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Editorial

Journal of Economics and Behavioral Studies (JEBS) provides distinct avenue for quality research in the ever-changing fields of economics & behavioral studies and related disciplines. Research work submitted for publication consideration should not merely limited to conceptualization of economics and behavioral developments but comprise interdisciplinary and multi-facet approaches to economics and behavioral theories and practices as well as general transformations in the fields. Scope of the JEBS includes: subjects of managerial economics, financial economics, development economics, finance, economics, financial psychology, strategic management, organizational behavior, human behavior, marketing, human resource management and behavioral finance. Author(s) should declare that work submitted to the journal is original, not under consideration for publication by another journal, and that all listed authors approve its submission to JEBS. Author (s) can submit: Research Paper, Conceptual Paper, Case Studies and Book Review. Journal received research submission related to all aspects of major themes and tracks. All submitted papers were first assessed by the editorial team for relevance and originality of the work and blindly peer-reviewed by the external reviewers depending on the subject matter of the paper. After the rigorous peer-review process, the submitted papers were selected based on originality, significance, and clarity of the purpose. The current issue of JEBS comprises of papers of scholars from South Africa, Ghana, China, Costa Rica, Pakistan and Namibia. Determinants of risk behaviour in livestock development programs, impact of Chinese, Korean and Japanese innovation spillover on labor productivity, Dynamic effect of foreign direct investment (FDI) and interest rates on GDP, psychological capital and organizational citizenship behavior, the 'user pays' principle and the electricity sector, influence of packaging and brand equity on over-the-counter herbal medicines, behavioral and environmental influences on entrepreneurial orientation, organisational capabilities and replicating successful programs, moral hazard effects of corporate bond guarantee purchases, determinants of climate change awareness, empirical investigation of trade liberalization and trade patterns, modelling real private consumption expenditure, high-quality input choice under uncertainty and ambiguity, on the unemployment–output relation, investigating the cost management practices of indigenous firms, empirical analysis of exchange rate pass-through to prices, relationship between workload-resources and exhaustion, influence of socio-psychological factors on consumer willingness to pay, modelling the BRICS exchange rates, end-user adoption of bitcoin, impact of financial sector development on foreign direct investment, local economic development, external factors influencing the cognitive response of impulse buying, assessing the dynamic economic impact of tourism in a developing region, role of international academic professionals in the development of entrepreneurial and happiness index for human resource management practitioners were some of the major practices and concepts examined in these studies. Current issue will therefore be a unique offer where scholars will be able to appreciate the latest results in their field of expertise, and to acquire additional knowledge in other relevant fields.

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PAPERS

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Determinants of Risk Behaviour in Livestock Development Programs: Evidence from South Africa's Kaonafatso Yadikgomo (Kyd) Scheme

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Abstract: Risk plays a significant role in input use decisions and production of output in agricultural production. Understanding farmer risk attitudes and their responses to risk is significant in designing effective intervention programmes. Few studies have tried to identify how the introduction of a livestock programme has tended to influence farmer risk profile. The objective of the study was to highlight the determinants of risk behaviour in participants of a livestock development programme. The study was carried out in KwaZulu-Natal (KZN) Province of South Africa, utilising a purposive sample of 164 respondents who are part of the Kaonafatso Yadikgomo (KYD) Scheme. The cross-sectional survey collected data pertaining to the risk attitudes of the livestock farmers from an attitudinal scale as well as socio-economic and farm bio-physical characteristics. Descriptive statistics and multiple linear regression were used to analyse the data. The results show that the livestock farmers were risk loving, with the risk attitude being influenced by the age of household head, monthly household income and experience in rearing cattle at the $p < 0.1$ level. Furthermore, the source of income, herd size, reason for slaughtering cattle distance to the nearest water source and access to a dip tank had significant influence of attitude towards risk at the $p < 0.05$ level. The study concludes that being part of a livestock development programme tends inflto uence the risk attitudes of the participants as the determinants were against a priori expectations.

Keywords: *Attitudinal scale, beef, farm biophysical, Likert scale, risk attitude, socio-economic*

1. Introduction

Risk plays a significant role in input use decisions and production of output in agricultural production (Orea & Wall, 2002; Wanda, 2009). In attributing this, a significant portion of the research has focused on providing evidence regarding how risk impacts nature of decision making through ascertaining producer attitude toward risk (Hurley, 2010; Tae-hun, 2008). Understanding farmer risk attitudes and their responses to risk is significant in designing effective intervention programmes. Risk alternative questionnaires have been utilised in this regard, whilst others have utilised expected utility maximization based behaviour as well as observation of economic actions (Hurley, 2010; Lagerkvist, 2005; Lien, 2002; Serra, Goodwin, & Featherstone, 2011; Wanda, 2009). Lagerkvist (2005) attests that much of the empirical work done has not sufficed as it has shown disparity with theory which is not reflected through individual behaviour. The literature has identified two contrasting poles in risk behaviour and attitude: risk aversion and risk loving. Risk-averse farmers utilise more (less) of a risk-reducing (increasing) factor than neutral farmers (Khan, Guttormsen, & Roll, 2017; Makki, Somwaru, & Vandeveer, 2002; Wanda, 2009). They tend to utilise an uneconomically optimal bundle of inputs (Khan et al., 2017). Furthermore, even when the output itself is variable, risk-averse farmers will not only take account of the expected output but its variability as well (Orea & Wall, 2002).

According to Kassie, Yesuf, and Köhlin (2008) in risk aversion, an increase in variance makes the decision maker worse off, with most decision makers exhibiting decreasing absolute risk aversion. Thus the greater the variability, the less the resources devoted (Mccarthy, 2000). Furthermore, neglecting this risk-averse behaviour in agricultural modelling leads to overstating the output levels of risky endeavours. In addition, aversion to risk also influences total output and input use, with a more risk-averse producer, who dislikes income variability, preferring slightly lower output and expected returns if the variability of returns also declines (Makki et al., 2002; Mbuku, Kosgey, & Kahi, 2006). Thus livestock farmers who are risk-averse are more willing to accept lower expected returns in avoiding the opportunity of unfavourable outcomes, thus having an impact on technology adoption (Kassie et al., 2008; Mbuku et al., 2006). In a related study by Flaten et al. (2005) comparing organic and conventional dairy farming in Norway, farmer perceptions were identified as significant in identifying their risk behaviour. There exists a literature gap in attributing

livestock development programme to farmer risk attitude. True so for the Kaona fatso YA Dikgomo (KYD) scheme in South Africa.

The scheme was formally established as a government Act in 2007, with the aim to empower beef farmers through continuous improvement and innovation (Government of South Africa, 2007). The scheme is involved in training smallholder farmers in recording, comparing production systems and genetic improvement for the purpose of increasing production and profit, with 8 400 farmers being part of the programme (ARC, 2012, 2015, 2016a). Benefits to being part of the scheme include access to animal health and production services, access to scientific methods in selecting animals to grow the livestock enterprise and accessing market advice. However, to date, there has been little to no inference on the impact on the risk of being part of the scheme. There appears a shortage of literature pertaining to how being part of the scheme has influenced the risk behaviour of the livestock farmers, offering a gap which can be pursued. Livestock farmer risk attitude studies suffer the same ill-fate as that of risk studies, of being scarce and one dimensional. Most studies simply allude to the risk profiles of livestock producers: whether they are risk-averse, neutral and/or loving (Hurley, 2010; Khan et al., 2017; Orea & Wall, 2002; Wanda, 2009). The most notable absentee however has been studies that try to identify how the introduction of a livestock programme has tended to influence farmer risk profile.

Program impact can be evaluated by identifying how risk profile tends to compound the production risk. This also tends to speak to the continuity of the programme. For instance, a programme that tends to shift the risk behaviour of its participants and is unlikely to maintain such a risk profile after the programme has ended will only be as good as it subsists. The most glaring question to follow would then be: what will be the resulting impact if the livestock programme tends to shift both the production risk and the risk behaviour and the programme came to a halt? An ideal livestock programme would be one that tends to reduce variability (risk) whilst at the same time maintaining the risk profile of the farmers involved. Such aspects have not been evaluated in livestock development programmes in general and the KYD programme in particular. This offers a literature gap and an opportunity to further put the KYD programme under scrutiny for better-informed decisions. The objective of the study was to highlight the KYD programme participant risk behaviour and the determinants towards this behaviour.

2. Material and Methods

The study was carried out in KwaZulu-Natal (KZN) Province in South Africa, targeting Kaonafatso YA Dikgomo (KYD) scheme participants. The province was selected because it has the largest number of the KYD scheme active members, at 53% of the country's total (ARC, 2016b). A cross-sectional survey was carried out to obtain a purposive sample of 164 respondents. The purposive sample was obtained through farmer field days, during which a questionnaire was the data collecting tool utilised. Purposive sampling was appropriate because it has less financial and temporal constraints, as well as that the farmers were conveniently grouped for the farmer field days. The sample size represented the number of farmers that were willing to partake in the study. Three farmer field days were targeted in November, 2017 in the following locations and the number of respondents: Godlwayo (42), Aitona (88) and Uitval (34). Godlwayo had 7 villages represented and Aitona with 6 villages whilst Uitval had 7 villages. Data collected pertained to the socio-economic variables as well as the risk attitudes of the livestock farmers. Farmers' risk attitudes were measured through a risk attitudinal scale in a questionnaire as used by Lagerkvist (2005). A 5 response option Likert scale was utilised as the measurement format. The Likert scale was utilised by authors such as Flaten et al. (2005) and Meuwissen, Huirne and Hardaker (2001) in ascertaining risk attitude, hence was appropriate for the study. The following ranking was used for the Likert scale (Lagerkvist, 2005): 1. Strongly disagree, 2. Disagree, 3. Not sure, 4. Agree, and 5. Strongly agree. The lower the individual statement score, the more the farmer takes measures in dealing with the risk in question. An example of a risk attitudinal statement and choice of option is observed below:

Table 1: Likert-Scale Attitudinal Question

Statement	Strongly disagree				Strongly agree	Not relevant
	1	2	3	4	5	
I want to sell more of my cattle since joining the KYD scheme	⬭	⬭	⬭	⬭	⬭	⬭

An individual lower total score hypothetically corresponds to higher risk aversion. The score for each Likert question was assigned a weight increasing from -2 for those who totally disagreed and +2 to those who strongly agree. Averaging a score of 0 corresponds to risk neutrality. Thus a positive score corresponds to risk affinity whilst a negative score represents risk aversion. The larger the magnitude, the larger the extremes of this risk behaviour. A total score was then attained through the summation of each Likert question. This individualistic total score was then used in a multiple linear regression as used by Hayran and Aykut, (2015) and Bishu et al. (2016) to ascertain factors having a bearing on the risk behaviour of KYD scheme participants in KZN Province, South Africa. A multiple linear regression model is a multivariate method appropriate when there are various explanatory variables and one dependent variable. It can be modelled as (Groebner, Shannon, Fry, & Smiths, 2011; Hair Jnr, Black, Babin, & Anderson, 2010):

$$y = \alpha_0 + \alpha_1 x_1 + \alpha_2 x_2 + \alpha_3 x_3 + \cdots + \alpha_n x_n + \varepsilon \quad (1)$$

Where y represents the Likert total score and $x_{1\ldots n}$ represent the independent variables, with $\alpha_{1\ldots n}$ being the coefficients. The following variables and their expected signs were utilised in the multiple linear regression.

Table 2: Variables Used in the Multiple Linear Regression Model

Variable	Definition	Type of measurement	E(sign)
Dependent variable			
Y	The total Likert score obtained through summation on individual Likert scores for each question	Continuous	
Independent variable			
AGE	What is the age of household head? (years)	Ordinal: 1=<20, 2=20-29, 3=30-39, 4=40-49, 5=50-59, 6=60-69, 7=>70	+
MARSTAT	What is the marital status of household head?	Categorical: 1=Single, 2=Married, 3=Widowed, 4=Divorced	+/-
HHSIZE	Household size	Continuous	-
EMPLOYSTAT	What is the employment status of household head?	Categorical: 1=Unemployed, 2=Formally employed, 3=Self-employed, 4=Part time farmer, 5=Full time farmer	+
MONFARINC	What is the monthly farm income? (Rand)	Ordinal: 1=<500, 2=500-999, 3=1000-1999, 4=2000-2999, 5=3000-3999, 6=4000-4999, 5=5000-5999, 6=10000-19999, 7=20000-29999, 8=30000-39999, 9=40000-49999, 10=50000-100000, 11=>100000	-
MONNONFARINC	What is the monthly non-farm income? (Rand)	Ordinal: 1=<500, 2=500-999, 3=1000-1999, 4=2000-2999, 5=3000-3999, 6=4000-4999, 5=5000-5999, 6=10000-19999, 7=20000-29999, 8=30000-39999, 9=40000-49999, 10=50000-100000, 11=>100000	+
INCSOUR	What is the source of income?	Categorical: 1=Formal employment, 2=Informal employment, 3=Social grants, 4=Remittances	+/-
LOGREARCATT	How long have you been rearing cattle?	Ordinal: 1=0-4, 2=5-9, 3=10-14, 4=15-19, 5=20-24, 6=25 and above	+

	(years)		
NOCATT	How many cattle do you have?	Continuous	+
REASSLAU	What is the reason for slaughtering cattle?	Categorical: 1=Own consumption, 2=Religious purposes, 3=Cultural tradition, 4=Financial obligation, 5=Profit	+/-
FARMACT	What are the farm activities undertaken?	Categorical: 1= Livestock only, 2=Livestock + crops, 3=Livestock + vegetables, 4=Livestock + crops + vegetables	-
DECMAK	Who is the decision maker?	Categorical: 1=Household head, 2=Immediate whole family, 3=Relative (individual), 4=Extended family (group)	+/-
DISTWATE	What is the distance to the nearest water source? (metres)	Continuous	-
TRAINI	Do you have training in rearing cattle?	Dummy: 1=Yes, 2=No	-
ACCTOVET	Do you have access to veterinary services?	Dummy: 1=Yes, 2=No	-
ACCTODIP	Do you have access to a dip tank?	Dummy: 1=Yes, 2=No	-

The multiple linear regression was thus modelled as follows:

$$Y = \alpha_0 + \alpha_1 AGE + \alpha_2 MARSTAT + \alpha_3 HHSIZE + \alpha_4 EMPLOYSTAT + \alpha_5 FARINC + \alpha_6 NONFARINC + \alpha_7 INCSOUR + \alpha_8 LOGREARCATT + \alpha_9 NONCATT + \alpha_{10} REASSLAU + \alpha_{11} FARMACT + \alpha_{12} DECMAK + \alpha_{13} DISTWATE + \alpha_{14} TRAINI + \alpha_{15} ACCTOVET + \alpha_{16} ACCTODIP + v_i$$

Where $\alpha_1 - \alpha_{16}$ represent the coefficients associated with the explanatory variables that influence farmer risk attitude score$Y$.$v_i$is the random error term with mean zero and variance 1

For reliability of the attitudinal scale, Cronbach's coefficient alpha was used in measuring the degree of communal variation:

$$\propto = \frac{b}{b-1}\left(1 - \frac{\sum \sigma_i^2}{\sigma_y^2}\right)$$

Where b is the number of statements in the scale, σ_i^2 is the variance of the $i$the statement, and σ_y^2 is the total variance of the b-item scale.

3. Results and Discussion

Seventy percent of the respondents had a male-headed household, with 79.9% having an age of more than 40. Forty-two percent of the household heads were married, with 55.4% attaining education not enough to be gainfully employed exhibited by the 59.1% of the unemployed household heads. Fifty-two percent of the respondents' household head had a monthly farm income of less than R500 whilst 41.5% had a non/off-farm income of R500, with 63.2% relying on social grants as a source of income. The mean number of years to being part of the KYD programme was 8.03 (≈8) years, with household size and dependency ratio averaging 6.58 (≈7) and 1.26 (≈1) respectively. The average cattle herd size was 18.96 (≈19) cattle, with a mean distance to the market of 2.6 km. Figure 1 shows that 64.4% of the respondents agree that they prefer to sell their livestock since joining the KYD scheme. Furthermore, 81.8% of the respondents are willing to continue with the experiences of the KYD scheme even if it ceases, whilst 68% agree to have improved in the use of conventional livestock technologies and systems. However, 69.8% of the respondents are either unsure or disagree in high cost of maintaining their livestock. A further 77.2% are indifferent and disagree to the scheme inducing income diversity, with 31.5% agreeing to discontinue the programme if the government support leaves. Fifty percent of the respondents indicate that they depend on the scheme for everything related to livestock rearing.

Figure 1: Farmer Behaviour since Joining the KYD Programme

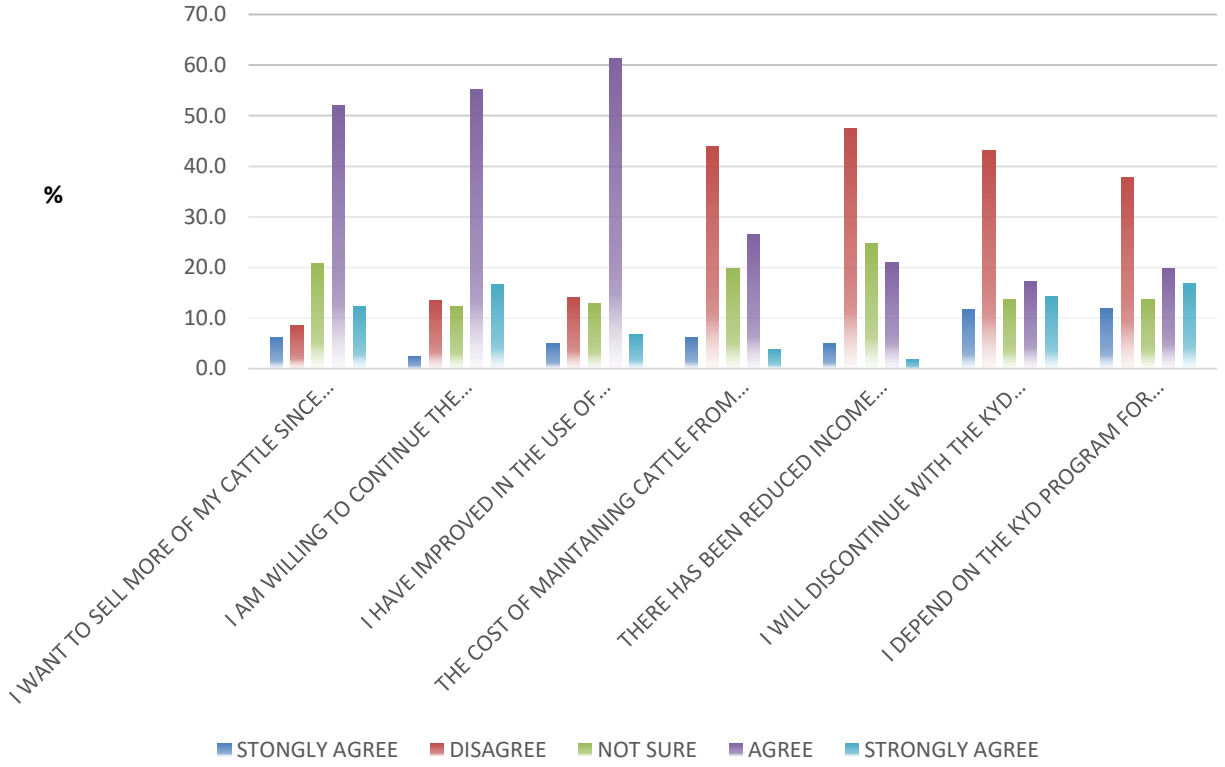


Table 3 shows that the Likert-scaled questions had a Cronbach's Alpha statistic of 0.538, indicating that the questions were relatively reliable. The Hotteling's T-squared test is significant at the $p < 0.01$ level, signifying a significant difference in the means of the Likert scores. The mean scores (≈4) and the negative skewness show that the respondents strongly agreed with the programme improving their propensity to sell, continue with the programme experiences and well as improved use of convectional technologies. The (ARC, 2011, 2015) highlighted the increased off take, commercialisation and market participation exhibited by KYD programme participants. However, the mean score of (≈3) highlight and the positive skewness indicate that the respondents disagreed with the programme exhibiting high maintenance costs, reduced income diversity, to discontinue when the financier leaves and well as depending on the programme.

Table 3: Farmer behaviour since joining the KYD programme

	Min	Max	Mean	Std. Dev	Skewness	Kurtosis
Prefers to sell more commercialise	1	5	3.56	1.019	-0.940	0.532
Willingness to continue with experiences	1	5	3.70	0.982	-0.868	0.239
Improved use of conventional methods	1	5	3.51	0.984	-1.050	0.352
High cost of maintaining	1	5	2.78	1.028	0.319	-0.927
Reduced income diversity	1	5	2.67	0.925	0.460	-0.655
Discontinuity when the government leaves	1	5	2.79	1.268	0.477	-0.984
Dependency on the programme	1	5	2.92	1.313	0.285	-1.200
Reliability test						
Cronbach's Alpha		0.538			Sig	
Hotelling's T-squared		91.825			0.000	
			Mean Square	F		
ANOVA with Tukey's Test for Nonadditivity	Between items		30.416	153.452	0.000	
	Nonadditivity residual		28.444	29.123	0.000	

Figure 2: Distribution of Respondents' Individual Total Likert Scores

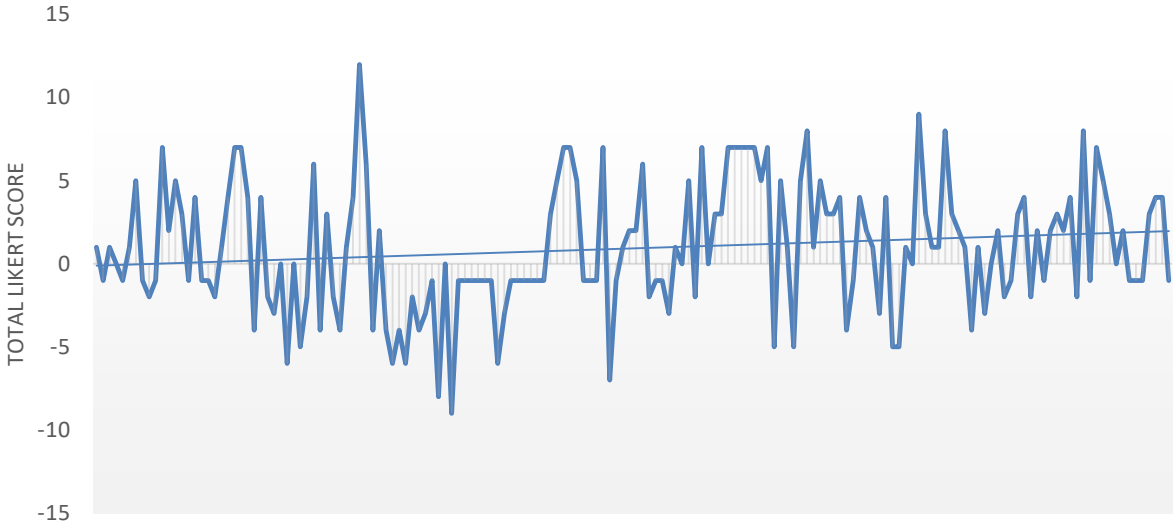


Figure 2 shows the distribution of the total Likert scores for the 164 respondents. The general positive trend indicates the affinity of the respondents to risk-taking. Table 4 shows the determinants of risk behaviour of KYD scheme participants. The variables significantly represent determinants of risk behaviour of KYD scheme participants at the $p<0.01$ level. The R^2 value shows that these variables account for a low 20.4% of the variables having an influence on the risk behaviour. This is similar to other studies which obtained the low coefficient of determinant mainly attributed to the perceptions and attitudes which tend to differ from one respondent to another (Aditto, Gan, & Nartea, 2012; Flaten et al., 2005; Meuwissen et al., 2001). The table shows that age of household head, monthly household farm income, and experience in rearing cattle have a significant bearing on the risk behaviour of KYD scheme participants at the $p<0.1$ level. The source of income, herd size, the reason for slaughtering cattle, distance to the nearest water source and access to a dip tank had a significant influence on the risk behaviour at the $p<0.05$ level.

Table 4: Multiple Linear Regression Results of Factors Influencing Risk Attitude

Variable	B	Sig	Beta
Age of household head	**0.528***	0.059	0.175
Marital status of household head	0.327	0.390	0.075
Total household size	0.120	0.141	0.128
Employment status of the household head	0.430	0.130	0.146
Monthly household farm income	**-0.263***	0.087	-0.178
Monthly household off/non-farm income	-0.224	0.174	-0.144
Source of income	**-0.967****	0.040	-0.188
How long have you been rearing cattle	**-0.428***	0.057	-0.175
Number of cattle	**-0.049****	0.026	-0.217
Reasons for slaughtering cattle	**-0.511****	0.016	-0.213
Farming activities undertaken	0.251	0.392	0.071
Decision maker	0.259	0.471	0.059
Distance to nearest water source	**-5.879E-05****	0.036	-0.163
Training in rearing cattle	-1.09	0.141	-0.123
Access to veterinary services	-1.06	0.184	-0.114
Access to dip tank	**3.67****	0.013	0.208
Constant	**23.2*****	0.000	2.88
Model Summary			
Sig.	0.00		
R^2	0.20		
Adjusted R^2	0.116		
F	2.23		

The age of household head had a positive significant influence on the risk behaviour of KYD scheme participants. The age of the household head accounted for 17.5% influence on the risk behaviour of the respondents. This is due to the risk-taking endeavours as the farmers become older (Aye & Oji, 2007). Experience also has a bearing on such behaviours, with previous experiences ensuring better preparedness of future risks and uncertainties (Van Winsen et al., 2016). The older people are more resource endowed, ensuring risk mitigation strategies, thus are prepared to venture and have an affinity for risk-taking. However, experience in farming had a 17.5% account on the risk behaviour of the KYD scheme participants, negatively influencing such behaviour. The more experienced the farmer was in rearing cattle, the more risk averse the farmer was, contrary to Aye and Oji, (2007). This is relative to the experiences of the farmers. Climate change induced recurrent droughts have had a negative bearing on the risk affinity behaviour of livestock farmers. This is not privy to less experienced farmers, who are willing to take risks. Cattle production requires long-term investment and orientation, in its nature not a quick return enterprise, and thus not appealing to risk takers. Only through experience, can such a decision be reached.

Monthly farm income had a negative significant influence on the risk behaviour of KYD scheme participants, accounting for 17.8% of this behaviour. Thus the more the farm income, the more risk averse the farmers become. This could be due to a livelihood-livestock enterprise nexus, where most of the respondents that had high farm income were overly reliant upon farming for their livelihood. Hence, they are less likely to experiment and expose to risk unless their livelihoods be compromised. This was contrary to Bishu et al. (2016) and Meuwissen, Huirne, and Hardaker, (2001) who found that the higher the farm income, the less risk averse the farmers. However, Mischra and Goodwin, (2006) indicated that it is actually the amount of off/non-farm income that would make farmers less risk-averse. This is supported by Aye and Oji (2007), Flaten et al. (2005) and Meuwissen, Huirne, and Hardaker, (2001) who highlighted that it is actually the total income that had a much significant influence on the risk attitude of farmers.

Table 4 also shows that the source of income had a negative significant influence on the risk behaviour of the KYD scheme participants, with an account of 18.8% of this behaviour. Thus, as the source of income shifted from formal employment to informal employment, social grants and remittances, the more risk averse the farmers. This amounts to the amount of income that can be obtained from each source. Remittances and social grants have low incomes; hence the farmers are reluctant in taking risk lest their livelihoods be compromised. The herd size and the reason for slaughtering cattle had a negative significant influence on the risk behaviour of KYD scheme participants. They both accounted for 21.7% and 21.3% of this risk behaviour respectively. The herd size was surprisingly indicating that the larger the herd size, the more risk averse the farmer. Bardhan et al. (2006) found that as herd size increases, the more risk averse the farmers, mainly attributed to farmers paying more attention to their farming. This was contrary to Bishu et al. (2016) who found that in Ethiopia, as herd size increased, farmers became less risk-averse. This was also supported by Van Winsen et al. (2016) and Xiao et al. (2001) who indicated that the larger the farm size, the less risk averse the farmer.

The results further show that as a reason for slaughtering changes from own consumption to religious purposes, cultural tradition, financial obligation and profit, the less risk averse the farmers. The profit potential induces the farmer to be less risk-averse in the endeavour to maximize on returns. Distance to water source and access to dip tank accounted for 16.3% and 20.8% for the risk behaviour of KYD scheme participants respectively. However, distance to water source had a negative influence whilst the access to dip tank had a positive influence on this risk behaviour. These results indicate that the further the distance to water source, the more risk averse the farmers would be. This will be congruent with the enterprise itself, which requires large volumes of water from watering the animals to providing vaccines and dipping them as well. Access to a dip tank had the a priori positive expectation insinuating that a farmer has risk affinity if they have access to a dip tank. This assures the reduction of external parasitic diseases, thereby increasing the risk tolerance of the farmers.

4. Conclusion

Livestock development programmes have had an influence on the risk behaviour of livestock keepers. This has a major impact on the sustainability and continuity the livestock development programmes. The objective

of the study was to highlight the KYD programme participant risk behaviour and the determinants towards this behaviour. In conclusion, being part of the livestock development programme made the participants less risk-averse. This is due to the assurance of the programme in providing the key technical and material support in their livestock enterprises, providing room for the experimentation. The farmers prefer to participate in markets more and are willing to continue with the teaching of the programme even when it comes to an end, with some overly relying on the programme for everything related to livestock rearing. Furthermore, factors such as the age of household head, monthly household farm income, experience in rearing cattle, the source of income, herd size, the reason for slaughtering cattle distance to the nearest water source and access to a dip tank had a significant influence on the risk behaviour. The results show that the risk behaviour is mainly determined by inherent farmer characteristics, with less institutional factors having a bearing on the risk behaviour. The programme has thus been beneficial in eliminating exogenous risk perceptions. This has a two-tier effect: 1) More risk affinity for the livestock farmers; and 2) The participants become overly reliant on the programme, and any alteration from this new norm would have a negative influence. The study recommends that institutions such as extension could have a role to play in influencing behaviour especially given that the farmers exhibit a propensity to commercialise and have risk affinity.

References

Aditto, S., Gan, C. & Nartea, G. V. (2012). Sources of Risk and Risk Management Strategies: The Case of Smallholder Farmers in a Developing Economy. In N. Banaitiene (Ed.), Risk Management-Current Issues and Challenges, 449–475.

ARC. (2011). Annual Report 2010-2011. Pretoria, South Africa.

ARC. (2012). National Beef Recording and Improvement Scheme. Irene, South Africa. Retrieved from http://www.arc.agric.za/arc-api/Newsletter Library/National Beef Recording and Improvement Scheme Newsletter 2012.pdf

ARC. (2015). ARC Annual Report 2014/2015. ARC Annual Report. Pretoria, South Africa.

ARC. (2016a). Annual Beef Bulletin. Irene, South Africa. Retrieved from http://www.arc.agric.za/ARC Newsletters/ARC Annual Beef Bulletin - 2016.pdf

ARC. (2016b). Annual Report 2015/16. Pretoria, South Africa.

Aye, G. C. & Oji, K. O. (2007). Effect of Poverty on Risk Attitudes of Farmers in Benue State, Nigeria. In 12th Annual Conference on Econometric Modelling for Africa. Cape Town, South Africa 4-6 July.

Bardhan, D., Daba, Y. P. S., Tewari, S. K. & Kumar, A. (2006). An assessment of the risk attitude of dairy farmers in Uttaranchal (India). In International Association of Agricultural Economists Conference. Gold Coast, Australia, August 12-18.

Bishu, K. G., O'Reilly, S., Lahiff, E. & Steiner, B. (2016). Cattle farmers' perceptions of risk and risk management strategies: evidence from Northern Ethiopia. *Journal of Risk Research*, 9877, 1–20.

Flaten, O., Lien, G., Koesling, M., Valle, P. S. & Ebbesvik, M. (2005). Comparing risk perceptions and risk management in organic and conventional dairy farming: empirical results from Norway. *Livestock Production Science,* 95, 11–25.

Government of South Africa. (2007). Agricultural Improvement Act, 1997 § (2007). South Africa.

Groebner, D. F., Shannon, P. W., Fry, P. C. & Smiths, K. D. (2011). Business Statistics: A Decision-Making Approach (8th Edition). New Jersey, USA: Prentice Hall.

Hair Jnr, J. F., Black, W. C., Babin, J. B. & Anderson, R. E. (2010). Multivariate Data Analysis. Pearson Prentice Hall.

Hayran, S. & Aykut, G. (2015). Risk Perception and Management Strategies in Dairy Farming: A Case of Adana Province of Turkey. *Turkish Journal of Agriculture - Food Science and Technology*, 3(12), 952–961.

Hurley, T. M. (2010). A Review of Agricultural Production Risk in the Developing World.

Kassie, M., Yesuf, M. & Köhlin, G. (2008). The Role of Production Risk in Sustainable Land- Management Technology Adoption in the Ethiopian Highlands. Environment for Development. Addis Ababa, Ethiopia.

Khan, A., Guttormsen, A. & Roll, K. H. (2017). Production risk of pang as (Pangasiushy pophthalmus) fish farming. *Aquaculture Economics & Management,* 0(0), 1–17.

Lagerkvist, C. J. (2005). Assessing farmers' risk attitudes based on economic, social, personal, and environmental sources of risk: evidence from Sweden. In American Agricultural Economics Association. Providence, 24-27.

Lien, G. (2002). Non-parametric estimation of decision makers' risk aversion. *Agricultural Economics*, 27, 75–83.

Makki, S. S., Somwaru, A. & Vandeveer, M. (2002). Decoupled Payments and Farmers' Production Decisions Under Risk. Decoupled Payments in a Changing Policy Setting. Economic Research Service, USDA.

Mbuku, S. M., Kosgey, I. S. & Kahi, A. K. (2006). Identification systems and selection criteria of pastoral goat keepers in northern Kenya – Implications for a breeding program. Tropentag, 11-13.

Mccarthy, N. (2000). An Economic Analysis of the Effects of Production Risk on the Use and Management of Common-Pool Rangelands. In N. McCarthy, B. Swallow, M. Kirk, & P. Hazell (Eds.), Property Rights, Risk, and Livestock Development in Africa, 155–190.

Meuwissen, M. P. M., Huirne, R. B. M. & Hardaker, J. B. (2001). Risk and risk management: an empirical analysis of Dutch livestock farmers. *Livestock Production Science*, 69, 43–53.

Mischra, A. K. & Goodwin, B. K. (2006). Revenue insurance purchase decisions of farmers. *Journal of Applied Economics*, 38, 149–159.

Orea, L. & Wall, A. (2002). Decomposing Productivity Growth (12 No. 2002). Asturia, Spain.

Serra, T., Goodwin, B. K. & Featherstone, A. M. (2011). Risk behaviour in the presence of government programs. Journal of Econometrics, Elsevier. https://doi.org/10.1016/j.jeconom.2009.10.005

Tae-hun, K. I. M. (2008). The Measurement of Farmers Risk Attitudes Using a Non-Structural Approach. *Journal of Rural Development,* 31(2), 63–80.

Van Winsen, F., De Mey, Y., Lauwers, L., Van Passel, S., Vancauteren, M. & Wauters, E. (2016). Determinants of risk behaviour: Effects of perceived risks and risk attitude on farmers' adoption of risk management strategies. *Journal of Risk Research,* 19(1), 56–78.

Wanda, O. (2009). Production Risk and Input Use in Banana Production in Uganda. Makerere University.

Xiao, J. J., Alhabeeb, M. J., Hong, G. S. & Haynes, G. (2001). Attitude toward risk and risk-taking behavior of business-owning families. *The Journal of Consumer Affairs,* 35, 307–325.

Impact of Chinese, Korean and Japanese Innovation Spillover on Labour Productivity in South African Manufacturing

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Abstract: Open economy endogenous growth theories consider physical intermediate imports as a channel through which innovation spreads across international boundaries. We build from this literature and contribute by considering trade in services as the channel through which innovation from China, Korea and Japan influences labour productivity in South Africa's manufacturing sector between 1995Q1 – 2017Q4. Unlike previous studies, we also compute a composite innovation index using the principal component analysis. Results from the autoregressive distributed lag model are supportive of open economy endogenous growth theories for Japan and Korea. However, for China, the effect is significantly negative adding further concerns over its predatory presence in South Africa.

Keywords: *Innovation spill over, labor productivity, manufacturing, South Africa*

1. Introduction

The objective of this paper is to estimate the impact of Chinese, Korean and Japanese innovation spill over on labour productivity growth in South Africa's manufacturing sector using recent data. Open economy endogenous growth theories by Aghion and Howitt (1990), Grossman and Helpman (1991) & Coe and Helpman (1995) and provide the standard theoretical foundation upon which empirical literature on innovation spillover is grounded. These models predict that technology transcends international boundaries through trade in intermediate imports. Consequently, the benefits of innovation created in technology frontier economies can be enjoyed by their technology lagging counterparts. While the literature on this theoretical discourse is well established, a closer look to the existing evidence reveals a number of gaps and shortcomings. First, few studies have considered trade in services as the transmission mechanism. Francois (1990), Mun and Nadiri (2002) and Guerrieri et al. (2005) have shown that services are essential in the role in explaining productivity growth through the linkage and coordination of technology transfers. Empirically, trade in services has gained more prominence in recent decades than trade in physical goods (Balchin et al., 2016). Despite the negligible role given to services as a determinant of long-run productivity growth in traditional growth models, there is little debate that trade in services has become fundamental in transferring skills, knowledge and technology across countries through, for example, service contracts where companies offer technical services abroad. Second, a substantial literature on technology spill over (Apergis et al., 2008, Behera et al., 2012, Nishioka and Ripoll, 2013, Medda and Piga, 2014, Pradeep et al., 2017 and Bloom et al., 2016) has commonly peroxide innovation by research and development (R&D) stock which is essentially an input in the innovation creation process. According to OECD (2010) however, econometric work needs to divert away from inputs of innovation alone and consider outputs of innovation.

Motivated by this recommendation, we propose and construct, using the principal component analysis (PCA), a novel composite innovation index that comprises both innovation inputs (R&D stock and human capital in R&D) and outputs (patent and trademark applications). An autoregressive distributed lag model (ARDL) due to Pesaran and Smith (1998) and Pesaran et al. (2001) is estimated through the bounds testing procedure. This procedure utilizes lags which makes it capable of adequately capturing the underlying data generating process. For robustness purposes, we employ alternative co integrating estimators that adequately remedy the endogeneity problem inherent in the innovation-productivity relation. These include the dynamic ordinary least squares estimation approach (DOLS), the fully modified ordinary least squares method (FMOLS) and the canonical cointegrating regression (CCR) approach. South Africa enjoys strong trade and diplomatic ties with China, Japan and Korea. According to South Africa's Industrial Development Cooperation (IDC) (2009), the majority of South Africa's imports from Asia originate from China, Japan, Korea and Saudi Arabia with a combined 53.5% share of total imports from the Asian region. In theory, one would expect technology to flow from technology frontier economies to technology lagging ones. Japan, Korea and China have higher per capita incomes relative to South Africa which makes it reasonable to consider the former

three as technology leading economies. Also, Japan and Korea are service driven economies hence we expect them to transmit innovative and high-quality services to innovation lagging economies like South Africa.

2. Literature Review

In theory, trade enhances innovation by facilitating industrial learning through the interchange of technical information across countries. It is essentially through this information exchange process that an innovation lagging economy can simply adopt a superior technology and advanced production ideas that have already been invented in technology frontier countries (Apergis et al., 2008). This phenomenon is commonly referred to as "the advantage of backwardness" in the sense that it prevents the duplication of research efforts. Physical intermediate goods traded globally constitute an important channel for innovation diffusion and transmission in models of endogenous growth developed by Romer (1989) and their extended open economy versions of Grossman and Helpman (1991) and Aghion and Howitt (1990). According to these theoretical models, the use of domestic and foreign-sourced intermediate and capital goods is fundamental in raising and sustaining productivity growth through superior technologies. Empirically, the idea that intermediate imports embody advanced technology and that their use enhances manufacturing productivity growth in the importing country was proposed by Schmookler (1966) and subsequently examined by Terleckyj (1974), Griliches and Lichtenberg (1984), Coe and Helpman (1995) and Keller (2002). Recent literature relies on firm, industry and sectoral level data to analyse the connection and relevant mechanisms linking imports and productivity. Influential firm-level studies such as Melitz (2003), Pradeep et al. (2017) and Medda and Piga (2014) confirm the presence of technology spillover on productivity. Our study is closely related to industry and sectoral level literature which includes Badinger and Egger (2016), Mehta (2013), Nishioka and Ripoll (2012), Raouf Abdel Fattah (2015), Apergis et al. (2008) and Behera et al. (2012).

These studies generally exploit data on manufacturing industries over time and use panel data techniques to explain the empirical link between technological spill over and productivity. The chain of evidence is mixed across most of these studies. For example, Behera et al. (2012) confirm that technology spillover is significant drivers of productivity. On the contrary, Mehta (2013) and Elu and Price (2010) do not find technological spill over to be a significant driver of productivity growth. The latter particularly conclude that international trade between the African region and China is not one which is characterised by technology transfer which is parallel to the prediction raised by Grossman and Helpman (1991). Although the source of result contradiction may not be determined a priori with virtual certainty, it is fair to argue that the source of the controversy lies in the use of different estimation approaches by different studies. A particular important shortcoming of earlier studies is that of disregarding issues of non-stationary as noted by Apergis et al. (2008). The problems of ignoring data stationary property are well known; statistical inference in the conventional ordinary least squares method will be spurious. It is against this background that we perform unit root and cointegration tests which would then allow us so to employ an estimation technique that is less susceptible to spurious inferences. There is however a fair amount of studies that conduct tests for both unit root and cointegration and these include Apergis et al. (2008), Lee (2006) and Guellec et al. (2004). These studies generally find productivity and technology spill over to be cointegrated and hence proceed with cointegrating estimation techniques. To our knowledge however, none of these studies adequately addresses the issue of simultaneity. The correction of simultaneity is critical in this kind of literature as trade variables may also react to changes in productivity growth. Some of the studies including Bloom et al. (2016) rely on instruments while firm-level studies such as one by Ahmed et al. (2015) capitalise on the Olley and Pakes (1992) approach to dealing with the endogeneity issue caused by unobserved productivity shocks.

Relying on the commonly applied Cobb-Douglas production function, Ahmed et al. (2015) conclude, in the context of Pakistan that policies that promote trade encourage productivity growth. Their study did not however focus on the channels through which trade can foster productivity growth. Other studies focus on the channels through which innovation spreads across countries apart from imports. Alvarez (2005) for the Chilean manufacturing industry focus on three main channels of technological absorption namely: exports, foreign direct investment and the purchase of foreign technical licenses. The author finds that exports significantly increase technological innovation. For finds innovation spillover from 16 countries on Egypt's domestic productivity through imports, exports, inward FDI and outward FDI. On the contrary, Goldberg et al. (2010) reach the conclusion that innovation is chiefly transferred through increased access to imported

inputs. This is similarly confirmed by Kasahara and Rodrigue (2008). Different from these studies, we focus on trade in services as the transmission mechanism. We are interested in services of two forms: 1) commercial presence - which is essentially the provision of a service by a service firm of a technologically advanced economy by establishing a commercial presence in another economy.

This presence can take the form of one services company establishing a branch in a foreign country and 2) the movement of skilled personnel which essentially involves the provision of a particular service through temporary residence of a foreign person in another country. This category can also encompass temporary or permanent migration of independent skilled professionals such as auto-mechanics; electricians, tailors and so on in another country. The ultimate objective is to assess the relevance of service imports in transferring innovation across international boundaries and the eventual effect on labour productivity in the importing country. Our analysis is conducted at sectoral level which necessitates the use of a time series approach. One might question the suitability of a sectoral level approach on the basis of data aggregation issues. Related empirical work in this area – trade in services - tends to rely on aggregated data[1] often of the cross-section in nature. Mattoo et al. (2006) demonstrate for example using a cross-sectional dataset that countries with liberalized financial and telecommunication sectors exhibit high productivity growth rate. Similarly, Eschenbach and Hoekman (2006) report that liberalization combined with the adoption of good practices in the regulation of telecommunications, financial and energy and transport services are relevant determinants of economic performance. We differ from these studies in that we consider trade in services as a mechanism through which innovation in one country affects productivity in the other. Close to this kind of analysis are studies that consider foreign direct investment as a productivity driver in the host country (Duggan et al. 2013, Arnold et al., 2011a, Fernandes and Paunov, 2012 and Arnold et al., 2016). Indeed, FDI is a key mechanism for the international provision of enabling services and the transfer of knowledge and the know-how as well as a relevant channel through which high-quality; low-cost services can improve TFP of manufacturing producers in the host country. However, our analysis aggregates a broad range of services other than FDI which makes it capable of providing a complete picture of how trade in services influences the productivity of the importing country as an innovation transmission mechanism.

3. Methodology

The sampling period is 1995 – 2017 guided by data availability. Despite the issue of data considerations, this period coincidentally represents the era in which trade between South Africa, China, Korea and Japan grew remarkably. In order to increase the sample size, the annual data are converted into quarterly intervals using the quadratic interpolation method. This transformation yields a sample size of 92 observations. The rest of the paper proceeds as follows: Section 2.0 reviews related literature, 3.0 describes the data and specifies empirical models, 4.0 reports and discusses the findings while 5.0 highlights some concluding remark.

Model Specification: To ascertain the impact of innovation embodied in service imports from China, Korea and Japan, we specify a multivariate model of the following form[2]:

$$\log LP_t = \beta_0 + \beta_1 \log S_t + \beta_2 \log C_t + \beta_3 \log K_t + \beta_4 \log J_t + \varepsilon_t \quad (1)$$
$$t = 1995Q1, \dots, 2017Q4$$

where log denotes logarithm, $\beta_0 - \beta_4$ are unknown parameters to be estimated, t signifies time period, $\varepsilon_t$is the white noise error term, LP is labour productivity defined as real output per worker in manufacturing. By focusing on productivity at sectoral level, we are making an assumption that manufacturing productivity draws from a common pool of technology. Variable$S$ represents South Africa composite innovation index C K and J are composite innovation indices for China, Korea and Japan respectively so that their corresponding slope parameter represent spill over effects. The composite innovation indices are computed using the

[1] Also one of the pioneering works by Coe and Helpman (1995) was even more aggregated as it was conducted at country level.

[2]This model theoretically builds from open economy versions of endogenous growth models by Coe and Helpman (1995). It is similar to that applied in Badinger et al. (2016), Mehta (2013), Nishioka and Ripoll (2013), Apergis et al. (2008) and Behera et al. (2012). The difference is that we focus on innovation transferred via service imports rather than R&D embodied in physical imports.

principal component analysis (PCA). The PCA is essentially a mathematical procedure that allows us to transform the correlated innovation indicators into an overall index called a principal component. It has two broad objectives namely reducing the dimensionality of a given data set and constructing new variable(s). In our case, we have four indicators of innovation namely R&D stock, researchers in R&D, patent and trademark applications and we compute a principal component index for each country. Human capital, just like R&D expenditure is a key input of innovation creation.

Empirically, there is a widespread consensus that education systems, through postgraduate research for example, significantly contribute to the knowledge bases. By definition, human capital here is quantified by the number of researchers in R&D. These are essentially professionals employed in the generation of new knowledge, products, production processes or production systems. Postgraduate Ph.D. students engaged in R&D are also included by measurement. The stock of R & D is calculated based on the perpetual inventory method (PIM). Using this method, R&D stock (Z_t) at the beginning of period t is equal to the beginning stock (Z_{t-1}) plus expenditure on R&D in the current year (R_t) subtract beginning stock depreciation (δZ_{t-1}) where δrefers to the rate of yearly depreciation.

$$Z_t = (1-\delta)Z_{t-1} + R_t$$

R&D stock in the initial year Z_0 is given by:

$$Z_0 = R_1/(\delta + \mathrm{g})$$

Here,g denotes the average yearly logarithmic R&D growth rate from Z_0 to the current period. Since initial R&D stock is not directly observed, we have measured it with an assumption that R&D expenditure and δ prior the initial period equals the average rates observed after the initial year. We have also assumed a depreciation rate of 15 per cent in line with Feldman and Kogler (2010) and Hall and Rosenberg (2010). Part of the novelty of our index is the inclusion of trademarks which are strongly used by firms when introducing new products mainly as a way of symbolising novelty and promoting the product brand so that the rewards of their innovation effort can be appropriated. With these four indicators, the PCA allows us to establish the weights of each indicator included in the overall index arbitrarily in a way that ensures that the final component (s) explain maximum variance in the data. We name the constructed index for each countryPCI. The next question becomes; how is innovation represented by this proxy transmitted from Korea, Japan and China to South Africa with an ultimate effect on labour productivity in manufacturing? As indicated in literature, several channels have been identified but we focus on weights based on service imports. How do these services link with innovation transfer and productivity growth? Despite being excluded in conventional growth models, trade in services has a strong impact on technology transfer and productivity growth.

Financial services for instance can influence productivity growth by facilitating the process of capital accumulation as well as fostering innovation (Levine, 1997). Telecommunications services that are of high quality and low costs result in sectoral and economy-wide benefits given that communication networks represent a way of transferring and conveying information regarding non-codified knowledge. In other words, telecommunications play an import role in the dissemination and diffusion of innovation and knowledge – including the use of the internet – i.e. the internet of things. A sound and robust network communication can also act as a transmission mechanism of digitised intermediate products. Similarly, efficient transport services can have an influence on the cost of shipment for goods as well as the migration of skilled personnel between countries. Business services that encompass consultancy, engineering and so on reduce transaction costs that are associated with the enforcement of business contracts and they also stand as a mechanism through which business process innovations are transmitted across countries.

Given this importance of services and following Lichtenberg and Pottels berghe de la Potterie (2001), the innovation spill over variable weighted by service imports is measured as:

$$C_{it} = \sum_j \frac{S\_IMP_{ijt}}{Y_{jt}} PCI_{jt}$$

$$K_{it} = \sum_j \frac{S\_IMP_{ijt}}{Y_{jt}} PCI_{jt}$$

$$J_{it} = \sum_j \frac{S\_IMP_{ijt}}{Y_{jt}} PCI_{jt}$$

where S_IMP represents service imports of country i (South Africa in this case) from country$j$, where j=China, Japan and Korea,Y_{jt} denotes GDP of the transmitting country and PCI_{jt} refers to the composite innovation index computed by the principal component analysis. Theoretically, open economy endogenous growth models by Grossman and Helpman (1991), Coe and Helpman (1995), Aghion and Howitt (1990) predict a positive effect of technology transfer on productivity of the importing country. Empirically, however, studies have shown that the effect can be negative. Therefore, either sign is expected on innovation spill over parameters. Data are sourced from different sources. Labour productivity in manufacturing is extracted from the South African. Reserve Bank (SARB), researchers in R&D and R&D expenditure is from OECD.

Estimation Procedure: The World Development Indicators (WDI), patent and trademark applications are sourced from WDI. With time series, it is important to first check the data generating process so as to avoid making spurious inferences which occur when we estimate a seemingly strong relationship which does not exist. To achieve this, we apply the Breakpoint unit root approach, the Augmented-Dickey-Fuller (ADF), Phillip-Perron (PP) as well as the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) approaches for robustness purposes. Apart from the KPSS, the entire tests have a null hypothesis of a non-stationary process. Having checked the data generating process, we apply the linear ARDL bounds testing procedure proposed by Pesaran and Smith (1998) and Pesaran et al. (2001) which has the main advantage of being applicable even in the presence of I(0) and 1(1) regresses. With the ARDL bounds testing procedure, equation (1) becomes.

$$\Delta \log LP_t = \theta_0 + \theta_1 \log LP_{t-1} + \theta_2 \log C_{t-1} + \theta_3 \log J_{t-1} + \theta_4 \log K_{t-1} + \theta_5 \log S_{t-1} + \sum_{i=1}^{n} \beta_i \Delta \log LP_{t-i} + \sum_{i=1}^{n} \varphi_i \Delta \log C_{t-i} + \sum_{i=1}^{n} \alpha_i \Delta \log J_{t-i} + \sum_{i=1}^{n} w_i \Delta \log K_{t-i} + \sum_{i=1}^{n} a_i \Delta \log S_{t-i} + \varepsilon_t \quad (2)$$

$$t = 1995Q1, \dots, 2017Q4$$

where Δ denotes the first difference operator. The optimum lag order for each regressor is automatically selected by the Akaike Information Criterion (AIC) which, according to Lütkepohl (2006), performs better than other alternatives. In performing the bounds testing procedure, we first estimate equation (2) by the OLS method and test for joint significance of lagged level variable parameters using an F-test. The corresponding F-statistic in the bounds testing procedure has a distribution which is non-standard and more importantly one which is dependent upon four key factors namely (i) the number of observations (n), i.e. sample size (ii) number of covariates less the lagged dependent variable (i.e. k-1) in the ARDL specification, (iii) the assumption of an intercept and the trend component and (iv) whether none of the variables is I (2). In this study, our sample size (n) is 92 and the number of regresses excluding the lagged dependent variable is 4. With regards to the inclusion of a trend and constant, case three is assumed. Importantly, none of the variables is I (2) as will be shown in the subsequent section. Critical values are tabulated in Pesaran et al. (2001) for the lower and the upper bound. An F-statistic above (below) the upper (lower) bound signals presence (absence) of a long-run association while the test is not conclusive if the F-statistic lies in between the upper and the lower bound.

The $H_o$of no long-run association is given by, $\theta_1 = \theta_2 = \theta_3 = \theta_4 = \theta_5 = 0$ against the H_A: $\theta_1 \neq \theta_2 \neq \theta_3 \neq \theta_4 \neq \theta_5 \neq 0$. This can be denoted by $F_P\left(\log LP \mid C, K, J, S\right)$. If co integration is confirmed in the equation that is normalised with labour productivity, then equation (2) can bare-specified into an error-correction-model (ECM) of the following form:

$$\Delta \log LP_t = c + \sum_{i=1}^{n} \beta_i \Delta \log LP_{t-i} + \sum_{i=1}^{n} \varphi_i \Delta \log C_{t-i} + \sum_{i=1}^{n} \alpha_i \Delta \log K_{t-i} + \sum_{i=1}^{n} w_i \Delta \log J_{t-i} + \sum_{i=1}^{n} \eta_{iP} \Delta \log S_{t-i} + \delta ECT_{t-1} + \varepsilon_{1t} \quad (3)$$

Adding to the variables already defined;ECT_{t-1} represents a year lagged ECT term that reconciles long-run information with short-run dynamics. For robustness purposes, ARDL results are compared with those from alternative estimators – the DOLS, the FMOLS and the CCR techniques.

Table 1: Japan Eigen Values and Factor Loadings

	F1	F2	F3	F4
Eigen value	2,248	0,903	0,708	0,140
Variability (%)	56,211	22,585	17,700	3,504
Cumulative (%)	56,211	78,796	96,496	100,000
Japan Factor loadings	F1	F2	F3	F4
R&D stock	0,945	0,128	0,104	0,282
Patents	0,684	0,691	0,148	0,181
R&D Researchers	0,724	0,414	0,528	0,160
Trademarks	0,603	0,488	0,630	0,045
Kaiser-Meyer-Olkin	0,788			

Table 2: Korea Eigen Values and Factor Loadings

	F1	F2	F3	F4
Eigen value	3,867	0,086	0,044	0,003
Variability (%)	96,678	2,145	1,099	0,078
Cumulative (%)	96,678	98,823	99,922	100,000
Japan Factor loadings	F1	F2	F3	F4
R&D stock	0,987	-0,127	-0,092	-0,034
Patents	0,993	-0,108	-0,026	0,043
R&D Researchers	0,984	-0,002	0,177	-0,011
Trademarks	0,969	0,241	-0,059	0,001
Kaiser-Meyer-Olkin	0,752			

Table 3: China Eigen Values and Factor Loadings

	F1	F2	F3	F4
Eigen value	3,686	0,270	0,036	0,009
Variability (%)	92,139	6,745	0,892	0,224
Cumulative %	92,139	98,884	99,776	100,000
	F1	F2	F3	F4
R&D stock	0,993	-0,054	-0,076	0,071
Patents	0,896	0,442	0,043	-0,008
R&D Researchers	0,960	-0,245	0,137	-0,002
Trademarks	0,988	-0,107	-0,096	-0,063
Kaiser-Meyer-Olkin	0,794			

To verify the applicability of the ARDL bounds testing procedure, we evaluated the integration properties of the data using four tests for stationary. Three out of four tests in table 4 confirm that the variables are stationary in levels and that none of them is I (2) which gives us the green light to apply the ARDL technique. The calculated F-statistics are presented in Table 5 and the outcome points to the presence of one cointegrating vector in which log *LP* is the dependent variable. This is the equation in which the calculated F-statistic is above the 5% critical upper bound. According to Pesaran et al. (2001) a long-run relationship exists if the calculated F-statistic is above the 5% upper bound critical value. For equations normalised with other regresses, the test either does not find a long-run relationship or is rather inconclusive.

Table 4: Unit Root Tests

Variable		Break-Point	ADF	PP	KPSS	Order of integration
LNLP	Levels	2.423	1.253	2.840*	1.219***	I(1)
	Δ	6.852***	2.940**	------	0.438	
LNS	Levels	3.686	1.641	0.846	0.998***	I(1)
	Δ	4.237*	[TI]5.926***	3.357**	0.082	
LNC	Levels	1.729	0.782	3.087**	1.177***	I(1)
	Δ	4.976***	3.956***	-----	0.439	
LNJ	Levels	1.255	[TI]1.896	0.708	0.715**	I(1)
	Δ	17.255***	2.361**	3.136***	0.346	
LNK	Levels	1.389	1.787	15.741***	1.142***	I(1)
	Δ	9.749***	6.892***	--------	0.194	

Note: *, **, *** denote p<0.1, p<0.05&p<0.01 respectively. [TI] = specification with trend & intercept. Figures in tables are test statistics for the Break-Point, ADF & PP tests. For the KPSS, the figures represent the LM-statistic. ADF = Augmented Dickey-Fuller, PP=Phillips-Perron, KSS=Kwiatkowski-Phillips-Schmidt-Shin

Table 5: Bounds F-tests for Co Integration

F-statistics	5% critical value bounds		10% critical value bounds		Conclusion
	I(0)	I(1)	I(0)	I(1)	
F_{LP}(LNC, LNK, LNJ, LNS) = 6.68	2.86	4.01	2.45	3.52	Cointegrated
F_S(LNLP, LNC, LNK, LNJ) = 2.37	2.86	4.01	2.45	3.52	Not Cointegrated
F_K(LNLP, LNC, LNS, LNJ) = 1.38	2.86	4.01	2.45	3.52	Not Cointegrated
F_J (LNLP, LNC, LNK, LNS) = 3.00	2.86	4.01	2.45	3.52	Inconclusive
F_C (LNLP, LNK, LNS, LNJ) = 2.13	2.86	4.01	2.45	3.52	Not Cointegrated

Note: Critical values are obtained from Pesaran et al. (2001), k=4, Case III is assumed i.e. unrestricted intercept and no trend.

4. Results and Discussion

Principal components results are attached in the appendix for brevity sake. In table 1out of four factors; the first two components explain about 79% variation of the overall index for Japan and 98.8% variation for Korea and China. In all cases, the Kaiser-Meyer-Olkin is above the 0.6 threshold which provides justification for using the principal component analysis. Interesting is that in all cases i.e. for Japan, China and Korea, all the four indicators load highly in the first factor. It is also the first factor – R&D stock - that is retained as its Eigenvalues are more than 1 in all cases, 2.3 for Japan, 3.9 for Korea and 3.7 for China. Our main specification that is normalized with labour productivity (*LP*) is based on an ARDL (10, 5, 9, 10, 5) automatically selected by the AIC as shown in figure 1. For brevity, short-run results are not reported. We therefore report only long-run parameters with Newey-West standard errors in table 6. Newey-West standard errors are used due to the prevalence of autocorrelation and heteroscedasticity (see table 7). Three results are noteworthy. First, innovation spill over transmitted through service imports from China enters with a significantly negative effect on labour productivity which supports Asongu et al. (2011), Renard (2011) and Diaw and Lessoua (2013).

A 10% increase in innovation from China reduces South Africa's labour productivity in manufacturing by 0.09% on impact holding constant other regresses. This is not a surprising result in literature. According to Koumou et al. (2016), it is often claimed that Chinese investments in Africa bring more harm than good to the economy, and that Chinese are predators of the African raw materials. Second, innovation from Korea and Japan enter with the expected positive and significant effects predicted by Grossman and Helpman (1991) open economy endogenous growth theory. According to the results, a 10% increase in innovation spill over from Korea (lnK) and Japan (lnJ) raises South Africa's labour productivity in manufacturing by 0.24% and

0.13% on impact respectively holding domestic innovation (lnS) and innovation from China (lnC) constant. This is empirically consistent with studies such as Nishioka and Ripoll (2013) and Acharya and Keller (2009) which all confirmed a positive effect of spillover effects on manufacturing productivity of the importing country. Third, domestic innovation has a larger effect on labour productivity as compared to innovation from Japan and Korea. A 10% increase in domestic innovation is estimated to raise labour productivity by 2.1% holding constant foreign innovation spill over.

This is in agreement with results reported in Acharya and Keller (2009), where domestic R&D stock is found to have a relatively greater impact on manufacturing productivity of the importing country. According to Piermartini and Rubínová (2014), this may be the case because foreign knowledge is less accessible relative to domestic knowledge owing to barriers related to such things as language and cultural differences. For robustness check, the long-run parameters were estimated by the DOLS, FMOLS and CCR techniques with Newey-West standard errors. The DOLS is estimated with 3 leads and 3 lags selected by the AIC. Coefficients of leads and lags are not reported for brevity sake. Results are reported in table 6 and they are confirmatory in that; i) Chinese innovation spillover have a negative effect on labour productivity, ii) Korean and Japanese innovation spillover have a positive effect and that iii) domestic innovation has a relatively larger effect on labour productivity. The evidence suggests however that the ARDL appears to over-estimate (upwards bias).

Table 6: Long-Run Estimates: Dependent Variable: log LP

Regresses	ARDL	DOLS	FMOLS	CCR
log South Africa (log S)	0.210***	0.125**	0.124**	0.124**
	(0.042)	(0.062)	(0.055)	(0.055)
log Korea (log K)	0.024***	0.059*	0.053***	0.053***
	(0.005)	(0.009)	(0.007)	(0.007)
log Japan (log J)	0.013***	0.010**	0.011***	0.011***
	(0.004)	(0.004)	(0.003)	(0.003)
log China (log C)	-0.010***	-0.042***	-0.036***	-0.036***
	(0.003)	(0.007)	(0.006)	(0.006)
C	4.647	4.999	4.999	4.999
	(0.167)	(0.185)	(0.227)	(0.227)
Adj. R-squared	0.903	0.956	0.961	0.953
Hansen Prob.		>0.2	>0.2	>0.2
No of Obs.	82	85	91	91

Note: *, **, *** denote p<0.1, p<0.05&p<0.01 respectively. Figures in parenthesis are Newey-West Standard errors the DOLS is estimated with 3 leads and 3 lags.

The effect of domestic innovation owing to its insufficient ability to adequately address the simultaneity problem, the adjusted R-squared is over 90% across all the variants, which makes the estimated model capable of explaining variations in labour productivity. All specifications were subjected to a battery of diagnostic tests. These include residual normality using the Jarque-Bera test, autocorrelation using the Breusch-Godfrey Serial Correlation LM test, heteroscedasticity using the Breusch-Pagan-Godfrey test, model specification using the Ramsey RESET test and parameter stability using the CUSUM test for parameter stability. Results suggested that the models passed the parameter stability, model specification and residual normality test and failed heteroscedasticity and autocorrelation. As a corrective measure, Newey-West standard errors were used. The results are shown in table 7. The Hansen probability value in table 6 tests the null of no cointegration post estimation of the DOLS, FMOLS and the CCR. In all cases, the probability value exceeds 20% which indicates insufficient statistical evidence to reject the null. This outcome points to a cointegrating relationship substantiating the bounds testing results reported in table 5. The error correction term of the ARDL attached in appendix is 0.12 indicating that 12% of the disequilibrium is corrected each quarter. It therefore takes about 2 years for the model to revert back to the equilibrium position in the event of a short-run discrepancy.

Figure 1: Model Selection Criterion

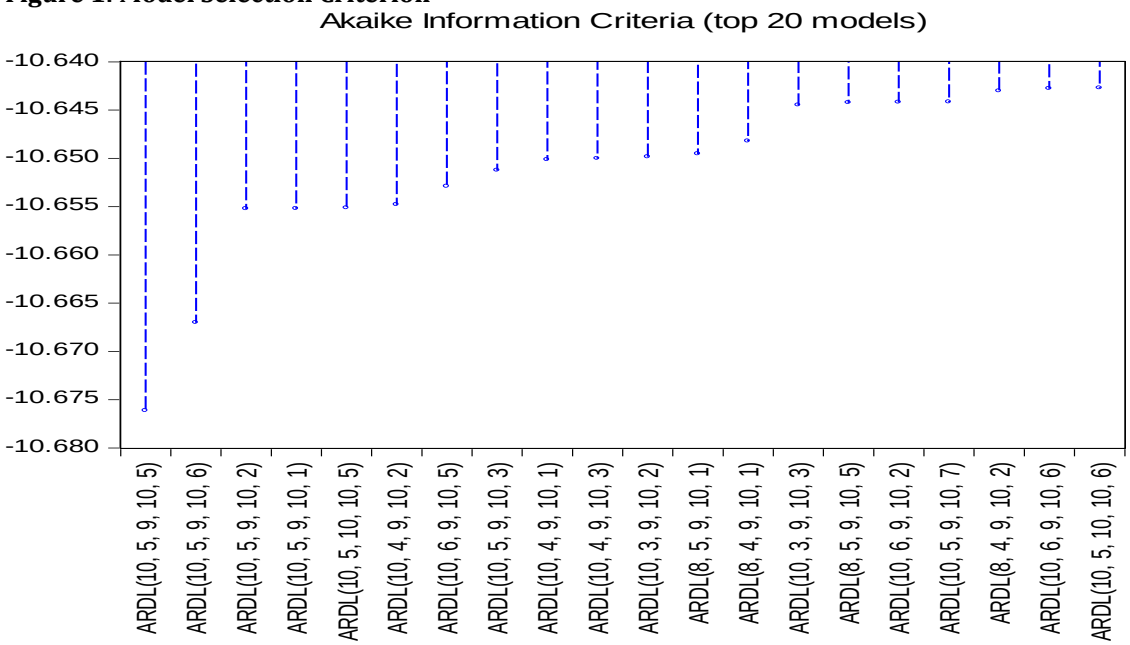


Figure 2: CUSUM Test for Parameter Stability

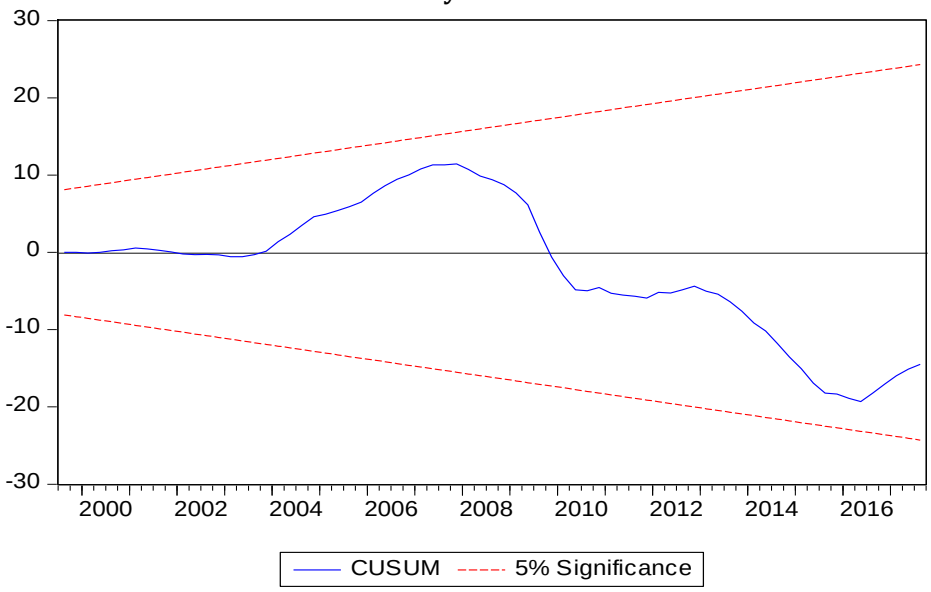
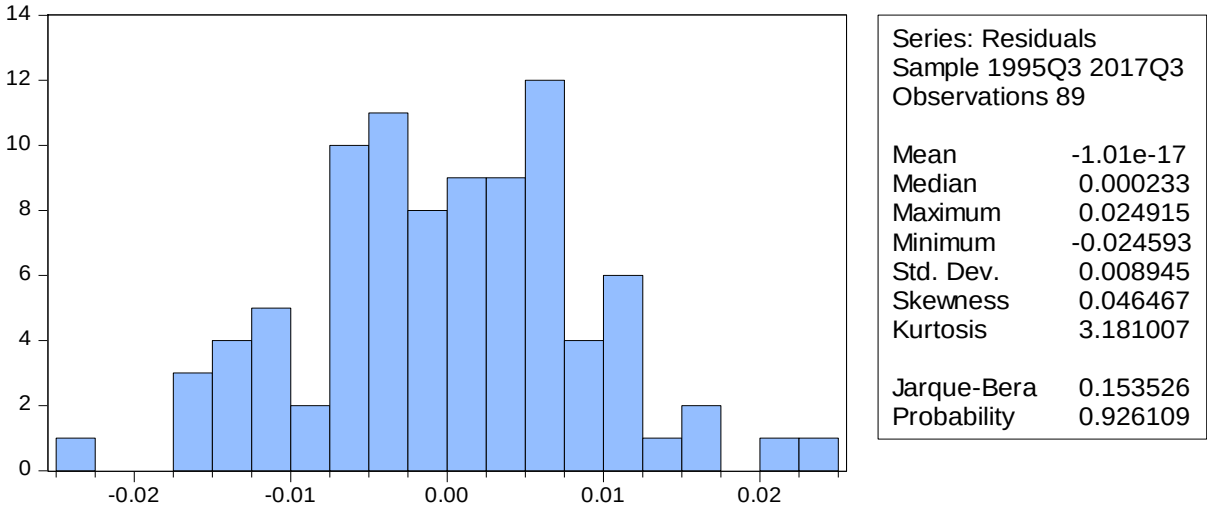


Table 7: Diagnostic Tests

Test	F-statistic	Probability Value
Breusch-Godfrey Serial LM test	F-statistic = 41.944	Pro b F(2, 74)=0.0000
Breusch-Pagan-Godfrey test	F-statistic = 2.010	Pro b F(12, 76) = 0.0345
Ramsey RESET test	F-statistic = 0.3089	Pro b = 0.5800

Figure 3: Jarque-Bera Test



How robust are these results? First we decompose the total sample into two sets 1995Q1 – 2008Q4 and 2009Q1 – 2017Q4. This decomposition allows us to establish whether or not the relationship between foreign innovation spillover has changed over time particularly pre and post the 2009 global financial crisis. The results in table 8variant (1) represent the 1995Q1 – 2008Q4 subsample and they are based on an ARDL (1, 4, 4, 4, 3) automatically selected by the AIC with Newey-West standard errors. Because the sample has 56 quarterly observations after adjusting for degrees of freedom, we rely on critical values re-formulated Narayan (2004). These critical values are suitable for small sample sizes ranging from 30 to 80 observations. The computed F-statistic is 18.99 which is above the 3.813 5% upper critical bound given n=56, k=4 with an intercept and no trend. This provided the green light to estimate the long-run estimates. Similarly, for variant (2), the F statistic is 4.693 which is above the 4.062 5% upper critical bound given n=36 and k=4. As shown in table 8, the sample decomposition does not bring significant alterations to the main results i.e. Chinese innovation correlate negatively with productivity, Korea and Japanese innovation spill over correlate positively but domestic innovation stock has a larger effect. Lastly we change our interpolation method from quadratic to linear interpolation when converting our initial annual data to quarterly data. The results in table 9are based on an ARDL (2, 0, 2, 2, 2) again automatically selected by the AIC. Following the same stages, i.e. the bounds testing procedure for the entire sample, the results in table 8 corroborate the central result that Chinese innovation is harmful to labour productivity in South Africa's manufacturing sector, Japanese and Korean innovation spillover have the opposite effect but domestic innovation has a larger effect.

Table 8: ARDL Long-Run Estimates – Sub Samples: Dependent Variable: Log LP

Regresses	**Variant (1) 1995Q1 – 2008Q4**	**Variant (2) 2009Q1 – 2017Q4**
log South Africa (log S)	0.288**	0.255***
	(0.107)	(0.054)
log Korea (log K)	0.091***	0.043***
	(0.013)	(0.009)
log Japan (log J)	0.014***	0.004**
	(0.002)	(0.002)
log China (log C)	-0.103***	-0.050***
	(0.029)	(0.007)
C	4.309	6.610
	(0.453)	(0.224)
Adj. sample size	54	33

Note: *, **, *** denote p<0.1, p<0.05&p<0.01 respectively. Figures in parenthesis are Newry West standard errors

Table 9: ARDL Estimates – Linearly Interpolated Data: Dependent variable: log LP

Regresses	Coefficient	Std. Error	t-Statistic	Prob.
log South Africa(log S)	0.295	0.095	3.09	0.0028
log Korea (log K)	0.035	0.012	2.92	0.0045
log Japan (log J)	0.008	0.001	8.00	0.0000
log China (log C)	-0.021	0.009	-2.24	0.0279
C	4.289	0.396	10.823	0.0000

5. Concluding Remarks

In this paper, we have constructed a composite innovation index that comprises R&D stock, R&D researchers, patents and trademarks using the principal component analysis. Different from previous studies, service imports are used as the transmission mechanism. Three results are noteworthy. First, service imports have a fundamental role in transferring innovation across international boundaries and this is true for Japan and Korea in which domestic labour productivity is raised within the 0.01% – 0.06% range. Second, although innovation from Korea and Japan correlates significantly with labour productivity, it is domestic innovation that has a relatively larger effect on productivity. Based on the evidence, a number of concluding remarks can be made. First, the results imply that domestic policy that affects trade in services with Korea and Japan such as restrictive rules and regulations can deny South Africa an opportunity to raise labour productivity through absorption of foreign innovation that comes along with their services. The second implication of our results is that labour productivity is more sensitive to domestic innovation which means that foreign innovation that might be transferred through service imports has to be treated as a complement rather than a substitute for domestic innovation efforts.

References

Acharya, R. C. & Keller, W. (2009). Technology Transfer Through Imports. *Canadian Journal of Economics/Revue canadienne d'économique*, 42(4), 1411-1448.

Ahmed, G., Arshad Khan, M. & Afzal, M. (2015). Trade Liberalization and Industrial Productivity: Evidence from Pakistan.

Alvarez, R. & Lopez, R. A. (2005). Exporting and Performance: Evidence from Chilean Plants. *Canadian Journal of Economics/Revue canadienne d'économique*, 38(4), 1384-1400.

Arnold, J., Nicoletti, G. & Scarpetta, S. (2011). Regulation, Resource Reallocation and Productivity Growth. *Nordic Economic Policy Review*, 2, 61-94.

Arnold, J. M., Javorcik, B., Lipscomb, M. & Mattoo, A. (2016). Services Reform and Manufacturing Performance: Evidence from India. *The Economic Journal*, 126(590), 1-39.

Apergis, N., Economidou, C. & Filippidis, I. (2008). Innovation, Technology Transfer and Labor Productivity Linkages: Evidence from a Panel of Manufacturing Industries. *Review of World Economics*, 144(3), 491-508.

Aghion, P. & Howitt, P. (1990). A Model of Growth Through Creative Destruction (No. w3223). National Bureau of Economic Research.

Asongu, S. A. & Aminkeng, G. A. (2013). The economic consequences of China–Africa Relations: Debunking Myths in the Debate. *Journal of Chinese Economic and Business Studies*, 11(4), 261-277.

Badinger, H. & Egger, P. (2016). Productivity Spill over across Countries and Industries: New evidence from OECD countries. *Oxford Bulletin of Economics and Statistics*, 78(4), 501-521.

Balchin, N., Hoekman, B. M., Martin, H., Mendez-Parra, M., Papadavid, P. & Te Velde, D. W. (2016). Trade in Services and Economic Transformation.

Behera, S. R., Dua, P. & Goldar, B. (2012). Foreign Direct Investment and Technology Spillover: Evidence Across Indian Manufacturing Industries. *The Singapore Economic Review*, 57(02), 1250011.

Bloom, N., Draca, M. & Van Reenen, J. (2016). Trade Induced Technical Change? The Impact of Chinese Imports on Innovation, IT and Productivity. *The Review of Economic Studies*, 83(1), 87-117.

Coe, D. T. & Helpman, E. (1995). International R&D Spillover. *European Economic Review*, 39(5), 859-887.

Diaw, D. & Lessoua, A. (2013). Natural Resources Exports, Diversification and Economic Growth of CEMAC countries: On the Impact of Trade with China. *African Development Review*, 25(2), 189-202.

Duggan, V., Rahardja, S. & Varela, G. (2013). Service Sector Reform and Manufacturing Productivity: Evidence from Indonesia.

Elu, J. U. & Price, G. N. (2010). Does China Transfer Productivity Enhancing Technology to Sub-Saharan Africa? Evidence from Manufacturing Firms. *African Development Review*, 22(s1), 587-598.

Eschenbach, F. & Hoekman, B. (2006). Services Policies in Transition Economies: on the EU and WTO as Commitment Mechanisms. *World Trade Review*, 5(3), 415-443.

Feldman, M. P. & Kogler, D. F. (2010). Stylized Facts in the Geography of Innovation. *Handbook of the Economics of Innovation,* 1**,** 381-410.

Fernandes, A. M. & Paunov, C. (2012). Foreign Direct Investment in Services and Manufacturing Productivity: Evidence for Chile. *Journal of Development Economics*, 97(2), 305-321.

Francois, J. F. (1990). Trade in Producer Services and Returns due to Specialization under Monopolistic Competition. Canadian Journal of Economics, 109-124.

Goldberg, P. K., Khandelwal, A. K., Pavcnik, N. & Topalova, P. (2010). Multiproduct Firms and Product Turnover in the Developing World: Evidence from India. *The Review of Economics and Statistics*, 92(4), 1042-1049.

Griliches, Z. & Lichtenberg, F. (1984). Interindustry Technology Flows and Productivity Growth: A Reexamination. The Review of Economics and Statistics**,** 324-329.

Grossman, G. M. & Helpman, E. (1991). Trade, Knowledge Spillover, and Growth. *European Economic Review*, 35(2-3), 517-526.

Guellec, D. & Van Pottelsberghe de la Potterie, B. (2004). From R&D to Productivity Growth: Do the Institutional Settings and the Source of Funds of R&D matter? *Oxford Bulletin of Economics and Statistics*, 66(3), 353-378.

Guerrieri, P. & Meliciani, V. (2005). Technology and International Competitiveness: The interdependence between Manufacturing and Producer Services. *Structural Change and Economic Dynamics*, 16(4), 489-502.

Hall, B. H. & Rosenberg, N. (2010). Handbook of the Economics of Innovation, Elsevier.

Industrial Development Cooperation. (2009). Trends in South African Manufacturing Production, Employment and Trade, Department of Research and Information, Fourth Quarter.

Kasahara, H. & Rodrigue, J. (2008). Does the use of Imported Intermediates Increase Productivity? Plant-level evidence. *Journal of Development Economics*, 87(1), 106-118.

Keller, W. (2002). Trade and the Transmission of Technology. *Journal of Economic growth*, 7(1), 5-24.

Lee, G. (2006). The Effectiveness of International Knowledge Spillover Channels. *European Economic Review*, 50(8), 2075-2088.

Levine, R. (1997). Financial Development and Economic Growth: Views and Agenda. *Journal of Economic Literature*, 35(2), 688-726.

Lichtenberg, F. R. & De La Potterie, B. V. P. (1998). International R&D Spill over: a comment. *European Economic Review*, 42(8), 1483-1491.

Mattoo, A., Rathindran, R. & Subramanian, A. (2006). Measuring Services Trade Liberalization and its Impact on Economic Growth: An illustration. Journal of Economic Integration, 64-98.

Medda, G. & Piga, C. A. (2014). Technological Spillover and Productivity in Italian Manufacturing Firms. *Journal of productivity analysis*, 41(3), 419-434.

Mehta, S. (2013). Technology Spillover and Productivity: Analysis of the Indian Manufacturing Sector. *Innovation and Development,* 3, 55-69.

Melitz, M. J. (2003). The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity. *Econometrica*, 71(6), 1695-1725.

Mun, S. B. & Nadiri, M. I. (2002). Information Technology Externalities: Empirical Evidence from 42 US Industries (No. w9272). National Bureau of Economic Research.

Narayan, P. (2004). Reformulating Critical Values for the Bounds F-statistics Approach to Cointegration: An Application to the Tourism Demand Model for Fiji (Vol. 2). Australia: Monash University.

Nishioka, S. (2013). R&D, Trade in Intermediate Inputs, and the Comparative Advantage of Advanced Countries. *Journal of the Japanese and International Economies*, 30, 96-110.

OECD. (2010). Measuring Innovation: A New Perspective.

Pesaran, M. H. & Smith, R. P. (1998). Structural analysis of co integrating VARS. *Journal of Economic Surveys*, 12(5), 471-505.

Pesaran, M. H., Shin, Y. & Smith, R. J. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics*, 16(3), 289-326.

Piermartini, R. & Rubínová, S. (2014). Knowledge Spill Over Through International Supply Chains (No. ERSD-2014-11). WTO Staff Working Paper.

Potterie, B. V. P. D. L. & Lichtenberg, F. (2001). Does Foreign Direct Investment Transfer Technology Across Borders? *Review of Economics and Statistics*, 83(3), 490-497.

Pradeep, V., Bhattacharya, M. & Chen, J. R. (2017). Spillover Effects of Research and Development, Exports and Foreign Investment on Productivity: Empirical Evidence from Indian Manufacturing. *Journal of South Asian Development*, 12(1), 18-41.

Raouf Abdel Fattah, E. (2015). Total Factor Productivity and Technology Spillover in Egypt. *Middle East Development Journal*, 7(2), 149-159.

Renard, M. F. (2011). China's Trade and FDI in Africa. China and Africa: An emerging partnership for development, 25.

Romer, P. M. (1989). Increasing Returns and New Developments in the Theory of Growth (No. w3098). National Bureau of Economic Research.

Roquia Fane Madouka Koumou, Wang Manyi. (2016). Effects of Chinese Foreign Direct Investment in Africa. *Journal of Finance and Accounting,* 4(3), 131-139.

Schmookler, J. (1966). Invention and Economic Growth, Cambridge, MA; Harvard University Press.

Stock, J. H. & Watson, M. W. (1993). A Simple Estimator of Cointegrating Vectors in Higher Order Integrated Systems. Econometrica: Journal of the Econometric Society, 783-820.

Park, J. Y. (1992). Canonical Cointegrating Regressions. Econometrica: Journal of the Econometric Society, 119-143.

Phillips, P. C. & Hansen, B. E. (1990). Statistical Inference in Instrumental Variables Regression with I (1) Processes. *The Review of Economic Studies*, 57(1), 99-125.

Terleckyj, H. (1974). Effects of R&D on the Productivity Growth of Industries: An Exploratory National Planning Association, Washington, D.C.

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An Investigation of the Dynamic Effect of Foreign Direct Investment (FDI) and Interest Rates on GDP in South Africa

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Abstract: Economic growth in South Africa has been in the "doldrums" for the past decade. If well managed, foreign direct investment (FDI) and repo rate (interest rate) could have a positive impact and assist in rapid economic growth so urgently needed in South Africa. FDI has been a driving force for growth in many developing economies. Not enough has been done to attract FDI in South Africa. The country has enormous ability and capacity to attract FDI inflows and to have the advantages from it. A quantitative research approach was used to analyse the association amongst the variables which include FDI, GDP and repo rate in the South African economy. The South African Reserve Bank database was used and the period analysed is from 2000 to 2016. Statistical and econometric methods such as correlation analysis, unit root tests, ARDL Bounds test for cointegration, an error correction model (ECM), and the Granger causality tests were used. Subsequently, after the econometric model was estimated, findings indicated the existence of a long-run relationship between the three variables. While, a significant positive relationship exists between FDI and GDP, a negative long-run relationship was found between GDP and repo rate and interestingly a non-significant relationship between repo rate and FDI. In the short run, the positive effect of FDI on GDP is minimal whilst a significant and positive relationship exists between GDP and repo rate. The results did also show some limitations in the results, with regards to FDI and repo rate that there is no significant relationship between the variables, meaning that repo rate does not have an impact on FDIs. Although some long-run evidence was found of FDI playing a role in economic growth in South Africa, such impact is limited. Also very interesting is that the repo rate and FDI do not have a statistically significant relationship. This could be due to the rising risks associated with investments in the country. In conclusion, there are many variables which could have a positive impact on the attraction of FDIs and such factors will be explored further in future studies.

Keywords: *Foreign direct investment (FDI), Gross Domestic Product (GDP), Interest rates (repo rate), South Africa*

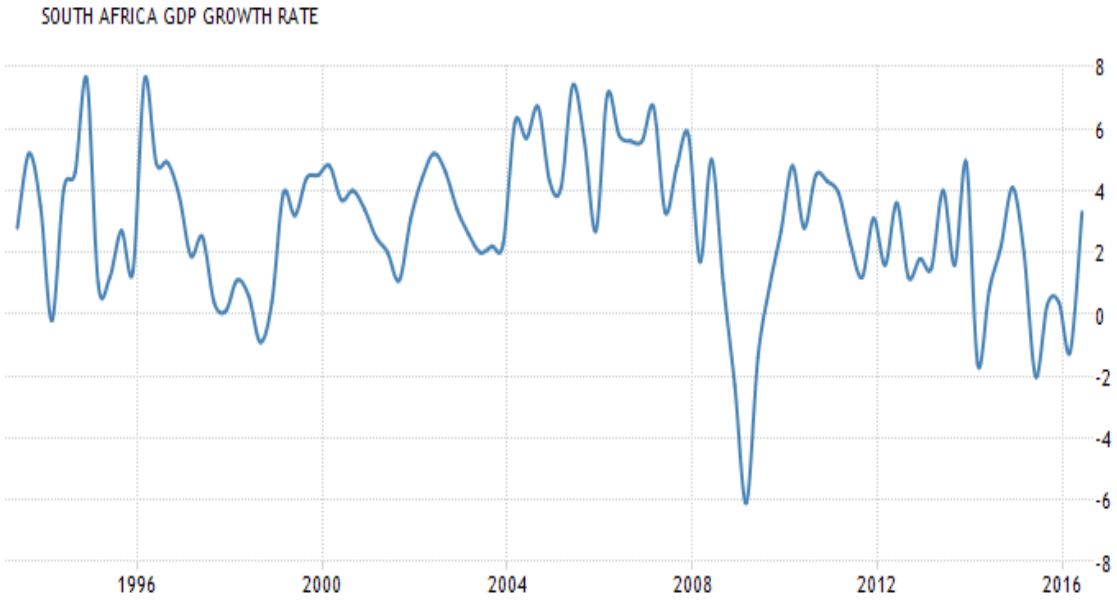
1. Introduction

South Africa is going through difficult internal economic conditions, with a depreciating currency, relatively high interest rates and political instability. All of these issues are affecting economic growth which is below 1.0% (Dornbusch et al*.,* 2011; Lings, 2017; SARB, 2018). As illustrated in Figure 1, growth in South Africa has been unstable and fluctuated between recoveries and recessions from 1995 to 2015 (World Bank, 2016). Economic growth in South Africa is expected to be above 1.0 percent for 2018, but the first quarter growth was -2.2 percent (Stats SA, 2018). Foreign direct investment (FDI) is universally acknowledged as beneficial to developing countries' economic growth (Samuel, 2013). But are economic growth and interest rates important to attract FDI? Continuous low level of economic growth not only affects the South Africa economy, but also affects all its citizens (Harmse, 2006). If South Africa continues to have low levels of economic growth, it will have an ongoing adverse effect on poverty, unemployment and inequality and development of the economy (Hogg, 2016). The global distribution of FDI is skewed, with 68 per cent of FDI is received by the top five percent of developed countries, while the bottom five percent which are all poor developing countries, only receive 1 percent of total FDI (Chakrabarti, 2003).

Regarding FDI flows to South Africa, the country re-entered the top 25 A.T Kearney FDI Confidence Index in 2017 (ATK Earney, 2017). For global investors to invest in an economy, the local investment environment must be stable with favourable conditions such a high return on investment and relatively high interest rates (Siddiqui, 2014). The results of the study provide a platform to examine the association amongst FDI, interest rate and GDP. Furthermore, the study lists possible policies which could be implemented in order to improve FDI inflow, with or without interest rates incentives. The purpose of the study is therefore to determine the relationship between FDI, interest rates and GDP in the case of South Africa. The theoretical objective includes

definitions of concepts; to examine applicable theories; and to evaluate the relationship between FDI, interest rates and GDP. The empirical objective is to determine the statistical relationship between FDI, interest rates and GDP in South Africa.

Figure 1: South African Economic Growth Rates from 1995-2016



Source: World Bank, 2016.

In South Africa, internal political and economic problems have hindered efforts to improve economic prosperity and sustain development in the country. The relationship between interest rates and FDI is dynamic and differ from country to country (Siddiqui, 2014). South Africa is currently ranked 49th on the "FDI Performance Index" in the Global Competitiveness Report (2015-2016) (WEF, 2015). An increase in the interest rate could increase the cost of money and could possibly "crowd out" domestic demand, especially taking into account that investments are affected by interest rates (Jordaan, 2013). This is a major problem because this will leave the South African economy in a stagnant state and could harm the economy by even decreasing the current growth rate. It is considered that the country has the potential to attract investment with the significant benefits from it (Wentzel & Steyn, 2014). It should be noted that the country has a number of stumbling blocks that affect FDI such as political instability, infrastructure capacity issues, shortages in highly skilled labour, high levels of crime, exchange controls, restrictive labour regulations and low economic growth (Tuomi, 2009; Lundahl & Petersson, 2013). FDI and interest rates are important economic indicators in economic growth.

2. Literature Review

According to Piana, (2005) FDI can be explained as a financial investment that can eventually lead to the significant influence of the management of the countries interest rate and growth potential. According to the definitions of the IMF (2001) and OECD (1996), FDI has the intention of attaining an interest of a direct investor in a firm in another economy which is known as the direct investment firm. The benefits of FDI for the host country are important and include issues such as technology spillover, human capital formation, improvement of the local business environment, improvement of integration to international trade and advancement of local firm development (Kurtishi-Kastrati, 2013). It can contribute to economic development add to improved foreign exchange, and growth in tax revenue for developing countries (Quazi, 2007). UNCTAD, (2006) found that the effect FDI has on employment is moderate however, it was reported that there is a larger impact in developing countries than that of developed countries, notably in the manufacturing sector. The interest rate is defined as the cost of borrowing or return on savings (Pritchard, 2015). Lower

rates or low-cost funding source is the aim for investors, and investors will invest in favourable interest rates or favourable returns. It has the result that capital could be attracted to a high rate country to a low rate country (Siddiqui, 2014). Favourable interest rate can lead to increased FDI because it allows for higher returns on investment although the risks could be higher (Singhania & Gupta, 2011). International trends are thought to affect South Africa's real interest rates (Farrell & Kahn, 2002). An important variable of FDI inflows is interest rates which conform to inflation, making interest rate a good measure (Singhania & Gupta, 2011). Final goods can be defined as the goods which are purchased by the end users (South African Reserve Bank, 2016).

According to Callen (2008), GDP could be defined as the total market value of all produced goods and services, within a specific country and over a specific time frame such as a year or quarter. Market GDP means that all transactions are accounted for, that is money is exchanged for the goods or services. Therefore, if a transaction such as a service is not paid for with money, it does not form part of GDP (Gonzalez, 2001). GDP has an important element which is that it shows all the production within the boundaries of the host country and within a time period (South African Reserve Bank, 2016). Finally, the last part of the definition of GDP is that services and goods which are produced within a certain duration normally a year, are included in the GDP calculation (World Heritage Encyclopaedia, 2016). In should be noted that in most cases investors select countries to invest in which are relatively stable with relatively high interest rates (Botha, 2015). The South African Reserve Bank has to make sure that there is price stability by controlling the inflation rate. An appropriate repo rate is determined bi-monthly by the Monetary Policy Committee. Interest rates in South Africa are currently at 6.5 percent (South African Reserve Bank, 2018). Kamath, (2008) argues that economic growth can be accelerated through FDI inflow due to the fact that it could have a constructive effect on exports and has considerably added to GDP.

The goods market and the money market are also linked to investments. Investment fluctuations also drive much of the business cycle (Dornbusch et al., 2011). The Hayekian and Keynesian perspective are analysed as the two ways of thinking about investment. The Hayekian perspective thought of investment as the rate to which equilibrium was adapted and therefore, the speed of adjustment is the decision of the best amount of investment effectively (Chingarande et al., 2012). However, the nature of the investment decision was less emphasized with the Keynesian approach. Investment decisions were more on the behavioural take (Faroh & Shen, 2015). Microeconomics, macroeconomics, social and political perspectives have many factors that influence the flow of FDI (Siddiqui, 2014). With regards to economic development, FDI is significantly important and most researchers have tested numerous variables to understand the impact on FDI. Yong Ting & Cheong Tang (2010) composed research in Malaysia and found a positive relationship between investment and infrastructure development and capacity, market size, interest rate, trade openness, exchange rate, level of corruption and inflation.

In India, Singhania and Gupta (2011) found that interest rate and GDP affected FDI. Interest rates adapt for inflation, which is a fair measure and important variable to determine FDI inflows (Singhania & Gupta, 2011). Investors focus on low-cost funding sources or low rates and will invest in countries or regions with higher returns and relatively higher interest rates. According to Chakrabarti, (2011) a positive relationship exists between FDI and interest rates in India. However, Chingarande et al. (2012) established no significant association between FDI and interest rates in the Zimbabwean economy. In some cases, the size of the market has a positive impact on FDI (Tsen, 2005), with the association between the two variables predicted to be positive (Ewe-Ghee, 2001). Most studies in the literature propose that market size is understood to positively have an influence on FDI (Billington, 1999; Cheng & Kwan, 2000; Shatz & Venables, 2000). With regards to a study conducted in South Africa, Mahembe, (2014) found that the neoclassical and the new endogenous economic growth theory all propose that FDI can contribute to GDP growth through indirect and direct impacts. Arvanitis, (2002) found that South Africa attracts less FDI than countries with even lower credit ratings.

3. Methodology

A quantitative research approach is used to find the effect of foreign direct investment and interest rates on GDP. This study focuses on an analysis of the relationship between the variables namely FDI, repo rate and

GDP on both the short and the long-run. Quarterly data employed in this study cover the period from 2000 to 2016. All datasets were obtained from the South African Reserve Bank (SARB). While FDI and GDP are measured in millions of Rand, the repo rate is regarded as the rate at which commercial bank lend money from the central bank in South Arica. To analyse the growth or elasticity and the responsiveness of the dependent variables towards fluctuations in the independent variable, each variable was transformed into a natural logarithm. An ARDL model was utilized to analyse the abovementioned relationships. A Granger causality estimation was also employed to establish the causal relationships amongst variables. The used ARDL econometric model originates by Pesaran et al. (2001). Contrary to the Johansen test of co-integration that requires all variable to be I (1), the ARDL model has the advantage of dealing with variables that are co-integrated of order zero [I (0)], order one [I(1)] or a mixture of the two. Additionally, besides being an efficient model when a small sample size is employed, the econometric model estimates both the long and short-run coefficients simultaneously. Lastly, the use of the ARDL model allows to include a different number of optimal lags in the same model.

This study employed an ARDL model because variables are a mixture of I (0) and I (1). All variables were converted to natural logs. To determine the effects of FDI and repo rate on the South African GDP, the following model was formulated:

$LGDP_t = \beta_0 + \beta_1 LFDI_t + \beta_2 LREPO_t + u_t$ ..... (1)

Where $LGDP$represents the natural log of GDP (at constant prices), $LFDI$is the log of FDI, $LREPO$ is the natural logartm of the repo rate and u is the error term. Using the ARDL approach, from equation (1), the following equation was formulated:

$LGDP_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i} LGDP_{t-1} + \sum_{i=1}^{n} \beta_{2i} LFDI_{t-1} + \sum_{i=1}^{n} \beta_{3i} LREPO_{t-1} + \delta_1 LGDP_{t-1} + \delta_2 LFDI_{t-1} + \delta_3 LREPO_{t-1} + e_t$ ..... (2)

Where β_0 is the drift component and e_t is the white noise residuals. The symbols β_1 to β_3 represent short run changes of the model, whilst δ_1 to δ_3 are the long run coefficients. The Pesaran et al. (2001) Bounds test procedure is performed to determine the long-run relationship. The Bounds testing procedure determines whether variables are co-integrated or not. The F-testing was used to test the following hypothesis:

$H_0 : \delta_1 = \delta_2 = \delta_2 = \delta_3 = 0$ (variables are not co-integrated)
$H_1 : \delta_1 \neq \delta_2 \neq \delta_2 \neq \delta_3 \neq 0$ (variables are co-integrated)

The Wald-test or F-statistics forms the base of the ARDL Bound test. Pesaran et al. (2001) suggest two critical values for the cointegration tests. The first is the lower critical bound assuming that all variables I(0) and not cointegrated. The second is the upper bound assuming that all variables are I (1) suggesting that they are cointegrated. The H_0 is rejected if the calculated F-statistics is greater than the upper bound. However, if the calculated F-statistics falls below the lower bound, the H_0 is not rejected meaning that there is no cointegration amongst variables. Pesaran et al. (2001) stated that if investigated variables are co-integrating, it is imperative to develop an unrestricted error correction model (UECM). From equation (2), the error correction was expressed as follow:

$\Delta LGDP_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i} \Delta LGDP_{t-1} + \sum_{i=1}^{n} \beta_{2i} \Delta LFDI_{t-1} + \sum_{i=1}^{n} \beta_{3i} \Delta LREPO_{t-1} + \varphi EC_{t-1} + u_t$ ..... (3)

Where Δ indicates changes, φ is the speed of adjustment parameter and the EC is the error correction term derived from the estimated long run (cointegration) model (equation 2).

4. Results and Discussion

Unit Root Test: The absence or presence of unit roots within variables is determined by using the units' root test. This test shows whether the data is stationary or non-stationary over time, therefore this procedure is important (Erding, 2010). In most cases, the Augmented Dickey-Fuller (ADF) test is used because of its practical superiority over almost all of the alternative techniques of testing for stationary of time series (Jebb et al., 2015). Table 1, represents all the results of the unit root test for the time series employed in this study. The results show that LFDI is stationary at level or order zero I (0), while GDP and repo rate are stationary

after being differentiated, thus, they are stationary at I (1). The model that needs to be estimated should therefore be able to handle variables that have a mixture of stationarity.

Table 1: Unit Root Test Results

Variable	Levels			First Difference		
		P-value	T-statistic	P-Value	T-Statistic	integration order
LFDI	Intercept	0.0000***	-2.91173	0.0000	0.0000	I(0)
	Intercept &trend	0.0000***	-3.487845	-2.91263	-3.489228	I(0)
LGDP	Intercept	0.1660	-2.912631	0.0033***	-2.912631	I(1)
	Intercept &trend	0.9495	-3.489228	0.0026***	-3.489228	I(1)
LREPO	Intercept	0.0804	-2.912631	0.0099***	-2.912631	I(1)
	Intercept &trend	0.1615	-3.489228	0.0349**	-3.489228	I(1)

Note: ***, **, and * denotes a rejection of null hypothesis 1%, 5% and 10% level respectively.

Correlation Coefficient Analysis: Correlations are utilized to analyse if a relationship exists between two variables and how the variables fluctuate together (Rouse, 2013). There could be a positive correlation which means that the two variables are moving in the same direction or the variables are decreasing or increasing in parallel. However, a negative correlation between two or more variables shows that as the one variable increases the other variable will decrease (Jebb et al., 2015). The results of the correlation tests are indicated in Table 2. As indicated in Table 2, there is a positive association between LFDI and LGDP, with a significant positive relationship and coefficient of0.2865.

Table 2: Correlation between FDI, GDP and Repo Rate

Probability		LGDP	LFDI	LREPO
LGDP		1.0000		
	P-value	-------		
LFDI		0.2865	1.0000	
	P-value	0.0264**	--------	
LREPO		-0.6944	-0.1401	1.0000
	P-value	0.0001***	0.2855	--------

Note: ***, **, and * denotes a rejection of null hypothesis 1%, 5% and 10% level respectively.

Lag Length Selection: The selection of lag length is an important step for time series analysis. The number of lags selected plays a significant role in the value of F-statistic. Thus, insufficient as well as the excess number of lags can lead to spurious regression or wrong conclusion (Bahmani-Oskooee & Brooks, 1999). Five information criteria are utilized in the determination the optimum number of lags to be integrated into the model. The majority of the criteria (four out of five) suggest the use of two lags. Therefore, for this study only two lags were included.

Table 3: Lag Length Selection Criteria

Lag	Log L	LR	FPE	AIC	SC	HQ
0	-466.2243	NA	62155.76	19.55101	19.66796	19.59521
1	-258.5863	380.6696	15.83085	11.27443	**11.74223***	11.45121
2	-243.4682	**25.82684***	**12.33153***	**11.01951***	11.83816	**11.32888***
3	-240.6991	4.384295	16.18479	11.27913	12.44863	11.72109
4	-232.2677	12.29581	16.95848	11.30282	12.82317	11.87736
5	-223.8800	11.18358	18.06805	11.32833	13.19954	12.03546
6	-213.2670	12.82404	17.89794	11.26113	13.48318	12.10084
7	-208.0599	5.641065	22.79924	11.41916	13.99206	12.39147
8	-200.0950	7.632987	26.80418	11.46229	14.38605	12.56718

* indicates the optimum number of lags selected by each criterion

The ARDL Bound Testing and Long Run Relationship Analysis: Table 4 reports findings from the ARDL Bounds test for cointegration. The computed F-statistic is greater than all Pasaran et al. (2001) critical values, even at 1 percent level of signified. Consequently, the null hypothesis for no cointegration amongst variables is rejected. In conclusion therefore it is confirmed that for the variables included in the study, a long-run relationship exists.

Table 4: ARDL Bounds Test Results

Dependent variable LGDP	**Estimated F-Statistic 14.6014**	
Critical Values*	Lower Bound Critical Value I(0)	Upper Bound Critical Value I(1)
1%	5.14	6.39
5%	3.78	4.87
10%	3.16	4.15

Note: * critical values from Pesaran et al. (2001) Table CI (V).

Since it known that a cointegration or long-run relationship exists amongst the variables, it vital to analyse the effect of independent variables on the dependent variables on the long-run. Equation (4), exhibits the equation:

LGDP = 16.5382 + 0.0780*LFDI - 0.5805*LREPO …… (4)

Considering the result from Equation (4), it can be concluded that a 1 percent increase in FDI leads to only0.08 percent growth in GDP. In addition, a negative long-run relationship exists between GDP and the repo rate. When the repo rate increases by 1 percent, the level of GDP declines by 0.58 percent. This shows that capital inflow from foreign investors supports economic growth whilst the repo rate growth generates negative impacts on economic growth in the domestic economy. Since variables cointegrated, the subsequent step is to calculate the unrestricted error correction mode. With regards to the relationship between LREPO and LGDP, there is a significant but negative association with a coefficient of-0.6944. There is a negative but non-significant relationship between LREPO and LFDI. All of the relationships are further analysed in the rest of the study using more advanced methods.

Error Correction Model (ECM) and Short Run Relationship Analysis: The vector error correction model indicates the speed by which the model reverts back to the equilibrium after an exogenous shock (Ubesie, 2016). The error correction term (ECT) should be negatively signed and significant, thus showing a movement back in the direction of equilibrium. A positive sign implies a move away from equilibrium (Jebb et al., 2015). Table 5 exhibits the result of the error correction model and the short-run findings. In the short-run, FDI is significant at 10 percent level, meaning a weak significance. If FDI increases by 1 percent, in the short-run, GDP increases by only 0.002which is almost insignificant. This result makes sense, since it takes time for the investment to impact on the country's economy. Contrary to the FDI, the repo rate is strongly significant and positive. This indicates that, in the short-run, a linear relationship exists between the repo rate and GDP. When the repo rate increases by 1 percent, GDP declines by 0.05 percent. With regards to the error correction model, it was found that the error term (ECT) is negative and significant as expected. The error term of -0.019330, suggests that approximately 0.2percent of chocks in the model is correct each quarter. Thus, it takes more than 51 quarters (1/0.019330) for the model to come back to the equilibrium.

Table 5: Short run and Error Correction Model (ECM)

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(LGDP(-1))	-0.216145	0.143176	-1.509642	0.1372
D(LFDI)	0.001823	0.000977	1.865801	0.0677*
D(LREPO)	0.054991	0.019299	2.849451	0.0063***
CointEq(-1)	-0.019330	0.002455	-7.873328	0.0000***

Note: ***, **, and * denotes a rejection of null hypothesis 1%, 5% and 10% level respectively.

PairWise Granger Causality Analysis: Granger causality test is used to predict short-run changes in one variable(X) as a result in the other variable (Y) changes. As illustrated in Table 6, there is only one-way relationship between repo rate and GDP. Changes in GDP can influence the level of repo rate yet the later does

not have an effect on short-term changes in GDP. Although a long-run relationship exists between GDP and FDI as displayed in Table 4, there is no causality between these two variables.

Table 6: Granger Causality Tests

Null Hypothesis:	F-Statistic	Probability	Causality	Direction of causality
FDI does not Granger Cause LGDP	0.2638	0.7691	No	
LGDP does not Granger Cause FDI	2.0142	0.1435	No	
LREPO does not Granger Cause LGDP	2.1933	0.1216	No	
LGDP does not Granger Cause LREPO	7.3794	0.0015*	Yes at 5%	⇦

Note: * denotes a rejection of null hypothesis at 1%level.

The effectiveness and reliability of the model are defined by the diagnostic tests results. The results indicate that the model passed the normality, serial correlation and heteroscedasticity tests. All P-values are greater than the alpha of 5 percent. Therefore, findings from the model are accurate and reliable.

Table 7: Diagnostic checking

	Test	P-value	Conclusion
Normality	JB	0.7507	Data is normally distributed
Serial Correlation	LM	0.1775	No serial correlation
Heteroscedasticity	White	0.2675	No Heteroscedasticity

5. Conclusion and Recommendations

The aim of the study was to determine the relationship between FDI, GDP and Repo rate in South Africa. The analysis focussed on correlation, causality long and short-run relationships. Findings of this study revealed that DFI and GDP are positively correlated while GDP and repo rate are negatively correlated. This preliminary analysis was supported by the long run relationships analysis. The increase of FDI leads to the economic growth in the country. This positive effect of FDI towards long-run economic growth was also found for short-run relationship analysis, yet the effect is very minimal. Despite a negative relationship between GDP and repo rate, in the short run the repo rate positively affect the level of GDP. The Granger causality results, suggested only a unidirectional relationship between GDP and repo rate. Therefore, GDP can be a short-run predictor of repo rate but not vice versa. The trustworthy of findings are supported by the diagnostic tests. The diagnostic tests indicated that the stable. In terms of policy suggestion or recommendations, the South African macroeconomists and policymakers should mostly focus on creating opportunities that attract foreign investors in order to improve the country's economy. On the other hand, while implementing interest rate policies should consider its long-run effect on economic growth.

References

Arvanitis, A. (2002). Foreign Direct Investment in South Africa: Why has it been so low? https://www.imf.org/external/pubs/nft/2006/soafrica/eng/pasoafr/sach5.pdf. Date of Access: 20 October 2017.

ATKearney (2017). FDI Confidence Index. https://www.atkearney.com.au/paper/-/asset_publisher/dVxv4Hz2h8bS/content/the-2017-foreign-direct-investment-confidence-index/. Date of access: 15 June 2018.

Bahmani-Oskooee, M. & Brooks, T. J. (1999). Bilateral J-curve between US and her trading partners. *Welt wirtscha ftliches Archive,* 135(1), 156-165.

Billington, N. (1999). The location of foreign direct investment: An empirical analysis. *Applied Economics,* 31(1), 65-78.

Botha, R. (2015). Bad timing for interest rate hike. Web Access. www.moneyweb.co.za/moneyweb-opinion/bad-timing-for-interest-rate-hike/. Date of Access: 2 March 2018.

Callen, T. (2008). What is GDP? https://www.imf.org/external/pubs/ft/fandd/2008/12/pdf/basics.pdf Date of Access: 22 August 2017.

Chakrabarti, A. (2003). A theory of the special distribution of foreign direct investment. *International Review of Economics & Finance,* 12(1), 149-169.

Chakrabarti, A. (2011). The determinants of foreign direct investments: Sensitivity analyses of cross-country regressions. *Kyklos*, 1(2), 89-114.

Cheng, L. K. & Kwan, Y. K. (2000). What are the determinants of the location of foreign direct investment? *Journal of International Economics,* 51(2), 379-400.

Chingarande, A., Webster, D. & Karambakuwa, R. T. (2012). The impact of interest rates on FDI: a case study of Zimbabwean economy. *International Journal of Management Sciences and Business Research,* 1(5), 22-29.

Dornbusch, R., Fisher, S. & Startz, R. (2011). Macroeconomics. 11thed. New York: McGraw-Hill.

Erding, A. (2010). Time Series. http://home.aubg.edu/faculty/didar/ECO%20310/TimeSeries.pdf. Date of Access: 8 November 2017.

Ewe-Ghee, L. (2001). Determinants of and the relation between foreign direct investment and Growth: A summary of the recent literature. International Monetary Fund Working Paper, WP/01/175.

Faroh, A. & Shen, H. (2015). Impact of interest rates on FDI: case study of Sierra Leone economy. *International Journal of Business Management and Economic Research,* 6(1), 124-132.

Farrell, G. N. & Kahn, B. (2002). South African real interest rates in comparative perspective: theory and evidence. *South African Reserve Bank,* 17(1), 1-6.

Gonzalez, F. (2001). Introduction to Macroeconomics and GDP definitions. http://www.shsu.edu/fxg001/Principle_of_Macroeconomics_files/Lecture1_intromacroandgdp.pdf Date of Access: 22 August 2017.

Harmse, C. (2006). The relationship between South Africa's macroeconomic policies and the performance of the various asset classes. www.resbank.co.za/Lists/News%20and%20Publications/Harmse.pdf. Date of Access: 29 April 2018.

Hogg, A. (2016). Why economic growth really, really matters. www.fin24.com/BizNews/why-economic-growth-really-really-matters-20160308. Date of Access: 2 March 2018.

IMF (International Monetary Fund). (2001). Balance of Payments Statistics Yearbook. Washington DC.

Jebb, A. T., Tay, L., Wang, W. & Huang, Q. (2015). Time series analysis for psychological and forecasting change. http://journal.frontiersin.org/article. Date of Access: 20 October 2017.

Jordaan, J. C. (2013). Impact of interest rate changes on South African GDP and households: a combine macroeconomic and social accounting matrix modelling approach. *Southern African Business Review,* 17(3), 158-160.

Kamath, G. B. (2008). Impact of Foreign Direct Investment in India. *ICFAI University Journal of International Business,* 3(4), 35-38.

Kurtishi-Kastrati, S. (2013). The effects of Foreign Direct Investment for host country's economy. *American University of the Middle East,* 5(1), 26-29.

Lings, K. (2017). SA economy is stuck. https://www.moneyweb.co.za/news/economy/sa-economy-is-stuck/. Date of access: 15 May 2018.

Lundahl, M. & Petersson, L. (2013). Post-apartheid South Africa: an economic success story? Achieving development success: Strategies and lessons from the developing world, 232.

Mahembe, E. (2014). Foreign direct investment inflows and economic growth in SADC countries. http://uir.unisa.ac.za/bitstream/handle/10500/14232/dissertation_mahember_e.pdf?sequence=1 Date of Access: 20 October 2017.

OECD (Organisation for Economic Cooperation and Development). (1996). Benchmark Definition of Foreign Direct Investment. 3rd edition. Paris.

Pesaran, M. H., Shin, Y. & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics,* 16(3), 289-326.

Piana, V. (2005). Foreign Direct Investment. http://www.economicswebinstitute.org/fdi.htm. Date of access: 22 August 2017.

Pritchard, J. (2015). What is the interest rate on loans or savings? https://www.thebalance.com/what-is-the-interest-rate-on-loans-or-savings-315437.

Quazi, R. M. (2007). Investment climate and Foreign Direct Investment: A study of selected countries in Latin America. *Global Journal of Business Research*, 1 (2), 1-13.

Rouse, M. (2013). Correlation. http://whatis.techtarget.com/definition/correlation. Date of access: 8 November 2017.

Samuel, C. (2013). The dark side of Foreign Direct Investment: A South African perspective. *South African Institute of International Affair,* 167(1), 5-7.

Shatz, H. J. & Venables, A. J. (2000). The geography of International investment. *The Oxford Handbook of Economic Geography,* 1(2), 125-145.

Siddiqui, H. A. A. (2014). Role of interest rate in attracting the FDI: Study on ASEAN 5 economy. *International Journal of Technical Research and Applications,* 2(3), 59-70.

Singhania, M. & Gupta, A. (2011). Determinants of foreign direct investment in India. *Journal of International Trade Law and Policy,* 10(1), 64-82.

South African Reserve Bank. (2016). Current market rates-interest rates. /www.resbank.co.za/Research/Rates/Pages/CurrentMarketRates.aspx. Date of access: 2 March 2018.

South African Reserve Bank. (2016). Gross Domestic Product. http://www2.resbank.co.za/internet/Glossary.nsf/0/08eac6efc196014642256b43002e76dc?OpenDocument. Date of access: 2 October 2017.

South African Reserve Bank. (2018). Statement by Monetary Policy Committee. https://www.resbank.co.za/Lists/News%20and%20Publications/Attachments/8466/MPC%20Statement%20May%202018.pdf. Date of access: 30 May 2018.

Stats SA. (2018). Gross Domestic Product (GDP), First quarter 2018, Statistical release no P0441. statssa.gov.za/publications/P0441/P04411stQuarter2018.pdf. Date of access: 20 July 2018.

Tsen, W. H. (2005). The determinant of foreign direct investment in the manufacturing industry of Malaysia. *Journal of Economic Cooperation*, 26(2), 91-110.

Tuomi, K. L. (2009). Fundamentals, Tax incentives and foreign direct investment. PhD thesis, American University, Washington DC.

Ubesie, M. (2016). The Effect of Financial Sector Liberalization on Economic Growth in Nigeria. *International Journal of Finance and Accounting*, 5(4), 193-201.

UNCTAD. (2006). World Investment Report 2006: FDI from developing and Transition Economies: Implications for development. Geneva: United Nations.

Wentzel, M. S. I. & Steyn, M. (2014). Investment promotion in the South African manufacturing industry: incentive comparisons with Malaysia and Singapore. *South African Journal of Economic and Management Sciences,* 17(3), 6-9.

World Bank. (2016). South Africa Economic Update: Promoting domestic competition between firms could help spur growth, reduce poverty.

World Economic Forum. (2015). Competitiveness Ranking. www.reports.weforum.org/global-competitiveness-report-2015-2016/competitiveness-rankings. Date of access: 2 March 2018.

World Heritage Encyclopaedia. (2016). GDP. http://www.worldlibrary.org/articles/gdp. Date of access: 2 October 2017.

Yong Ting, A. & Cheong Tang, T. (2010). The determinants of inward foreign direct investment: The case of Malaysia. *International Journal of Business & Society*, 1(1), 59-76.

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Evaluation of the Components of Psychological Capital and Organizational Citizenship Behavior among Nigerian Graduate Employees

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Abstract: In consideration of implications of organizational citizenship behavior, it is quite necessary for scholars and human resource management practitioners, to urgently investigate the correlates of psychological capital dimensions and the dimensions of organizational citizenship behavior. The purpose of the study was twofold. Firstly, to examines the relationship between psychological capital and organizational citizenship behavior. Secondly, to investigate the relationships between the dimensions of organizational citizenship behavior and psychological capital. The study is important, because its outcomes would help the corporate world, governments and human resource managers to avert the problem of underperformance among employees by improving psychological capital and organizational citizenship behavior. The study adopted the positivist explanatory cross-sectional (survey) research design to systematically sample opinions of 1,532 male and female graduate employees across the various sectors of the Nigerian economy, using a structured and validated questionnaire, and the Statistical Package for the Social Sciences (SPSS). The results of the statistical analysis of data showed that there was a significant positive relationship between psychological capital and organizational citizenship behavior, $r = 0.588$, $p<0.01$. The results also showed that altruism, conscientiousness and civic virtue dimensions of organizational citizenship behavior are significantly positively interrelated to hope, optimism, resilience and self-efficacy dimensions of psychological capital. The study suggested that human resource managers should develop psychological capital in employees in order to increase the level of organizational performance. Recommendations of the study could assist in training and developing effective manpower capacity towards improving the economy of the nation.

Keywords: *Graduate, employee, organizational citizenship behavior, psychological capital*

1. Introduction

Organizational citizenship behavior and psychological capital are important constructs to the contemporary corporate world. Organizational citizenship behavior may be described as desirable dispositions of employees, which may contribute to the survival and success of organizations. Again, organizational citizenship behavior could be viewed as voluntary helping actions usually exhibited among employees to ensure the achievement of set corporate objectives. Psychological capital on the other hand, is viewed in this study as a strategic mission to elicit, maintain and promote corporate citizenship behavior among employees. The concept of psychological capital may be linked to the concept of motivation, which is relevant to employees' performance. The present harsh global economic situation might necessitate the need of employees to develop and nurture a winning spirit in the form of psychological capital - resilience, optimism, self-efficacy and hope, even in the face of the turbulent work environment and challenging situations at workplace. It is therefore, imperative for the competitive workforce to be indoctrinated in the psychology of positivity whose mission lays on psychological capital in achieving corporate performance.

Although, there is increasing consideration of the phenomenon of organizational citizenship behavior by researchers, a review of the literature shows a lack of agreement about the scope of the concept, (Farzianpour, Foroushani, Kamjoo & Hosseini, 2011). However, the current study sought to empirically examine psychological capital as a correlate of organizational citizenship behavior in order to fill the existing vacuum identified in the literature. The purposes of the study are twofold. Firstly, to examines the relationship between psychological capital and organizational citizenship behavior. Secondly, to investigates the relationships between the dimensions of organizational citizenship behavior and psychological capital. Hence this study seeks to answer the following research questions: Could there be a significant positive relationship between psychological capital and organizational citizenship behavior? Are the dimensions of psychological capital significantly interrelated with the dimensions of organizational citizenship behavior? Parveen (2012) reports in his review of the literature on organizational citizenship behavior, a four-

dimension model that consists of individual initiative, interpersonal helping, personal industry, and loyal boosterism behaviors.

2. Conceptual Literature

Organizational Citizenship Behavior: Organizational citizenship behavior, is an essential phenomenon in the formal work setting because of its potency to facilitate interpersonal relationships among employees, and also to increase organizational performance (Pradhan, Jena & Bhattacharya, 2016). Organizational citizenship behavior is an alternative form of performance behavior, which is differentiated from the traditional performance that relies heavily on official assignments and tasks (Karolidis, 2016). For instance, having subordinates who are highly engaged in organizational citizenship may advance supervisors' efficacy by permitting them towards dedicating a better quantity of time to future strategic matters. Hence, supervisors, subordinates and the organizations at large benefit from positive behaviors (Lelei, Chepkwony & Ambrose, 2016). These behaviors are explained by concepts such as pro-social behaviors, extra-role behaviors, contextual performance, spontaneous behaviors or organizational citizenship behavior. According to Behtooee (2016), there is no fixed agreement among scholars in the field of organizational citizenship behavior concerning the dimensions of the construct. The variations that were observed in the meaning and dimensions of organizational citizenship behavior may be as a result of differences in culture. It might be interpreted otherwise in different social contexts, given that what it means to be a "good citizen" may vary from nation to nation, particularly for those from the East and the West (Abd-Allah, 2016). For instance, a certain helping behavior that is exhibited by an individual may be recognized and appreciated in some contexts, and it may be understood in different ways, or it may be interpreted as motive-based, such as ingratiation, and probably cause unexpected troubles in interpersonal relationships at the workplace in some other cultures.

Furthermore, Ahmed and Khan (2016) report that the OCBI category includes altruism, maintenance of peace, and cheerfulness behaviors with intentions to assist others, while the OCBO category is composed of sportsmanship, civic virtue and conscientiousness; as well as organizational loyalty; endorsement and commitment to the organization's objectives; job devotion; taking charge; and upholding the company reputation. Additional concrete examples of OCBI, according to Ahmed and Khan (2016), are voluntarily assisting a newly employed staff member to access the organization's finance framework and praising a kindred staff on a new promotion. Similarly, presenting a novel knowledge to the organization on how the workforce process may be better, and being present at voluntary corporate meetings, are examples of OCBO (Ahmed & Khan, 2016). Spik (2016), reports that organizational citizenship behavior consists of self-development, individual initiative sportsmanship, organizational compliance, organizational loyalty, civic virtue and helping. However, the most notable themes of organizational citizenship behavior are the five (civic virtue, conscientiousness, sportsmanship, altruism and courtesy) that were earlier identified by Organ, and which are commonly referred to by scholars in the field (Behtooee, 2016). Interpersonal helping behavior, according to Parveen (2012), involves assisting co-employees in their jobs when they need help. Individual initiative behavior implies communicating with other employees in the workplace in order to improve individual and group performances (Parveen, 2012). Personal industry relates to the performance of specific jobs far in excess of what was required, while loyal boosterism includes the promotion of the organizational image to outsiders (Parveen, 2012).

Though, in the meta-analysis of the literature on organizational citizenship behavior, which was conducted by Podsakoff, MacKenzie, Paine and Bachrach (2000), researchers identified about thirty different types of organizational citizenship behavior. Nevertheless, prior to the work of Podsakoff, MacKenzie, Paine and Bachrach (2000), a range of taxonomies was proposed to classify the behaviors that were identified as organizational citizenship. Podsakoff, MacKenzie, Paine and Bachrach (2000) advanced the taxonomy, and integrated the propositions of other scholars such as Organ, Podsakoff and MacKenzie. Helping behavior, according to Podsakoff, MacKenzie, Paine and Bachrach (2000), is a type of organizational citizenship behavior, which is similar to altruism. Such behavior involves voluntarily helping co-employees in solving work-related problems. It includes acts that improve morale, encourage, cooperation, and build and preserve good relationships in the workplace. Sportsmanship on the other hand involves bearing burdens and work difficulties without grumbling, being willing to relinquish individual enthusiasm for the benefit of the

workgroup, while organizational loyalty encompasses promoting the company's image, remaining committed even under adverse conditions, defending an organization against external threats (Podsakoff, MacKenzie, Paine & Bachrach, 2000). Organizational compliance, fourth on the list, is a type of organizational citizenship behavior that comprises all behaviors related to observing organizational rules and procedures, complying with organizational values, respect for authority, conscientiousness, meeting deadlines.

Individual initiative, on the other hand, is the act of trying to discover approaches to enhance person, group or organizational functioning including: voluntarily suggesting organizational improvements, demonstrations of imagination and development intended to improve one's tasks, while civic virtue implies responsible and useful contribution in the political procedure of the organization. It includes: presence at optional meetings, disseminating informed views with colleagues, being ready to deliver bad update if it is necessary for the good of the organization, and keeping abreast of different issues concerning the organization (Podsakoff, MacKenzie, Paine & Bachrach, 2000). The last on the list of seven dimensions of organizational citizenship behavior as enlisted by Podsakoff, MacKenzie, Paine and Bachrach (2000) is self-development, which stands for self-training, and searching out and exploiting advanced instructional courses. It also involves being well-informed of the up-to-date development in one's speciality, and learning new kinds of expertise in order to enlarge the array of one's input to an organization.

Williams and Anderson (1991) categorized organizational citizenship behavior into two classes based on the target beneficiary: organizational citizenship behaviors towards individuals such as the supervisor, subordinates and colleagues, and organizational citizenship behaviors toward the organization, such as those related behaviors that are performed for the betterment of the organization. Organizational citizenship behaviors towards the organization (OCBO) refer to the helping-behaviour which focuses on the organization as a whole. Examples include when a member of staff offers to render supplementary jobs as needed, or assists to establish useful meetings on themes, which are pertinent to all staff (Williams & Anderson, 1991). On the other hand, organizational citizenship behavior (OCBI) implies helping-behaviour that is exhibited towards individual colleagues. An example of OCBI is employees who volunteer to help their co-employees who are absent from work or employees who are helping their subordinates to cope with work-related challenges (Williams & Anderson, 1991).

Psychological Capital: Psychological capital is a compound concept that consists of hope, resilience, self-efficacy and optimism. Thus, collectively, hope, resilience, self-efficacy and optimism formed the concept of psychological capital. In other words, the four integral components of psychological capital are hope, resilience, self-efficacy and optimism (Luthans, Avolio, Avey, & Norman, 2007). Specifically, Luthans, Avolio, Avey and Norman (2007) described self-efficacy as having the self-assurance to assume, and exert the required efforts to succeed in difficult professions. Moreover, Stajkovic and Luthans (1998) refer to self-efficacy as a person's belief about his/her mental ability, drive and forces that are essential to successfully implement a given assignment within a specific context. It is developed based on the theory of social cognition, which was propounded by Bandura (1997). Self-efficiency is not similar to the other three sub-constructs (hope, optimism and resilience) of psychological capital. Bandura (1997) believes that self-efficacy could be improved through four specific approaches. First, it is believed that when a person is successful at overcoming a particular challenge, he or she will be more confident. Thus, the task mastery gives more self-assurance and aptitude to execute the next difficult tasks. Second, self-efficacy can be improved through a vicarious learning process, by observing significant others and imitating them. It implies that when an important person achieves success in a specific task, the observing person can upsurge his or her confidence in following such a model.

Third, the individuals who have earned another person's regard might be affected by his or her confidence in order to gain more buoyancy. For instance, if followers receive a positive comment from their leaders whom they hold in high esteem, they will have more assurance in accomplishing a given task. Fourth, personal confidence can be built by a caring attitude. For example, when a leader provides psychological support and cares for or appreciates his or her subordinates, in order to strengthen their existing relationship and improve performance. Hope, being one of the integral parts of the psychological capital, signifies the investment of the efforts of the persons that are working toward the attainment of set goals (Malone, 2010). However, Avey, Luthans, and Jenes's (2009) theory of hope incorporates three fundamental components:

goals, paths and power. Pathways represent a person's aptitude to plan strategies of achieving desirable goals while agency denotes a person's perceived capability in applying such strategies as pathways to reach the anticipated goals. Moreover, the aim of agency is to inspire individuals to generate positive energy in achieving the given tasks while pathways are considered to be an avenue of reaching their objectives or to succeed at a given task (Avey, Luthans & Jenes, 2009). Luthans, Norman, Avolio, and Avey (2008) describe hope as the determination of employees in moving towards achieving organizational objectives, besides the ability of individuals to advance paths in achieving goals when required.

According to Snyder, Sympson, Ybasco, Borders, Babyak and Higgins (1996), agency and pathways cannot function separately; both operate interdependently to accomplish a specific task. It therefore implies that an individual who is highly hopeful can generate multiple pathways to attain a specific target. Resilience, being the third component of psychological capital, is defined by Huong (2016), as a positively adaptable capability of an individual, which helps him or her to quickly recover from the effects of adversity, uncertainty or a failure situation. In other words, a resilient individual might be more compelling in an extensive variety of life exercises and negative occasions. Furthermore, it represents the development of good adaptation in the workplace, and plays an important role in healthy adaptations particularly to difficult life occasions (Durrah, Al-Tobasi, A'aqoulah, & Ahmad, 2016). Kappagoda, Othman and De Alwis (2014) describe resilience as a positive force that is applicable in countering undesirable events, while Mills et al. (2013) defined resilience as the ability to bob over from disappointment and adversity. As a positive state, resiliency can be developed by imitating responses in not only adverse, but also on extremely positive occasions (Nguyen & Nguyen, 2012). Besides, resilience can be enhanced by exhibiting and maintaining a positive emotion during the time of disappointment or negative events.

There are three main ideologies of resilience: coherence, connectedness and control (Enzi & Ibrahim, 2012). It is also characterized by improvisation, objectivity, adaptation, deep faith and realism (Meng, Qi & Li, 2011). Hence, highly resilient individuals who usually recover well and quickly after adverse occasions are completely dissimilar from those who perpetually stay bothered, and find it tough to push forward (Luthans, Avey, Avolio & Peterson, 2010). Lastly, optimism, the fourth component of psychological capital is described as the propensity of an individual to keep up an uplifting viewpoint towards the future regardless of the present situation (Durrah, Al-Tobasi, A'aqoulah & Ahmad, 2016). Literally, an optimist is an individual who anticipates good things while a pessimist is an opposite individual who imagines evil things to occur (Durrah, Al-Tobasi, A'aqoulah & Ahmad, 2016). The development of optimism cuts across three areas. It can be developed intolerance toward the past. It can also be developed in valuation and estimating the present. Individuals can also develop optimism by focusing on the future (Durrah, Al-Tobasi, A'aqoulah & Ahmad, 2016).

Again, the psychological state of optimism describes an explanatory style of the cause of behavior that mostly attributes positive events as originating from personality while the cause of negative events is usually attributed to external factors (Millard, 2011). According to Avey, Luthans and Pigeon (2010), an optimist believes that positive events occur, because of their own attitude and behaviors. In other words, the optimists are the individuals who dependably expect great things will come to them. Carver and Scheier (2002) also explained that highly rated optimists can advance efforts, even when facing an enduring difficult or challenging experience. Hence, to an optimist, he or she rarely nurture failures, and all undesirable results of action seem to be a challenge and a prospect to improve and aim at better results. Moreover, Schneider (2001) suggested that employees with a great level of optimism, particularly, realistic optimism, may increase their performance in work. Realistic optimism involves the process of improving and concentrating on the favorable aspects of individuals' experiences. It thus describes a scientific assessment of resource to complete a given task.

Empirical Literature Review

The relationship between Psychological Capital and Organizational Citizenship Behavior: Shaheen, Bukhari and Adil (2016) surveyed the role of psychological capital on organizational citizenship behavior in a sample of 325 male and female bank employees of private and public sector banks in Islamabad and Rawalpindi cities of Pakistan. Their findings showed that psychological capital is a significant determinant of

organizational citizenship behavior among the participants. Similarly, Pradhan, Jena and Bhattacharya (2016) investigated the relationship between psychological capital and organizational citizenship behavior among 212 professionals in the Indian manufacturing and service industries, and observed if emotional intelligence assumes a part in moderating the relationships between psychological capital and organizational citizenship behavior, using structural equation modelling. The outcomes of the structural equation modelling indicate that psychological capital is positively related to organizational citizenship behavior. Likewise, Suifan (2016) examined the impact of psychological capital on organizational citizenship behavior among 277 male and female staff of Jordanian banks, using a survey design and a questionnaire to elicit information from the participants. The results of the statistical analysis that was performed on the data based on the stated hypothesis showed that there is a significant positive relationship between psychological capital and organizational. Moreover, Paul, Bamel and Garg (2016) in their exploratory study of the relationship between resilience and organizational citizenship behavior within the context of Indian organizations, sampled 345 employees who were working in the manufacturing industries of Uttarakhand and Himachal Pradesh in India. Data were collected in the study with a self-administered questionnaire through the systematic sampling method. The findings of the study proved that there is a positive relationship between resilience and organizational citizenship behavior.

Relationship of Dimensions of Psychological Capital and Organizational Citizenship Behavior: Ali-Shah and Ali-Shah (2016) adopted a longitudinal research design approach to investigate the relationship between psychological capital and organizational citizenship behavior among 411 male and female employees of telecommunication firms in Pakistan, using a structured questionnaire as an instrument of data collection. The results of the investigation revealed that psychological capital and the in-role performance type of organizational citizenship behavior are significantly positively interrelated. Additionally, Rostiana and Lihardja (2013) conducted a survey to investigate the influence of psychological capital on organizational citizenship behavior among 205 participants in an office of a coal mining firm, using a validated questionnaire to measure the constructs that were involved in the study, and the data collected was processed statistically with ANOVA and regression techniques to test the hypothesis. The results of the study showed that psychological capital significantly influenced organizational citizenship behavior. Thus, it implies that psychological capital plays a crucial role in exhibiting in-role and extra-role performance.

Harris (2012) found in his doctoral degree research, which was conducted on the relationships between psychological capital, work engagement and organizational citizenship behavior in South African automotive dealerships, that there is a low positive correlation ($r = 0.27$) between organizational citizenship behavior and psychological capital. Harris (2012) further reported that both functional participation ($r = 0.26$) and sportsmanship ($r = 0.22$) dimensions of organizational citizenship behavior have a small positive relationship with psychological capital. In addition, according to Harris (2012), the results of the study further showed that self-efficacy ($r = 0.24$) and hope ($r = 0.26$) have low correlations with the total score of organizational citizenship behavior. As reported by Harris (2012), the hypothesized relationship between the dimensions of psychological capital and organizational citizenship behavior was also confirmed as the results showed that there is a low correlation between functional participation and self-efficacy ($r = 0.24$) and hope ($r = 0.25$), while sportsmanship has a low correlation with optimism ($r = 0.30$).

Statement of Hypotheses: Based on the past studies reviewed and on logical grounds, the present study states the following hypotheses:

Hypothesis 1

H_0: Psychological capital is not significantly positively correlated with organizational citizenship behavior.
H_1: Psychological capital is significantly positively correlated with organizational citizenship behavior.

Hypothesis 2

H_0: Self-efficacy, hope, optimism and resilience are not significantly positively interrelated to civic virtue, conscientiousness and altruism.

H_1: Self-efficacy, hope, optimism and resilience are significantly positively interrelated to civic virtue, conscientiousness and altruism

3. Methodology

Research Design, Sample and Procedure: The study adopted a positivist explanatory cross-sectional (survey) research design. The positivist explanatory cross-sectional (survey) research was considered appropriate for the study, because the research used the positivist approach by means of quantitative data generation, and hypotheses testing (Bhattacherjee, 2012). The chosen research design was also considered appropriate in the study, because of the study cut-across the private and public sectors of the national economy thus, incorporated diverse industries.

The stratify type of probability (Two-stage North Carolina Centre for Public Health Preparedness', 2013 sampling scheme) technique was adopted along with The Research Advisor's (2006) Sample Size Calculation Table, and used in calculating the appropriate sample size of the study. According to the Federal Ministry of Women Affairs and Social Development (2008), there were a total number of 40,567,978 male and female employees across industries in Nigeria as at the year 2007. In applying the stratified sampling method as recommended by the North Carolina Centre for Public Health Preparedness, 10% of 40,567,978 was calculated at the first stage, which reduced the number to 4,056,797. Again, at the second stage, 10% of 4,056,797 were calculated. Consequently, the result further reduced the number to 405,679. Nevertheless, at this point, the researchers subjected the derived figure of 405,679 to the recommendation of the Research Advisor (2006), which approves a sample size of 1,532 (at 95% level of confidence and 2.5% margin of error) out of an approximate population of 500,000 for a national survey. Hence, the researchers were 95% confident of the population sampled being a true representation of the study's targeted population. Thus, a total of 1,532 male and female graduate employees formed the sample size of the study.

In addition, the convenience and purposive types of non-probability sampling technique were employed in selecting participants for the study. Firstly, the convenience sampling technique was applied in selecting the three most suitable states (Oyo, Osun and Lagos States) out of the thirty-six states in Nigeria, as the sites of the field work. The rationale for selecting the three states is that each of them houses one or the other of the renowned public and private universities (University of Ibadan, Obafemi Awolowo University, and the Pan-Atlantic University) where the study sample was offered part-time postgraduate admissions of MBA programmes as working-class postgraduate students with a minimum of three-year employment experience. Another reason for adopting the convenience sampling technique was because the fieldwork became easier when the participants were met in groups at conducive places such as in the lecture-rooms and relaxation centres within the university premises. Furthermore, since the study was designed only for the graduate employees, the purposive sampling technique was also introduced and applied, to ensure that participants in the study were employed during the period of the field work, and that they were graduates of universities and polytechnics. The sample comprised of 916 (60%) male and 616 (40%) female graduate employees from 19 sectors of the Nigerian economy.

Among the participants, 202 (13.2%) were graduate employees from the educational sector, 38 (2.5%) from the research institutes, 51 (3.3%) from the transportation sector, 291 (19%) from the finance and insurance sector, 83 (5.4%) from the fast-moving and consumable goods (FMCG) Industry, 21 (1.4%) from the commercial sector, 70 (4.6%) from the healthcare sector, 8 (0.5%) from the aviation sector, 77 (5.0%) from the agricultural sector, 57 (3.7%) from the information. All participants were Nigerians English speakers. The participants' ages ranged from 20 years to 65 years old. Relatively, 974 (63.6%) of the participants were senior staff while the remaining 558 (36.4%) were junior staff. Conclusively, among the participants, 730 (47.7%) were employed by the government while the remaining 802 (52.3%) were working under the employment of private organizations. Data were collected by means of paper-pencil inventories (structured validated questionnaires), which were distributed to employees in the large lecture auditoriums during their weekend (Saturdays) part-time professional postgraduate programs, in the three renowned public and private universities (University of Ibadan, Obafemi Awolowo University and the Pan-Atlantic University), situated in Oyo, Osun and Lagos states of Nigeria.

Ethical Consideration: The participants' voluntary participation in the study was sought through a letter of consent, signed by each of the participants. The participants were informed about the importance of the study as the findings from the study may positively influence the government policy helping in improving their conditions of employment and service respectively. Moreover, assurance was given to the participants in respect of confidentiality of all information supplied. Furthermore, the participants were instructed not to indicate any means of identification such as name, identity number or organizational affiliation. With the utmost sense of sincerity, information concerning the study and its outcomes was accurately submitted to the appropriate institutions. Thus, it was ensured that no instance of misleading actions was demonstrated in the course of the study. The researchers also ensured that the study was conducted in a conducive environment such that would not expose the participants to any physical or psychological hazard. The Research Ethics Committee of the University of Fort Hare furthermore granted approval for ethical clearance of the study (Certificate reference number: MJO071SADE01). Likewise, the results indicate that there is a significant positive relationship between organisational citizenship behaviour and conscientiousness, $r = 0.755$, $p<0.01$.

Measuring Instrument: Two established scales of measurement were employed to assess psychological capital, and organizational citizenship behavior.

Psychological Capital: A 24-item scale of psychological capital that was developed and validated by Luthans, Avolio, Avey and Norman (2007) was utilised to measure psychological capital. The construct consisted of self-efficacy, hope-state, optimism-state and resilience-state sub-scales, with a 5-point Likert-type response format ranging from 1/(Strongly disagree) to 5/(Strongly agree). The authors reported a Cronbach Alpha coefficient score of 0.91 for the scale. However, the outcome of the pilot factor analysis of this study reduced the scale-item to 21, and yielded Cronbach Alpha coefficient scores of 0.88 (self-efficacy), 0.91 (hope), 0.85 (resilience), 0.67 (optimism) and 0.94 for the whole scale of psychological capital, while the main study's factor analysis yielded a Cronbach Alpha coefficient score of 0.85 for the whole scale of psychological capital.

Organizational Citizenship Behavior: A 15-item modified version of Podsakoff, Mackenzie, Moorman, and Fetter's (1990) organizational citizenship behavior questionnaire by Argentero, Cortese and Ferretti (2008) was utilised to measure organizational citizenship behavior. The construct consisted of altruism, conscientiousness and civic virtue sub-scales, with a 5-point Likert-type response format ranging from 1/(Strongly disagree) to 5/(Strongly agree). Argentero, Cortese and Ferretti (2008) reported the following Cronbach Alpha coefficients for the scale: altruism =0.81, conscientiousness =0.73, civic virtue =0.73 and 0.84 for the whole scale of organizational citizenship behavior. However, the outcome of the pilot factor analysis of this study reduced the scale-item to 13, and yielded Cronbach Alpha coefficient of 0.88 (altruism), 0.81 (conscientiousness), 0.86 (civic virtue) and 0.93 for the whole scale of organizational citizenship behavior, while the main study's factor analysis yielded a Cronbach Alpha coefficient score of 0.82 for the whole scale of organizational citizenship behavior.

Statistical Analysis of Data: The data generated from 1,532 screened questionnaires were analyzed based on the hypotheses stated, using version 20 of the Statistical Package for the Social Sciences (SPSS). All hypotheses stated were analyzed, using Pearson Correlation Analysis.

4. Research Results

The results of the analysis are presented in table 1 below:

Table 1: A Summary Table of Pearson Correlation Analysis Showing the Relationships among OCB, PSYCAP, the Four Dimensions of OCB, and the Four Dimensions of PSYCAP

Variable	1	2	3	4	5	6	7	8	9
1) OCB	1	.885**	.755**	.843**	.516**	.495**	.444**	.373**	.473**
2) Altruism OCB	.885**	1	.522**	.523**	.440**	.432**	.402**	.296**	.440**
3) Conscien OCB	.755**	.522**	1	.495**	.428**	.395**	.342**	.306**	.362**
4) Civic virt. OCB	.843**	.523**	.495**	1	.413**	.396**	.347**	.323**	.359**
5) Self-Eff. PSYCAP	.516**	.440**	.428**	.413**	1	.622**	.501**	.403**	.438**
6) Hope PSYCAP	.495**	.432**	.395**	.396**	.622**	1	.497**	.448**	.404**

7) Resilience PSYCAP	.444**	.402**	.342**	.347**	.501**	.497**	1	.381**	.369**
8) Optimism PSYCAP	.373**	.296**	.306**	.323**	.403**	.448**	.381**	1	.345**
9) PSYCAP	.588**	.440**	.362**	.359**	.438**	.404**	.369**	.345**	1

**. Correlation is significant at the 0.01 level (2-tailed).

The results of correlation analysis in table 1 above show that there is a significant positive relationship between organisational citizenship behaviour and psychological capital r = 0.440, p<0.01. This implies that organisational citizenship behaviour is significantly positively related to psychological capital. The results in table1 also indicate that there is a significant positive relationship between organisational citizenship behaviour and altruism, r = 0.885, p<0.01. It confirms that altruism is, indeed, strongly related to organizational citizenship behavior. The results further show that there is a significant positive relationship between organisational citizenship behaviour and civic virtue, r = 0.843, p<0.01. It also confirms that civic virtue is strongly related to organization citizenship behavior. It also confirms that conscientiousness is strongly related to organizational citizenship behavior.

Moreover, from the results in Table 1, there is a significant positive relationship between organizational citizenship behavior and the self-efficacy component of psychological capital, r = 0.516, p<0.01. The result implies that as self-efficacy increases so also do organizational citizenship behavior. Similarly, the results in the table above show that there is a significant positive relationship between organizational citizenship behavior and the hope component of psychological capital, r = 0.495, p<0.01. It also means that as the level of hope increases so the level of organizational citizenship behavior increases. Furthermore, the results in Table 1 show that there is a significant positive relationship between organizational citizenship behavior and the resilience component of psychological capital, r = 0.444, p<0.01. It implies that organizational citizenship behavior and resilience move together in the same direction. Additionally, from the same table, results indicate that there is a significant positive relationship between organizational citizenship behavior and the optimism component of psychological capital, r = 0.373, p<0.01. The result suggests that organizational citizenship behavior positively and directly correlated with resilience. In addition, from Table 1, the results reveal that there is a significant positive relationship between altruism and conscientiousness, r = 0.522, p<0.01.

The results also indicate that there is a significant positive relationship between altruism and civic virtue, r = 0.523, p<0.01. Similarly, the results show that there is a significant positive relationship between altruism and self-efficacy, r = 0.440, p<0.01. Equally, the results suggest that there is a significant positive relationship between altruism and hope, r = 0.432, p<0.01. Likewise, the results depict that there is a significant positive relationship between altruism and resilience, r = 0.402, p<0.01. Furthermore, the results illustrate that there is a significant positive relationship between altruism and optimism, r = 0.296, p<0.01. Similarly, the results in Table 1 reveal that there is a significant positive relationship between conscientiousness and civic virtue, r = 0.495, p<0.01. In the same way, the results reveal that there is a significant positive relationship between conscientiousness and self-efficacy, r = 0.428, p<0.01. Correspondingly, the results show that there is a significant positive relationship between conscientiousness and hope, r = 0.395, p<0.01. Also, it shows that there is a significant positive relationship between conscientiousness and resilience, r = 0.342, p<0.01. Moreover, the results show that there is a significant positive relationship between conscientiousness and optimism, r = 0.306, p<0.01. Furthermore, from Table 1, the results indicate that there is a significant positive relationship between civic virtue and self-efficacy, r = 0.413, p<0.01. Likewise, the results demonstrate that there is a significant positive relationship between civic virtue and hope, r = 0.396, p<0.01.

In the same vein, the results demonstrate that there is a significant positive relationship between civic virtue and resilience, r = 0.347, p<0.01. Equally, the results indicate that there is a significant positive relationship between civic virtue and optimism, r = 0.323, p<0.01. In the same way, the results in Table 1 show that there is a significant positive relationship between self-efficacy and hope, r = 0.622, p<0.01. Likewise, the results establish that there is a significant positive relationship between self-efficacy and resilience, r = 0.501, p<0.01. At the same time, the results demonstrate that there is a significant positive relationship between self-efficacy and optimism, r = 0.403, p<0.01. Moreover, from the results in Table 1, it is found that there is a significant positive relationship between hope and resilience, r = 0.497, p<0.01. Similarly, there is also a

significant positive relationship between hope and optimism, r = 0.448, p<0.01. Additionally, from the same table, results indicate that there is a significant positive relationship between resilience and optimism, r = 0.381, p<0.01. The summary of the above interpretations is that the intercorrelation matrix of the dimensions of organizational citizenship behavior and psychological capital, which are shown in Table 1 demonstrates that all the dimensions are positively interrelated with one another, including the two main variables (organizational citizenship behavior and psychological capital). Conclusively, the descriptive analyses showing means and standard deviations of participants' responses on the two main variables and their dimensions are presented in Table 2 below.

Limitations and Suggestions: The first noticeable shortcoming of this research relates to bias in the approach of data collection. The research only adopted the quantitative method, which limited the opinions of research respondents to the response options provided to statements in the questionnaire. This study therefore, suggests that future studies should consider adopting more than one method of data collection. The second acknowledged limitation of this study is the fact that the study was designed only to explore the relationships among variables under consideration. Because of this reason, the study could not specifically categorize variables into classes of dependence and independence, therefore further limits the generalization of the findings.

Table 2: A Summary Table of Descriptive Analysis Showing the Mean Difference and Standard Deviation among OCB, the three Dimensions of OCB, the four Dimensions of PSYCAP, Emotional Awareness of others (Emotional Intelligence) and Occupational Stress

Variable	N	*X*	SD
Psychological capital	1532	60.4817	8.49292
Organizational citizenship behavior	1532	52.3890	6.94911
Self-efficacy (psycap)	1532	20.3845	3.54578
Hope (psycap)	1532	20.5281	3.40532
Resilience (psycap)	1532	15.3544	2.59459
Optimism (psycap)	1532	8.0424	1.65358
Altruism (OCB)	1532	20.0020	3.25440
Conscientiousness (OCB)	1532	11.8035	1.97103
Civic virtue (OCB)	1532	20.5836	3.17756
Valid N (listwise)	1532		

The results in Tables 2 above show the levels at which the participants possessed each of the variables of consideration in the study. For instance, the results of descriptive statistics show that the participants demonstrated a higher level of psychological capital, $\overline{X}$ = 60.482, SD = 8.493. The results imply that the participants in the study are positively oriented about themselves. Similarly, the results in the Table 2 above show that participants expressed a high level of organizational citizenship behavior, $\overline{X}$ = 52.389, SD = 6.949, which also indicates that the participants are highly interested in helping their colleagues at work, at the same time ensuring that their personal and organizational goals are achieved. The results further reveal that participants expressed significantly higher levels of civic virtue, $\overline{X}$ = 20.584, SD = 3.178; hope, $\overline{X}$ = 20.528, SD = 3.405; self-efficacy, $\overline{X}$ = 20.385, SD = 3.546; altruism, $\overline{X}$ = 20.002, SD = 3.254; resilience, $\overline{X}$ = 15.354, SD = 2.595; conscientiousness, $\overline{X}$ = 11.804, SD = 1.971; and optimism, $\overline{X}$ = 8.042, SD = 1.653.

Discussion: The results established the hypothesized relationship between psychological capital and organizational citizenship behavior. It also confirmed the hypothesized interrelationships among the components of psychological capital and organizational citizenship behavior. The results of hypothesis 1 show that there is a significant positive relationship between organizational citizenship behavior and psychological capital. The result implies that organizational citizenship behavior is significantly positively related to psychological. The result is in line with the expectation that employees with higher levels of positive orientations will contribute significantly higher, beyond the border or scope of their job duties and

responsibilities, to assist co-employees and customers or client in order to enable the organization to achieve her goals and objectives. The present findings corroborate the findings of Ali-Shah and Ali-Shah (2016), which revealed that psychological capital and the in-role performance type of organizational citizenship behavior are significantly positively interrelated. Similarly, Suifan (2016), reports that there is a significant positive relationship between psychological capital and organizational citizenship behavior.

Moreover, Paul, Bamel and Garg's (2016) study demonstrated that there is a positive relationship between resilience and organizational citizenship behavior. The results of hypothesis 2 show that there are significant positive interrelationships among the components of organizational citizenship behavior and psychological capital. The results imply that psychological capital dimensions and organizational citizenship behavior components are all positive human behavioral dispositions that move concurrently along each other in the same direction. In other words, in relation to the Nigerian graduate employees' experience, the graduate employees who perpetually exhibit citizenship behavior at work, even in the face of the peculiar tough work environment of Nigeria, are those who have discovered, developed and are constantly demonstrating reasonable levels of hope, optimism, resilience and self-efficacy when saddled with difficulties on official responsibilities. This is to say that extra-role performance is rooted in the human psychological states of hope, optimism, resilience and self-efficacy.

For instance, a highly hopeful graduate employee is constantly motivated by his or her positive perception of the job or career, and willing to give his or her best on the official assignments with the belief that he or she is building a brighter career future, even while helping the colleagues and the organization at large to meet the set goals and objectives. Such a graduate employee will drive the work team with his vision, to perform beyond the criterion. Likewise, the states of self-efficacy, optimism and resilience drive a graduate employee who is found to possess the aforementioned psychological states at higher levels, and propel him or her to engage in citizenship behavior in the workplace. In support of the above, Ali-Shah and Ali-Shah (2016) report that psychological capital and the in-role performance type of organizational citizenship behavior are significantly positively interrelated. Additionally, the results of the study that was conducted by Rostiana and Lihardja (2013) showed that psychological capital significantly influenced organizational citizenship behavior. Thus, it implies that psychological capital plays a crucial role in exhibiting in-role and extra-role performance.

Harris (2012) found in his doctoral degree research, which was conducted on the relationships between psychological capital, work engagement and organizational citizenship behavior in South African automotive dealerships, that there is a low positive correlation ($r = 0.27$) between organizational citizenship behavior and psychological capital. Harris (2012) further reported that both functional participation ($r = 0.26$) and sportsmanship ($r = 0.22$) dimensions of organizational citizenship behavior have a small positive relationship with psychological capital. In addition, according to Harris (2012), the results of the study further showed that self-efficacy ($r = 0.24$) and hope ($r = 0.26$) have low correlations with the total score of organizational citizenship behavior. As reported by Harris (2012), the hypothesized relationship between the dimensions of psychological capital and organizational citizenship behavior was also confirmed as the results showed that there is a low correlation between functional participation and self-efficacy ($r = 0.24$) and hope ($r = 0.25$), while sportsmanship has a low correlation with optimism ($r = 0.30$).

5. Conclusion

The Study Makes the Following Conclusions:

- There is a significant positive relationship between psychological and organizational citizenship behavior.
- Altruism, civic virtue and conscientiousness are all significantly positively interrelated to self-efficacy, resilience, optimism and hope.

Recommendations: In view of the above discussion and conclusions, the researchers make the following practical recommendations: The tertiary institutions' management, most especially of the university authorities, should incorporate in their academic curricula some practical simulated work exercise that will

pre-expose the graduating students to the challenges at the world of work. This will build their psyche, and make them mentally ready for the challenges in the corporate world, even in the cause of discharging of career duties or responsibilities through the positivist approach. This can be achieved by a deliberate inclusion of moderately difficult practical group assignments in the syllabus that will task each student in a group, to proactively think 'outside the box' and proffer visible solutions in the form of suggestions to the problems at hand. By so doing, students will develop a reasonable level of positive orientations along with the acquired theoretical knowledge of their disciplines while the universities can as well boast of producing a capable graduate who will fit perfectly into the realities of the world of work and promptly deliver. Human resource managers, seminar facilitators, workshop trainers and supervisors should focus on training the individual employees or graduates to discover their covert psychological states of development such as psychological capital and make them refined through a systematic training process that converts the covert behavioural gifts into overt psychological assets in the form of demonstrable managerial competencies, which can enhance their performance on the job, and enable them to be pro-social among colleagues in the work settings.

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References

Abd-Allah, O. M. Z. (2016). The relationship between organizational citizenship behavior and employee engagement in cement industry in Egypt. *International Journal of Management and Commerce Innovations,* 4(1), 362-376.

Ahmed, S. W. & Khan, T. (2016). Does motivation lead to organizational citizenship behavior? - A Theoretical Review. *Global Journal of Management and Business Research: A Administration and Management,* 16(7), 43-49.

Ali-Shah, T. & Ali-Shah, S. Z. (2016). Combined effects of psychological capital and psychological contract on employees' job level outcomes. *European Journal of Business and Management,* 8(26), 5-19.

Argentero, P., Cortese, C. G. & Ferretti, M. S. (2008). Organizational citizenship behavior: Podsakoff et al.'s scale. *TPM,* 15(2), 61-75.

Avey, J., Luthans, F. & Jenes, S. (2009). Psychological capital: A positive resource for combating employee stress and turnover. *Human Resource Management,* 48(5), 677-693.

Bandura, A. (1997). Self-efficacy: The exercise of control. New York, NY: Freeman.

Behtooee, L. (2016). A model for explanation of social capital in organizations, psychological empowerment, job involvement, and organizational citizenship behavior. *International Journal of Advanced and Applied Sciences,* 3(5), 80-87.

Bhattacherjee, A. (2012). Social science research: Principle, methods and practices. Textbook collection. Book 3.

Carver, C. S. & Scheier, M. F. (2002). Optimism, pessimism, and self-regulation. In E.C. Chang (Ed.), Optimism and pessimism: Implication for theory, research and practice. United States of America: American Psychological Association.

Durrah, O., Al-Tobasi, A., A'aqoulah, A. & Ahmad, M. (2016). The impact of the psychological capital on job performance: A case study on faculty members at Philadelphia University. *International Review of Management and Marketing,* 6(2), 183-191.

Enzi, S. & Ibrahim, I. (2012). Positive psychological capital (conceptual perspective in core basics and requirements for building and preparing). *Journal of Economic and Administrative Sciences,* 18(65), 1-31.

Farzianpour, F., Foroushani, A. R., Kamjoo, H. & Hosseini, S. S. (2011). Organizational citizenship behavior (OCB) among the managers of teaching hospitals. *American Journal of Economics and Business Administration,* 3(3), 534-542.

Harris, C. (2012). Relationships between psychological capital, work engagement and organizational citizenship behavior in South African automotive dealerships. Doctoral Degree Thesis, Department of Industrial Psychology, Nelson Mandela Metropolitan University, South Africa.

Huong, T. H. T. (2016). Psychological capital and quality of work life among employees in public sector: Evidence from Ho Chi Minh City Department of Culture and Sports. Master Thesis, University of Tampere.

Kappagoda, S., Othman, H. & De Alwis, G. (2014). The impact of psychological capital on job performance: Development of a conceptual framework. *European Journal of Business and Management,* 6(14), 143-154.

Karolidis, D. (2016). Organizational citizenship behavior in the Greek public sector. Interdependent Program me of Postgraduate Studies in Business Administration, University of Macedonia.

Lelei, J. C., Chepkwony, P. K. & Ambrose, K. (2016). Effect of organizational citizenship behavior on employee performance in banking sector, Nairobi County, Kenya. *International Journal of Business, Humanities and Technology,* 5(4), 55-61.

Luthans, F., Avey, J. B., Avolio, B. J. & Peterson, S. J. (2010). The development and resulting performance impact of positive psychological capital. *Human Resource Development Quarterly,* 21, 41-67.

Luthans, F., Avolio, B. J., Avey, J. B. & Norman, S. M. (2007). Psychological capital: Measurement and relationship with performance and satisfaction. *Personnel Psychology*, 60, 541-572.

Luthans, F., Norman, S., Avolio, B. & Avey, J. (2008). The mediating role of psychological capital in the supportive organizational climate employee performance relationship. *Journal of Organizational Behavior,* 29, 219-238.

Luthans, F. & Youssef, C. (2004). Human, social, and now positive psychological capital management. *Organizational Dynamics,* 33(2), 152-155.

Malone, L. (2010). Individual differences and stress reactions as predictors of performance in pilot trainees. Master Thesis, Manhattan, Kansas: Kansas State University.

Meng, Y., Qi, S. & Li, L. (2011). A study on the impact of hotel leaders' psychological capital on employee engagement, service systems and service management (ICSSSM). 8th International Conference On, 25-27 June, Tianjin.

Millard, M. (2011). Psychological net worth: Finding the balance between psychological Capital and psychological debt, Doctoral Thesis, University of Nebraska - Lincoln.

Mills, J. M., Fleck, C. R. & Kozikowski, A. (2013). Positive psychology at work: A conceptual review, state-of-practice assessment, and a look ahead. *The Journal of Positive Psychology,* 8(2), 153-164.

Nguyen, T. D. & Nguyen, T. T. (2012). Psychological capital, quality of work life, and quality of life of marketers' evidence from Vietnam. *Journal of Macro marketing*, 32(1), 87-95.

North Carolina Center for Public Health Preparedness. (2013). Two-stage cluster sampling: general guidance for use in public health assessments. Cited in Aramide, O.K. (2014). Relationship between the use of family planning related information and attitudes of rural childbearing women toward family planning. A Ph. D Thesis, Postgraduate School, Babcock University, Nigeria, 73-75.

Parveen, D. (2012). Organizational Citizenship Behavior and Job Tenure: An Empirical Study at Indian Organizations. *Indian Journal of Psychological Science,* 6(1), 124-132.

Paul, H., Bamel, U. K. & Garg, P. (2016). Employee resilience and organizational citizenship behavior: Mediating effects of organizational commitment. *The Journal for Decision Makers,* 41(4), 308–324.

Podsakoff, P. M., Mackenzie, S. B, Moorman, R. H. & Fetter, R. (1990). Transformational leader behaviors and their effects on followers' trust in leader, satisfaction and organizational citizenship behavior. *The Leadership Quarterly*, 1(2), 107-142.

Podsakoff, P. M., MacKenzie, S. B., Paine, J. B. & Bachrach, D. G. (2000). Organizational Citizenship Behaviors: A Critical Review of the Theoretical and Empirical Literature and Suggestions for Future Research. *Journal of Management,* 26(3), 513–563.

Pradhan, R. K. & Jena, L. K. & Bhattacharya, P. (2016). Impact of psychological capital on organizational citizenship behavior: Moderating role of emotional intelligence. *Cogent Business & Management,* 3(1), 1-16.

Rostiana, D. & Lihardja, N. (2013). The influence of psychological capital to work engagement and organizational citizenship behavior. International conference on entrepreneurship and business management, Sanur, Bali – November 21-22, ISBN: 978-979-9234-49-0.

Schneider, S. (2001). In search of realistic optimism meaning, knowledge, and warm fuzziness. *American Psychologist,* 56(3), 250-263.

Shaheen, S., Bukhari, I. & Adil, A. (2016). Moderating role of psychological capital between perceived organizational support and organizational citizenship behavior and its dimensions. *International Journal of Research Studies in Psychology,* 5(2), 41-50.

Snyder C. R, Sympson, S., Ybasco, F., Borders, T., Babyak, M. & Higgins, R. (1996). Development and validation of the state hope scale. *Journal of Personality and Social Psychology,* 70, 321–335.

Spik, A. (2016). Enthusiasts or trapped? - Relations between organizational commitment profiles, organizational citizenship behavior and life satisfaction. *Journal of Entrepreneurship, Management and Innovation (JEMI),* 12(1), 7-34.

Stajkovic, A. D. & Luthans, F. (1998). Self-efficacy and work-related performance: A meta-analysis. *Psychological Bulletin,* 124, 240-261.

Suifan, T. S. (2016). The impact of organizational climate and psychological capital on organizational citizenship behavior. *International Journal of Business and Management,* 11(1), 224-230.

The Research Advisors. (2006). http://research-advisors.com

Williams, L. J. & Anderson, S. E. (1991). Job satisfaction, and organizational commitment as predictors of organizational citizenship and in-role behaviors. *Journal of Management,* 17, 601-617.

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The 'User Pays' Principle and the Electricity Sector: A South African Case

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Abstract: This paper discusses the 'user pays' principle (UPP) within the South African developmental state concept. The essence of the paper is to ascertain whether UPP can be implemented in the electricity sector without necessarily harming the developmental state agenda taking into account the challenges of inequality, unemployment and poverty in South Africa. In this paper, we present the arguments in support of the UPP in the electricity supply industry (ESI) and its building blocks. The paper analyses the role of regulatory authority in the implementation and adoption of the UPP. Finally, the paper analyses the role of UPP in the developmental state concept and the challenges of implementing it. The analysis shows that adoption of inclining block tariff (IBTs) was based on the individual's perceived ability to pay and not on UPP while the free basic electricity (FBE) policy is a government-funded initiative meant to provide electricity to poor households. The paper also found that the ESI currently has high levels of inefficiencies in production and use, procurement and operation of utilities, cross-subsidisation, infrastructure and maintenance backlogs which may hinder the full implementation of UPP. Lastly, although the full implementation of 'user pays' principle (UPP) could incentivise efficient operation of the electricity supply industry (ESI) and attract the much-needed investment in the sector, the UPP system will pose serious challenges considering the country's three main problems: inequality, unemployment and poverty.

Keywords: *'User pays' principle, electricity, South Africa, developmental state*

1. Introduction

There is a global movement towards the implementation of the 'user pays' principle (UPP) in infrastructure projects around the world. The main point of discussion over the past three decades in most developing countries has been the costs and benefit of implementing the UPP. The UPP is based on the idea that the most efficient allocation of services is achieved when end users pay the full costs of services rendered (Nelson & Orton, 2013; Kanakoudis & Gonelas, 2014). The UPP is well established in the literature and provides that the price of service should reflect the full range of costs involved in using a particular infrastructure. Studies (see for example, Snyder & Stegman, 1986; Pagano & Perry, 2008; Engel, Fischer, & Galetovic, 2013; Lossa & Martimort, 2015; and Delmon, 2017 among others) indicate that there is consensus among policymakers that the UPP approach has a superior potential to attract finance for the much-needed economic infrastructure mainly in developing countries. For example, the study by Engel et al. (2013) demonstrates the importance of UPP in replacing or complementing the public provision of economic infrastructure over the past decades. In the developed world, the United States, United Kingdom and Australia are examples of countries that have successfully implemented UPP in a number of economic sectors.

In South Africa, Government's National Development Plan (NDP) of 2012 envisaged a developmental state economy that is capable of transforming the country through the rollout of bulk infrastructure in electricity, water and sanitation, housing, telecommunications, etc. The NDP highlights low levels of public infrastructure funding, especially in electricity, roads, rail, water and sanitation, public transport and housing. However, there seems to be a consensus that, given the limited government financial resources, some of the funds for economic infrastructure will need to be sourced through Public-Private Partnerships (PPP). In the electricity sector, the current investment levels are insufficient and accompanied by high maintenance backlogs, especially at the local distribution level. This threatens the security of supply in the future. There is an urgent need for an additional capacity of ±40 000MW by 2030, with ±20 000 MW from renewable sources (National Planning Commission, 2012). This is necessitated by the fact that some of the current existing generation plants will be retired as they reach the end of their useful life. There is a consensus that, in order to overcome the challenges of access to electricity and infrastructure, electricity prices need.

To increase in short to medium term in order to finance capital and operational expenditure requirements and remain sustainable. This is based on the fact that some of the existing electricity tariffs are below cost, with most based on the individual's ability to pay (perceived affordability) rather than on the 'user pays' principle. However, there is a fundamental turning point regarding the funding of infrastructure projects around the developing world. Recently, the World Bank, as the largest development finance institution, declared that no funds would be advanced to ESI projects in developing countries unless tariffs reflect the true underlying costs of supply (Patterson, 2013). Our approach in this study entails a detailed analysis of the main characteristics of the electricity supply industry (ESI) in South Africa as well as government policies/plans that anchor the industry. Our analysis of the ESI focuses more on the role of utilities and customers and the key challenges (capacity and inefficiencies) faced by the ESI, whilst our attention to government policies/plans focuses on the National Development Plan (NDP), Integrated Energy Plan (IEP) and Integrated Resources Plan (IRP), free basic electricity (FBE), Electricity Pricing Policy (EPP), etc. Furthermore, we review international best practices on the 'user pays' pricing approach (UPP) and map out possible approaches for its successful implementation and propose reasons why the UPP is necessary for South Africa. Importantly, we establish the key relationships between FBE, inclining block tariffs, cost reflectivity and the 'user pays' approach implementation in an environment of high inequality, unemployment and poverty. This paper, therefore, discusses the 'user pays' principle in detail, focusing on its implementation in the electricity industry. The paper provides reasons why the 'user pays' approach makes sense for South Africa, outlines its building blocks, summarises the role of the economic regulator, and looks at the 'user pays' principle versus the developmental state. The paper then draws conclusions and gives recommendations.

2. The 'User Pays' Pricing Approach

Literature suggests that UPP is the most practical solution for promoting equity, efficiency and sustainability in most economic sectors. The UPP is mostly used to collect revenue from road infrastructure financing, transport congestion management, environmental management, etc. However, the implementation of the UPP system has proved to be difficult, especially in developing countries with high levels of inequality, unemployment, poverty and low growth. The successful implementation requires extensive support from government and politicians, as well as customer/end-user education on the costs and benefits. In the ESI, the price of electricity is normally a function of available capacity where excess or underinvestment has consequences (Kirschen & Strbac, 2004). Excess capacity leads to high prices while on the other hand underinvestment also leads to high prices, supply shortages and disruptions in economic activity. Kirschen and Strbac (2004) argued that allowing regulated utilities to recover their full cost of capacity investment enables them to remain sustainable in the medium to long-term. However, they also suggest that this does not necessarily guarantee that the investment made is economically optimal. Other studies suggest that the most efficient way of limiting further infrastructure-induced price increases is through UPP, which incentivises investors/utilities to be efficient in infrastructure procurement and operation, while at the same time incentivising consumers to shift their demand from peak to off-peak periods (Hall, Jeanneret & Rai, 2016). Hall, Jeanneret, and Rai (2016) indicate that, in most instances, knowledge of their consumption empowers users to maximise the potential benefits of cost-reflective pricing. Nijhuis, Gibescu and Cobben (2017) further highlight that the UPP system penalises those users that put a greater strain on the system. In mature electricity markets, the UPP system has been successfully used as a new approach to congestion management.

User Pays' Pricing Approach and Cost-reflective Tariffs: The UPP approach is premised on the fact that the price paid by end users signals the true costs of electricity supply. Kirschen and Strbac (2004) indicate that electricity tariffs should be equal to the long-term marginal costs of supplying electricity to all customer classes. The tariff that users pay should signal to them the costs that their decisions impose on the electricity system and society. In other words, users should be exposed to the consequences of their consumption. Tariffs that mirror the true costs promote efficient investment in electricity infrastructure and innovative technology (Maphosa & Mabuza, 2016). Recently, Hobmann, Frederiks, Stenner and Meikle (2016) suggested that a solution to the current disparities is to move electricity tariffs closer to the actual costs incurred by utilities to provide users with a price signal that accurately conveys the true costs of power generation. However, the efficiency of the costs incurred in supplying electricity is also important in achieving this goal. The importance of cost-reflective electricity tariffs is well recognised around the world. In South Africa, this is

recognised through the Electricity Pricing Policy (2008) which states that 'electricity prices should reflect efficient market signals, accurate cost of supply and concomitant price levels that would ensure the financial viability of the electricity sector in its entirety'. There is a consensus that there are disparities between the actual costs incurred by utilities and the tariffs charged to some users. Suggestions to migrate from the perceived non-cost-reflective tariffs to cost reflectivity date back to 2004. However, target dates set have constantly been shifted from the initial target of 2013 to 2015 and then 2019, owing to difficulties in balancing access and affordability of energy services. From a regulatory perspective, setting tariffs requires a balance between a number of competing objectives i.e. economic efficiency, revenue sufficiency, fairness and equity, social orientation of electricity, simplicity, transparency and consistency with government policy. The tariffs must be set in such a way that they establish the efficient costs incurred by utilities to cover their prudently incurred operational (Opex) and capital expenditure (Capex) costs. Furthermore, the tariff should establish the share of Opex and Capex costs to be recovered through user charges versus the ones to be subsidised, i.e. through government subsidies.

User Pays' versus Inclining Block Tariffs (IBTs) and Free Basic Electricity (FBE): In an effort to ensure access to affordable, reliable, sustainable and modern energy for all, South Africa adopted the free basic electricity (FBE) policy and later the inclining block tariffs (IBTs). The FBE policy was developed in 2003 mainly to provide indigents with the free electricity deemed necessary to support their basic energy needs. FBE facilitates the provision of basic energy to poor households to address the socio-economic issues of inequality, unemployment and poverty. The FBE programme is funded through the South African government's equitable share grant, which funds the FBE programme. FBE varies from one local distributor to the other; however, the majority of distributors provide 50kWh/month per indigent household. On the other hand, IBT is a residential tariff structure that seeks to make electricity affordable to low-income households by providing lower tariffs for low consumption. The IBT is divided into four consumption blocks with each block having a different tariff per kilowatt-hour (kWh) of energy consumed. The first IBT block normally corresponds with the 50kWh FBE allocation per month. Another important feature of the IBT tariffs is that they allow for cross-subsidisation of low-income users by other customer categories, i.e. high-income households, industrial and commercial. Some have also urged that IBTs promote energy efficiency to a certain extent through higher charges for higher consumption.

However, both the FBE policy and IBT approach are based on perceived affordability (the individual's ability to pay) and promotion of access to affordable electricity and do not address the sustainability of the electricity industry. Tariffs charged under both approaches do not reflect the true costs of consumption – government funds the 50kWh FBE, while the IBT rates are cross-subsidised by other customer categories. Various studies show that cross-subsidisation is not a long-term solution to affordability since most of the high energy-intensive users meant to subsidise low-income consumers are slowly switching to off-grid solutions in South Africa (Willems & Ehlers, 2008; Maphosa & Mabuza, 2016). Financial sustainability and electricity provision is affected in local distributors mainly dominated by users on the IBT structure. The main arguments in support of moving towards the 'user pays' principle for these users are a locative efficiency, covering costs incurred in a generation, fiscal and monetary objectives, incentivising investment, price stability and environmental sustainability.

Why 'User Pays Makes Sense for South Africa: The South African electricity sector is characterised by a number of challenges. Some of these challenges emanate from the utilities, while others are from the users of electricity. It is our view that the introduction of a full user pays pricing approach will help address some of these challenges. At the top of the agenda is the high level of inefficiency in the usage of electricity by various users in South Africa. Appropriate implementation of 'user pays' tariffs can help change South African consumers' behaviour in various sectors. Importantly, in Sydney, Australia, laid (2001) found that the implementation of the 'user pays' pricing principle in Sydney's water sector resulted in the indefinite deferment of a proposed new dam on the Shoal Haven River due to a 20% decline in overall water consumption. High levels of inefficiencies in the procurement and operation of utilities in the country also exist. Recently, there has been a heated debate among electricity consumers and the public at large on inefficiencies (imprudent costs) and the perceived irregular expenditure on some capital and operation costs. The argument is that these inefficiencies have far-reaching negative effects on households and firms which are dependent on them as their only energy source. Delays and subsequent cost overruns in some instances

result in the overstatement of the regulatory asset base (RAB), which results in higher revenue request by utilities. It has also been argued that, in some instances, consumers pay the price for utilities' inefficiencies. It is our view that isolating the true underlying costs of electricity, excluding inefficiencies, will pave the way for the full implementation of the 'user pays' principle.

Currently, there is no mechanism in place to validate the extent of non-cost-reflectivity of tariffs in the ESI. Compounding the problem is also the high level of cross-subsidisation in the ESI, which Maphosa and Mabuza (2016) argued against in light of their long-term sustainability. Therefore, cross-subsidies are a short-term solution that should be used while addressing the inefficiencies in the industry. The high levels of electricity infrastructure maintenance and refurbishment backlogs also pose a challenge to the industry. The electricity distribution infrastructure is estimated to be ±40 years old with the majority of it requiring major refurbishment or replacement. In this regard, the UPP approach would assist in attracting investment to eradicate or reduce these backlogs. The government's fiscal budget is unable to fund all highly capital-intensive infrastructure projects adequately on its own. Proper implementation of the UPP will incentivise the private sector to partner with government to address this challenge. Positive economic benefits have already been seen in various sectors where the 'user pays' approach has been implemented, for example in national roads, public transport (Gautrain), water (raw water), national environment management, prisons and office blocks.

However, since electricity consumers in South Africa view electricity as a public good, the implementation of such an approach in the ESI might pose serious challenges due to the three problems mentioned above. Although the NDP concedes that tariffs should increase in short to medium term to fund capital expenditure and maintenance programmes, it is not quite clear whether tariffs are indeed low, taking into consideration the level of inefficiencies in the capital and operational expenditure discussed above. Furthermore, another part of the debate is the notion that state-owned utilities, for example Eskom, should not be allowed by the regulator to earn a profit. Consumers do not understand the need to pay high tariffs that are equivalent to their strain on the electricity grid. However, Patterson (2013) rejects this notion and argues that as much as private entities are allowed to earn profits, so are state-owned utilities for them to remain self-sustainable and avoid over-reliance on government bailouts. The NDP also supports this view by conceding that electricity tariffs need to increase in short to medium term to fund capital expenditure and maintenance programs.

Building Blocks: 'User Pays' Principle: There are various ways to promote efficiency, equity and sustainability in the electricity sector and the 'user pays' approach is the simplest in theory, but very difficult to implement in practice (Rogers, De Silva & Bhatia, 2002). In this section, we propose possible building blocks for the successful implementation of the 'user pays' approach in the ESI. A rigorous public participation process before and during the construction of infrastructure projects, e.g. power stations, is required. The UPP requires the provision of adequate information related to costs and benefits of every project undertaken, especially the ones to be paid for by users. These costs and benefits must be properly articulated to encourage user buy-in. However, in South Africa, the procurement and construction of power stations are not under the ambit of the regulator, therefore the enforcement of efficiency in these projects poses a slight challenge. It is recommended that a body like a regulator responsible for tariff/price setting in the ESI should also be responsible for awarding construction tenders and oversee the procurement of assets to enforce efficiency. An open competitive bidding process in the procurement of utility assets is important in convincing electricity users. Again, the bidding process should be open to all stakeholders and their inputs properly considered in making the final decision. Ideally, this process should lead to the selection of the most capable service provider.

Furthermore, transparency during the construction phase is also important in order to keep users abreast of timelines, possible delays and any foreseeable cost escalations. This should be done to demonstrate that due care is applied at all times and that any inefficiencies are identified and corrected without affecting project timelines. Importantly, both utilities and government need to manage perceptions and misconceptions about particular projects actively, for example, affordability, corruption, beneficiaries, the full disclosure of all costs incurred, subcontractors, and their shareholders. The costs and benefits of such projects should be properly motivated to prepare users in advance. Lastly, the general political will is a critical factor needed for proper

implementation of the UPP system. Williams (1995) opined that the nature of infrastructure funding systems is solely dominated by political considerations.

3. The Role of the Regulator

Available electricity literature shows that the price that users pay is a function of the capacity in the system (Patterson, 2013). If electricity utilities are allowed to build too much generation capacity, the electricity users ultimately pay more for unused capacity. However, if too little capacity is built, the electricity network will be congested, leading to load shedding, price increases and ultimately, low economic growth. It is, therefore, important to recognise the role of the regulator like the one of striking a balance between generation capacity and prices. The uncertainties between demand and generation create a difficult task for regulators. Regulators should be constantly aware of the costs and benefits of both under-and over-investment in generation capacity to determine the efficient price. Furthermore, the role of the regulator is to implement tariff structures that eliminate inefficiencies in the usage of electricity as provided by government policies; for example, in South Africa, the Electricity Pricing Policy (EPP) is important in this regard. It is our opinion that the successful implementation of the UPP requires the regulator to rigorously develop and implement prudency rules around procurement, construction and operation costs of utilities. These rules should clearly state how inefficiencies, construction delays, cost overruns and a lack of due diligence by utilities will be penalised. Importantly, efficiency must also be instilled in the day-to-day operations of utilities to isolate prudently incurred costs from inefficient costs. Regulatory mechanisms should also be in place to protect users from paying for utilities' inefficiencies.

Recent studies (see, for example, Ouyang & Sun, 2015; Nazemi & Mashayekhi, 2015) stressed that inefficiencies distort pricing and affordability levels in electricity regulation around the world. The regulator needs to develop frameworks to classify and disqualify costs imprudently incurred to instil confidence in users and possibly encourage them to accept a full UPP as a future useful method of payment of electricity. On the other hand, this will also encourage utilities to be more efficient in their capital and operational expenditure. Proper classification and disqualification of costs might possibly instil confidence in consumers about the work of the regulator and encourage users to consider moving towards the full 'user pays' system. Procedures and methodologies for the evaluation and revaluation of the RAB must be reinforced.

Regulating utilities in terms of a rate of return methodology may, in some instances, encourage the utilities to overstate their RAB to increase the allowed revenue collected from end users (Kirschen & Strbac, 2004). The gradual movement towards a full 'user pays' system must be encouraged to eliminate cross-subsidisation. Although cross-subsidies are important for equity reasons, they are considered highly inefficient and regressive; therefore, they should be gradually phased out to relieve the subsidising population (Chattopadhyay, 2004; Fattouh & El-Katiri, 2013; Maphosa & Mabuza, 2016). Studies show that cross-subsidisation is gradually moving industrial and commercial users towards off-grid solutions, while others have also considered downscaling or relocating their operations. In reality, the subsidising population is slowly shrinking, while the subsidised population is ever increasing.

'User Pays' and the 'Developmental State': The 'developmental state' concept is not new in the developing world. It is a concept that was developed in policy discussions regarding the three problems – unemployment, inequality and poverty (Burger, 2014). The 'developmental state' concept is therefore linked to high levels of economic growth and large infrastructure projects that grow at rapid rates, for example, Japan and China in the 1980s and Brazil in the 2000s. In South African, the National Development Plan (2012) proposed the idea of transforming South Africa into a 'developmental state' through massive capital-intensive infrastructure construction. The plan envisaged aggressive savings channelled for industrialisation to reduce inequality, unemployment and poverty in South Africa. One of the key building blocks identified in the NDP is to work with the private sector in building the required bulk infrastructure, mainly in the economic sectors. Given that South Africa lags behind in infrastructure investment, there is a serious need to induce high levels of capital spending, especially in the electricity and the energy sector.

In the absence of adequate funds for expanding and maintaining electricity infrastructure, the 'user pays' system offers a meaningful approach that can drive electricity sector growth. In other words, the 'user pays'

approach offers potential benefits that can be harnessed in the electricity sector. There is an estimated gross fixed capital formation of 30% of GDP required by 2030 to realise sustained growth; however, this will not be possible through state-led funding alone. Statistics show that there is an overreliance on government to fund all required infrastructure. However, due to low economic growth over the past five years, approximately only 10% of the population contribute to government revenue through taxation (National Treasury, 2015). The introduction of the full UPP can potentially bridge the ESI funding gap and transform into a self-sustainable industry capable of transforming the economy. It could help attract the much needed private sector investment to meet the 40 000 MW additional capacity by 2030, of which approximately 20 000 MW is envisaged to come from renewable energy sources. Furthermore, this will help to address the huge maintenance backlogs, especially at the local distribution.

4. Summary of Results

Our analysis shows that, first, the 'user pays' principle is the most practical, promoting equity, efficiency and sustainability in the ESI. This is reinforced by recent seminal works of Hall et al. (2016) and Nijhuis et al. (2017). The UPP approach is successful in limiting further infrastructure-induced tariff increase since it incentives consumers to change their consumption behaviour. Second there is a strong link between cost reflectivity and UPP. Both principles are premised on end-users paying the actual costs of the strain they impose on the system (i.e. tariff paid must be equal to the long-term marginal costs). This is confirmed by Kirschen and Strbac (2004), Maphosa and Mabuza (2016) and Hobmann et al. (2016). Importantly, there is recognition in South Africa through the EPP that cost reflectivity is important for the sustainability of the ESI. There is a need to strike a balance between access and affordability in order to achieve cost-reflective tariffs. Third, we observe that both the FBE policy and IBTs are approaches based on perceived affordability (the individual's ability to pay) and only centred on the promotion of access to affordable electricity and do not address the sustainability of the ESI. The two are anchored by government funding and cross-subsidisation respectively and raise sustainability problems. This is confirmed by Willems and Ehlers (2008) and Maphosa and Mabuza (2016) in similar studies. The benefit of this is that the government can focus on other priorities areas, such as building social infrastructure related to health care, social welfare, housing, etc.

Fourth, the implementation of the UPP approach is ideal for South Africa, especially for the ESI. The UPP will help address all the inefficiencies and challenges raised above (i.e. usage, procurement and utility operation). Furthermore, the UPP will help attract the much needed private investment into the ESI. Fifth, although very effective, the implementation of UPP in a developing country suffering from the three main problems (inequality, unemployment and poverty inequality) would pose serious challenges. A rigorous public participation process would be required and political will to secure the buy-in by end users. Sixth, the role of the regulator should be reinforced in issues around procurement of utility assets, construction and utility operations. Modern regulatory instruments are required to enforce compliance. This analysis is in line with Ouyang and Sun (2015) and Nazemi and Mashayekhi (2015), who stressed that protection of end users from utilities' inefficiency was important. Finally, the UPP system is useful in attracting the much needed private investment to bridge the funding gap in the ESI to enable the government to fund social infrastructure in the country.

5. Conclusion and Recommendations

This paper analysed the 'user pays' principle within the South African developmental state concept. The objective was to ascertain whether UPP can be implemented in the electricity sector without necessarily harming the developmental state agenda, taking into account the challenges of inequality, unemployment and poverty in South Africa. We examined the interplay between UPP, free basic electricity, inclining block tariffs and cost-reflective tariffs in the ESI; the building blocks in adopting the UPP; presented the arguments for the adoption of UPP in South Africa; and the role of the regulator in the implementation and adoption of the UPP. Finally, the paper analysed the role of UPP in the developmental state concept and the challenges of implementing it. The study found that there are potential benefits of fully implementing the UPP in the electricity supply industry to attract much-needed capital investment. We also found that the 'User Pays' Principle UPP can be effective in limiting wastage and inefficiencies in the electricity supply industry (ESI).

However, policies such as free basic electricity and cross-subsidised tariff structures (i.e. inclining block tariffs) are only a temporary measure which does not augur well for the sustainability of the sector and hinders the successful implementation of UPP. On the role of the regulator, we found that inefficiencies in operational and capital expenditure distorted electricity tariffs and that it was necessary to instil efficiencies through the electricity value chain.

Recommendations: Thus, while the full implementation of the UPP will be an important addition to the electricity sector, we recommended gradual implementation to counter the potential negative effects it will have on universal access and affordability. The regulator needs to develop regulatory tools to monitor compliance with efficiency standards in order to limit tariff distortions. A countrywide public participation process is required to convince end users of the importance of moving towards the UPP system and the sustainability of the sector.

References

Burger, P. (2014). How suitable is a 'developmental state' to tackle unemployment, inequality and poverty in South Africa?

Chattopadhyay, P. (2004). Cross-subsidy in electricity tariffs: evidence from India. *Energy Policy*, 32(5), 673-684.

Delmon, J. (2017). Public-private partnership projects in infrastructure: an essential guide for policymakers. Cambridge University Press.

Engel, E., Fischer, R. & Galetovic, A. (2013). The basic public finance of public-private partnerships. *Journal of the European Economic Association*, 11(1), 83-111.

Fattouh, B. & El-Katiri, L. (2013). Energy subsidies in the Middle East and North Africa. *Energy Strategy Reviews*, 2(1), 108-115.

Hall, N. L., Jeanneret, T. D. & Rai, A. (2016). Cost-reflective electricity pricing: Consumer preferences and perceptions. *Energy Policy*, 95, 62-72.

Hobman, E. V., Frederiks, E. R., Stenner, K. & Meikle, S. (2016). Uptake and usage of cost-reflective electricity pricing: Insights from psychology and behavioural economics. *Renewable and Sustainable Energy Reviews*, 57, 455-467.

Kanakoudis, V. & Gonelas, K. (2014). Developing a methodology towards full water cost recovery in urban water pipe networks, based on the "user-pays" principle. *Procedia Engineering*, 70, 907-916.

Kirschen, D. S. & Strbac, G. (2004). Fundamentals of power system economics. John Wiley & Sons.

Iossa, E. & Martimort, D. (2015). The simple microeconomics of public-private partnerships. *Journal of Public Economic Theory*, 17(1), 4-48.

Maphosa, M. & Mabuza, P. (2016). The trade-offs between pro-poor and cost-reflective tariffs in South Africa: A regulatory perspective. *Journal of Economics and Behavioural Studies*, 8(6), 206-215.

National Planning Commission. (2012). National Development Plan 2030: Our future–make it work. Pretoria: Presidency of South Africa.

National Treasury. (2015). 8th Tax Statistics Bulletin. Pretoria, South Africa.

Nazemi, A. & Mashayekhi, M. (2015). Competitiveness assessment of Iran's restructured electricity market. *Energy Economics*, 49, 308-316.

Nelson, T. & Orton, F. (2013). A new approach to congestion pricing in electricity markets: Improving user pays pricing incentives. *Energy Economics*, 40, 1-7.

Nijhuis, M., Gibescu, M. & Cobben, J. F. G. (2017). Analysis of reflectivity & predictability of electricity network tariff structures for household consumers. *Energy Policy*, 109, 631-641.

Ouyang, X. & Sun, C. (2015). Energy savings potential in China's industrial sector: from the perspectives of factor price distortion and al locative inefficiency. *Energy Economics*, 48, 117-126.

Pagano, M. A. & Perry, D. (2008). Financing infrastructure in the 21st century city. *Public Works Management & Policy*, 13(1), 22-38.

Patterson, W. (2013). Transforming electricity: The coming generation of change. Rout ledge.

Rogers, P., De Silva, R. & Bhatia, R. (2002). Water is an economic good: How to use prices to promote equity, efficiency, and sustainability. *Water Policy*, 4(1), 1-17.

Snyder, T. P. & Stegman, M. A. (1986). Paying for growth: Using development fees to finance infrastructure (No. Third Printing, 1989).

Willems, B. & Ehlers, E. (2008). Cross-subsidies in the electricity sector. *Competition and Regulation in Network Industries*, 9(3), 201-227.

Williams, A. W. (1995). Should the user pay? *Transportation*, 22(2), 115-134.

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The Influence of Packaging and Brand Equity on Over-The-Counter Herbal Medicines in Kumasi, Ghana

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Abstract: In today`s competitive business environment, packaging and brand equity provide a competitive advantage to a firm which may increase and maintain its market share. However, the role of packaging in supporting the brand equity is relatively new in the over-the-counter pharmaceutical market and currently, there is a lack of empirical research to uncover its significance in this product segment. This paper seeks to investigate the impact of packaging on brand equity through the mediating effect of dimensions of brand equity in the over-the-counter drug market in Kumasi metropolis. Based on Aaker`s customer-based brand equity model, eight hypotheses were formulated and tested through structural equation modelling. Using systematic sampling, data was collected through survey questionnaires from a sample of 348 consumers who patronize in herbal medicines from herbal stores in Kumasi Metropolis. The study found that packaging significantly contributes to support brand equity of plant medicines through the mediating effect of brand awareness, brand association and brand loyalty. These results indicate that brand managers in the plant medicine industry need to consider packaging as an important brand-building tool in their marketing strategy to enhance brand equity in the over-the-counter pharmaceutical market. This will enh0ance their competitive distinctiveness in the over-the-counter market.

Keywords: *Packaging, Herbal medicines, Over-the-counter, Brand equity, Consumers*

1. Introduction

Over the years, over-the-counter (OTC) medications have played a crucial role in health care delivery across the world. Over-the-counter medicines are recognised as the most frequently used medications for common ailments which provide multiple self-treatment options and easy access to medicines (DeLorme, Hu, Reid & Ann, 2010). Herbal medicines are often used as OTC medication (WHO, 2011; Essegbey, Awuni, Essegbey, Akuffobea, & Mica, 2014; WHO, 2005) and are bought to combat minor sickness, chronic ailments, maintain fitness or health (Samojlik, cited by Naresh & Reddy, 2016). Empirical research shows that nearly 70– 95 % of the people living in less developed countries rely on medicinal plant products to satisfy their primary health care needs (WHO, 2011). Roughly, 80% of the population in Ghana use plant medicines for their basic health care needs (UNDP, 2007). Most of the plant medicines produced in Ghana are packaged and sold at pharmacies, chemists` shops and herbal shops (WHO, 2011; Essegbey et al., 2014). Herbal medicines consist of processed plant materials or raw plant materials as well as herbal medicinal products with therapeutic or human benefits derived from one or more plants (WHO, 1998). Packaging is one of the essential regulatory requirements in the pharmaceutical industry (GFDA, 2013). In the OTC product market, medicines are usually bought without a prescription, and consumers buy a product on their own initiative and all the roles with regard to the decision-making process and consumption of products are performed by the end-user similar to fast moving consumer goods market (Dickov, 2012; Kim & King, 2009).

Packaging is therefore the key element that conveys comprehensive information critical to the safe and effective use of medicines by patients (WHO, 2002). Consequently, the functions of packaging in the OTC product market are similar to the consumer packaged goods market (Kim & King, 2009). It has also been noted that a well-designed packaging does not only aid consumers` decision-making in the OTC market but also strengthen brand equity (Keller, 2013). According to Chaudhary (2011), building a successful brand is one of the powerful competitive weapons used to break through competition. As a competitive tool (Shuiling & Moss, 2004), strong brands can insulate a firm against competitive attacks and entry into the market in order to secure and maintain market share (Farquhar, 1989; Keller, 2013). Despite the growing importance of packaging in strengthening brand equity, there is relative scarcity of empirical research available to confirm its significance (Pieterse, 2013; Keller & Lehmann, 2006; Brodersen & Manolova, 2008), particularly in the OTC pharmaceutical market. Consequently, the aim of this research is to explore the influence of

packaging on brand equity through the mediated effect of dimensions of brand equity in the OTC product market.

Objectives of the Study: The following objectives were formulated to address the purpose of this study:

- To examine the influence of packaging on brand equity through the mediating effect of brand awareness in the OTC market.
- To determine the impact of packaging on brand equity through the mediating influence of brand association in the OTC market.
- To evaluate the influence of packaging on brand equity through the mediating role of brand quality in the OTC market.
- To investigate the effect of packaging on brand equity through the mediating influence of brand loyalty in the OTC market.

2. Literature Review

Customer-Based Brand Equity: In the last few years, the concept of brand equity has attracted researchers and practitioners due to its strategic role in the success of a business. Essentially, one of the most important assets of a business organization is the name of the brand that is linked to their products or services (Keller, 2013). It has been highlighted that positive brand equity conveys numerous advantages to a company, such as, greater loyalty, resilience to competitive attacks and marketing crises, higher margins and licensing opportunities which generate sustainable cash flow (Farquhar, 1989; Keller, 2013). Obviously, one of the invaluable assets of a company is the brand it has built over the years (Keller, 2013). Keller (1993) defined customer-based brand equity (CBBE) as the differences in outcome of consumer`s reactions to the marketing of the brand due to the consumers' knowledge with the brand. The author further noted that, a brand has high (or low) equity if customers respond favourably (or negatively) to the product and its marketing mix activity compared to the identical but unbranded product. Keller (2001) highlighted that the strength of a brand depends upon what is stored in consumers` memory as a result of their past exposures with the brand.

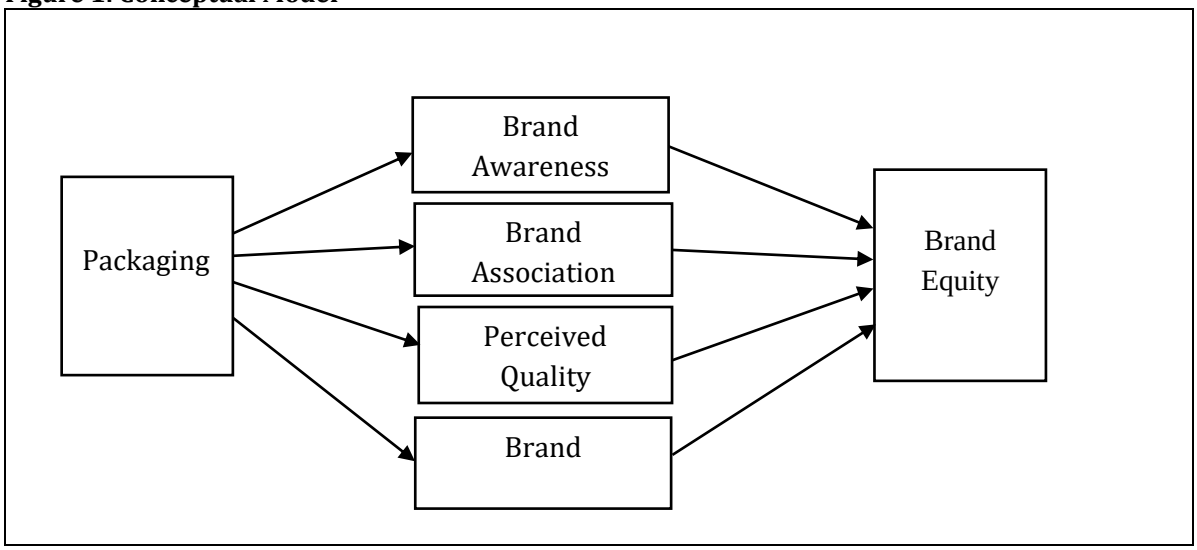
In author`s view, brand knowledge is the main source of CBBE and is decomposed into brand awareness and brand image. Keller (2013) noted that CBBE occurs when a consumer demonstrates strong awareness and familiarity with the brand and some strong, favourable, and unique association with a brand. Lassar, Mittal & Sharma (1995) are of the view that CBBE results from the greater assurance consumers have with a brand compared to its competing brands. Alternatively, Aaker (1991) proposed that brand equity consists of assets and liabilities which are associated with a brand that enhance or reduce the value a product endowed to a company and its customers. The author further noted that brand assets that create value for a product are brand name awareness, brand association, perceived quality, brand loyalty and other proprietary brand assets such as patents, trademarks, and channel relationship. However, Aaker (1996) confirmed that brand awareness, brand associations, perceived quality and brand loyalty represent customers` perceptions, while the other brand assets are obtained from the information in the market.

Hence, in the author`s view, brand awareness, brand loyalty, brand associations and perceived quality are the dimensions of CBBE. A review of the literature shows that the dimensions of Aaker`s CBBE have been widely used in many empirical research and in many contexts (e.g. Christodoulides, Cadogan & Veloutsou, 2015**;** Buil, Martinez & de Chernatony, 2013**;** Yoo, Donthu & Lee, 2000**;** Gil, Andres & Martinez, 2007**;** Washburn & Plank, 2002). In addition, the importance of Aaker`s CBBE model has been documented in the pharmaceutical marketing literature (e.g. Dlacic & Kezman, 2014; Moss, 2007; Panchal, Khan & Ramesh, 2012; Sanyal & Datta, 2011). Hence, this study is guided by Aaker`s CBBE model. In this regard, the study will contribute to advance the existing stock of knowledge on the significance of packaging and brand equity in the OTC health industry. Moreover, the study will have managerial significance in guiding strategic packaging and branding decisions of plant medicine companies and the pharmaceutical industry as a whole.

Conceptual Framework: The focus of a conceptual model is to determine dependent and independent variables and the relationship between them in a study. In this study, the packaging is recognised as an independent variable, whilst the dimensions of brand equity are intervening variables, and the overall brand

equity is considered as a dependent variable. The Figure I below depicts the conceptual framework of this study. It can be observed that packaging influences brand equity through the mediating effect of the brand loyalty, brand awareness, perceived quality and brand association. In turn, brand loyalty, brand awareness, brand association and perceived quality are directly related to the overall brand equity.

Figure 1: Conceptual Model



Source: Researchers` Own Elaborations

Research Propositions: On the basis of the conceptual model deduced from the literature, the proposed hypotheses in this study are discussed below.

Relationship between Brand Equity and its Antecedents: According to Aaker (1996), the key brand assets that provide value to a product are brand loyalty, brand associations, brand awareness and perceived quality.

Brand Awareness: Brand awareness is regarded as one of the elements of brand equity because the consumer must first be aware of the existence of the brand at the marketplace (Buil et al., 2013; Keller, 2013; Hoeffler & Keller, 2002). Brand awareness relates to the salience of the brand in consumers` memory (Aaker, 1996). Keller (2013) identified brand recognition and brand recall as the sources of brand awareness. Brand recognition relates to the consumers` ability to confirm their past experiences with the brand, whilst band recall indicates the ability of consumers to spontaneously generate the brand from memory (Hoeffler & Keller, 2002; Keller, 1993). Alternatively, Aaker (1996) operationalized brand awareness as brand recognition, brand recall and top-of-mind awareness of the brand. Keller (1993) suggested that one of the advantages of high brand awareness is that it has the potential to influence consumers to include the brand among alternatives they wish to purchase. Secondly, strong brand awareness can impact on consumers` decisions in the consideration set. The author further stated that high brand awareness is necessary for the formation and strength of the consumer`s mental association with the brand. Aaker (1996) is also of the view that a high level of brand awareness can drive brand choice and loyalty in the market. A study reveals that positive brand awareness significantly influences brand equity (Asif, Abbas, Kashif, Hussain & Hussain, 2015). Consequently, the following hypothesis is postulated:

H1: Brand Awareness is Significant and Directly Related to Brand Equity

Brand Association: Another element of brand equity is a brand association (Keller, 1993; Aaker, 1991). Brand associations relate to anything that the consumer mentally associates with the brand (Aaker, 1991). Aaker (1996) is of the view that perceived value, brand personality and organizational associations are the sources of brand association. The perceived value relates to the functional benefits that a brand endows to its customers. According to Zeithaml (1988), perceived value is the subjective evaluation of the utility of the product in terms of what is received and given out. Brand personality refers to a set of human traits linked to

the brand (Aaker, 1997), and it tends to reflect the emotions and feelings evoked by the brand (Keller, 1993). For some brands, a brand personality provides symbolic and self-expressive benefits which in turn, serve as a source of differentiation and customer-brand relationships (Aaker, 1996). While product-related attributes tend to serve a utilitarian function, extrinsic product features provide a personality for the brand (Keller, 1993; Aaker, 1997).

Finally, the organizational association relates to the organizational elements (people, values, and programs) that are connected to the brand and have the potential to drive choice and brand differentiation. The empirical study also confirms that perceived value, brand personality and organizational associations significantly influence brand equity (Buil et al., 2013). Aaker (1991) stated that brand associations can be used as a platform to the position, distinguish and extend brands. Furthermore, consumers depend on brand associations to retrieve, organize and process the information in their minds to assist in making buying decisions. Chen (2001) is also of the view that a strong and unique brand association would increase brand equity and which ultimately, provides a firm with a strong competitive edge in the market. A study also reveals that brand association has a significant positive relationship with brand equity (Yoo et al., 2000). Hence, the following proposition is postulated;

H2: Brand Association is Significant and Directly Related to Brand Equity

Perceived Quality: Perceived quality is another component of brand equity (Aaker, 1996). Zeithaml (1988) defined perceived quality as the consumer`s subjective assessment of excellence or superiority of a product. Aaker (1991) is of the view that perceived quality differs sharply from actual product quality where the latter relates to the extent to which a product or service provides superior service. Gil et al. (2007) argued that perceptions of quality can, however, be enhanced by improving the actual quality of the product. The author further suggested that the firm needs to convey the quality of the brands in its marketing activities**.** A further distinction is made between manufacturing-based quality and product-based quality. Gavin (1983) stated that product-based quality relates to nature and an amount of ingredients that make up a product, whilst manufacturing-based quality refers to conformance to production or service requirements. Aaker (1991) noted that consumers' perceptions of quality of a product depend on performance, features, reliability, conformance, durability, serviceability, fit and finish. In addition, perceived quality has also been identified as a component of perceived value (Zeithaml, 1988), and high perceptions of quality of a brand would drive consumers to select that brand rather than its competitors (Yoo et al., 2000). Aaker (1992) highlighted that perceptions of high brand quality can provide a source of differentiation, basis for purchases, line extensions, channel member interest and price premium and overall, contributing to the profit margin of the firm. It has been established that perceived quality has a positive effect on brand usage, price elasticity and stock returns which ultimately, contribute to the profitability of the brand (Aaker 1996). It has been highlighted that brand equity increases when consumers perceive the brand to be of high of quality (Buil et al., 2013; Yoo et al., 2000). Past research also shows that perceived quality has a significant influence on brand equity (Buil et al., 2013). As a result, the following hypothesis is posited:

H3: Perceived Quality is Significant and Directly Related to Brand Equity

Brand Loyalty: Another major element of brand equity is brand loyalty, and it measures the attachment customers have with a particular brand (Aaker, 1991). Oliver (1999) defined loyalty as a commitment to repeatedly patronize a preferred product, despite competitors` marketing efforts or situational influences. Chaudhuri and Holbrook (2001) categorized brand loyalty into behavioural and attitudinal loyalty. Behavioural loyalty indicates consumers` re-patronage of a brand, whilst attitudinal loyalty describes a customer`s commitment to a brand**.** Empirical research shows that both behavioural and attitudinal brand loyalty influence brand equity (ibid). The loyal customer base has been demonstrated to have a significant influence on market share, price premium, the barrier to competitor entry, and the overall profitability of the brand (Chaudhuri & Holbrook, 2001; Aaker, 1996). Aaker (1992) also pointed out that brand loyalty relatively reduces the marketing cost involved in retaining customers in winning new ones and also improves trade leverage. A study shows that brand loyalty has a dominant influence on brand equity (Atilgan, Aksoy & Akinci, 2005), and hence, the following hypothesis is formulated:

H4: Brand Loyalty is Significant and Directly Related to Brand Equity

Relationship between Packaging and Brand Equity Dimensions: Brand equity, one of the strategic objectives of marketing is significantly influenced by packaging and is the single most influential marketing communications tool for conveying a brand`s core identity for most consumer products (Hanzaee, 2009; Wallace, 2001). Thus, a well-designed packaging serves as a platform for building customer-based brand equity (Keller, 1993) by enhancing the recognition and recall of the brand (Underwood, 2003). Keller (2013) is of the view that brand awareness occurs when consumers have greater familiarity with the brand via repeated contact with the brand. Essentially, the packaging is the first point of contact that exposes the consumer to the brand which can enhance familiarity and awareness of the brand. While in the store, packaging also serves as a "visible billboard" that attracts and sustains consumer`s attention to the brand creating immediate recognition and recall of the brand (Kotler & Keller, 2009; Keller, 2013; Peter & Olsons, 2008). It has been emphasized that packaging colour is a vital element that creates brand awareness (Kotler, 2003) because it is more vivid, memorable, and evokes consumers` emotions about the brand (Garber, Burke & Morgan, 2000). Empirical studies also confirm that, a distinctive and appealing packaging contributes significantly to brand awareness (Pieterse, 2013). In this regard, the following hypothesis is proposed:

H5: Packaging has Significant and Positive Relationship with Brand Awareness

According to Farhana (2012) packaging plays an important role in strengthening consumers` mental associations with a brand. Underwood (2003) is of the view that the visual and structural elements of packaging such as colours, fonts, brand logo, packaging materials, shapes, product description and other elements convey brand personality which provides rich brand associations. Moreover, visual, verbal and tactile elements of packaging evoke images of product performance, quality, usage situations, and past experiences in the consumer`s memory (Garber et al., 2000). Gardner (1981) noted that a product`s package is a symbol of communication that penetrates the mind and invokes meanings that obviously affect a consumer`s sensory response to the product. While, Keller (1993) proposed that brand knowledge is the key dimension of brand equity and ultimately, the power of brand resides in the minds of consumers. Packaging therefore serves as a powerful source of brand associations as it conveys the potential meanings of the brand (Underwood, 2003). For many non-durable consumer goods, packaging plays a key role in communicating symbolism and images of the brand and thus, effectively distinguishing the brand from its competitors (Underwood & Ozanne, 1998). Empirical evidence suggests that product picture on the package can assist less familiar brands to grab more attention and transfer experiential benefits to consumers (Underwood, Klein & Burke, 2001) which can strengthen brand associations (Pieterse, 2013). Hence, the following proposition is stated;

H6: Packaging has Significant and Positive Relationship with Brand Association

Pitta and Katsanis (1995) suggested that quality products are wrapped in quality packages. It has also been emphasized that the perceived quality of pharmaceutical products depends largely on the quality of the package (WHO, 2002). Hence, a package of high quality is perceived to contain quality products and vice versa (Silayoi & Speece, 2004). Visual elements of packaging design (e.g. colours, typeface, logos, size and graphics) are important inputs for judging the quality of products and brands. The results of an empirical study also indicate that visual packaging attributes directly influence perceived quality and brand preference of products and brands (Edward, 2013). Products are made up of intrinsic and extrinsic elements (Miyazaki, Grewal & Goodstein, 2005) and consumer perception of product quality lies on these attributes (Zeithaml, 1988). Packaging is recognized as a non-product related attribute (Keller, 1993), yet it forms the basis for consumer`s perception of product quality (Pitta & Katsanis, 1995). However, the packaging is regarded as both intrinsic and extrinsic cue that signal quality (Zeithaml, 1988; Underwood, 2003). Past research also indicates that packages that contain pictures signal high quality (Underwood & Klein, 2002). As a result, the following hypothesis is posited:

H7: Packaging has Significant and Positive Relationship with Perceived Quality

Underwood (2003) argued that packaging is a key element that conveys functional, experiential and /or symbolism which establishes a relationship between the customer and brand. It has also been emphasized that product packaging that grabs attention, persuades and conveys authentic information can strengthen

brand loyalty and customer- brand relationship (Underwood & Ozanne, 1998). Similarly, Smith and Taylor (2002) noted that packaging can create competitive strength by providing stronger shelf presence, positioning the brand and overall, supporting brand loyalty. A distinctive packaging is described as "a visual magnet" that attracts the buyer to purchase the brand which can create loyalty to a brand (ibid). Hess, Singh, Danes and Metcalf (2014) pointed out that packaging provides a platform for building and enhancing consumer product satisfaction which underlies enduring brand loyalty and profitability. Previous studies also suggest that packaging significantly influences brand loyalty (Dhurup, Mafini & Dumasi, 2014; Khan, 2012). Consequently, the following hypothesis is postulated:

H8: Packaging has Significant and Positive Relationship with Brand Loyalty

3. Research Methodology

A research plan used for testing the statistical significance of the proposed hypotheses is explained below. In this research, Made-in-Ghana herbal medicines sold at licensed herbal shops within Kumasi metropolis were selected. These herbal medicines are fully licensed and certified by Ghana Food and Drugs Authority. Though, licensed chemist shops by law can sell herbal medicines and OTC orthodox medicines, identifying respondents will not be practicable. Hence, licensed herbal shops were chosen as they are mandated by law to distribute only plant medicines.

Sample and Data Collection Procedures: The study population consisted of 3 710 consumers at the age of 18 years and above and 80 herbal shops operating within Kumasi Metropolis. The total number of the herbal store were obtained from the 2017 statistical data of Traditional Medicine Practice Council (TMPC) in Kumasi which is mandated by law to license herbal selling points. Moreover, the total number of consumers was obtained from 2017 sales records of the 80 herbal shops. Out of this number, 60 shops provided only retail services, whilst 20 offered both wholesale and retail services. Using stratified random sampling and guided by Krejcie and Morgan (1970) table for determining sample size, 71 herbal stores were chosen in order to ensure that each stratum is well-represented to increase the precision of the sample (Malhotra & Birks, 2007). Sample sizes of 348 consumers were included in the study by using Krejcie and Morgan (1970) model for determining sample size. Moreover, the results of the Kaiser-Meyer-Olkin Measure (KMO) of Sampling Adequacy was 0.927 which is more than 0.70, indicating that the study`s sample size is satisfactory (Hair, Black, Babin & Anderson, 2010). The questionnaires were distributed through face-to-face contact with the participants at the shops through a systematic sampling strategy. Thus, the first customer entering the shop was randomly intercepted and subsequently, every eleventh customer was contacted until the entire sample size was exhausted. Systematic sampling strategy was employed because it made it possible to obtain respondents "without the knowledge of the elements in the sample frame" (Malhotra & Birks, 2007, p. 417) and concurs with past research (Pappu, Quester & Cooksey, 2006), where systematic sampling method was used to recruit participants for a study in a busy shopping mall in an Australian State Capital City. The questions were also read to respondents who were busy shopping while the answers provided were ticked.

Test Instruments Development: A closed-ended questionnaires with five-point Likert scale anchored on strongly disagreed (1) to strongly agree (5) were utilized to capture the participants` perceptions on packaging, brand loyalty, brand awareness, brand quality, brand association and overall brand equity. The questionnaires comprise multiple test items for measuring packaging, overall brand equity, brand association, brand loyalty, brand awareness and perceived quality.

Packaging Design: Six test instruments were designed to measure consumers` perceptions of packaging design of herbal medicines.

Brand Awareness: Five indicators were employed to measure brand awareness and were taken from Gil et al. (2007) and Yoo et al. (2000) and modified.

Perceived Quality: Five test responses were used to evaluate the perceived quality and four of them were adopted from Gil et al. (2007) and Yoo et al. (2000) and modified.

Brand Associations: Five test items used to evaluate brand associations were borrowed from Aaker (1996) and Tong and Hawley (2009) and modified.

Brand Loyalty: Six test items employed to measure brand loyalty were obtained from Tong and Hawley (2009) and Yoo et al. (2000) and adapted.

Overall Brand Equity: Five test responses employed to measure overall brand equity were borrowed from Yoo et al. (2000) and also modified. Closed-ended questionnaires were employed because the data gathered lends itself more to statistical analysis and interpretation (Creswell, 2014; Mackenzie & Knipe, 2006). More importantly, the shoppers did not have time and therefore the pre-determined answers made it easier and quicker for them to respond to the questions.

4. Data Analysis and Results

Out of the total number of 316 questionnaires collected, 307 were found usable for the analysis because9 of them were incomplete and therefore were discarded. The demographic structure of the sample suggests that the majority of the respondents were young, traders, had secondary education and with moderate to high income. Out of the total number of 304, 68.4% (208) were male whilst 31.6% (96) were female. 40.7% (124) were between the age of 18 and 25 years, 39.2% (120) had secondary education, 36.7 % (110) were traders and lastly, 61.2% (127) had daily expenditure above US$2.

Reliability and Validity of Test Instruments: Consistent with earlier studies (Yoo et al., 2000; Gil et al, 2007), Cronbach`s alpha coefficients, exploratory factor analysis and confirmatory factor analysis were utilized to determine the reliability and validity of the test items in the research.

Internal Consistency Reliability: Cronbach`s alpha coefficient was used to assess the satisfactory levels of internal consistency reliability of the test items in the study. The findings reveal that test items of packaging, brand equity, brand awareness, brand loyalty, brand association and perceived quality had Cronbach`s alpha values above the acceptable cut-off of 0.70 which ranged between 0.724 and0.857, showing good internal consistency reliability (Nunnally, 1975; Tavakol & Dennick, 2011; Hair et al., 2010). Consequently, all the constructs produced acceptable reliability and 22 test items were retained representing the six (6) latent variables in the research.

Exploratory Factor Analysis: Exploratory factor analysis was undertaken to examine how well the multiple indicators load on their respective latent variables as intended in order to produce brand loyalty, brand awareness, perceived quality, brand equity, brand association and packaging. A total of 31 indicator items were used for the exploratory factor analysis. The results of Bartlett`s Test of Sphericity reveal that the correlation matrix has significant correlations ($X^2 = 5812.912$, df= 465, $p < 0.001$) with all the variables in this study. This outcome provided an acceptable solution for the factor analysis. Exploratory factor analysis through maximum likelihood factoring with oblimin rotation method produced six (6) latent constructs and 22 respective indicator items. The results of the pattern matrix demonstrate that most of the indicators loaded above 0.30, ranging from 0.305 to 0.986 which offered an admissible factor structure (Hair et al., 2010). The six latent constructs extracted explained a total of 64.94% of the variance in the explored phenomenon in this sample. Furthermore, all the corrected item-total correlation coefficients were above 0.30, ranging from 0.506 to 0.837 which suggest that the observed items correlate well with the summated score (Joiner, Pfaff & Acres, 2002). Analysis of the orthogonal rotation also yielded similar results which provide evidence of construct validity.

Structural Equation Modelling: The structural equation modelling was employed to test the proposed hypotheses in the study. As recommended in the literature, the structural equation modelling was conducted in two stages. First, the measurement model was conducted through the confirmatory factor analysis and subsequently, the structural model was undertaken (Anderson & Gerbing, 1988; Byrne, 2016).

Confirmatory Factor Analysis: Confirmatory factor analysis was conducted through the use of SPSS Amos 22 with maximum likelihood estimation to confirm the results that emerged from the exploratory factor

analysis and to further evaluate the convergent and discriminate validity of the constructs. In order to purify the model to achieve construct validity and better model fit, standardised residual estimates of pairs of measured items above 2.5 were deleted as they reflect a greater level of error in the measurement (Hair et al., 2010; Byrne, 2016). Moreover, observed variables with standardised factor loadings below 0.50 were dropped with the view to achieving convergent validity (Hair et al., 2010). As a result, two items of brand equity, three items of packaging and one item of brand associations were discarded and the findings are shown in Table 1 below. The results show that 16 indicators loaded on their purported latent constructs and the factor loadings were statistically significant at $p < 0.001$ level, and above 0.50 ranging from 0.575 to 0.893, providing evidence of construct validity (Anderson & Gerbing, 1988; Hair et al., 2010). Though, the Chi-square test (X^2 =200.075, DF =89, $p< 0.001$) failed to confirm the model, the other fit indices were acceptable. Normed Chi-square statistic (CMIN/DF), Root Mean Residual (RMR), Goodness-of-Fit Index (GFI) and Adjusted Goodness-of-Fit Index (AGFI) were 2.248, 0.044, 0.925 and 0.886respectively, indicating satisfactory fit of the model (Hair et al., 2010; Kline, 2005). The Standardised Root Mean Square Error (SRMR) and Root Mean Square Error of Approximation (RMSEA) were 0.039 and 0.064 with 90% confidence interval falls within the range of 0.052 and 0.076 respectively, which shows that the model has a good fit (Hu & Bentler, 1999).

Finally, the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Normed Fit Index (NFI) and Incremental Fit Index (IFI) were 0.952, 0.935, 0.917 and 0.952 respectively. These results show that the model fitted well with the data (Hu & Bentler, 1999; Hair et al., 2010) and therefore provide an acceptable solution to proceed with the structural model.

Table 1: Results of Confirmatory Factor Analysis

Latent constructs and Indicator items		Standardised loadings	t- value
Packaging (α = 0.845**, CR =** 0.756**, AVE =**0.514**)**			
P2	The packaging preserves the contents of X	0.575	9.266
P4	The packaging of X makes X environmentally-friendly	0.712	11.215
P5	The packaging of X makes X convenient to use	0.840	— [a]
Brand Awareness (α =0.770**, CR =**0.769, **AVE =**0.528**)**			
A3	Some characteristics of X`s packaging come to my mind quickly	0.670	— [a]
A4	When I think about X, the first thing that comes to my mind is X`s packaging	0.719	10.429
A5	I am aware of the packaging of X	0.787	11.085
Perceived quality (α = 0.848**, CR =** 0.851**, AVE =**0.741**)**			
PQ1	The packaging of X makes X function well	0.893	— [a]
PQ2	The packaging of X makes X very reliable	0.828	14.970
Brand associations (α =0.724**, CR =** 0.685, **AVE =** 0.522**)**			
PAS1	X`s packaging makes X offer good value for money	0.698	— [a]
PAS2	X`s packaging makes me like the image of X	0.745	9.459
Brand loyalty (α = 0.823, **CR** = 0.807, **AVE** =0.584)			
PL2	The packaging of X would make me recommend X to my friends	0.740	— [a]
PL4	The packaging of X makes me loyal to X	0.768	12.570
PL5	I will keep on buying X as long as I am satisfied with the packaging of X	0.783	12.794
Brand equity (α =0.857**, CR =** 0.823**, AVE =** 0.608**)**			
PE3	The packaging of X makes X more than a product to me	0.766	12.892
PE4	X`s packaging makes it seems smarter to purchase X, if another brand is not different from X in any way	0.827	13.861
PE5	The packaging of X makes me prefer X, even if there is another brand as good as X	0.746	— [a]

Notes: X = Focal brand; **α** = Cronbach`s alpha; **CR** = Composite reliability; **AVE** = Average variance extracted; **a** = path parameter was set to 1, therefore no t-values were estimated; all loadings are significant at 0.001 level.

Furthermore, composite reliability statistics were estimated for each latent constructs to determine the internal consistency reliability in the measurement model. Although, composite reliability is similar to Cronbach`s alpha estimates, the former is considered a more superior measure (Washburn & Plank, 2002; Hair et al., 2010). The findings of the composite reliability statistics show that all the constructs were above the traditional threshold of 0.70 and ranged between 0.756 and 0.851 except brand association which had value of0.685. However, it is recommended that coefficients ranging between 0.60 and 0.70 are deemed adequate (Bagozzi & Yi, 1988; Tong & Hawley, 2009; Hair et al., 2010). As a result, all the constructs have satisfactory internal consistency reliability. Also, average variance extracted was used to test convergent validity (Fornell & Larcker, 1981; Hair et al., 2010) and all the constructs had coefficients higher than the recommended value of 0.50 ranging between 0.514 and 0.741 which indicate good convergent validity (Bagozzi & Yi, 1988; Fornell & Larcker, 1981; Hair et al., 2010). To provide support for discriminate validity, the loadings of individual indicator items on their respective latent factors were above the cross-loadings on any other latent factors (Hair et al., 2010). These results show that brand awareness, brand association, perceived quality, brand loyalty, packaging and brand equity were reliable and valid constructs in this analysis.

Structural Model: The structural model was employed to test the statistical significance of the proposed hypotheses in the study. Packaging was specified as the independent variable and brand awareness, brand association, brand loyalty and perceived quality were mediating variables whilst overall brand equity is considered as a dependent variable. Although, the Chi-square test (X^2 = 240.948, DF =95, p < 0.001) did not support the sample data, all other the fit measures suggest that the structural model provided an acceptable solution to the path estimates in this study; CMIN/DF = 2.536; GFI =0.909; AGFI = 0.870; NFI =0.900; IFI =0.937; TLI = 0.920; CFI =0.936; RMSEA =0.071(0.060- 0.082); SRMR = 0.049. The results of the structural model in Table II reveal that brand awareness (ß = 0.331, t =3.659, p = 0.000) and brand loyalty (ß = 0.451, t =4.870, p = 0.000) are positively related to overall brand equity at significant level of p < 0.001, whilst brand associations (β = 0.273, t = 3.182, p = 0.001) is directly related to brand equity at significant level of p = 0.001. These outcomes confirm *H1, H4* and *H2* respectively. However, the results further show that perceived quality (β = -0.061, t = -0.822, p = 0.411) is not significantly related to brand equity and therefore H3 is rejected. Moreover, the results of the structural model in Table II indicate that packaging is positively related to brand awareness (ß =0.826, t = 8.256, p = 0.000), brand association (ß = 0.753, t = 7.608, p = 0.000), perceived quality (ß = 0.784, t = 9.606, p = 0.000) and brand loyalty (β = 0.838, t = 8.968, p = 0.000) at p < 0.001 level. These findings support H5*, H6*, *H7* and *H8*respectively. In the structural model, however, no direct path between packaging and brand equity was specified. Instead, as conceptualized in this study, brand equity is indirectly influenced by packaging through the mediated dimensions of brand equity. In order to ascertain the indirect (mediated) effect of packaging on brand equity in this analysis, bootstrap was performed with samples of 1000 at a biased-corrected confidence interval of 95%. The results indicate that packaging (ß = 0.809, t = 7.516, p = 0.004) has statistically significant indirect effect on brand equity at p < 0.001 two-tailed level.

Table 2: Test Results of the Proposed Hypotheses

Hypotheses	Structural relations	Standardized Estimates (ß)	t-value	p-value	Remarks
H1	Brand equity <---Brand awareness	0.331	3.659	< 0.001	Accepted
H2	Brand equity <--- Brand association	0.273	3.182	0.001	Accepted
H3	Brand equity <----Perceived quality	-0.061	-0.822	> 0.05	Rejected
H4	Brand equity <---- Brand loyalty	0.451	4.870	< 0.001	Accepted
H5	Brand awareness <------ Packaging	0.826	8.256	< 0.001	Accepted
H6	Brand association <----- Packaging	0.753	7.608	< 0.001	Accepted
H7	Perceived quality <------ Packaging	0.784	9.606	< 0.001	Accepted
H8	Brand loyalty <---------- Packaging	0.838	8.968	< 0.001	Accepted

Discussion: The research aimed to examine the impact of packaging on the brand equity of herbal medicines in the OTC pharmaceutical market. The study found that brand awareness is significant and positively affected by packaging and is in line with the results of past research (Pieterse, 2013). While, brand awareness

significantly contributes to enhance brand equity and is consistent with the results of earlier studies (Asif, Abbas, Kashif, Hussain & Hussain, 2015**;** Panchal et al., 2012). These results also confirm the existing literature (Keller, 1993; Underwood, 2003), which suggests that brand equity is strengthened by well–designed packaging by supporting awareness of the brand. This outcome of the study demonstrates that consumers rely on packaging to be able to recognize and confirm their past experiences with the brands of herbal medicines in the OTC market. This has eventually contributed to strengthening the value of brands of herbal medicines sold in the OTC market. This result also confirms numerous advertising being run by plant medicine companies on radios, television and internet nationwide.

Additionally, the study also established that packaging significantly supports the formation of a valuable brand association. This result concurs with the previous studies (Pieterse, 2013; Underwood et al., 2001) which indicate that distinctive packaging strengthens brand associations. The results also reveal that brand association, in turn, directly influences brand equity. Consistent with the findings of past research (Tong & Hawley, 2009; Yoo et al., 2000) which suggest that brand equity is enhanced when there is the existence of strong and unique brand associations. These outcomes demonstrate that effective packaging design significantly contributes to strengthen brand equity through the mediating influence of brand association. This is in line with the current literature (Farhana, 2012; Underwood, 2003), which propose that packaging enhances brand equity by positively influencing brand association. In the OTC pharmaceutical market, consumers use packaging to develop a positive image about the brands of herbal medicines. Furthermore, consumers` perceptions of the value of medicinal herbal brands depend on the packaging design. Additionally, the study found that packaging directly influences the perceived quality and is consistent with past research (Edward, 2013; Underwood & Klein, 2002). This suggests that packaging is an important clue which consumers use to evaluate the quality of herbal medicines in the OTC health market. However, the results further show that the path between perceived quality and brand equity is not significant and is consistent with the results of past study (Tong & Hawley, 2009). In addition, the study establishes that packaging significantly supports the formation of customers` loyalty to the brands of plant medicines in the OTC market. This, in turn, contributes to strengthen the value of the brands. Consistent with the results of past studies (Dhurup et al., 2014), which show that packaging positively influences brand loyalty, whilst brand loyalty (Atilgan et al., 2005; Tong & Hawley, 2009; Yoo et al., 2000), significantly strengthen brand equity. More importantly, the study found that among the dimensions of brand equity, packaging has a greater influence on brand loyalty and hence, contributes substantially to overall brand equity of herbal medicines in the OTC market.

5. Conclusion and Recommendations

Based on the Results of the Study, the Following Recommendations are made:

The study revealed that packaging contributes to enhance brand equity through the mediating effect of brand awareness, brand association and brand loyalty in the OTC health market. First, traditional herbal medicine firms should frequently track consumers` perceptions of the packaging elements as a means of supporting the awareness, image and loyalty of their brands in the OTC market. Moreover, traditional herbal medicine companies should not consider packaging as an afterthought but rather prioritize packaging decisions in their branding strategy in order to develop strong brands in the OTC drug market. The data set of the study reveals that consumers were concerned with the role of packaging in safeguarding the content of the product, the environment and making the product convenient to use. Therefore, traditional herbal medicine companies should go beyond the industry`s regulatory requirements and design consumer-driven packages through the combination of colours, photograph and packaging innovations to satisfy their customers to leverage the importance of packaging in the OTC health market.

The study established that packaging has a stronger effect on brand loyalty than any other dimension of brand equity in the OTC market. Recognizing the important role of brand loyalty to the growth of a business, traditional herbal medicine companies should consider packaging in their loyalty programs to substantially enhance loyalty in the OTC health market. The research also found that packaging significantly supports the brand quality. However, perceived quality did not contribute to the overall brand equity of the herbal medicines. It has also been emphasized that quality products are wrapped in attractive and distinctive

containers (Pitta & Katsanis, 1995). Efforts should therefore be directed towards improving the attributes of packaging design, such as colour, size and shape, photography, material and typography to substantially strengthen consumers' perceptions of quality and hence, the overall brand equity.

Conclusion: The aim of the study was to identify the impact of packaging on brand equity of herbal medicines in the OTC pharmaceutical market. The study established that packaging contribute to enhance overall value of a brand through the mediating impact of brand awareness, brand associations and brand loyalty in the OTC health market. These findings confirmed that packaging has indirect effect on brand equity through the mediated brand equity dimensions. Traditionally, product packaging was used to protect, preserve and ease the movement of goods but as a result of increase in self-service ethos and changes in consumer`s lifestyle, the role of packaging has expanded to include environmental and marketing functions. In the OTC pharmaceutical market, however, packaging is an important brand-building tool as it performs a role similar to other marketing communications elements in supporting brand equity of plant medicines.

Limitations and Future Research: The current research was conducted by using a single product category in the consumer health market and participants were selected from the end-users of this product. Though, the results could be useful to other non - prescription orthodox medicines, drawing from only a single product category suggests that the findings of the research may not be generalized to other consumer packaged goods. Future research should include different samples of products to enhance the generalizability of the findings to wider product categories. Moreover, the current research employed quantitative research options where survey questionnaires were used to capture the views of respondents. Future research should be undertaken by employing qualitative methods to allow for in-depth study of the impact of packaging on brand equity in the OTC drug market.

References

Aaker, D. A. (1991). Managing Brand Equity: Capitalizing on the Value of Brand Name. New York, N.Y. 10020: The Free Press.

Aaker, D. A. (1996). Measuring Brand Equity across Products and Markets. *California Management Review*, 38(3), 102 – 120.

Aaker, D. A. (1992). The Value of Brand Equity. *Journal of Business Strategy,* 13(4), 27-32.

Aaker, J. L. (1997). Dimensions of Brand Personality. *Journal of Marketing Research*, 34(3), 347- 357.

Anderson, J. C. & Gerbing, D. W. (1988). Structural Equation Modelling in Practice: A Review and Recommended Two- Step Approach. *Psychological Bulletin,* 103(3), 411- 423.

Atilgan, E., Aksoy, S. & Akinci, S. (2005). Determinants of Brand Equity: A Verification Approach in the Beverage Industry in Turkey. *Marketing Intelligence & Planning,* 23(3), 237- 248.

Asif, M., Abbas, K., Kashif, M., Hussain, S. & Hussain, I. (2015). Impact of Brand Awareness and Loyalty on Brand Equity. *Journal of Marketing & Consumer Research*, 12, 67-72.

Bagozzi, R. P. & Yi, Y. (1988). On the Evaluating Structural Equation Models. Journal *of Academy of Marketing Research,* 16(1), 074-094.

Brodersen, M. & Manolova, P. (2008). Packaging Design as a Brand- Building Tool, Unpublished MSc Thesis submitted to the School of Economics and Management, Lund University, India.

Buil, I., Martinez, E. & deChernatony, L. (2013). The Influence of Brand Equity on Consumer Responses. *Journal of Consumer Marketing,* 30(1), 62-74.

Byrne, B. M. (2016). Structural Equation Modelling with AMOS: Basic Concepts, Applications and Programming, (3rd ed.), New York, NY 10017: Francis & Taylor Group.

Chaudhary, P. (2011). Role of Packaging on Consumer`s Buying Decisions: A Case Study of Pan I part City. *International Journal of Research in Finance & Marketing*, 1(8), 76-84.

Chaudhuri, A. & Holbrook, M. B. (2001). The Chain of Effects from Brand Trust and Brand Affect to Brand Performance: The Role of Brand Loyalty. *Journal of Marketing*, 62(2), 81-93.

Chen, A. C. H. (2001). Using Free Association to Examine the Relationship between the Characteristics of Brand Association and Brand Equity. *Journal of Product & Brand Management,* 10(7), 439-457.

Christodoulides, G., Cadogan, J. W. & Veloutsou, C. (2015). Customer-Based Brand Equity Measurement: Lessons Learned from International Study. *International Marketing Review*, 23(3/4), 307-328.

Creswell, J. W. (2014). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, (4th ed.), California: SAGE Publications Inc.

DeLorme, D. E., Hu, J., Reid, L. N. & Ann, S. (2010). The State of Public Research on Over-the-Counter Drug Advertising. *International Journal of Pharmaceutical & Health Care Marketing,* 4(3), 208-231.

Dhurup, M., Mafini, C. & Dumasi, T. (2014). The Impact of Packaging, Price and Brand Awareness on Brand Loyalty: Evidence from the Paint Retailing Industry. *ActaCommercii,* 14(1), 1-9.

Dickov, V. (2012). The Aspect of Brands and Marketing Development in Pharmaceutical Industry. *Acta MedicaLituanica,* 19(2), 93–100.

Dlacic, J. & Kezman, E. (2014). Exploring Relationship between Brand Equity and Customer Loyalty on Pharmaceutical Market. *Economic& Business Review*, 16(2), 121-131.

Edward, S. T. W. (2013). The influence of visual packaging design on perceived food product quality value, and brand preference. *International Journal of Retail &Distribution Management,* 41(10), 805 – 816.

Essegbey, G. O., Awuni, S., Essegbey, I. T., Akuffobea, M. & Mica, B. (2014). Country Study on Innovations, Intellectual Property and Informal Economy: Traditional Medicines in Ghana.

Farhana, M. (2012). Brand Elements Lead to Brand Equity: Differentiate or Die. *Information Management & Business Review*, 4(4), 223-233.

Farquhar, P. H. (1989). Managing Brand Equity. Marketing Research, 24-33.

Fornell, C. & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research,* 18 (1), 39-50.

Garber, L. L. J., Burke, R. R. & Morgan, J. J. (2000). The Role of Package Colour in Consumer Purchase Consideration and Choice. Marketing Science Institute, Working Paper Series, Report No. 00-104.

Gardner, B. B. (1981). The Package Communication. Handbook of Package Design Research, (In Walter Stem ed.), pp. 232-237: Wiley & Sons.

Gavin, D. A. (1983). Competing on the Eight Dimensions of Quality. *Harvard Business Review,* 65, 107-109.

GFDA. (2013). Guidelines for Registration of Herbal Medicine Products in Ghana.

Gil, R. B., Andres, E. F. & Martinez, E. S. (2007). Family as Source of Customer-Based Brand Equity *Journal of Product & Brand Management,* 16(3), 188-199.

Hair, J. H. Jr., Black, W. C, Babin, B. J. & Anderson, R. E. (2010). Multivariate Data Analysis (7th ed.), New York: Pearson Prentice Hall.

Hanzaee, K. H. (2009). Verbal and Pictorial Stimulus of Package Design in Right – Left Languages According to Brain Laterality. Advances in Technology, Education & Development, 308-324.

Hess, J. S., Singh, J., Danes, J. & Metcalf, L. E. (2014). Impact of Consumer Product Package Quality on Consumption Satisfaction, Brand Perceptions, Consumer Investment and Behaviour. *Journal of Applied Packaging Research,* 6(1/ 4), 23-39.

Hoeffler, S. & Keller, K. L. (2002). Building Brand Equity through Corporate Societal Marketing. *Journal of Public Policy & Marketing*, 21(1), 78-89.

Hu, L. & Bentler, P. M. (1999). Cut-off Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives. *Structural Equation Modelling: Multidisciplinary Journal*, 6(1), 1- 55.

Joiner, T. E., Pfaff, J. J. & Acres, J. G. (2002). A Brief Screening Tool for Suicidal Symptoms in Adolescents and Young Adults in General Health Settings: Reliability and Validity data from the Australian National General Practice Youth Suicide Prevention Project. *Behaviour Research and Therapy,* 40, 471–481.

Keller, K. L. (1993). Conceptualization, Measuring, and Managing Customer-Based Brand Equity. *Journal of Marketing,* 57(1), 1-22.

Keller, K. L. (2001). Building Customer –Based Brand Equity: A Blueprint for Creating Strong Brands, Marketing Science Institute. Working Paper Series, Report, No. 01-107.

Keller, K. L. (2013). Strategic Brand Management: Building Measuring, and Managing Brand Equity, (4th ed.), England: Pearson Education Ltd.

Keller, K. L. & Lehmann, D. R. (2006). Brands and Branding: Research Findings and Future Priorities. *Marketing Science*, 25(6), 740-759.

Khan, S. (2012). Contribution of Brand Awareness and Brand Characteristics towards Customer Loyalty (A Case of Study of Milk Industry of Peshawar, Pakistan). *Journal of Asian Business Strategy,* 2(8), 170-176.

Kim, W. J. & King, K. W. (2009). Product Category Effects on External Search for Prescription and Non-Prescription Drugs. *Journal of Advertising,* 38(1), 5-20.

Kline, R. B. (2005). Principles and Practice of Structural Equation Modelling, (2nd ed.), New York, NY 10012: Guilford Press.

Kotler, P. & Keller, K. L. (2009). Marketing Management, (3rd ed.), Upper Saddle River, New Jersey, 07458: Pearson Education, Inc.

Kotler, P. (2003). Marketing Management, (11th ed.), Upper Saddle River, New Jersey: Pearson Education Inc.

Krejcie, R. V. & Morgan, D. W. (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement,* 30, 607-610.

Lassar, M., Mittal, B. & Sharma, A. (1995). Measuring Customer-Based Brand Equity. *Journal of Consumer Marketing,* 12(4), 11-19.

Mackenzie, N. & Knipe, S. (2006). Research Dilemmas: Paradigms, Methods and Methodology. *Issues in Educational Research,* 16, 193-205.

Malhotra, N. K. & Birks, D. F. (2007). Marketing Research: An Applied Approach, (3rd ed.), England: Pearson Education Limited.

Miyazaki, A. D., Grewal, D. & Goodstein, R. C. (2005). The Effect of Multiple Extrinsic Cues on Quality Perceptions: A Matter of Consistency. *Journal of Consumer Research*, 32, 146-153.

Moss, G. D. (2007). Pharmaceuticals: Where is the Brand Logic? Brand Lessons and Strategy. New York: Haworth Press, Inc.

Naresh, B. & Reddy, D. B. S. (2016). Impact of Perception on Consumer Purchase Behaviour of Herbal Product in India. *Indian Journal of Research*, 5(6), 233-235.

Nunnally, J. C. (1975). Psychometric Theory: 25 years and Now. *Educational Researcher,* 4(10), 7-21.

Oliver, R. L. (1999). Whence Consumer Loyalty? *Journal of Marketing,* 63, 33-44.

Panchal, S. K., Khan, B. M. & Ramesh, S. (2012). Importance of Brand Loyalty, Brand Awareness and Perceived Quality Parameters in Building Brand Equity in Indian Pharmaceutical Industry. *Journal of Medical Marketing*, 12(2), 81-92.

Pappu, R., Quester, P. Q. & Cooksey, R. W. (2006). Customer-Based Brand Equity and Country-of-Origin Relationships: Some Empirical Evidence. *European Journal of Marketing,* 40(5/6), 696-717.

Peter, J. P. & Olson, J. C. (2008). Consumer Behaviour and Marketing Strategy, (8th ed.), New York, NY 10020: Pearson Education Inc.

Pieterse, C. (2013). The Potential of Packaging to Strengthen Brand Equity in Female Apparel Retail Stores. Unpublished MSc dissertation submitted to University of Pretoria, South Africa.

Pitta, D. A. & Katsanis, L. P. (1995). Understanding Brand Equity for Successful Brand Extension. *Journal of Consumer Marketing*, 12(4), 51-64.

Sanyal, S. N. & Datta, S. K. (2011). The Effect of Country - of- Origin on Brand Equity: An Empirical Study on Generic Drugs. *Journal of Product & Brand Management,* 20(2), 130-140.

Schuiling, I. & Moss, G. (2004). How different are branding strategies in Pharmaceutical industry versus fast moving consumer goods? *Journal of Brand Management,* 11(5), 366-380.

Silayoi, P. & Speece, M. (2004). Packaging and Purchase Decision: An Exploratory Study on the Impact of Involvement level and Time. *British Food Journal*, 106(8), 607-628.

Smith, P. R. & Taylor, J. (2002). Marketing Communications: An Integrated Approach, (3ed.), London: Pearson Education Inc.

Tavakol, M. & Dennick, R. (2011). Making Sense of Cronbach`s Alpha. *International Journal of Medical Education,* 2, 53-55.

Tong, X. & Hawley, J. M. (2009). Measuring Customer- Based Brand Equity: Empirical Evidence from Sportswear Market in China. *Journal of Product & Brand Management,* 18(4), 262-271.

Underwood, R. L., Klein, N. M. & Burke, R. R. (2001). Packaging Communication: Attentional Effects of Product Imagery. *Journal of Product &Brand Management*, 10(7), 403 – 422.

Underwood, R. L. (2003). The Communicative Power of Product Package: Creating Brand Identity via Lived and Mediated Experience. *Journal of Marketing Theory & Practice*, 11(1), 62 -76.

Underwood, R. L. & Klein, N. M. (2002). Packaging as a Brand Communication: Effects of Product Pictures Consumer Responses to Packaging and Brand. *Journal of Marketing Theory & Practice*, 10(4), 58-68.

Underwood, R. L. & Ozanne, J. L. (1998). Is your Packaging an Effective Communicator? A Normative Framework for Increasing the Communication Competence of Packaging. *Journal of Marketing Communications,* 4, 207-220.

UNDP. (2007). Ghana Human Development Report: Towards a More Inclusive Society.

Wallace, R. (2001). Proving Our Value: Measuring Package Design`s Return on Investment. *Design Management Journal,* 12(3), 20-27.

Washburn, J. H. & Plank, R. E. (2002). Measuring Brand Equity: An Evaluation of a Consumer-Based Brand Equity Scale. *Journal of Theory & Practice*, 10(1), 46-62.

WHO. (1998). Guidelines for Appropriate Use of Herbal Medicines. WHO Regional Publication, Western Pacific Series, 23.

WHO. (2002). Guidelines on Packaging Pharmaceutical Products. Technical Report Series, 902.

WHO. (2005). National Policy on Traditional Medicine and Regulation of Herbal Medicine. *Report of a WHO Global Strategy*, Geneva (Available at: http:// www. apps.who.int/medicinedocs/pdf/s791e/7916e.pdf; *Accessed May 12, 2016*)

WHO. (2011). Traditional Medicines, Global Situation, Issues and Challenges.

Yoo, B., Donthu, N. & Lee, S. (2000). An Examination of Selected Marketing Mix Elements and Brand Equity. *Journal of the Academy of Marketing Science*, 28(2), 195-211.

Zeithaml, V. A. (1988). Consumer Perceptions of Price, Quality, and Value: A Means- End Model and Synthesis of Evidence. *Journal of Marketing,* 52, 2-22.

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Behavioral and Environmental Influences on Entrepreneurial Orientation

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Abstract: Traditionally, theories of innovation and entrepreneurship have concentrated on either environmental or dispositional variables to explain different rates and levels in entrepreneurial activity. However, these theories have unsuccessfully represented the complexity of human behavior actions involve the interaction of various environmental, cognitive, and behavioral variables. Recognizing this shortcoming and considering that contextual influences on entrepreneurial behavior in an emerging market context are rarely accounted for, this study empirically examined the degree to which individual-level variables of entrepreneurial alertness and self-efficacy interact with environmental dynamism and hostility to influence a firm's entrepreneurial orientation. Appreciating the multiplicity of elements facing an entrepreneur who is trying to make sense of the external environment, the study surveyed 310 owner-mangers in South Africa and relied on SEM to determine the best model fit. The study findings reveal that as a result of mediating and interaction effects, an individual with higher levels of alertness and self-efficacy is more likely to be innovative, engage in risk-taking behavior and show pro-activeness, in other words, have higher levels of entrepreneurial orientation. It is recommended that policymakers encourage entrepreneurial orientation by fostering a high-support route in which the effects of the hostile environments are minimized to encourage higher levels of innovation. Moreover, scholars can build on these findings by investigating the interconnectedness of exogenous environmental and individual factors in terms of explaining entrepreneurial orientation.

Keywords: *Innovation, entrepreneurial alertness, entrepreneurial self-efficacy, environmental dynamism and hostility, entrepreneurial orientation, South Africa.*

1. Introduction

Scholars increasingly recognize that innovation is a multi-faceted construct which integrates the behaviors of individuals; organizational and environmental factors (Anderson et al., 2009; Poon, 2006; Rauch et al., 2009; Urban, 2007). Furthermore, research finds that not only are entrepreneurship and innovation corresponding, but an amalgamation of the two is vital towards achieving sustainability in today's dynamic and ever-changing environment (Dess and Lumpkin, 2005). Entrepreneurship is highly relevant to economic development, poverty alleviation, wealth generation, job creation and spurs the economic growth of many developed and developing or emerging countries (Samson & Mahmood, 2015). However, despite much promise many Small and Medium Enterprises (SMEs) in developing countries have not delivered on their potential (Lundström & Stevenson, 2005; Urban, 2016). One reason for such failure is that while the external environment's influence on SMEs has been the subject of much debate (Davidsson et al., 2006; Dobbs & Hamilton, 2007), the importance of an individual's orientation, as a crucial feature to business performance is often neglected (Estrin et al., 2013; Piispanen et al., 2018).

As a consequence, the process of innovation and entrepreneurship cannot be viewed in isolation but rather as a set of interrelated factors, where the multitude of factors involved in improving or restraining entrepreneurship needs to give sufficient attention (Urban, 2007). The objectives of this study are to empirically examine the extent to which the individual level variables of entrepreneurial alertness and self-efficacy interact with environmental dynamism and hostility to influence the entrepreneurial orientation of SMEs in South Africa. In South Africa, entrepreneurship is viewed as crucial for economic development, yet low levels of total entrepreneurial activity (TEA) rate persist, causing South Africa to be among the lowermost in their peer group of developing nations (Herrington et al. 2017). Recognizing this shortcoming and considering the neglect of studying contextual and individual influences on entrepreneurial behavior (Haynie et al. 2010; Shane and Venkataraman, 2000), this study adds to the business literature by emphasizing the importance of the environment and seeks to explain how successful entrepreneurial ventures 'fit' best with their environments (Luthans et al., 2000; Welter and Small bone 2011).

Accounting for the multiplicity of such elements illustrates the challenges facing entrepreneurs who are trying to make sense of the external environment in an emerging economy (Urban & Hwindingwi, 2016). The importance of the study is evident when considering environmental influences are imperative to entrepreneurs who need to formulate strategies based on reliable information to recognize and exploit opportunities, while at the same time manage risk and deal with uncertainty (Bamiatzi & Kirchmaier, 2012; Urban & Hwindingwi, 2016). Theoretical frameworks and models suggest that context is an essential determinant of entrepreneurial success as the specific attributes within each context influence the success or failure of the business (Moroz & Hindle, 2012). External environmental factors may be determined in terms of 'environmental munificence' (i.e. favorable environmental conditions) or 'hostility' (i.e. unfavorable environmental conditions), both of which offer opportunities as well as challenges which enterprises need to respond to in entrepreneurial and innovative ways (Brownhilder, 2016; Hameed & Ali, 2011). Moreover, research findings show that SMEs are vulnerable since they are new and small, and hence environmental forces may have a greater impact on their operations. Additionally, the ability of entrepreneurs to remain alert to opportunities and be confident in their capabilities, while surveying their uncertain environments is pivotal for successfully high performing businesses (Bruwer, 2018).

Research findings emphasize that successful entrepreneurs seem to excel at discovering opportunities entrenched in the environment which they scan, as their alertness allows them to spot high pay-off opportunities (Baron, 2006; Gaglio and Katz 2001). This suggests that an entrepreneurial mindset impacts decision making (Haynie et al., 2010), where one's cognitive adaptability in terms of alertness, flexibility, and self-regulation, under dynamic and uncertain environments is important (McGrath & Macmillan, 1992). Cognition has been described as the mental processing which individuals rely on to deal with their environments (Baron, 2006). Consequently, levels of entrepreneurial alertness and self-efficacy can vary depending on the person's context. Several researchers have used the entrepreneurial self-efficacy (ESE) construct to study entrepreneurial behavior, as it refers to the "strengths of a person's belief that he/she is capable of successfully performing the various roles and tasks of an entrepreneur" (Bandura, 1986; Chen et al., 1998; De Noble et al., 1999). There is a growing stream of literature which suggests that higher levels of ESE affect entrepreneurial intentions and subsequent action, leading to calls for future research to interrogate ESE so as to understand casual directions between ESE and related variables, as well as to determine how ESE is associated to innovation (McGee et al., 2009). Nonetheless and despite their potential, entrepreneurial alertness and ESE remain understudied in African and emerging market contexts (Urban, 2016).

This is somewhat limiting considering the importance of understanding their potential interplay within a dynamic and often hostile environmental context (Busenitz et al., 2014; Kaish and Gilad 1991). Prior studies on the contextual landscape in Africa indicate that SMEs need to affiliate their business strategies with fitting entrepreneurial orientations to alleviate some of the negative results of functioning in such hostile environments (Brownhilder, 2016). Following the work of Khanna and Palepu (2010), under ideal market conditions every country would off era range of functioning institutions to support businesses in developing or emerging markets but in reality in emerging economies institutions are not sufficiently robust to allow buyers and sellers to transact easily. Such 'institutional voids' pose many challenges for businesses in emerging markets when compared to businesses in developed economies with well-defined and functioning institutions. The section which follows will provide an overview of the relevant theoretical foundations of the constructs under study. The section on methodology will detail the sampling and instrument design and indicate how the hypotheses are tested using structural equation modeling (SEM). Researchers note that an essential part of SEM analyses is "goodness of fit testing" (Fornell & Larcker, 1981) which involves fitting SEM models and covariance structure modeling. Results and discussion follow, while the last section provides conclusions, considers repercussions for theory and policy, and examines limitations and future research directions.

2. Literature Review

Entrepreneurial Orientation: Research shows that entrepreneurship may serve as a foundation for a strategy where firms who dedicate considerable resources to the innovation process, are able to obtain a competitive advantage (Dess and Lumpkin, 2005; Urban, 2016). A steady stream of research highlights the

concept of EO as encompassing "organizational processes, practices and decision-making styles of innovative firms" (Covin and Lumpkin, 2011). Widespread research confirms that EO is best understood as a multi-dimensional construct and includes: innovativeness, risk-taking, and proactiveness (Dess and Lumpkin, 2005). Innovativeness is conceptualized in terms of uniqueness and emergent new products, services or processes. Risk-taking is related to managerial readiness to dedicate substantial resources to leverage new opportunities by way of taking and encouraging calculated risk-taking. Proactiveness is a resolution in implementing initiatives and involves fostering a culture of adaptability, experimenting and the acceptance of failure. Research reports that the extent to which each of these dimensions is valuable for forecasting the firm performance is largely dependent on the environment in which the firm operates in (Covin and Lumpkin, 2011; Dess and Lumpkin, 2005; Rauch et al., 2009). Research finding on EO, which incorporates these dimensions generally find that higher levels of EO are associated with success, even when firms are operating in hostile environments. Consequently, there have been calls to study EO from "a contingency perspective in terms of how environmental, organizational and individual factors, may moderate, mediate or interact with EO to enhance firm performance" (Anderson et al., 2009; Dess and Lumpkin, 2005; Rauch et al., 2009).

Entrepreneurial Alertness: Alertness and motives explain entrepreneurial recognition of opportunities, and affect start-up decisions and enterprise performance (Busenitz & Lau 1996; Kirzner, 1997; Kruger, 2007; Urban, 2007). Research reveals that the successful performance of entrepreneurs is reliant on motivation and behavior where various models and theories (e.g., Shane et al., 2003) explain how both the nature of the individual and how they perceive the opportunity are important (Shane & Venkataraman, 2000). Several studies have indicated how an individual's orientation or alertness is crucial to encouraging entrepreneurial growth and development (Davidsson & Honig, 2003; Drnovsek & Glas, 2002; Shane et al., 2003; Ucbasaran et al., 2001). Moreover, findings indicate that the ability to recognize opportunities is related to a variety of human and social capital variables such as level and application of education, type of work experience, as well as specific entrepreneurial knowledge and experience (Davidsson & Honig, 2003; Ucbasaran et al., 2001). Research is also converging which reveals that the aptitude to recognize opportunities is primarily a cognitive function (Shane & Venkataraman, 2000) where individuals are thought to hold unique cognitive scripts which allow them to have higher levels of alertness (Busenitz & Lau 1996; Kirzner, 1997; Tang et al., 2012; Urban, 2016).

Based on several studies researchers' have recognized entrepreneurial alertness as best understood from a process perspective which consists of three stages, these are. The first phase, scanning and search represents persistently scanning the environment to ascertain information or changes which have occurred unobserved by some individuals; the second phase, association and connection is about assembling information and using that information as knowledge to develop alternatives or provide additional choices; the third phase, evaluation and judgment encompasses individuals making valuations and decisions about fluctuations and deciding whether these are in fact profitable opportunities (Tang et al., 2012). Recognizing that the above-mentioned dimensions have been used in past studies to operationalize entrepreneurial alertness and for this study, the following hypothesis is formulated.

Hypothesis1: Entrepreneurial alertness as an individual level construct based on its constituent dimensions has a positive relationship with higher levels of firm entrepreneurial orientation.

Entrepreneurial Self-Efficacy: Entrepreneurial activity is often theorized to manifest as a result of numerous motivational and belief factors (Shane et al., 2003), where self-efficacy plays a pivotal role (Urban, 2007). Researchers consider motivation as an essential part of the entrepreneurial process which needs to be accompanied with concomitant individual level skills and capabilities. The construct of self-efficacy has been extensively interrogated in the field of behavioral management, where it is conceptualized as "people's judgments of their capabilities to organize and perform courses of action required to attain selected types of performance" (Bandura 1986, 1997). Findings across disciplines reveal that self-efficacy beliefs determine what trials the entrepreneur will accept and how long she will persist and continue under adverse conditions (Bandura, 1997; Urban, 2007). Research findings highlight that individuals are inclined to circumvent tasks about which they have low self-efficacy while, equally, are enticed to perform tasks about which they have a sense of high self-efficacy (Bandura, 1997; Earley, 1994). Self-efficacy has been applied to the entrepreneurship domain where the entrepreneurial self-efficacy (ESE) construct is used to designate "the

strength of a person's belief that he or she is capable of successfully performing various roles and tasks of entrepreneur" (Chen et al., 1998; de Noble et al., 1999). ESE has been operationalized from the viewpoint of entrepreneurial tasks performed during the entrepreneurial process (McGee et al., 2009), where such a process perspective ensures that ESE may be measured across varying entrepreneurial activities. As past studies indicate that an individual's level of ESE may be related to higher levels of firm performance (Chen et al., 1998; de Noble et al., 1999), it is hypothesized that.

Hypothesis 2: Entrepreneurial self-efficacy (ESE) as an individual level construct based on its constituent dimensions has a positive relationship with entrepreneurial orientation.

Furthermore, by building on the principles of configuration theory, in particular, the SCT, which is premised on a combination or interaction of several characteristics (Andrevski et al., 2013, Bandura, 1986) the present study, recognizes that alertness and ESE may prove to be complementary. The rationale here is that entrepreneurs who are alert to opportunities may not engage because they lack self-belief and do not possess the requisite entrepreneurial capabilities (ESE) to carry out the various tasks required of an entrepreneur during the entrepreneurial process (Chen et al., 1998; De Noble et al., 1999). Consequently, the third hypothesis predicts an interaction in terms of alertness and ESE as:

Hypothesis 3: There is a positive interaction between entrepreneurial alertness and entrepreneurial self-efficacy (ESE).

Environmental Dynamism and Hostility: In the management literature, three characteristics have been used extensively to describe an industry's condition of the external environment, namely environmental hostility, dynamism and diversity (heterogeneity) (Dess & Beard, 1984; Zahra & Covin, 1995). These dimensions relate to two generally used approaches to theorizing about environments (Zahra & Covin, 1995; Wright et al., 2015). The current study builds in this direction by relying on the dimensions of dynamism and hostility, as they are reliable with earlier theory and these two dimensions have in the past shown modest correlations [Zahra, 1993), which means that distinctive features of the environment are encapsulated with each dimension.

Dynamism points to the rate and unpredictability of change in the industry [Dess & Beard, 1984]. Such changes may result from competitors' actions, developments in customer's' needs, and alterations in technological conditions. Such fluctuations create opportunities as well as threats for businesses and may force them to leverage innovations and other resources (Dess and Beard, 1984), as well as promote investments in new product development [Zahra & Covin, 1995). Furthermore, studies indicate that entrepreneurial activities would be neglected without market changes and increased dynamism (Dess & Beard, 1984). In principle the greater the market dynamism the greater the pressure for the firm to be more innovative (Wiklund et al., 2009; Zahra & Covin, 1995).

On the other hand, hostility refers to an environment that is inherently risky and where few opportunities are available, often due to intense competition. Miller and Friesen (1982) describe hostility as the "degree of threat faced by the firm as a result of the intensity of the competition in the marketplace, as well as the vicissitudes of the industry". Hostility is expressed in terms of an overwhelming competitive environment, where the intensity of the competition is often accompanied by a dearth of opportunities. Researchers find that competitive intensity positively influences the SMEs open innovations, with findings revealing that the majority of innovations in technology are in response to competitive, hostile market pressures (Miller & Friesen, 1982; Wright et al., 2015; Zahra & Coven, 1995).

Hypothesis 4a: Perceived environmental dynamism and hostility mediate the relationship between entrepreneurial alertness and entrepreneurial orientation in such a manner that the association is positive and significant In line with configuration theories where a combination of several organizational attributes is theorized to have a greater influence on firm outcomes than the individual effects alone (Andrevski et al., 2013), the last hypotheses builds on the notion that individual level variables cannot be viewed in isolation but rather as a set of interrelated factors, where the environment also needs to give proper consideration (Urban, 2007). Subsequently it is predicted that individuals with more pronounced ESE perceive their

business context as having more opportunities to exploit (Chen et al., 1998). Accordingly, the more hostile the environment, the higher the need for innovation and more likely SMEs will be entrepreneurial (Myers & Marquis, 1969). Following this line of reasoning it is hypothesized that:

Hypothesis 4b: Perceived environmental dynamism and hostility mediate the relationship between self-efficacy (ESE) and entrepreneurial orientation in such a manner that the association is positive and significant.

3. Research Methodology

Sampling and Data Collection: The target population was based on sampling frames sourced from the South African National Small Business Chamber (NSBC, 2016), Business Partners (2016), and the Department of Trade and Industry (Dti, 2016). The study took place in the Gauteng region in South Africa (SA) which is the largest province in South Africa (SA) (Stats SA, 2014). SMEs were nominated in accord with the conventional method of describing SMEs in SA, which is in line with the Schedule of the National Small Business Amendment Act No. 29 (RSA, 2003). The selection criterion reflects various established limits for each sector or subsector as per the standard industrial classification (SIC). For the target population the sampling selection criteria are based on Total Full-time Equivalent (FTE) of paid employees is classified as Medium = 200 employees, and Small = 50 employees (RSA, 2003). Furthermore, the SMEs had to "represent by owner-managers who currently own and manage their enterprise/business" (Xavier et al., 2012). The reason being that owner-managers are typically well placed with regard to overseeing the planned endeavors of the whole enterprise (Venkataraman, 1997).

These sample selection criteria, also acted as the SME sample parameters or control variables which incorporated the size of the enterprise and age of the enterprise. The age of the enterprise (years of operation since the SME was created), and enterprise size were included in the model as prior studies have found these variables to be significant (Autio & Acs, 2007). Following the identification of the different sampling frames, a well-established formula was used to determine the maximum sample size [Sheehan & McMillan, 1999], where s was the required sample size; X^2 was the table value of chi-square (1 degree of freedom and at the desired confidence level (3.541); N was simply the population size; and P the proportion of SMEs with d expressed as the degree of accuracy expressed as a proportion (.05). Following the calculation, the results indicated a sample size of 300 as suitable. Several SMEs with incomplete firm information were discarded and a sampling frame of 1800 SME owner-managers were requested to complete the online survey contacted as per the given selection criteria. After numerous requests and reminders during a three-week period a total of 310responses were obtained (17.2% response rate), which was judged adequate for the online survey (Sheehan & McMillan, 1999). The characteristics of the sample revealed that the majority of the respondents were between the ages of 35 and 44 years old (73%), male (60%) and had attained a tertiary degree or diploma (67%). Most of the enterprises were less than 15 years old (64%), and relatively evenly distributed in terms of small-size (52%) and medium-sized enterprises (48%). To test for sampling bias, differences between early and late respondents in terms of firm age showed no statistically significant results (t-test = $p > 0.10$).

Instruments: Independent variables (IVs): Entrepreneurial alertness (EA) was operationalized as per the theoretical overview where different dimensions best describe this process as per Tang et al. (2012). These dimensions are in turn "reflective constructs based on the respondent perceptions" in terms of: (1) scanning and search (4 items), (2) association and connection (5 items), and (3) evaluation and judgment (5 items). Sample items included "I have frequent interactions with others to acquire new information'; 'I see links between seemingly unrelated pieces of information'; 'I can distinguish between profitable opportunities and not-so-profitable opportunities". All items were measured with five-point Likert scales ranging from strongly agree (5) to strongly disagree (1). Entrepreneurial self-efficacy (ESE) was operationalized in terms of the empirical evidence on the various entrepreneurial tasks that entrepreneurs typically employ to navigate the entrepreneurial process and include functions such as "marketing, innovation, management, risk-taking, and financial control". The items for the self-efficacy assessment are based on Chen et al.'s (1998) ESE sub-scales (marginally modified) and consisted of items such as "I am good at developing new business ideas' and 'I can reduce risk and deal with uncertainty". The respondents indicating degree of certainty (high = 5, low = 1). In

performing each of these roles/tasks on a 5-point Likert-type scale for the environment (ENV), the dimensions of hostility and dynamism were selected to reflect environmental perceptions [Zahra, 1993]. Environmental hostility was operationalized as "an adverse business climate, such as the powerful competition for various resources". Environmental dynamism was operationalized as "both the rate and unpredictability of change in a specific industry" (Dess & Beard, 1984; Zahra & Covin, 1995). Environmental dynamism (5-items) and hostility (6-items) were measured using a 7-point scale, representing '1 = if you strongly agree and 7 = if you strongly disagree'. Recognizing that environmental perceptions may change depending on industry context, respondents were requested "to indicate the extent to which they agreed or disagreed with each statement as it applies to their principal industry in which they operate in".

Dependent variables (DV): Entrepreneurial orientation (EO) was operationalized using existing conceptualizations of EO, as it incorporates the three dimensions of innovation, risk-taking and proactiveness. Employing the multidimensional nature of EO is advantageous as it is backed by "theoretically meaningful relationships established in earlier studies, thus allowing for more advanced knowledge to evolve" (Dess and Lumpkin, 2005; Rauch et al., 2009). Consequently, EO was measured along a six-point bi-polar Likert scale, represented by nine items. Respondents had to circle number "1 if the statement on the left-hand side of the scale best designates your reaction to the item, or circle number 6 if the statement on your right-hand side of the scale best describes your reaction to the item".

Data Analysis: Literature provides different options on methods of configuration analysis, which include two-way and three-way interactions; cluster analysis, deviation scores and a set-theoretic approach. In particular, multiplicative three-way interactions are suitably used in testing for the effect of configurations consisting of three theoretical constructs (Andrevski et al., 2013), as is the case in the current study in terms of the hypothesized relationships between the constructs. Considering the nature of data collected, all from the same source, the study was vulnerable to common-method bias, which "affects item reliability and validity and/or the co-variation between two constructs" (Podsakoff et al., 2012). As recommended a number of "procedural and statistical steps were taken to offset these risks". First, all questions were required to be answered anonymously, and the questionnaires were returned directly to the researcher thus moderating any need for respondents' social desirability bias (Crowne & Marlowe, 1960).

Second, existing scales were adapted and piloted (n = 25) to ensure that the scale items were clear and unambiguous to respondents. Third, the physical proximity between the dependent (DV) and independent variables (IVs) on the questionnaire was reduced. Lastly, the adoption of different scale anchors for different variables assisted in overcoming common methods bias (Podsakoff et al., 2012). This practice is also consistent with SEM applications, which can accept scales of any metric range including ratio type of measures with true zeros and has no upper limits (Hair et al., 2010). SEM was used because it incorporates measurement error in the estimation of the dependence relationships (Hair et al., 2010). Furthermore, as recommended in order examine the interrelationships between the study latent variables structural models must be generated using the maximum likelihood method of estimation (ML).

4. Results and Discussion

Reliability and Validity Test Results: An exploratory factor analysis (EFA) was first applied to ensure that the constructs have convergent validity. Factors with Eigenvalues > 1 were retained and factor loadings ranged between .69 and .92. This was followed by confirmatory factor analysis (CFA) to ensure that the items which did not meet pre-defined cut-off criteria ("with indicator loadings ≥.4; factor reliability (FR) ≥.6 and average variance extracted (AVE) ≥.5") were removed (Fornell & Larcker, 1981). Initially the fit of each factor (subscale) and its observed items was assessed individually to determine whether there were any weak items with squared factor loadings below .20. Secondly, each factor or subscale was modelled together with other factors measuring the same theoretical construct to determine if convergent validity is achieved (first-order CFA model).

Results showed model fit estimates for each factor as a good model fit, with AVE ≥.5, indicating convergent validity among the dimensions. Thirdly, a second-order CFA[3] model was tested in which the first-order factors became the indicators and finally CFA was run for the hypothesized model combining all theoretical constructs and their indicators to determine whether discriminate validity had been realized. That model estimates are presented in Table 1 which shows a chi-square value of 285.44 (p = .000) and model fit indices such as nor medX^2 (X^2/DF) =2.23, GFI = .91, AGFI =.87, TLI= .92 and RMSEA =.06 indicating an acceptable model fit. Where necessary, improvements in the measurement model were made based on modification indices that indicated changes and standardized residual values. To improve model parsimony, variables with residual values greater than 1.96, low factor loadings and squared factor loadings below .20 were deleted incrementally (Hair et al., 2010). Scale reliability was tested by calculating Cronbach's alpha and item-to-total correlations, with satisfactory results (Nunnally, 1978) obtained in terms of: ESE = 0.79; EA = 0.95, ENV= 0.72; EO = 0.81.

Descriptive and Correlations: Table 2 shows means, standard deviations and inter-correlations of the study variables. On the varying scale ranges the results indicate that ESE, EA and ENV are all above mid-point average while the mean scores for EO show lower mid-point averages. Pearson correlation coefficients indicate that several constructs are significantly correlated but not greater than 0.7, an observation which is relevant in that it highlights that they are not too strongly correlated so as to cause multi Collin (Hair et al., 2010).

Table 1: Statistics for the Hypothesized Measurement Model

Model Fit		**DF**	**x^2**	**x^2/DF**	**P**	**GFI**	**AGFI**	**TLI**	**RMSEA**
Overall		128	285.44	2.23	.000	.92	.85	.90	.06
Path			B	S.E.	C.R.	B	L^2	P	
MKT	<---	ESE	1.00			.77	.55		
INN	<---	ESE	.62	.08	6.88	.42	.18	***	
MNGT	<---	ESE	.15	.05	3.92	.23	.06	***	
RTC	<---	ESE	.68	.08	9.09	.57	.36	***	
SCAN	<---	EA	1.00			.71	.54		
ASSOC	<---	EA	.75	.08	11.10	.71	.55	***	
EVAL	<---	EA	1.00	.09	11.40	.73	.62	***	
CHNG	<---	ENV	1.00			.82	.71		
INV	<---	EO	1.00			.73	.57		
RISK	<---	EO	1.05	.09	12.65	.74	.56	***	
PROAC	<---	EO	1.18	.09	15.02	.86	.78	***	

*** Correlation is significant at .001 Levels (1-tailed), Abbreviations for factors and their sub-dimensions: "ESE = Entrepreneurial self-efficacy, MKT = Marketing, INN = Innovation, MNGT = Management, RTFC = Risk-taking control; EA = Entrepreneurial alertness, SCAN = Scanning and search, ASSOC = Association and connection, EVAL = Evaluation and judgment; ENV = Environmental dynamism and hostility; EO = Entrepreneurial orientation, INV = Innovation, RISK = Risk-taking, PROAC= Pro activeness".

[3]"The measurement models were tested for overall goodness of fit using Chi-Square but due to its sensitive to sample size and lack of a defined power function (Fornell & Larker, 1981), other model fit tests included: the normed x^2, which is the ratio of chi-square and its degrees of freedom (x^2/DF), goodness of fit index (GFI), adjusted goodness of fit index (AGFI), normal fit index (NFI), non-normal fit index (NNFI) or the Tucker-Lewis Index (TLI), comparative fit index (CFI), increment fit index (IFI), and root mean square error approximation (RMSEA)" (Fornell & Larcker, 1981).

Table 2: Descriptive and Correlation Matrix

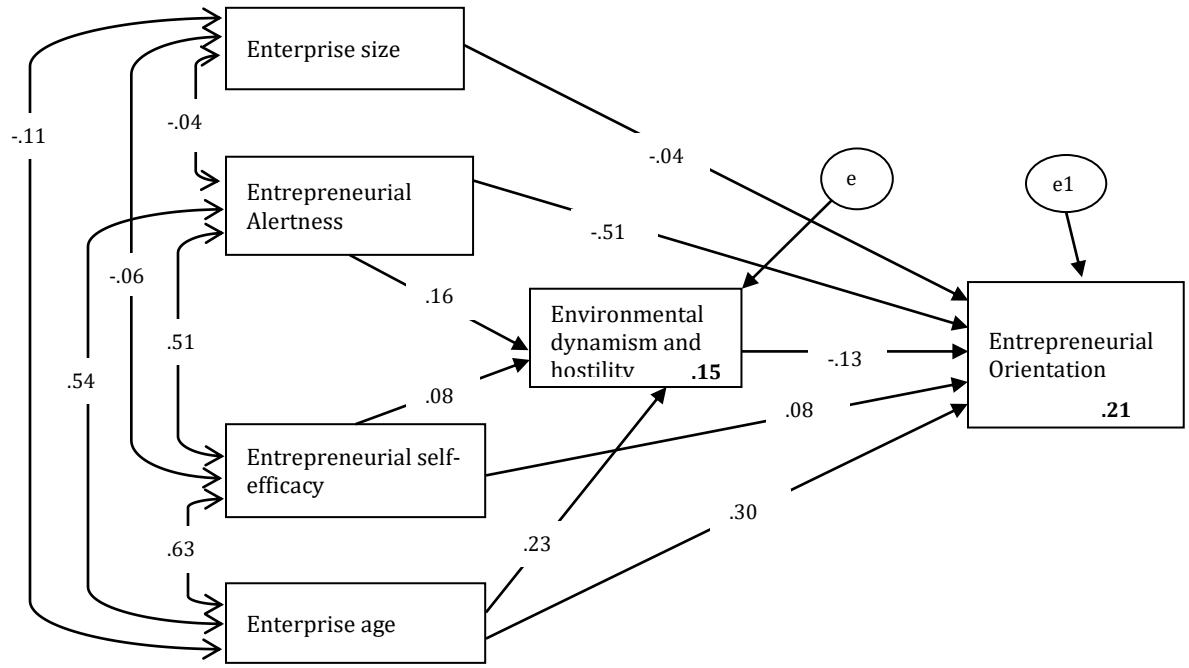
Variable	EA	ESE	ENV	EO	Age	Size
EA	1					
ESE	.532**	1				
ENV	.512**	.541**	1			
EO	.371**	.307**	.398**	1		
Age	.222**	.268**	.103	.107	1	
Size	.118**	.243**	.121	.155	.017	1
Mean	4.19	4.32	3.88	2.76	0.05	0.19
Std. dev.	0.95	1.01	0.98	0.96	0.75	0.79

Hypotheses Test Results and Discussion: The hypothesized measurement model were tested as partially mediated and interaction effect models as per H1 and H2 which estimated direct effects while H3 estimated interaction effects and H4 and H5 mediation and interaction effects. Figure 1 shows the results for the full and partially mediated model which generated a chi-square of 2.36 (p =.308), RMR= .01, GFI= 1.00, AGFI= .97, CFI= 1.00, TLI= .99 and RMSEA = .01, indicating a very good and acceptable model (see Table 3). The full and partial interaction model in Figure 2 generated a chi-square of 2.45 (p = .311), GFI= 1.00, AGFI= .97, CFI= 1.00, TLI= .99 and RMSEA = .02 also revealing very good model fit (see Table 3). Thus, no modifications to the hypothesized partially mediated and interaction models were conducted because of the solid model fits obtained. The standardized parameter estimates for these models show several significant ($p < .01$) values where both the direct and indirect path coefficients are displayed in Table 3. The direct and indirect path coefficients indicate overall goodness of fit improvement, where the models account for variance in both ENV and EO. The path coefficients for the full mediation model in terms of ESE to ENV ($\beta = .224$, $p \leq .01$), EA to EO ($\beta = .16$, $p > .01$) and ESE to EO ($\beta = -.17$, $p \leq .01$), are highest and provide support for H1-H4.

The ability of the partially mediated model to account for the variance in the criterion variable ($R^2 = .22$) is fairer compared to ($R^2 = .04$) in the fully mediated model. There is also a large difference between the models in terms of the partially and the fully mediated models as measured by PNFI. Comparison of the CFI values reveals that the partially mediated model is a better depiction of the relationships among the study variables. However, in comparing the two models, the X^2 and CFI differences are not applicable since both models have good model fits. Hence, the two models are compared on PNFI and R^2 change. The comparison of the full and partial interaction models reveals that the partial interaction model has a greater power to explain the variance in the dependent variable ($R^2 = .24$) than the full interaction effect ($R^2 = .05$).

In addition, the PNFI difference between the two models confirms that the partially interacted model is a more parsimonious model. Therefore, the partially mediated Model (Figure 1) and partially interacted model Figure 2 are adopted in drawing conclusions and recommendations on the hypothesized effects where H1, H2 and H3 are supported. Overall, the partially mediated model accounts for 15 percent of the variance in the ENV and 22 percent of the variance in EO (see Table 3). This means that the ENV has the greatest effect on EO, providing support for H4 and H5.

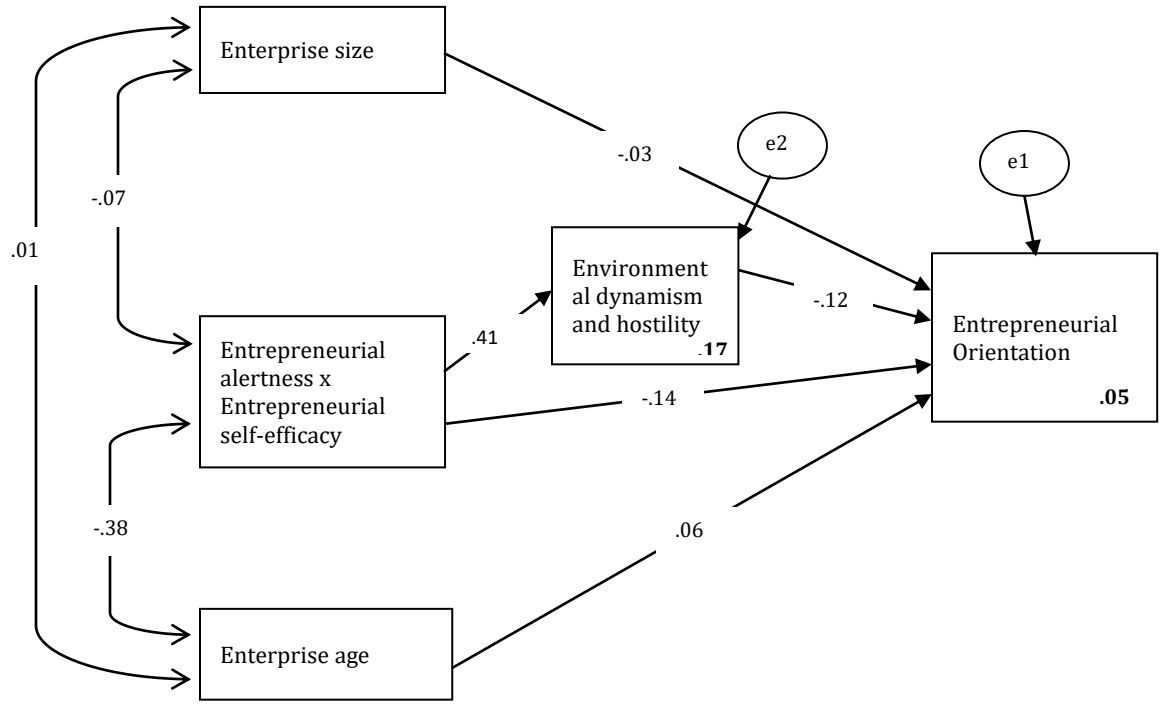
Figure 1: Partial Mediation Effects Model



These results resonate with earlier studies where both environmental perceptions and the alertness and ESE of the individual are important determinants of entrepreneurship. The study has brought attention to the fact that environmental perceptions interact with individual-level variables to increase EO. These results coincide with similar studies which indicate that ESE influences levels of innovation and performance. Higher levels of ESE indicate that the entrepreneur has adopted greater competencies or expertise in entrepreneurial-related tasks such as risk-taking and innovation which translates into higher EO levels. Moreover, as entrepreneurs are motivated to innovate in areas which they have some expertise, capabilities and experience these influences are important to alertness (Autio & Acs, 2007). Following the validation of the EO construct in this study it seems that EO is influenced positively by individual factors and forces operating within the broader environment in South Africa. Testing for the non-spurious relationship between constructs was done by comparing two structural models. The rule is that significance of the estimated relationships between the constructs in the two models should not be significantly different (Hair et al., 2010). On comparing the estimates for the two models as presented in Table 4, the significance of the structural relationships in terms of the constructs in model 1 remained unchanged when the control variables were added in the second model. In addition, the effect of control variables remained non-significant. This implies that the main effects as expected are not significantly affected by the size and age of the enterprise. Therefore, it can be assumed that the relationships as hypothesis in terms of the different constructs in the model were non-spurious and represented a true state of reality.

Such reasoning highlights the importance of the environmental context to innovation and EO were not only does the level and nature of entrepreneurship differ depending on the environment, but the differing types of entrepreneurial activity and their contribution to the economic development are reliant on the contextual conditions (Urban, 2007). In South Africa, despite policymakers having targeted entrepreneurial activity as an important element of the country's economic growth objectives, currently in the South African context innovation levels are declining where there has been a marked drop in entrepreneurs who believe they offer innovative products, (Herrington et al., 2017).The importance to have evidence-based policies that are fit for purpose is important when considering a lack of innovation and EO in many SMEs in emerging economies, such as South Africa.

Figure 2: Full Interaction Effects Model



The extent of the combined effect of the predictor variables on ENV and EO was investigated through testing of hypotheses H3 and H4 in a multiplicative structural model of the predictor variables. The results indicate that a unit change in the multiplicative factor causes 0.76 unit increase in ENV. This means that the joint effect of the predictor variables causes an improvement in ENV and a reduction in EO. Overall, the partially interacted model accounts for 17 percent of the variance in ENV and 23 percent of the variance in EO see Figures 1 and 2. In addition, the relative effect of the interaction between the independent variables was observed. As shown in Table 5, the inclusion of the interaction term (EA*ESE) maximized the total positive effect of ENV and EO. On the other hand, however, the interaction term caused a negative total effect of individual independent variables on ENV which demonstrates the importance of direct and interaction effects of the independent variables on ENV and EO respectively. Another plausible explanation for the support of the study hypotheses is that while the environment may be characterized by hostility, change and dynamism, entrepreneurs still need to predict future scenarios and develop their alertness and ESE to effect higher levels of EO in such hostile surroundings (Dess and Lumpkin, 2005; Rauch et al., 2009).

The findings further resonate with past research, which suggests that the more dynamism and hostility is present in the environment, a greater need for innovation is more likely, and consequently firms will display higher levels of EO. In this sense, the study findings are in line with empirical evidence which suggests that in emerging and developing countries entrepreneurial activity is flourishing ahead of developed countries as opportunities are opening up in these markets (Xavier et al., 2012), with corresponding higher levels of EO. Notwithstanding the positive results obtained for the predicted relationships, a relatively modest role for the dynamic and hostile environment (R^2= .04) was observed in the fully mediated model. A plausible interpretation may be that dominant firms in the South African business environment entrench their market power and eventually push competitors out by relying on exclusionary practices, such as high barriers to entry. These competitor actions and tactics negatively influence how smaller enterprises deal with gaining vital inputs for their products, manage their cash flows and also affect their ability to access channels for distribution, which ultimately forces this business out of the marketplace (Kampel, 2003).

Table 3: Comparative Statistics for the Partially Mediation and Full Interaction Effects Models

Model Fit Index			Mediation		Interaction	
			Full	Partial	Full	Partial
x2			72.18	2.36	2.45	2.12
DF			8	2	2	2.00
P			.000	.31	.31	.35
X2/DF			9.02	1.18	1.16	1.06
RMR			.04	.01	.01	.007
GFI			.96	1.00	1.00	1.00
AGFI			.72	.97	.97	.97
NFI			.86	1.00	.92	1.00
RFI			.21	.95	.8	.98
IFI			.87	1.00	1.00	1.00
TLI			.23	.99	.97	1.00
CFI			.86	1.00	1.00	1.00
RMSEA			.16	.02	.02	.01
PCLOSE			.00	.55	.66	.58
PNFI			.15	.1	.194	.07
PCFI			.15	.1	.198	.07
AIC			107/55	53/55	25/28	71/73
CAIC			214/183	175/185	89/100	230/241
ECVI			.324/.186	.177/.182	.093/.099	.231/.238
Hoelter p=.05			56	775	753	846
Hoelter p=.01			72	1009	1118	1216
Path			**B**	**β**	**B**	**B**
ENV	<---	EA	.08	.08		-.13
ENV	<---	ESE	.224**	.23**		-.12
EO	<---	EA	.16**	.16**		-.15
EO	<---	ESE	-.17**	-.13*	-.12*	-.12*
EO	<---	ENV		.08		.38**
ENV	<---	Size	-.06	-.04	0.06	-.03
ENV	<---	Age		-.51***		-.06
EO	<---	Size		.30***		.79***
EO	<---	Age	.06	.06	0.02	.06
ENV	<---	EA*ESE			.41***	.74***
EO	<---	EA*ESE			-.14*	-1.06**
Variance Explained			**R^2**	**R^2**	**R^2**	**R^2**
ENV			.15	.16	.17	.17
EO			.04	.22	.05	.24

***Correlation is significant at .001 Levels; ** Correlation is significant at .01 Levels * Correlation is significant at .05 Levels (1-tailed)

Table 4: Test Results for No Spurious Relationship between Constructs

Path			Model 1 Estimate	P-values	Model 2 Estimate	P-Values
ENV	<---	EA	.08	.233	.08	.233
ENV	<---	Size	.22	.002	.22	.002
ENV	<---	ESE	.16	.011	.16	.011
ENV	<---	Age	(.14)	.013	(.13)	.018
EO	<---	EA	.08	.229	.08	.258
EO	<---	ESE			(.04)	.450
EO	<---	Size	(.51)	***	(.51)	***
EO	<---	Age	.28	***	.30	***

Table 5: Direct and Indirect Effects of the Interaction Model

Standardized Total Effects	EA	ESE	E1	E2	EA*ESE	ENV
ENV	.12	.14	-	-	.74	-
EO	.43	.05	.02	.06	1.04	.13
Standardized Direct Effects	EA	ESE	B4	B5	EC*ESE	ENV
ENV	.12	.16	-	-	.64	-
EO	.39	.06	-02	.06	-.05	-.13
Standardized Indirect Effects	EA	ESE	B4	B5	EC*ESE	ENV
ENV	-	-	-	-	-	-
EO	.02	.02	-	-	-.09	-

Based on the extensive statistical analyses conducted, the study hypotheses are supported. Similar to other studies, the study findings reveal that behavioral and cognitive manifestations of alertness and self-efficacy lead to higher levels of EO (Urban, 2016). Recognizing the vital links between alertness, ESE and EO, this study makes a meaningful contribution by providing empirical evidence in terms of modelling these relationships. With developments in social psychology research (Luthans et al., 2000) this currently permits entrepreneurship researchers to tackle the "thinking-doing connection" more directly, by focusing on ESE and alertness. Such an approach is a more fruitful area of research, it could be argued, in contrast to using alternative variables such as demographics. With the advances being made in fields such social neuroscience it is important that scholars attempt to "understand how knowledge is structured at a very deep level" (Krueger, 2007), which is focused on discovering the entrepreneurial mindset in terms of on alertness and ESE.

Limitations and Future Research: The study has typical cross-sectional design shortcomings as the paper loses full understanding whether alertness and ESE may well change over time. In this regard longitudinal studies are essential to examine whether entrepreneurial alertness and ESE can persist under conditions of environmental dynamism and hostility. Since the study relied on perceptual data some responses could be considered prejudiced by biases and cognitive inadequacies. Furthermore, as with previous studies, using cumulative measures of environmental perceptions may obscure less researched effects (Welter & Small bone, 2011), such as cultural traditions and the power of informal political institutions such as party politics on EO.

5. Conclusion

An important conclusion of this study is that the relationships between entrepreneurial alertness, self-efficacy and entrepreneurial orientation are mediated by environmental dynamism and hostility. The study adds to the growing literature on entrepreneurship by showing how interactions between these variables provide a more understandable and academically rigorous on figuration than any of the study factors would display if studied in isolation. The study also extends the current research agenda which notes that the interconnectedness of exogenous environmental processes in an emerging market, such as South Africa make it problematic to isolate unique factors as determinants of entrepreneurship (Urban, 2016).

Implications: The study findings can be advanced to practice and education, where consideration of alertness and self-efficacy as skills and abilities to be mastered could be brought into the design of curriculum and teaching methodologies, which can improve learning and instigate innovation. Considering the environmental dynamism and hostility facing entrepreneurs, they will need to develop higher levels of alertness and ESE to effectively deal with the complexity and changes present in the business environment (Baron, 2006; Gaglio & Katz, 2001). The study findings also have relevance at more national global levels where research indicates that significant job creation and firm performance result from disruptive and innovative opportunities, as opposed to self-employment opportunities', which are rarely scalable and mostly necessity based in emerging economies (Alvarez & Barney, 2014).

Recommendations: Policy is often used as an institutional mechanism to act as an enabler for enterprise start-ups and growth. It is recommended that policy should address the EO of SMEs by focusing on alertness, ESE and environmental perceptions. Policymakers can encourage entrepreneurship by fostering higher levels of alertness and ESE to alleviate some of the effects of hostile environments. As literature reveals, it is often the differences in perceptions which results in distinctions in opportunities pursued by the entrepreneur. An entrepreneur who is alert and has high levels of ESE may recognize one particular type of opportunity, whereas others may not even be aware that the opportunity exists (Autio & Acs, 2007; Venkataraman, 1997). In terms of academic relevance, this study contributes to the innovation and entrepreneurship literature, which has largely neglected understanding the impact that cognitive and behavioral perceptions have on EO in an emerging market context. Future studies could focus on different country institutional environmental conditions and determine if alertness and ESE are influenced positively by these institutions when pursuing EO. In general, developing a greater awareness of the complexities of the individual and the environment represents a productive area for future research.

References

Alvarez, S. A., Barney, J. B. (2014). Entrepreneurial opportunities and poverty alleviation. *Entrepreneurship Theory and Practice*, 38(1), 159–184.

Anderson, B. S., Covin, J. G. & Slevin, D. P. (2009). Understanding the relationship between entrepreneurial orientation and strategic learning capability: an empirical investigation. *Strategic Entrepreneurship Journal,* 3(3), 218–240.

Andrevski, G., Brass, D. J. & Ferrier, W. J. (2013). Alliance portfolio configurations and competitive action frequency. *Journal of Management*, 20(10), 1-27.

Ardichvili, A, Cardozo, R. & Ray, S. (2003). A theory of entrepreneurial opportunity identification and development. *Journal of Business Venturing*, 18(1), 105-123.

Autio, E. & Acs, Z. J. (2007). Individual and country-level determinants of growth aspiration in new ventures', in A. Zacharakis (Ed.). Frontiers of Entrepreneurship Research, 121-156.

Bamiatzi, V. C. & Kirchmaier, T. (2012). Strategies for superior performance under adverse conditions: A focus on small and medium-sized high-growth firms. *International Small Business Journal*, 32(3), 259 -284.

Bandura, A. (1986). Social Foundations of Thought and Action: A Social Cognitive Theory. Englewood Cliffs, N.J.: Prentice-Hall.

Bandura, A. (1997). Self-efficacy: The Exercise of Control. New York: W.H. Freeman & Company.

Baron, R. A. (2006). Opportunity recognition as pattern recognition: How entrepreneurs "connect the dots" to identify new business opportunities. *Academy of Management Perspectives,* 20, 104-119.

Basardien, F., Friedrich, C. & Twum-Darko, M. (2016). Evidence-based practices of promoting entrepreneurship education in Higher Education institutions in Africa. *Journal of Economics and Behavioral Studies,* 8(5), 68-81.

Brownhilder, N. (2016). Examining the moderating effect of environmental hostility on the entrepreneurial orientation-performance relationship. *Journal of Economics and Behavioral Studies,* 8(6), 6-18.

Bruwer, J. P. (2018). Do internal control activities adversely influence the profitability and solvency of South African SMMEs? *Journal of Economics and Behavioral Studies*, 10(1), 49-58.

Busenitz, L. W. & Lau, C. M. (1996). A cross-cultural cognitive model of new venture creation. *Entrepreneurship Theory and Practice*, 20(1), 25-39.

Busenitz, L. W., Plummer, L. A., Klotz, A. C., Shahzad, A. & Rhoads, K. (2014). Entrepreneurship research (1985–2009) and the emergence of opportunities. *Entrepreneurship Theory and Practice*, 38(8), 981–1000.

Business Partners. (2016). Available at: https://www.businesspartners.co.za/en-za.

Chen, C. C., Greene, P. G. & Crick, A. (1998). Does entrepreneurial self-efficacy distinguish entrepreneurs from managers? *Journal of Business Venturing*, 13(2), 295-316.

Covin, J. G. & Lumpkin, G. (2011). Entrepreneurial orientation theory and research: reflections on a needed construct. *Entrepreneurship Theory and Practice*, 35(5), 855–872.

Crowne, D. & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology*, 24(4), 340-354.

Davidsson, P. & Honig, B. (2003). The role of social and human capital among nascent entrepreneurs. *Journal of Business Venturing*, 18(3), 301-331.

Davidsson, P., Delmar, F. & Wiklund, J. (2006). Entrepreneurship and the growth of firms. Cheltenham, UK: Edward Elgar.

De Noble, A. F., Jung, D. & Ehrlich S. B. (1999). Entrepreneurial self-efficacy: The development of a measure and its relationship to entrepreneurial action. Frontiers of Entrepreneurship Research. Babson: Babson College.

Department of Trade and Industry. (2016). Available at: www.dti.gov.za.

Dess, G. G. & Beard, D. W. (1984). Dimensions of organizational task environment. *Administrative Staff Quarterly*, 29(1), 52-73.

Dess, G. G. & Lumpkin, G. T. (2005). The role of entrepreneurial orientation in stimulating effective corporate entrepreneurship. *Academy of Management Perspectives*, 19(1), 147–156.

Dobbs, M. & Hamilton, R. T. (2007). Small business growth: recent evidence and new directions. *International Journal of Entrepreneurial Behavior and Research*, 13(5), 296–322.

Drnovsek, M. & Glas, M. (2002). The entrepreneurial self-efficacy of nascent entrepreneurs: The case of two economies in transition. *Journal of Enterprising Culture*, 10(2), 107-131.

Earley, P. C. (1994). Self or group? Cultural effects of training on self-efficacy and performance. *Administrative Science Quarterly*, 39(1), 89-109.

Estrin, S., Korosteleva, J. & Mickiwicz, T. (2013). Which institutions encourage entrepreneurial growth aspirations? *Journal of Business Venturing,* 28(1), 564-580.

Fornell, C. & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(2), 39–50.

Gaglio, C. M. & Katz, J. (2001). The psychological basis of opportunity identification: entrepreneurial alertness. *Journal of Small Business Economics*, 16(1), 95–111.

Hair J. F., Black W. C., Babin B. J. & Anderson R. E. (2010). Multivariate data analysis: a global perspective. (Eds.). 7th Ed, Upper Saddle River, NJ: Pearson.

Hameed, I. & Ali, B. (2011). Impact of entrepreneurial orientation, entrepreneurial management and environmental dynamism on firm's financial performance. *Journal of Economics and Behavioral Studies*, 3(2), 101-114.

Haynie, J. M., Shepherd, D., Mosakowski, E. & Earley, P. C. (2010). A situated metacognitive model of the entrepreneurial mindset. *Journal of Business Venturing*, 25(2), 217–229.

Herrington, M., Kew, P. & Mwanga, A. (2017). South Africa Report 2016/2017. Can Small Businesses Survive in South Africa? Cape Town: UCT.

Kaish, S., Gilad B. (1991). Characteristics of opportunity search for entrepreneurs versus executives: sources, interests, and general alertness. *Journal of Business Venturing*, 6(1), 45-61.

Kampel, K. (2003). The role of South African competition law in supporting SMEs. Paper presented at the 48th ICSB World Conference, Advancing Entrepreneurship and Small Business 15-18 June 2003, Belfast, Northern Ireland.

Khanna, T. & Palepu, K. G. (2010). Winning in emerging markets: A roadmap for strategy and execution. Boston: Harvard Business School Press.

Kirzner, I. M. (1997). Entrepreneurial discovery and the competitive market process: An Austrian approach. *Review of Austrian Economics*, 11(12), 5-17.

Krueger, N. F. (2007). What lies beneath? The experiential essence of entrepreneurial thinking. *Entrepreneurship Theory and Practice*, 31(1), 123-138.

Lundström, A. & Stevenson, L. (2005). Entrepreneurship Policy: Theory and Practice, Volume 9, New York: Springer.

Luthans, F., Stajkovic, A. D. & Ibrayeva, E. (2000). Environmental and psychological challenges facing entrepreneurial development in transitional economies. *Journal of World Business*, 35(1), 95-117.

McGee, J. E., Peterson, M., Mueller, S. L. & Sequeira J. M. (2009). Entrepreneurial self-efficacy: refining the measure. *Entrepreneurship Theory and Practice*, 33(1), 1-24

McGrath, R. G., Macmillan, I. C. & Scheinberg, S. (1992). Elitists, risk takers, and rugged individualists? An exploratory analysis of cultural differences between entrepreneurs and non-entrepreneurs. *Journal of Business Venturing*, 7(1), 115-135.

Miller, D. & Friesen, P. H. (1982). Innovation in conservative and entrepreneurial firms: two models of strategic momentum. *Strategic Management Journal*, 3(1), 1-25.

Moroz, P. W. & Hindle, K. (2012). Entrepreneurship as a process: Toward harmonizing multiple perspectives. *Entrepreneurship Theory and Practice*, 36(4), 781-818.

Myers, S. & Marquis, D. G. (1969), Successful industrial innovation. Washington DC. National Science Foundation.

National Small Business Chamber (NSBC). (2016). Fueling Small Business Growth: National Small Business Chamber. Available from: https://www.nsbc.org.za.

Nunnally, J. C. (1978). Psychometric theory, (2nd Ed.). New York: McGraw-Hill.

Piispanen, V. V., Paloniemi, K. J. & Simonen, J. (2018). Qualities of the growth-oriented entrepreneur. *International Journal of Entrepreneurship and Small Business*, 34 (1), 112 – 130.

Podsakoff, P. M., Mackenzie, S. B. & Podsakoff, N. P. (2012). Sources of method bias in social science research and recommendations on how to control it. *Annual Review of Psychology*, 63(5), 539-569.

Poon, J. M. L. (2006). Effects of self-concept traits and entrepreneurial orientation on firm performance. *International Small Business Journal,* 24(1), 61–82.

Rauch, A., Wiklund, J., Lumpkin, G. & Frese, M. (2009). Entrepreneurial orientation and business performance: an assessment of past research and suggestions for the future. *Entrepreneurship Theory and Practice,* 33(3), 761–787.

RSA, Republic of South Africa. (2003). National Small Business Act 102 of 1996. Cape Town: Government Printers.

Samson, A. T. & Mahmood, R. (2015). The impact of entrepreneurial orientation, reconfiguring capability and moderation of environmental turbulence on export performance of SMEs in Nigeria. *Journal of Economics and Behavioral Studies,* 7(3), 76-87.

Shane, S. & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review,* 25(1), 217–226.

Shane, S., Locke, E. A. & Collins, C. J. (2003). Entrepreneurial motivation. *Human Resource Management Review*, 13(2), 257-279.

Sheehan, K. B. & McMillan, S. J. (1999). Response variation in e-mail surveys: An exploration. *Journal of Advertising Research*, 39(4), 45-54.

Statistics South Africa. (2014). Gross domestic product, Annual estimates 2004 – 2013, Regional estimates 2004 – 2013. Third quarter 2014. Statistical release P0441, Pretoria.

Tang, J. Kacmar, K. M. M. & Busenitz, L. (2012). Entrepreneurial alertness in the pursuit of new opportunities. *Journal of Business Venturing*, 27(1), 77–94.

Ucbasaran, D., Westhead, P., Wright, M. (2001). The focus of entrepreneurial research: contextual and process issues. *Entrepreneurship Theory and Practice*, 25(1), 34-45.

Urban, B. & Hwindingwi, R (2016). Institutional factors in African Emerging Markets influencing MNE corporate strategies. *International Journal of Emerging Markets*, 11(4), 497-513.

Urban, B. (2007). A framework for understanding the role of culture in entrepreneurship. *Acta Commercii*, 7(1), 82-95.

Urban, B. (2016). Empirical evidence on the influence of the institutional environment on venture innovation performance in South Africa. *Journal of Developmental Entrepreneurship*, 21(2), 1-14.

Venkataraman, S. (1997). The distinctive domain of entrepreneurial research. Advances in Entrepreneurship. *Firm Emergence and Growth*, 3(1), 119-138.

Welter, F. & Small bone, D. (2011). Institutional perspectives on entrepreneurial behavior in challenging environments. *Journal of Small Business Management*, 49(1), 107-125.

Wiklund, J., Patzelt, H. & Shepherd, D. A. (2009). Building an integrative model of small business growth. *Small Business Economics*, 32(4), 351–375.

Wright, M., Roper, S., Hart, M. & Carter, S. (2015). Joining the dots: Building the evidence base for SME growth policy. *International Small Business Journal*, 33(1), 3-11.

Xavier, S. R., Kelley, D., Kew, J., Herrington, M. & Vorderwulbecke, A. (2012). Global Entrepreneurship Monitor 2012 Global Report. London: Global Entrepreneurship Research Association.

Zahra, S. (1993). A conceptual model of entrepreneurship as firm behavior: a critique and extension. *Entrepreneurship Theory and Practice*, 16(1), 5-21.

Zahra, S. A. & Covin, J. G. (1995). Contextual influences on the corporate entrepreneurship-performance relationship: A longitudinal analysis. *Journal of Business Venturing*, 10(1), 43-58.

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Organisational Capabilities and Replicating Successful Programs Designed to Empower Poor Youths: A Correlational Study

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Abstract: This article reports on the investigated relationship between the organisational capabilities of youth-serving non-governmental organisations (NGOs) and the replication of successful programmes designed to empower poor youths in Nigeria. The data used in this study were obtained from 187 youth-serving NGOs in Nigeria registered with the Nigeria Network of Non-Governmental Organisations, the Conference of Non-Governmental Organisations (Edo State chapter), the Civil Society for HIV/AIDS in Nigeria (Edo State chapter) and the National Youth Council of Nigeria (Edo State chapter). Pearson's correlation r was used to examine the relationship between the research variables and a positive relationship was found between the organisational capabilities of youth-serving NGOs and the replication of successful programmes designed to empower poor youths. In addition, regression analysis was used to determine the organisational capabilities of youth-serving NGOs that predicted the replication of successful programmes designed to empower poor youths in Nigeria, and it was found that adequate staffing, alliance-building, lobbying, replication and stimulating market forces significantly predicted the replication of successful programmes designed to empower poor youths in Nigeria. The study therefore recommends that appropriate measures be put in place by managers of youth-serving NGOs to ensure that the main predictors of the replication. Of successful programmes designed to empower poor youths are adequate to aid successfully in the replication of successful programmes designed to empower poor youths in Nigeria while also giving adequate attention to other organisational capabilities contained in the SCALERS model.

Keywords: *Nigeria; organisational capabilities; SCALERS model; youth poverty alleviation; youth-serving NGOs*

1. Introduction

Solving today's social challenges requires adequate organisational capabilities on which social sector organisations can rely to have the desired social outcome in the society. An increasing number of social sector organisations rely on diverse organisational capabilities to contribute positively to the alleviation of societal issues (Adele, 2015; Kim, 2011; Tchouakeu, Maldonado, Zhao, Robinson, Maitland, & Tapia, 2011). Organisational capabilities are "the socially complex routines that determine the efficiency with which firms physically transform inputs into outputs" (Collis, 1994, p. 145). Some examples of organisational capabilities are staffing, communication, alliance-building, lobbying, earnings-generation replication and stimulating market forces (Bloom & Smith, 2010). Although extensive academic studies has investigated organisational capabilities in relation to several organisational outcomes, such as customer value creation (Martelo, Barroso & Cepeda, 2013), competitive advantages and capacity of organisations to respond to internal and external change (Inan & Bititci, 2015) and profitability (López-Cabarcos, Göttling-Oliveira-Monteiro & Vázquez-Rodríguez, 2015), much less research has investigated organisational capabilities in relation to social outcomes (Bloom & Smith, 2010).

The importance of organisational capabilities in enabling social sector organisations alleviate social issues in society suggests the need for more studies to focus on the relationship between organisational capabilities and social outcomes. This need is shown in the context of youth poverty alleviation in Nigeria. The activities of youth-serving NGOs in Nigeria in the areas of –healthcare services (HIV/AIDS intervention) (Ajowun, Titiloye, & Oshiname, 2015; Isiugo-Abanihe, Olajide, Nwokocha, Fayehun, Okunola, & Akingbade, 2015); education and training services (Alabi, Bahah, & Alabi, 2014; Oshadare, Ige, & Lawal, 2015); financial services (microcredit lending services) (Eneji, Obim, Otu, & Ogli, 2013); women development services (Omofonmwan & Odia, 2009; Oyelude & Bamigbola, 2013) and vocational training (Bello, Danjuma, & Adamu, 2007) have become very important as Nigeria battles with increasing cases of youth poverty (Adedokun, & Oluwag bohunmi, 2014; Adisa, 2013; Aiyedogbon & Ohwofasa, 2012; Curtain, 2003); and the negative consequences associated with youth poverty such as crime (Ajaegbu, 2012; Ayegba, 2015; Onuoha, 2014); youth homelessness (Edewor, 2014); and illegal migration (Okafor, 2012).

It is important to add that previous studies on the activities of youth-serving NGOs in Nigeria have revealed that, in their attempt to alleviate youth poverty in Nigeria, youth-serving NGOs have several organisational capability challenges with regard to –staffing (Aransiola, 2013; Iwuchukwu, Nwankwo, & Igbokwe, 2014); communication (Nwogu, 2014); alliance-building (Kasali, Ahmad, & Ean, 2015); lobbying (Momoh, Oluwasanu, Oduola, Delano, & Ladipo,2015); earnings-generation (Aransiola, 2013; Oyelude, & Bamigbola, 2013); replication (Adepoju & Oyesanya, 2014; Mac-Ikemenjima, 2005; Ohize & Adamu, 2009); and stimulating market forces (Akpan, Patrick, James, & Agom, 2015). Furthermore, organisational capability challenges may hinder the capacities of youth-serving NGOs to replicate successful programmes designed to empower poor youths in Nigeria and to fight youth poverty in Nigeria, as evidence from various studies show certain problems that negatively affect the fight to alleviate youth poverty in Nigeria by youth-serving NGOs, namely: inadequate staffing (Aransiola, 2013); insufficient funding (Nwogu, 2014); poor communication (Nwogu, 2014); reduced support from development partners (Kasali et al., 2015); and a lack of capacity to negotiate with government (Momoh et al., 2015).

Based on the importance of the organisational capabilities of youth-serving NGOs in the fight to alleviate youth poverty in Nigeria, there is a need to ascertain and understand the actual relationship between organisational capabilities of youth-serving NGOs and the replication of successful programmes designed to empower poor youths to maximise the potential of youth-serving NGOs to alleviate the suffering of deprived youths in Nigeria. The main purpose of this study was to contribute to the theoretical understanding of the SCALERS model (see Bloom & Smith, 2010) by investigating the relationship between the organisational capabilities of youth-serving NGOs and the replication of successful programmes designed to empower poor youths in Nigeria using the SCALERS model as a theoretical framework. In order to achieve the study aim, the following were the core research questions to which extent is there a positive relationship between the organisational capabilities of youth-serving NGOs (as contained in the adapted SCALERS model) and the replication of successful programmes designed to empower poor youths?

To which extent are the organisational capabilities of youth-serving NGOs (as contained in the adapted SCALERS model) able to predict the replication of successful programmes designed to empower poor youths in Nigeria? More specifically, this study had three objectives to replicate Bloom and Smith's (2010) study in a Nigeria context (a developing country), specifically in a previously unexplored social organisation context, namely youth-serving NGOs. Youth poverty alleviation, and the replication of successful programmes designed to empower poor youths in Nigeria to determine the extent to which there exists a positive relationship between the organisational capabilities of youth-serving NGOs and the replication of successful programmes. Designed to empower poor youths in Nigeria and to determine the organisational capabilities of youth-serving NGOs, which predict the replication of successful programmes designed to empower poor youths in Nigeria. This study built on the SCALERS model by extending the applicability of the SCALERS model to investigate the relationship between the organisational capabilities of youth-serving NGOs and the replication of successful programmes designed to empower poor youths in Nigeria for the first time using a developing country context.

Furthermore, this article contributes to increasing the number of articles reporting on studies dedicated to the replication of successful voluntary sector initiatives as Mulgan (2006, p. 159) notes that few studies have been dedicated to discourse on replicating successful voluntary sector initiatives. This study focused on youth-serving NGOs as the unit of analysis and the replication of successful programmes designed to empower poor youths. As the social outcome because a previous study by Bloom and Smith (2010) applied the SCALERS model to investigate the organisational capabilities of social entrepreneurial organisations to scale social outcome resulting in the need to ascertain the wider applicability of the SCALERS model to other social sector organisations and their target social outcomes. The article has four parts. First, it reports on the SCALERS model as the theoretical framework for the study, and presents previous studies related to organisational capabilities and several outcomes targeted by organisations. Then the research methodology is presented which is followed by the results and discussion. The article concludes with recommendations emerging from the study.

2. Literature Review

This section presents the literature review for the study.

Theoretical Literature: This study adapted the SCALERS model by Bloom and Smith (2010) to investigate the relationship between the organisational capabilities of youth-serving NGOs and the replication of successful programmes designed to empower poor youths in Nigeria. This was done due to existing gaps in literature focusing on the issues experienced by youth-serving NGOs in their pursuit to alleviate youth poverty in Nigeria, and existing gaps in literature focusing on the relationship between organisational capabilities and several business outcomes. According to Bloom and Chatterji (2009, p. 115), there are "seven proposed drivers or organisational capabilities that can encourage the successful scaling by a social entrepreneurial organisation". These organisational capabilities are "staffing, communication, alliance building, lobbying, earnings-generation, replication and stimulating market forces", represented by the SCALERS acronym (Bloom & Chatterji, 2009, p. 115). Furthermore, the proposed relationship between the organisational capabilities contained in the SCALERS model and the scale of social impact (see Figure 1) (Bloom & Chatterji, 2009) has been confirmed by Bloom and Smith (2010). The present study, having adapted the SCALERS model, sought to explore the relationship between the organisational capabilities contained in the SCALERS model and the replication of successful programmes designed to empower poor youths (see Figure 2).

Hypotheses Development: In developing the hypotheses for this study, the measurement of the SCALERS constructs and the scale of the social impact construct in the empirical test of the SCALERS model by Bloom and Smith (2010) were adapted and subsequently used in this study (see Figure 1 & 2). The SCALERS constructs were the independent variables, while the scale of social impact was the dependent variable for the empirical test of the SCALERS model by Bloom and Smith (2010).

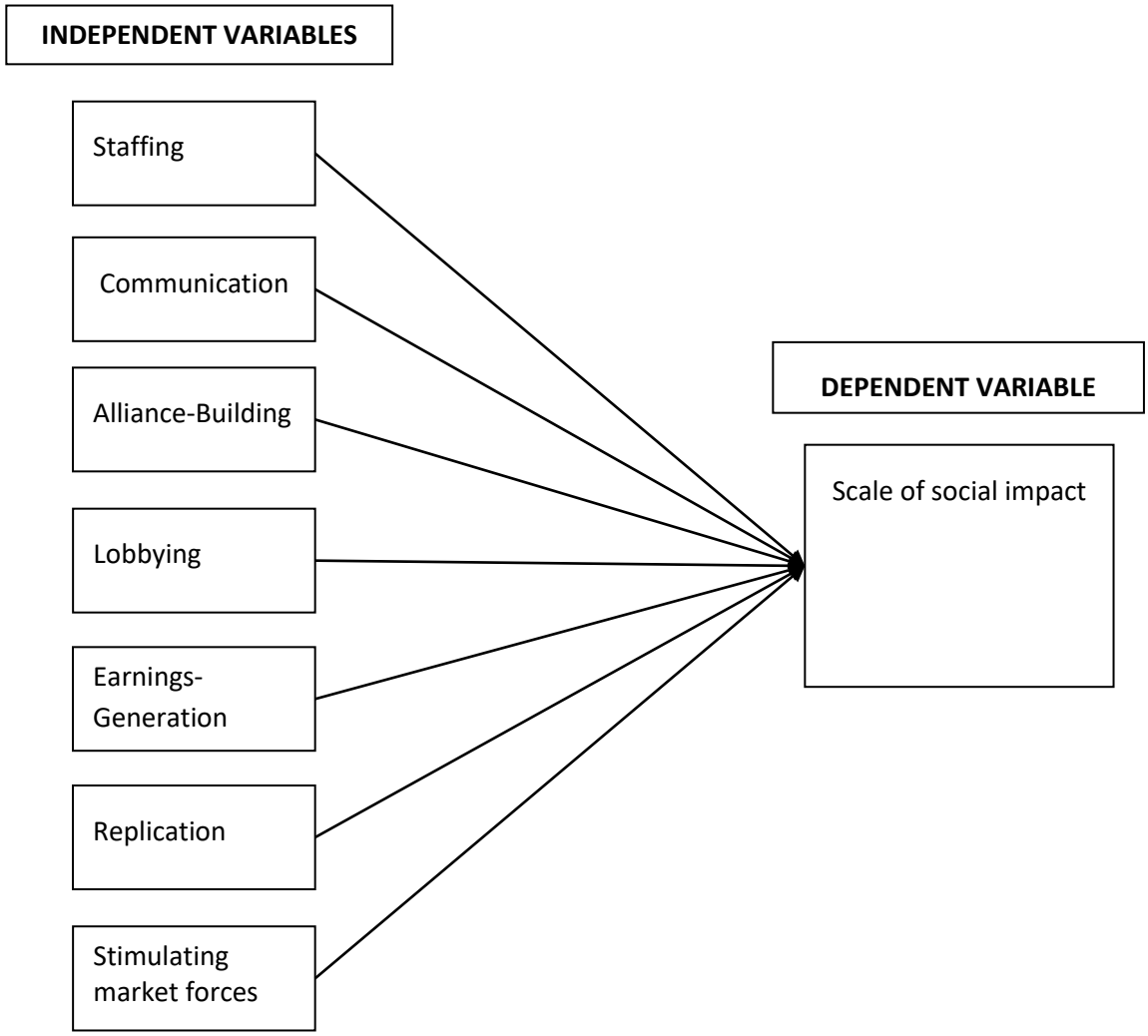
The Following were the Research Hypotheses Formulated for this Study:

H1: Staffing is positively related to the replication of successful programmes designed to empower poor youths.
H0: Staffing is not positively related to the replication of successful programmes designed to empower poor youths.
H2: Communication is positively related to the replication of successful programmes designed to empower poor youths.
H0: Communication is not positively related to the replication of successful programmes designed to empower poor youths.
H3: Alliance-building is positively related to the replication of successful programmes designed to empower poor youths.
H0: Alliance-building is not positively related to the replication of successful programmes designed to empower poor youths.
H4: Lobbying is positively related to the replication of successful programmes designed to empower poor youths.
H0: Lobbying is not positively related to the replication of successful programmes designed to empower poor youths.
H5: Earnings-generation is positively related to the replication of successful programmes designed to empower poor youths.
H0: Earnings-generation is not positively related to the replication of successful programmes designed to empower poor youths.
H6: Replicating is positively related to the dissemination of successful programmes designed to empower poor youths.
H0: Replicating is not positively related to the dissemination of successful programmes designed to empower poor youths.
H7: Stimulating market forces is positively related to the replication of successful programmes designed to empower poor youths.

H0: Stimulating market forces is not positively related to the replication of successful programmes designed to empower poor youths.

Materials: The instrument utilised for this study was a self-administered questionnaire adapted from the SCALERS model exploratory study by Bloom and Smith (2010, pp. 144–145). The research instrument contained 28 questions that had to be rated on a 5-point Likert type scale used to measure the perceptions of youth-serving NGOs of their organisational capabilities and replicating successful programmes designed to empower poor youths. Informed consent forms were used to obtain the research participants' consent to participate in the study.

Figure 1: SCALERS Model by Bloom and Smith (2010)



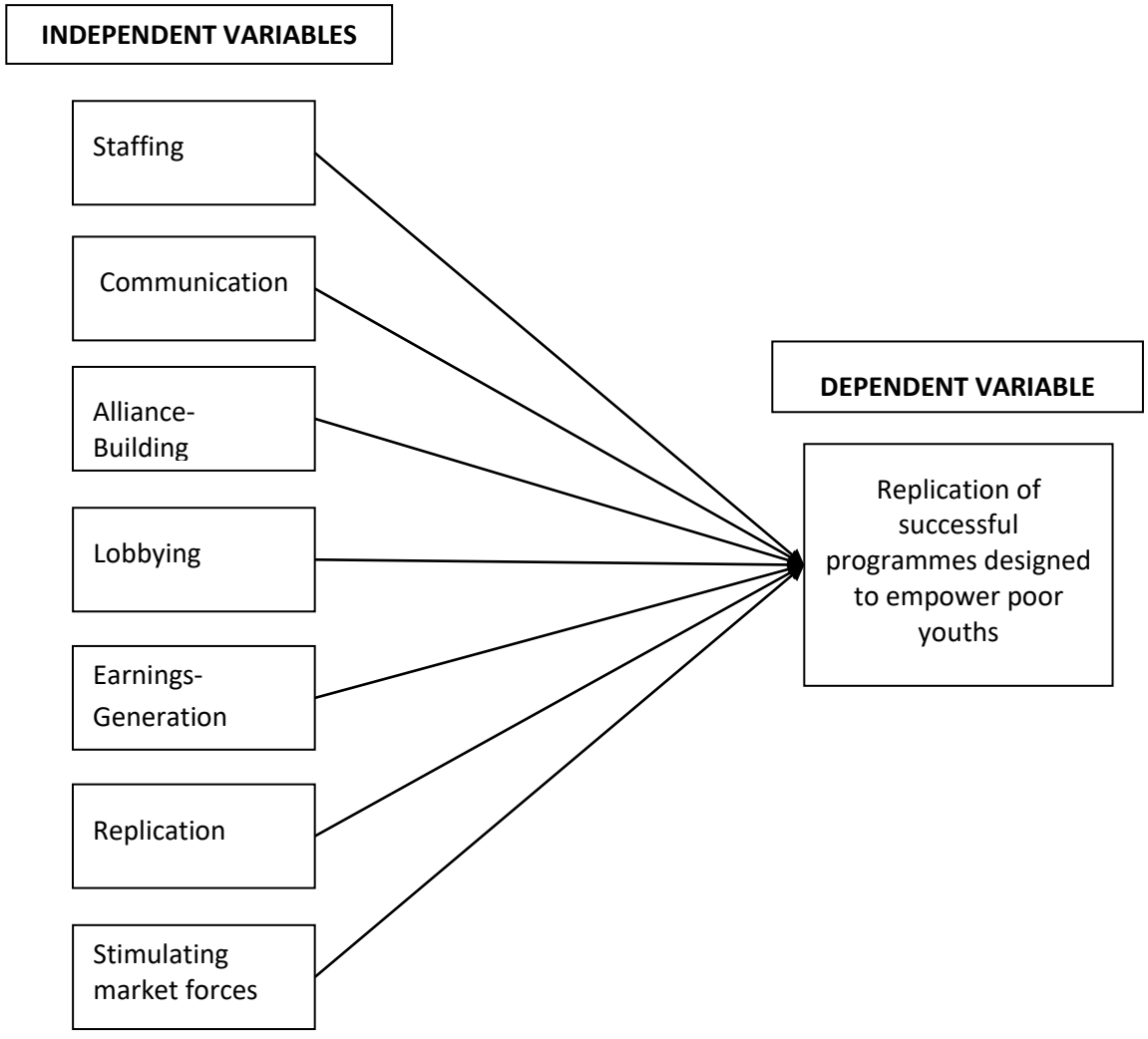
Source: Bloom and Smith (2010)

Data Collection: The data were collected at locations where youth-serving NGOs held scheduled association meetings. The first location where the research data were obtained involved the NNNGO via a conference themed 'Global good practices in NGO regulations', which was held on 9 December 2015 in Lagos, Nigeria. Furthermore, meetings of the Conference of Non-Governmental Organisations (CONGO) (Edo State chapter), the Civil Society for HIV/AIDS in Nigeria (CiSHAN) (Edo State chapter) and the National Youth Council of Nigeria (NYCN) (Edo State chapter), which had youth-serving NGOs in large attendance, were held. A total 187 completed research questionnaires were returned after issues of improperly filled-out questionnaires

had been addressed, indicating a response rate of 95.4%, which was very good for the study (see Baruch & Holtom, 2008, pp. 1141, 1155).

Data Analysis: The Statistical Package for the Social Sciences (SPSS) version 23 for Windows was used for the analysis and presentation of the research data. Pearson's correlation r was used to test the relationship between replicating successful programmes designed to empower poor youths and the organisational capabilities of youth-serving NGOs. In addition, regression analysis was used to determine the independent variables (organisational capabilities of youth-serving NGOs) that predicted the dependent variable (replication of successful programmes designed to empower poor youths). The choice of Pearson's correlation r and regression analysis was based on the research data satisfying the criteria for parametric tests, and these criteria were interval scale variables (dependent and independent). As recommended by Cohen et al. (2013, p. 415) and Sekaran (2003, p. 394), and a large sample size of above 30 research participants as recommended by Elliot and Woodward (2007, pp. 26–27, p. 57) and Pallant (2007, p. 295). Additional justification for the choice of Pearson's correlation r and regression analysis was based.

Figure 2: Adapted SCALERS Model for the Organisational Capabilities of Youth-Serving NGOS to Replicate Successful Programmes Designed to Empower Poor Youths



Source: Bloom and Smith (2010) (adapted)

Empirical Literature: Notable studies (see Lau, Man & Chow, 2004; López-Cabarcos et al., 2015; Van Oppen & Brugman, 2009) have shown that organisational capabilities in different organisations are correlated with several outcomes, such as business performance and social influence. Regarding the effect of organisational capabilities on business performance, Zehir and Acar (2006), using a survey, examined organisational capabilities and their effect on business performance. They found that increasing the level of organisational capabilities had a positive effect on business performance. In addition, Bloom and Smith (2010) considered the drivers of social entrepreneurial effect using the SCALERS model. They found that staffing, communication, alliance-building, lobbying, earnings-generation, replication and stimulating market forces were positively related to the scaling of social outcomes. The present study investigated the relationship between the organisational capabilities of youth-serving NGOs and the replication of successful programmes designed to empower poor youths in Nigeria.

3. Methodology

This section presents the research methodology for the study.

Study Population and Sampling: The population for this study comprised youth-serving NGOs. According to the Nigeria Network of Non-Governmental Organisations (NNNGO) (a private organisation that has a database of NGOs, which is based in Lagos, Nigeria), there were approximately 400 active and registered youth-serving NGOs in December 2015 in Nigeria. The reason for the selection of youth-serving NGOs for this study was based on a gap in the SCALERS model literature that focused solely on social entrepreneurial organisations and scaling social entrepreneurial impact in the United States of America (Bloom & Smith, 2010). This study extended the applicability of the SCALERS model by re-contextualising the SCALERS model by focusing on youth-serving NGOs and replicating successful programmes designed to empower poor youths in Nigeria. A simple random sampling technique was adopted to gain access to the NGOs. The study utilised Cohen, Mani on (p. 104) table on sample size for a defined population figure to determine the sample size for the research population of 400 youth-serving NGOs available for the study from the sampling frame provided by the NNNGO. The sample contained 196 youth-serving NGOs based on the 95% confidence level and the 5% margin of error. The choice for the selection of sample size of 196 youth-serving NGOs was based on the confidence level and the confidence interval required to achieve the results needed to reflect the perceptions of the target population of 400 youth-serving NGOs accurately as recommended by Cohen et al. (2013).

Study Design: This study adopted a non-experimental and correlational research design as it considered the relationship between replicating successful programmes designed to empower poor youths and the organisational capabilities of youth-serving NGOs. The variables in this study were organisational capabilities (independent variables) as contained in the SCALERS model, and replicating successful programmes designed to empower poor youths (dependent variable). On the usage of the tests by scholars such as Bloom and Smith (2010, p. 128) and Zehir and Acar (2006, pp. 168–169), who applied the tests to investigate the relationship between organisational capabilities and business performance and scaling of social effect.

4. Results and Discussion

This section presents the analysis of results and a discussion of Pearson's correlation coefficient (r) of the testing of the research hypotheses and regression analysis of the independent variables (organisational capabilities) that predicted the dependent variable (replication of successful programmes designed to empower poor youths).

Pearson's Correlation R Results: As seen in Table 1, an increase in the effectiveness of the staffing ($r=0.498$, $p < 0.0005$), communication ($r=0.469$, $p < 0.0005$), alliance-building ($r=0.444$, $p < 0.0005$), lobbying ($r=0.426$, $p < 0.0005$), earnings-generation ($r=0.292$, $p < 0.0005$), replication ($r=0.426$, $p < 0.0005$), and stimulating market forces ($r=0.408$, $p < 0.0005$) capabilities of youth-serving NGOs reflected a positive influence on the increase in the capacity of youth-serving NGOs to replicate successful programmes designed to empower poor youths in Nigeria. These findings indicate that the null hypotheses (H_0) for hypotheses 1 to 7 were rejected. This means that the organisational capabilities contained in the SCALERS model and investigated in this study were positively related to the replication of successful programmes designed to empower poor

youths in Nigeria. These findings overall suggest that the staffing, communication, alliance-building, lobbying, earnings-generation, replication and stimulating market forces capabilities of youth-serving NGOs as contained in the SCALERS model play a significant role in the replication of successful programmes designed to empower poor youths in Nigeria (Igbinakhase, 2017). Furthermore, the weak positive significance in the relationship between earnings-generation and the replication of successful programmes designed to empower poor youths in this study might be explained by the fact.

That a significant number of youth-serving NGOs (M=2.56, SD=1.058), t (186) = -5.737, p < 0.0005) indicated that, at the time of this research, they did not have a sustainable income from products and services that they offered at a price. This was unlike their social entrepreneurship counterparts in the study carried out by Bloom and Smith (2010), who were able to realise income from products and services that they offered at a price. Lastly, the implication of the results of the hypotheses testing carried out on all seven hypotheses was that improvement of the staffing, communication, alliance-building, earnings-generation, replication and stimulating market forces capabilities of youth-serving NGOs will be beneficial in the replication of successful programmes designed to empower poor youths. As result of this implication, youth-serving NGOs should endeavour to resolve their – staffing (Aransiola, 2013; Odukoya, Busari, & Ateh-Abang, 2006); communication (Nwogu, 2014); alliance-building (Kasali et al., 2015); lobbying (Momoh et al., 2015). Earnings-generation (Aransiola, 2013; Oyelude & Bamigbola, 2013); replication (Adepoju & Oyesanya, 2014; Nwogu, 2014; Patrick & Ijah, 2012; Samuels, Blake & Akinrimisi, 2012); and stimulating market forces challenges (Akpan et al., 2015) in time in order to achieve their youth poverty alleviation goals in society.

Table 1: Hypothesis Testing Using Pearson's Correlation R

		RSPDEPY	Staffing	Communication	Alliance-building	Lobbying	Earnings-generation	Replication	Stimulating market forces
RSPDEPY*	Pearson's correlation	1	0.498**	0.469**	0.444**	0.426**	0.292**	0.444**	0.408**
	Sig. (2-tailed)		0.000	0.000	0.000	0.000	0.000	0.000	0.000
	N	187	187	187	187	187	187	187	187

* RSPDEPY = replication of successful programmes designed to empower poor youths
** Correlation is significant at the 0.01 level (2-tailed).
Source: Author's own compilation

Regression Analysis: As seen in Table 2, the seven predictors (independent variables) explained 44.1% of the variance (R^2=0.441, F (7,169) = 20.160, p < 0.0005). As a result, it was found that adequate staffing significantly predicted the replication of successful programmes designed to empower poor youths (β=0.117, p=0.043), as did alliance-building (β=0.188, p=0.000), replication (β=0.113, p=0.034), lobbying (β=0.138, p=0.009) and stimulating market forces (β=0.180, p=0.001). These findings overall suggest that a major boost in the staffing, alliance-building, lobbying, replication and stimulating market forces capabilities of youth-serving NGOs would significantly improve the replication of successful programmes designed to empower poor youths to alleviate youth poverty in Nigeria (Igbinakhase, 2017). The results of this study bring new empirical evidence to the literature, which is consistent with the argument that organisational capabilities have the potential to influence the capacity of an NGO to scale for social outcomes in addition to social enterprises (Bloom & Chatterji, 2009; Bloom & Smith, 2010).

In addition, this study brings new empirical evidence in the percentage of variance (namely 44.1%) explained by the organisational capabilities of youth-serving NGOs in the replication of successful programmes designed. To empower poor youths in Nigeria for seven organisational capabilities as contained in the SCALERS model in addition to the study by Bloom and Smith (2010), which showed that the SCALERS model accounted for "38% of the variance in the scaling of social impact" (Bloom & Smith, 2010, p. 140). Lastly, when all the SCALERS are combined in the model used in this study, communication and earnings-generation became unimportant. This is because NGOs in general in Nigeria are known to be non-profit-focused with

respect to their earnings-generation capability, while, with respect to their communication capability, the youth-serving NGOs may have operated in an environment where additional communication with key stakeholders would not lead to improved communication outcomes. This brings new empirical evidence to the literature. This finding is inconsistent with the findings by Bloom and Smith (2010) that alliance building and lobbying became irrelevant when the SCALERS were combined in a model. This may suggest that investigations of organisational capabilities for NGOs in the scale of specific social outcomes may indicate different unimportant organisational capabilities when all the SCALERS are combined in the model as opposed to what was found in the exploration of the SCALERS model by Bloom and Smith (2010).

Table 2: Regression Analysis to Determine the Independent Variables that Predicted the Dependent Variable

	Un Standardized coefficients		Standardised coefficients		
	B	Std. error	Beta	T	Sig.
Constant	0.967	0.253		3.827	0.000
Staffing	0.117	0.057	0.159	2.041	0.043
Communication	0.124	0.068	0.136	1.825	0.070
Alliance-building	0.188	0.053	0.227	3.568	0.000
Lobbying	0.138	0.052	0.175	2.652	0.009
Earnings-generation	-0.100	0.052	-0.139	-1.928	0.055
Replication	0.113	0.053	0.151	2.132	0.034
Stimulating market forces	0.180	0.052	0.235	3.439	0.001

Note: Dependent variable: replication of successful programmes designed to empower poor youths
Source: Author's own compilation

5. Conclusion

This study investigated the relationship between the organisational capabilities of youth-serving NGOs and the replication of successful programmes designed to empower poor youths using the SCALERS model as a theoretical framework. It also determined the organisational capabilities of youth-serving NGOs that predicted the replication of successful programmes designed to empower poor youths in Nigeria. Using Pearson's correlation r and regression analysis the study found that the organisational capabilities of youth-serving NGOs were positively correlated with the replication of successful programmes designed to empower poor youths and that adequate staffing, alliance-building, lobbying, replication and stimulating market forces capabilities of youth-serving NGOs will result in the improvement of the replication of successful programmes designed to empower poor youths to alleviate youth poverty in Nigeria.

It is recommended that, as youth-serving NGOs tackle the issue of the growing scourge of youth poverty in Nigeria, appropriate measures must be put in place by managers of youth-serving NGOs to ensure that the main predictors of the replication of successful programmes designed to empower poor youths which are staffing, alliance-building. Lobbying, replication and stimulating market forces capabilities are adequate to aid the replication of successful programmes designed to empower poor youths in Nigeria successfully while also giving adequate attention to other organisational capabilities contained in the SCALERS model. Such measures, when implemented, will enable youth-serving NGOs to have adequate organisational capabilities to achieve their organisational goals in society.

Limitations and Directions for Future Research: The first limitation of the study was that the data were obtained from youth-serving NGOs in Nigeria and as a result, the generalisation of the research findings is limited to Nigeria and youth-serving NGOs in Nigeria. The second limitation was that the capabilities of youth-serving NGOs investigated in this study were limited to independent variables in the SCALERS model (staffing, communication, alliance-building, lobbying, earnings-generation, replication and stimulating market forces), while the dependent variable was the replication of successful programmes designed to empower poor youths. As a result, there may be other organisational capabilities of youth-serving NGOs that may be correlated with the replication of successful programmes designed to empower poor youths. The third limitation was that the alliance-building and earnings-generation measurement scales both had low internal

consistency reliability based on the benchmarked Standards of acceptable reliability for this study (namely 0.492 < 0.7 and 0.678 < 0.7 respectively). Which could not be improved by deleting items, as the researcher relied on the "meaningful content coverage of some domain and reasonable unidimensionality of the measure", as suggested by Schmitt (1996, p. 352). The researcher satisfactorily managed these limitations to achieve the research objectives. Future research is needed to establish other organisational capabilities of youth-serving NGOs that may influence the replication of successful programmes designed to empower poor youths in Nigeria, as this study had established the correlation between the organisational capabilities of youth-serving NGOs and the replication of successful programmes designed to empower poor youths, and also that the organisational capabilities of youth-serving NGOs in the adapted SCALERS model accounted for 44.1% of the variance in the replication of successful programmes designed to empower poor youths in Nigeria.

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References

Adedokun, M. O. & Oluwagbohunmi, M. F. (2014). An overview of the challenges facing youths in Nigeria society. *International Journal of Humanities and Social Science*, 4(6), 154–161.

Adele, H. A. (2015). Networking: A prerequisite for socio value creation of NGOs in South Western Nigeria. *European Journal of Business and Social Sciences*, 4(1), 75–89.

Adepoju, R. I. & Oyesanya, O. S. (2014). A critical analysis of poverty alleviation strategies of Al-Hayat Relief Foundation in Nigeria. *Journal of Islamic Finance*, 3(2), 49–59.

Adisa, W. B. (2013). The travails and challenges of a post-military state on Nigerian youth. *International Journal of Sociology and Anthropology*, 5(7), 226–232.

Aiyedogbon, J. O. & Ohwofasa, B. O. (2012). Poverty and youth unemployment in Nigeria, 1987–2011. *International Journal of Business and Social Science*, 3(20), 269–279.

Ajaegbu, O. O. (2012). Rising youth unemployment and violent crime in Nigeria. *American Journal of Social Issues and Humanities*, 2(5), 315–321.

Ajowun, A. J., Titiloye, M. A. & Oshiname, F. O. (2015). Effects of peer education on the knowledge and use of HIV counselling and testing services among young persons in Ibadan, Nigeria. *African Journal of Biomedical Research*, 18(2), 161–170.

Akpan, S. B., Patrick, I. V., James, S. U. & Agom, D. I. (2015). Determinants of decision and participation of rural youth in agricultural production: A case study of youth in the southern region of Nigeria. *Russian Journal of Agricultural and Socio-Economic Sciences*, 7(43), 35–48.

Alabi, T., Bahah, M. & Alabi, S. O. (2014). The girl-child: A sociological view on the problems of girl-child education in Nigeria. *European Scientific Journal*, 10(2), 393–409.

Aransiola, J. O. (2013). Providing sustainable supports for street children in Nigeria: Stakeholders' challenges and the policy options available. *Advances in Applied Sociology*, 3(3), 172–177.

Ayegba, U. S. (2015). Unemployment and poverty as sources and consequence of insecurity in Nigeria: The Boko Haram insurgency revisited. *African Journal of Political Science and International Relations*, 9(3), 90–99.

Baruch, Y. & Holtom, B. C. (2008). Survey response rates and trends in organisational research. *Human Relations*, 61, 1139–1160.

Bello, M. I., Danjuma, I. M. & Adamu, A. Y. (2007). A survey of vocational training needs of 15–25 years old out-of-school youths in Bauchi Metropolis. *Journal of Career and Technical Education*, 23(1), 55–71.

Bloom, P. N. & Chatterji, A. K. (2009). Scaling social entrepreneurship impact. *California Management Review*, 53, 114–133.

Bloom, P. N. & Smith, B. R. (2010). Identifying the drivers of social entrepreneurial impact: Theoretical development and an exploratory empirical test of SCALERS. *Journal of Social Entrepreneurship*, 1(1), 126–145.

Cohen, L., Manion, L. & Morrison, K. (2013). *Research methods in education*. London: Routledge.

Collis, D. J. (1994). Research note: How valuable are organisational capabilities? *Strategic Management Journal*, 15(S1), 143–152.

Curtain, R. (2003). Youth in extreme poverty: Dimensions and country responses. In Expert Meeting on Global Priorities for Youth.

Edewor, P. A. (2014). Homeless children and youths in Lagos, Nigeria: Their characteristics, street life and sexual behaviour. *Mediterranean Journal of Social Sciences*, 5(1), 537–545.

Elliott, A. C. & Woodward, W. A. (2007). Statistical analysis quick reference guidebook with SPSS examples. Thousand Oaks, CA: Sage.

Eneji, C. V. O., Obim, E., Otu, J. E. & Ogli, S. O. (2013). Non-governmental organisation's agricultural micro credit facilities and farmer's household income in Benue State, Nigeria. *International Journal of Management Sciences*, 1(11), 427–435.

Igbinakhase, I. (2017). Investigating Nigerian non-governmental organizations' capabilities to replicate successful youth poverty alleviation innovation programmes (Unpublished doctoral thesis). University of KwaZulu-Natal, Durban.

Inan, G. G. & Bititci, U. S. (2015). Understanding organisational capabilities and dynamic capabilities in the context of microenterprises: A research agenda. *Procedia - Social and Behavioural Sciences*, 210, 310–319.

Isiugo-Abanihe, U. C., Olajide, R., Nwokocha, E. E., Fayehun, F., Okunola, R. A. & Akingbade, R. (2015). Adolescent sexuality and life skills education in Nigeria: To what extent have out-of-school adolescents been reached? *African Journal of Reproductive Health*, 19(1), 101–111.

Iwuchukwu, J. C., Nwankwo, O. J. & Igbokwe, E. M. (2014). Providers and beneficiaries view of the contributions of state-level non-governmental organisations (NGO) to rural community development in Anambra State, Nigeria. *Journal of Agricultural Extension and Rural Development*, 6(1), 21–27.

Kasali, T. A., Ahmad, S. A. & Ean, L. H. (2015). Does microfinance operation have effect on poverty alleviation in Nigeria? *European Journal of Contemporary Economics and Management*, 2(2), 54–69.

Kim, Y. (2011). The unveiled power of NGOs: How NGOs influence states' foreign policy behaviours (Unpublished PhD dissertation). University of Iowa, Iowa City, IA.

Lau, T. M., Man, T. W. Y. & Chow, I. (2004). Organisational capabilities and performance of SMEs in dynamic and stable environments. *The International Journal of Entrepreneurship and Innovation*, 5(4), 221–229.

López-Cabarcos, M. A., Göttling-Oliveira-Monteiro, S. & Vázquez-Rodríguez, P. (2015). Organisational capabilities and profitability. *SAGE Open*, 5(4), 1–13.

Mac-Ikemenjima, D. (2005). E-education in Nigeria: Challenges and prospects. Paper delivered at the 8th UN ICT Task Force Meeting, Dublin.

Martelo, S., Barroso, C. & Cepeda, G. (2013). The use of organisational capabilities to increase customer value. Journal of Business Research, 66(10), 1–9.

Momoh, G. T., Oluwasanu, M. M., Oduola, O. L., Delano, G. E. & Ladipo, O. A. (2015). Outcome of a reproductive health advocacy mentoring intervention for staff of selected non-governmental organisations in Nigeria. *BMC Health Services Research*, 15(314), 1–9.

Mulgan, G. (2006). The process of social innovation. *Innovations*, 1(2), 145–162.

Nwogu, V. I. (2014). Anti-trafficking interventions in Nigeria and the principal-agent aid model. *Anti-trafficking Review*, 3, 41–63.

Odukoya, D., Busari, T. & Ateh-Abang, M. A. (2006). Contributions of non-formal education to HIV preventive education in Nigeria: Case study and inventory of NGO practices. Education Research Network for West and Central Africa.

Ohize, E. & Adamu, M. J. (2009). Case study of youth empowerment scheme of Niger State, Nigeria in poverty alleviation. *AU Journal of Technology*, 13(1), 47–52.

Okafor, F. C. N. (2012). The zest for migration and national development in Nigeria: Bridging the gap between illusion and reality. *Treatise and Document Journal of Ethics Studies*, (68), 72–87.

Omofonmwan, S. I. & Odia, L. O. (2009). The role of non-governmental organisations in community development: Focus on Edo State-Nigeria. *Anthropologist*, 11(4), 247–254.

Onuoha, F. C. (2014). Why do youth join Boko Haram? The United States Institute of Peace special report no. 348.

Oshadare, A. A., Ige, T. P. & Lawal, C. O. (2015). E-learning through information and communication technology: A suitable methodology for adult education in Nigeria. *Knowledge Review*, 33(3), 1–8.

Oyelude, A. A. & Bamigbola, A. A. (2013). Women empowerment through access to information. The strategic roles of non-governmental organisations in Nigeria. *US-China Education Review*, 3(2), 103–115.

Pallant, J. (2007). SPSS survival manual: A step by step guide to data analysis using SPSS for windows (3rd ed.). Sydney: McGraw-Hill.

Patrick, J. M. & Ijah, C. N. (2012). Adult and non-formal education programmes of nongovernmental organisations for poverty alleviation in Nigeria: What can be learnt from the practice. *Journal of Education and Practice,* 3(11), 1–6.

Samuels, F., Blake, C. & Akinrimisi, B. (2012). HIV vulnerabilities and the potential for strengthening social protection responses in the context of H*IV in Nigeria*. London: ODI.

Schmitt, N. (1996). Uses and abuses of coefficient alpha. *Psychological Assessment*, 8(4), 350–353.

Sekaran, U. (2003). Research methods for business: A skill building approach (4th ed.). Hoboken, NJ: Wiley.

Tchouakeu, L. M. N., Maldonado, E., Zhao, K., Robinson, H., Maitland, C. & Tapia, A. (2011). Exploring barriers to coordination between humanitarian NGOs: A comparative case study of two NGO's information technology coordination bodies. *International Journal of Information Systems and Social Change*, 2(2), 1–25.

Van Oppen, C. & Brugman, L. (2009). Organisational capabilities as the key to sustainable innovation.

Zehir, C. & Acar, A. Z. (2006). Organisational capabilities and its impacts on business performance. In The Proceedings of the 2nd International Strategic Management Conference (pp. 163–171). Kocaeli: Gebze Institute of Technology.

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Moral Hazard Effects of Corporate Bond Guarantee Purchases: Empirical Evidence from China

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Abstract: This study examines corporate bond guarantees by developing a theoretical model that decomposes the overall impact of a guarantee into signalling and incentive effects and presenting empirical evidence based on data from China's corporate bond market. Our empirical research yields considerable evidence for the effects we posit in the model and provides some important insights into the problems of adverse selection and moral hazard in China's bond market. The empirical evidence shows that the bond issuer with lower credit rating are more willing to purchase a bond guarantee and guaranteed bonds have a higher issue spread yield than those non-guaranteed bonds, even though both have the same bond credit rating. Our findings suggest that moral hazard would be better than adverse selection to explain the self-selection of bond guarantees. Prior to bond issuance credit rating signal provides a mechanism to mitigate information inequality, while bond guarantees relieve information asymmetry afterwards.

Keywords: *Adverse selection; Bond guarantee; China; Information asymmetry; Moral hazard.*

1. Introduction

This paper examines the signalling and incentive effects of a bond guarantee mechanism mitigating problems of adverse selection and moral hazard in China's corporate bond market. It investigates whether a bond guarantee is used to signal the bond issuer's risk information, thereafter avoiding adverse selection, or to restrict the issuer's behavior by compensating for the loss of default, thereafter addressing the moral hazard problem between the issuer and investor. Information asymmetry between the issuer and investor in debt contracts can lead to adverse selection and moral hazard. A guarantee is an effective mechanism to alleviate the problem of information asymmetry (Akerlof, 1970; Wang and Zhou, 2014). Like collaterals in debt contracts, economic theory treats a guarantee as for the compensation of ex-ante information asymmetry or the method to reduce the ex-post agency problem (Berger et al., 2011), resulting in the formation of two opposite effects: adverse selection and moral hazard. These two effects provide different implications. Adverse selection is concerned with information asymmetry before the debt is issued; that is, a bond guarantee is considered as a signal sent by the debtor with an information advantage to the creditor, and thus the debtor with low risk can obtain a lower interest rate with the use of a guarantee.

Moral hazard is related to information asymmetry after the debt is issued; a bond guarantee is used to make up for the loss of creditor in case of debtor default, therefore the debtor with high risk needs to obtain a guarantee and is charged with higher issue cost. To alleviate information asymmetry problems in bond markets, bond issuers can purchase either bond insurance or bond guarantee. Bond insurance is an irrevocable guarantee by an insurer to pay bondholders' coupon and/or principal payments in the event of the issuer default. Bond insurance has enjoyed tremendous growth since its inception in 1971 in the US municipal bond market. The growth was greatly attributed to the role that bond insurance plays in reducing information asymmetry (Thakor, 1982; Kidwell et al., 1987; Gonas et al., 2004; Peng and Brucato, 2004; Kolasinski, 2009; Lu et al., 2010; Liu, 2012). Like bond insurance offered for municipal bonds, a growing number of corporate bonds have recently been issued with guarantees. A bond guarantee is issued by a third party on the instruction of the bond issuer and used as an insurance policy when the bond issuer fails to fulfil a contractual commitment. According to Chen et al. (2015), the portion of newly issued bonds with guarantees measured by par value increased significantly from 1.4% in 1993 to over 18% in 2012 and peaked.

Similar to a bond insurer, a bond guarantor receives a fee for creating a backup payer if a bond issuer is unable to fulfil its obligation. The data released by the Emergent FISD database (http://www.mergent.com) shows that bond guarantees, bond insurance and letters of credit accounted for 96%, 3% and 1% respectively of the total credit enhancement in the US bond market from 1993 to 2012. In Japan, guaranteed bonds

constituted 34.5% of the Japanese corporate bonds issued recently (Pagano et al., 2015). Based on the data from Wind Data Feed Service (http://www.wind.com.cn), it is estimated that over 60% of newly issued corporate bonds in China were bundled with guarantees during the period 2008 to 2014. In contrast to the popularity and significance of guaranteed bonds in the capital markets, bond guarantee research is surprisingly very limited. Previous studies on corporate bond yield spreads have deliberately excluded guaranteed bonds from research samples (e.g., Lu et al., 2010; Park et al., 2013). Only recently, a few studies have attempted to examine the information and economic value of bond guarantees. For example, Altieri et al. (2016) examine the effects of decision of parent companies to guarantee bonds issued by their subsidiaries and find the market value of the parent firms' outstanding bonds drops two times more when it issues a guarantee for its subsidiary's debt than when it issues a new bond in its own name. Studying corporate guaranteed bonds issued in Japan, Pagano et al. (2015) find evidence of self-selection where issuers with unrated bank-guaranteed bonds have higher levels of information asymmetry and poorer firm quality, and bond investors are willing to accept lower yields for guaranteed bonds than rated ones because of the perceived value of a guarantee to the bond issuer.

Chen et al. (2015) provide evidence that rating enhancement is not the only driver for corporations to issue guaranteed bonds and the role of agency problem and debt overhang can also play a significant part for issuing firms to purchase a bond guarantee. Two broad strands of theoretical arguments emerge to explain guarantees as arising from the existence of either ex-ante private information or ex-post incentive problems between bond issuers and investors. The first set of arguments considers a guarantee as a way for low-risk issuers to signal their quality under conditions of ex-ante private information, while the second set elucidates a guarantee as the strategic response of the issuers to ex-post effects. Although these theoretical effects are understandable in general, little evidence is presented in the literature about how they function and interact. In any realistic setting, both ex-ante information signalling and ex-post incentive effects are likely to be closely related. Earlier studies on bond guarantees mostly focused on the effects of a guarantee on interest rate cost and directly introduced a dummy variable (i.e., if the bond is guaranteed) into the model as one of the regressors (e.g., Qi et al., 2012; Han and Hu, 2015). However, it can be argued that if borrowers are economically rational, when faced with the option of purchasing a bond guarantee, they will do so only when it expects to lead to a lower net interest cost. Thus, the decision of a bond issuer to obtain a bond guarantee is not random but endogenous to the model. The interest cost differences measured by a naive dummy variable could be biased (Hsueh and Kidwell, 1988). To overcome this bias, this study follows Wooldridge, (2002) and Francesco and Cardamone, (2008) to use a probit model to estimate probabilities of choosing a guarantee and introduce the fitted probabilities as an instrumental variable in the second stage of regression for the determinants of yield spreads.

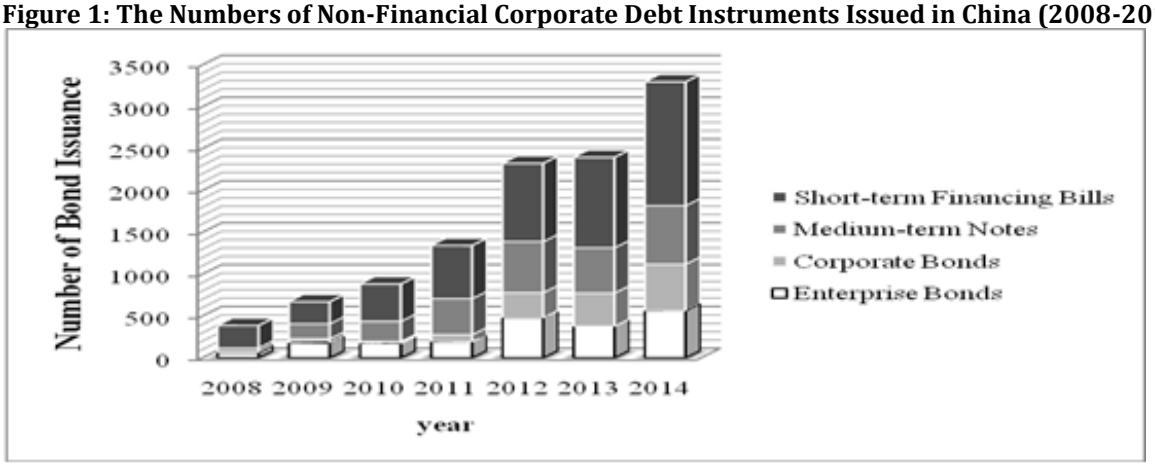
In addition, following Hsueh and Kidwell, (1988) and Sola and Palomba, (2015), this study carries out robustness tests by employing the 2-stage Heckman model, in which the inverse Mills ratio (IMR) from the first-stage probit model is used as an independent variable in a second stage regression model of yield spreads. This paper contributes to an understanding of the effects of a bond guarantee by presenting a simple model that decomposes the overall impact of a guarantee into signalling and incentive effects that reduce the borrower's default rate. Our empirical research yields evidence for the effects we posit in the model and provides important insights into the problems of adverse selection and moral hazard in China's corporate bond market. The empirical evidence based on a sample of China's bond market for the period of 2008 to 2015 shows that the bond issuers with lower credit rating are more willing to purchase a bond guarantee and guaranteed bonds have a higher issue spread yield than those non-guaranteed bonds, even both have the same bond credit rating. To the best of our knowledge, this is the first study of its kind to find the significance of moral hazard effects in explaining the choice of a guarantee by bond issuers. The rest of this paper is structured as follows. Section 2 provides the institutional background and market developments of China's guaranteed bond market. Section 3 reviews the relevant literature followed by presenting research hypotheses.

Institutional Background and China's Guaranteed Bond Market: In the last decade, the size of China's bond market has increased from virtually nonexistent into one of the largest markets in the world. There are four main types of bonds in the market: government bonds, central bank notes, financial bonds issued by financial institutions, and non-financial corporate debt instruments issued by non-financial organizations.

Non-financial corporate debt instruments can be classified as enterprise bonds, corporate bonds, medium-term notes, and short-term financing bills. Unlike short-term financing bills and medium-term notes, enterprise bonds and corporate bonds provide companies with long-term debt financing instruments. China's enterprise bonds are quite different from corporate bonds. Enterprise bonds, which can be traded on both the Inter-bank and bond exchange markets, are issued by institutions affiliated to various central government departments, enterprises solely funded by the state, state-controlled enterprises (SCEs), and other large-sized state-owned entities (SOEs). Enterprise bond issuance is subject to an administrative approval for a quota from the National Development and Reform Commission (NDRC), which is part of the central planning system in China. The raised funds from enterprise bonds are predominantly used for the government-guided projects. After the issuance of enterprise bonds, the issuers are no longer subject to any information disclosure and regulatory control.

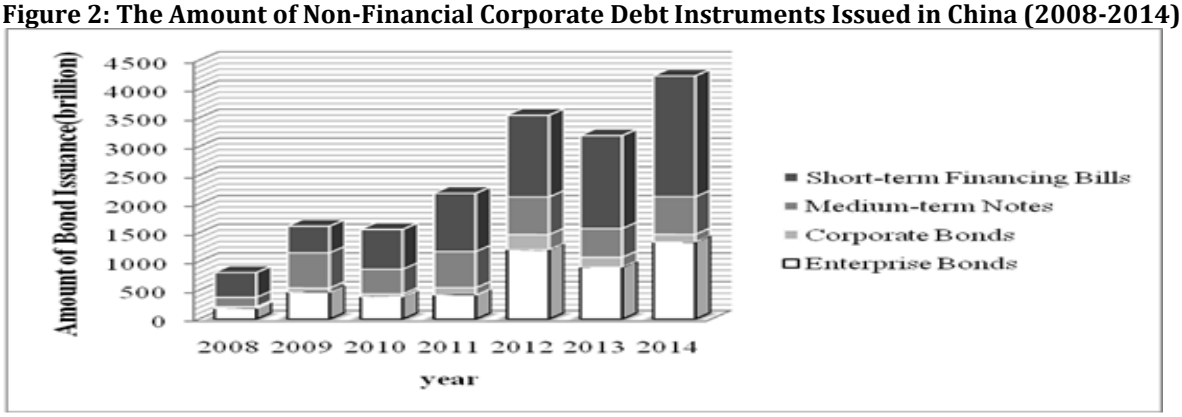
However, corporate bonds can be issued by any business organization without restrictions in terms of the type of ownership. Corporate bond issuance requires approval from the China Securities Regulatory Commission (CSRC) that regulates China's securities and futures markets. After the issuance, corporate bonds can only be traded on the exchange market and issuers make their own decision on the use of raised funds but are required to regularly disclose information to the public. Thus, corporate bonds are more market-oriented than enterprise bonds. Section 4 discusses the data and empirical methodology, while Section 5 presents empirical results. Section 6 concludes the study. In China, 385 non-financial corporate debt instruments were issued in 2008 while by the end of 2014, 3296 non-financial corporate debt instruments were issued and traded on the market as shown in Figure 1 with the amount of non-financial corporate debt instruments increasing from 807.6 billion RMB in 2008 to 4228.4 billion RMB in 2014 (Figure 2). The proportions of guaranteed bonds issued during the period of 2008 to 2014 are given in Table 1.

Figure 1: The Numbers of Non-Financial Corporate Debt Instruments Issued in China (2008-2014)



Source: Wind Data Feed Service.

Figure 2: The Amount of Non-Financial Corporate Debt Instruments Issued in China (2008-2014)



Source: Wind Data Feed Service.

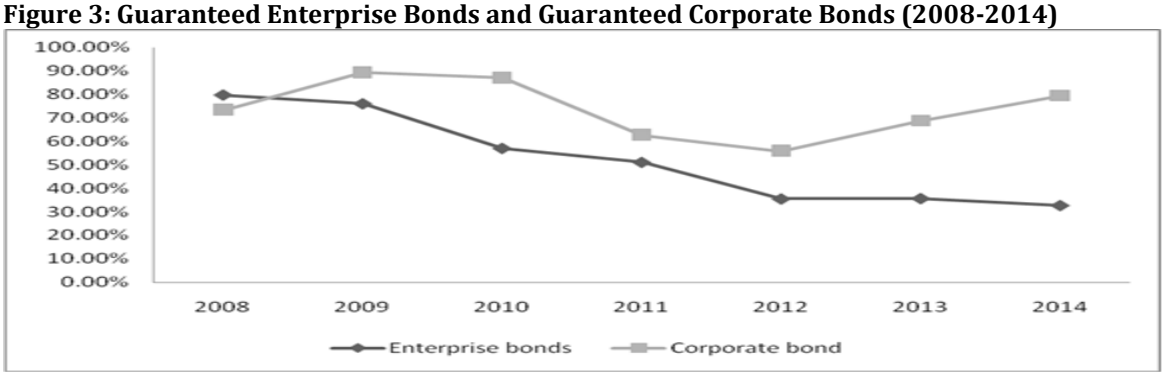
Table 1: The Proportion of Guaranteed Bond Issues

Year	Enterprise bonds	Corporate bond	Medium-term Notes	Short-term financing bills
2008	79.69%	73.33%	0.00%	1.50%
2009	75.98%	89.36%	4.44%	0.38%
2010	56.98%	86.96%	15.42%	2.69%
2011	51.04%	62.65%	9.74%	2.20%
2012	35.49%	55.85%	11.17%	2.25%
2013	35.64%	68.77%	8.69%	1.76%
2014	32.68%	79.46%	4.58%	1.08%

Source: Wind Data Feed Service.

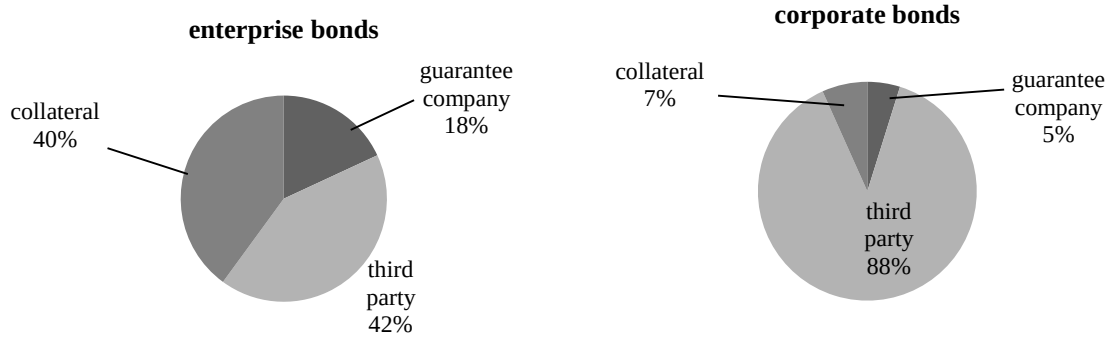
As shown in Table 1, over the period 2008 - 2014 only a few medium-term notes and short-term financing bills were issued with a guarantee. However, over 50% of enterprise bonds and corporate bonds were issued with a guarantee. Interestingly, the number of guaranteed enterprise bonds was decreasing over time while that of corporate bonds was standing at a high level of over 50% in the past seven years as shown in Figure 3. As enterprise bonds issuers are usually affiliated to central government departments, enterprises solely funded by the state, SCEs or other large SOEs, they are often creditworthy and considered "invisibly secured" at issuance. Unlike enterprise bonds, corporate bonds have no restrictions as to the status of controlling shareholders of bond issuers, as long as the bonds meet the relevant criteria set up by the authorities. Many corporate bond issuers are not owned or controlled by the state. They are less secured comparing to enterprise bonds. Most corporate bond issuers seek a guarantee as a way of credit enhancements with a view to making bond issues successful.

Figure 3: Guaranteed Enterprise Bonds and Guaranteed Corporate Bonds (2008-2014)



Source: Wind Data Feed Service.

Figure 4: Proportions of Types of Bonds Issued (2008-2014)



Source: authors' calculation based on data from Wind Data Feed Service.

There are different types of guarantees in China's bond market. Bond issuers can either use their own assets as collaterals or obtain a guarantee from a specialized guarantee company that is similar to a bond insurance firm or turn to a third-party enterprise that can be their parent company or business partner. As presented in Figure 4, over the period 2008 - 2014, 42% of the enterprise bonds used a guarantee from a third-party enterprise and 18% of them were from a guarantee company. The rest used collaterals as a credit-enhancing arrangement due to the prohibition of bank guarantees in 2007. For corporate bonds, most of them (88%) turned to a third-party enterprise for credit guarantees; only a few employed a guarantee from guarantee companies (5%) or used their own collaterals (7%). In empirical testing of guarantee signalling effects, we firstly use corporate bonds as a sample and then expand our sample to include enterprise bonds for a robustness test as guarantee effects of enterprise bonds may be influenced by an "invisible" guarantee from the authorities.

2. Literature Review and Hypotheses

Credit markets and bond markets possess the problem of asymmetric information. Two broad strands of theoretical literature explain bond guarantees as arising from the existence of either ex-ante private information or ex-post agency problems between bond issuers and investors. Ex-ante theories emphasize that collateral or guarantee is a signal sent by a borrower, which can reveal its high-quality. Stiglitz & Weiss (1981) document that default risk is private information known to borrowers and banks can't identify which is of higher risk. If banks price loan contracts with average default risk, higher-quality borrowers will exit the credit markets because of the high cost and the remaining lower-quality borrowers are willing to pay higher interest rates, which leads to adverse selection. In order to pay what that matches its true quality, in equilibrium, higher-quality (lower risk) borrowers have to choose secured debt with lower interest rates and low quality (high risk) borrowers need to self-select into unsecured debt with higher interest rates (Bester, 1985; Besanko & Thakor, 1987a & b; Chan & Kanantas 1987). While theoretical research on why bond issuers frequently issue guaranteed bonds is scarce in the literature, we could have some enlightenment from bond insurance research due to the similarity of both bond guarantee and insurance.

Thakor (1982) in a seminal paper concerning bond insurance presents a set of signalling models showing that bond issuers with higher-quality (lower risk) choose to buy more insurance. Thakor (1982) reveals that bond insurance can convey private information about issuers to lenders. Adopting Thakor's signalling equilibrium in the case of debt insurance, we predict that the ex-ante signalling of a bond guarantee provides a negative relationship between the borrower's risk and a guarantee, and between a guarantee and the bond interest rate. That is, a higher-risk borrower is more likely to issue guaranteed bonds, and the interest rate of a guaranteed bond is higher than that of a non-guaranteed bond. A review of extant literature on the ex-ante signalling theories of credit markets and bond markets reveals that most of the prior studies do not directly examine key predictions of the signalling. The literature argues that ex-ante information asymmetry between lenders and borrowers can be eliminated after the establishment of a long-term relationship between them. When the degree of information asymmetry lessens, the borrowers are less likely to obtain guarantees (Berger & Udell, 1995; Harhoff & Korting, 1998; Chakraborty & Hu, 2006; and Brick & Palia, 2007).

However, using the data of Japan's small and medium-sized enterprises (SMEs), Ono & Uesugi (2009) find a positive relationship between the cooperation time and collateral. Berger et al. (2011) report that the ex-post theories of collateral are empirically dominant although the ex-ante theories are also valid for customers with short borrower-lender relationships that are relatively unknown to the lender. As for tests for the signal effect of insurance in the bond market, the follow-up studies are mainly based on Thakor's (1982) models and most of them suggest that bond insurance can reveal default information (e.g., Hsueh & Liu, 1990; Kidwell et al., 1987; Liu, 2012; Moldogaziev & Johnson, 2011). Moldogaziev & Johnson (2011) find that the lower the credit rating of the issuer, the more likely insurance to be purchased. These results are contradictory to the prediction of Thakor's model that "issuer default rate is negatively related to the ratio of insurance", which could argue that a poorly rated issuer does not have the motivation of using a guarantee to send a signal. Hence, the question of whether a guarantee can solve the adverse selection problem remains to be explored. The ex-post theories indicate that lenders can observe the borrower's default risk, but the borrower's.

Efforts cannot be observed, which eventually leads to moral hazard (Boot et al., 1991; Weber, 2014). Compared to high-credit borrowers, the default risk of low-credit borrowers is higher. To avoid losses and

overcome incentive conflicts, lenders require risky borrowers to provide collateral as a tool that encourages borrowers to repay debt. In addition, due to the cost of selling off the collateral, moral risk and other "transaction costs", the value that banks get from the collateral will be far less than the value that the borrowers have (Barro, 1976). Once default, banks still suffer loss. Therefore, banks will raise the risk premium accordingly when pricing the loan contracts. The ex-post theories suggest that the borrower's risk is positively related to the use of guarantee, and a guaranteed bond has a higher interest rate. Empirical research finds evidence that borrower's risk is positively related to the use of guarantees. Gonas et al. (2004), show that firms with better public ratings are less likely to pledge collateral. Brick & Palia (2007), document that the observable risky borrowers are more likely to provide collateral. As for studies of bond markets, John et al. (2003) construct an agency cost model and reveal that the interest rates of collateral debts are significantly higher than that of unsecured bonds. Chen et al. (2015) also show that US companies issue guaranteed bonds for credit enhancement and easing the agency problem.

These two broad strands of theoretical arguments explain collateral as arising from the existence of either ex-ante private information or ex-post incentive effect. They can be used to make different predictions. However, the extant literature is mostly based on credit markets; few studies have discussed the economic functions of guarantee in bond markets. In credit markets, banks can use their professional skills to gather information about borrowers and to reduce information asymmetry by establishing long-term cooperation with borrowers, while lenders in bond markets are dispersed investors and collecting information by lenders about issuers is very difficult and the cost is significantly high. This provides a space for credit ratings. Credit ratings can reflect issuers' default risk and be used as an important reference to determine a bond interest rate as there is a negative relationship between ratings and a bond interest rate (Kisgen & Strahan, 2010). While bond insurance has the risk transfer function, the key assumption in Thakor's model is there is no other signal transmission mechanism in the market, which seemingly overlooks the effect of bond credit rating signal. In bond markets, credit ratings can facilitate the mitigation of asymmetric information in advance.

Accordingly, We Put Forward the Following Opposite Hypotheses:

Hypothesis 1a: Under the ex-post incentive theory, guaranteed bonds are more likely to be issued by higher-risk issuers.

Hypothesis 1b: Under the ex-ante signalling theory, guaranteed bonds are more likely to be issued by lower-risk issuers.

Within the framework of ex-ante signal theories, bond issuers send signals through a guarantee to reveal its high quality and low risk. Thus, the interest rate of a guaranteed bond should be lower than that of the unsecured bond. However, within the framework of ex-post theories, higher risk issuers expect to purchase a guarantee. While bond guarantees improve credit ratings, bond interest rates cannot be reduced to the same level of unsecured debt interest rates. Moreover, due to the cost of selling off collateral, the moral hazard of enterprise and other "transaction costs", the value that investors expect to obtain from collateral will be far less than the value of the collateral itself, thus once a bond defaults, the bond investors will suffer loss. Consequently, when setting interest rates, investors will take the above factors into account; eventually this improves guaranteed bond rates accordingly.

Hence, We Put Forward the Following Opposite Hypotheses:

Hypothesis 2a: Under the ex-post incentive theory, the interest rates of guaranteed bonds are higher than those of non-guaranteed bonds.

Hypothesis 2b: Under the ex-ante signalling theory, the interest rates of guaranteed bonds are lower than those of non-guaranteed bonds.

3. Data and Methodology

Sample Data: Bond issues and issuer information are obtained from the Wind Database. The Wind Database also provides information that can be used to identify types of credit enhancements contained in issued bonds: i) third-party enterprise guarantees; ii) guarantees provided by a guarantee company; and iii) collaterals. The initial sample consists of 1,378 corporate bonds and 4,056 enterprise bonds issued from 2008 to September 2015. Then, we exclude bonds issued with a floating interest rate and bond issued by firms whose rating or bond rating is unidentifiable at the time of issuing. In accordance with the theoretical models, we focus on these bonds whose credit enhancements are provided by a guarantee from a third-party enterprise or a guarantee company and exclude collateralized bonds. After the above process, the final sample consists of 588 corporate bonds and 1,321 enterprise bonds. Of 1,909 bonds in total, 681 are guaranteed bonds, which account for 35.67% of the total sample.

Empirical Methodology: One way to resolve information asymmetry problems in credit markets for bond issuers is to use credit ratings to signal to the market the credit quality of bonds (Hsueh & Kidwell, 1988; Opp et al., 2013; Byoun, 2014). Ratings serve a dual role: they provide information to investors and are used to regulate institutional investors (Opp et al., 2013). There are two types of credit rating: Firm rating and bond rating. Firm rating or underlying rating reflects an 'unenhanced' credit quality of an issuer. The bond rating reflects an enhanced credit quality of a bond. Bond rating of a guaranteed bond is at least equal to its firm rating and usually it is higher than its firm rating. While for a non-guaranteed bond, bond rating is the same as the issuer's firm rating. Therefore, we conduct empirical tests of the theoretical model with two types of credit rating. Firstly, we use a probit model to examine Hypothesis 1 concerning the relationship between a bond issuer's underlying credit rating and the probability of purchasing a guarantee. Incorporating other control variables, we identify the determinants of a firm issuer of guaranteed bonds with a probit regression. For each bond issue, a firm either uses a guarantee (guar=1) or does not use a guarantee (guar=0). We consider a set of factors that can explain the option. Specifically, we model the probability that a bond issuer uses a guarantee with a probit function as follows:

$$prob(guar_i) = \Phi\left[\beta_0 + \beta_1 \cdot rating_i + \beta_2 \cdot instruments + \sum \beta_k \cdot Control_k + \varepsilon\right] \quad (1)$$

Φ [.] denotes the standard normal distribution. The set of parameters β reflects the impact of independent variables on the probability. The key independent variable is the issuer's underlying credit rating (rating). For empirical testing, we convert the ratings to a consistent numerical score, i.e., the rating variable is a numeric term that increases as the issuer's credit quality increases. Following the theoretical model above, rating varies over the open interval (0, 1). Thus, we create nine categories for rated bonds: the AAA rated bonds with a score of 0.9, and others are: below BBB = 0.1, BBB+ = 0.2, A- = 0.3,..., AA = 0.7, AA+ = 0.8. We expect the probability of purchasing a guarantee increases as ex-ante intrinsic credit risk (rating) decreases and accordingly the expected sign of the variable is negative.

Controlled variables, $Control_k$, that may also explain a bond issuer's propensity to use a guarantee will be discussed in the following sections. We estimate the probability of purchasing a guarantee by Equation (1) and then put the fitted value as an explained variable into the following Equation (2) to regress the issue spread. To avoid the endogenous problem, we introduce instrumental variables into Equation (1). We select two measures of credit rating transition and credit rating outlook. Both can indirectly measure default risk after the bond is issued; while at the same time have no impact on the yield spread at issue. Secondly, we explore the signalling effect of a bond guarantee by considering the bond issue yield spread. Although prior literature shows that a guarantee can reduce bond credit risk and improve bond ratings, investors may still treat a guaranteed bond differently from a non-guaranteed bond even both have the same bond rating. In other words, if a bond guarantee conveys the information about an issuer's default risk to the market, investors will ask for higher risk premium for a guaranteed bond than a non-guaranteed bond with the same bond rating.

We test the hypotheses with an OLS regression. One condition that makes the traditional OLS model an appropriate statistical technique is that an issuer's decision to acquire a guarantee is random. Given our

previous discussion, however, this may not be the case. In line with the theoretical model, if an issuer is economically rational, when faced the option of purchasing a guarantee, the issuer will do so when it expects acquiring a guarantee leads to minimize the total borrowing cost. Thus, the issuer's decision to obtain a guarantee is not random but endogenous to the model. Due to the self-selection bias mentioned above, the traditional OLS model is inappropriate to test our second hypothesis. We estimate the self-selection bias in the first stage (i.e., probit model) and correct it in the second stage. Specifically, we follow Wooldridge (2002) and Francesco & Cardamone (2008) and use the fitted probabilities estimated by the probit model above as an instrumental variable of the dummy endogenous variable guari. This IV estimator is more efficient than that of Two-Stage least squares (2SLS) regression model (Wooldridge, 2002). We regress the determinants of issue yield spreads as follows:

$$spread_i = \gamma_0 + \gamma_1 \cdot prob(guar_i) + \gamma_2 \cdot br\_rating_i + \sum \gamma_k \cdot Control_k + \varepsilon \quad (2)$$

For the above OLS regression model, the dependent variable is the issue yield spread between sample credit bonds and China's treasury bonds with a comparable maturity. One of the key independent variables that we test is prob (guar), which is estimated by the probit model above as an instrumental variable of the dummy endogenous variable guari. We expect that the yield spread of a guaranteed bond is higher than that of a non-guaranteed bond for the reason of a bond guarantee probably conveying information about an issuer's high default risk. The expected sign of prob(guar) should be positive. The other key independent variable is bond rating (br_rating), which is also numeric that increases as the credit quality of a bond increases. To be specific, A- = 0.3, A = 0.4, A+ = 0.5, …, AAA = 0.9; the higher the bond rating, the lower the default risk of a bond. So, the expected sign of br_rating is negative. We also consider a set of factors relating to bond features, issuer characteristics and macro-economy environments that influence both the determinants of Equations 1 and 2. They are defined respectively as follows:

LN (size): The natural log of the issued amount. Issue size can be used as a proxy for the measure of information asymmetry (Pagano et al., 2015). To lower the interest yield, firms with larger information asymmetry and poorer firm quality are more likely to issue bonds with a bank guarantee instead of obtaining a rating from rating agencies (Pagano et al., 2015). Thus, the expected sign of LN (size) in Equation 1 is negative. The amount issued can also be used as a liquidity variable (Yu, 2005). The larger the issued amount, the more liquid the bond, which expects to lead to a lower yield. Thus, the expected impact of LN (size) on yield spreads should be negative.

LN (term): the natural log of the maturity of a bond. The time to maturity is usually treated as a default risk measure as well as liquidity risk measure. Covitz & Downing (2007) note that classification as to whether the time to maturity is a liquidity or credit factor is somewhat ambiguous and they treat it as a liquidity measure. For most investment-grade bonds that are main constituents of our sample, a longer term means more uncertainty and higher default risk. The expected sign for this variable in Equation 1 is positive, suggesting that the longer the term of a bond, the more likely the bond is guaranteed. According to Long staff et al. (2005) and He & Milbradt (2014), shorter-maturity corporate bonds have a more liquid secondary market in general, thereafter a lower yield spread. Accordingly, the expected sign for the coefficient of maturity is positive, indicating that a higher yield is expected to compensate for a longer investment horizon.

Put: A dummy variable for a bond, equal to one if the bond has a put option. A put option reduces the risk for investors. The expected sign for this variable in Equation 1 is negative suggesting a bond with a put option is less likely to be issued with a guarantee than that without a put option. The expected sign for this variable in Equation 2 is positive, indicating that a bond issue with a put option expects to have a lower yield spread. Prepay/Callable: a dummy variable for a bond equal to one if the bond has a prepayment provision or a callable option. A prepay option (Prepay) increases the risk for investors and a bond issuer is likely to purchase a guarantee to enhance the credit of bond. The expected sign for this variable in Equation 1 is positive, suggesting that bonds with a prepay option are more likely to use a guarantee than those without such an option. The expected sign for this variable in Equation 2 is positive, indicating that a prepay option expects to increase the yield spread.

Coupon Adjustment: A dummy variable for a bond, equal to one if the bond has a coupon adjustment term.

Corp: A dummy variable equal to one if it is a corporate bond. As noted in Section 2, corporate bonds and enterprise bonds are different. The dummy variable Corp is used to investigate the impacts of different bonds. The expected signs of Corp in Equations 1 and 2 are unknown.

SOE: A dummy variable that is equal to one if an issuer is a SOE. Borisova et al. (2015) suggest that government ownership could carry an implicit debt guarantee reducing the chance of default and leading to a lower cost of debt. The expected sign of SOE in Equation 2 is negative.

ROE: An issuer's return of equity at issuance. Financially constrained firms have difficulty in accessing capital because of their low creditworthiness. Thus, issuers with a higher level of financial constraints are more likely to purchase a guarantee (Chen et al., 2015). High levels of ROE indicate firms that are financially healthy and are likely to produce a low yield spread (Campbell & Taksler, 2003). The expected signs for this variable in Equations 1 and 2 are negative.

Long-Term Debt Ratio: An issuer's long-term debt to total assets at issuance. Issuers with more debt overhang are more likely to use guarantees to mitigate underinvestment (Kolasinski, 2009; Chen et al., 2015). An issuer with a high long-term debt ratio indicates that the issuer is highly leveraged with a high yield spread (Campbell & Taksler, 2003). The expected signs for this variable in both Equations 1 and 2 are positive.

Listed: A dummy variable for a bond equal to one if the bonds are issued by a company listed on the Shanghai or Shenzhen Stock Exchange. Because a listed company usually has better firm quality, lower risk and higher creditworthiness, bonds issued by a listed firm are of relatively low risk. The expected sign for this variable in Equation 1 is negative, indicating bonds issued by a listed company are less likely to be guaranteed. The expected sign for this variable in Equation 2 is negative, which implies that a listed company expects to decrease the yield spread. To control for time-varying macroeconomic and industry-specific factors, we consider year (yeari) and industry (industryi) dummy variables. Studies have also found mixed evidence on the relationship between risk-free interest rates and credit spreads. The capital structure model of Leland & Toft (1996) and the bond pricing models of Long staff & Schwartz (1995) and Dougal et al. (2015) contain a common prediction: in equilibrium, an increase in the risk-free rate decreases a firm's credit spread. However, empirical tests that include only non-callable bonds find no relationship between credit spreads and interest rates (e.g., Duffee, 1998; Jacoby et al., 2009). Neal et al. (2015) argue that the phenomenon is largely a statistical artefact caused by failing to take account of co-integration between treasury and corporate bond yields. Using a generalized impulse-response approach and conditioning on the current level of rates, Neal et al. (2015) find that large shocks to the treasury curve do not produce significant changes in corporate credit spreads, either contemporaneously or out to three years in the future.

Table 2: Distribution of Bond Guarantee and Firm-Rating

Issuer rating	AA+~AAA	AA	A+、AA-	Below A	Total
Guaranteed	166	379	321	6	872
Non-guaranteed	282	786	22	0	1090
Total number of bonds	448	1165	343	6	1962
Percentage of guaranteed bonds	37.05%	32.53%	93.58%	100.00%	44.44%

4. Statistics Summary and Empirical Results

Summary Statistics: Table 2 lists a distribution of guaranteed bond issues based on issuer ratings. Intuitively, there seems to be a relationship between underlying ratings and their choice of obtaining guarantees. The proportion of guaranteed bonds increases when underlying ratings rise. The issuers rated as AAA or AA+ choose to obtain guarantees account for 37.05%. 32.53% of the issuers with AA rating choose to issue guaranteed bonds, while 93.58% of the issuers rated AA- or A+ choose to do so. Furthermore, all the issuers rated below A choose to issue guaranteed bonds. Table 2 shows a negative relationship between underlying ratings and bond guarantees. The descriptive statistics of the variables used in this study are given in Table 3. The mean issue spread of the total sample is 295 basis points (BPS) with a standard deviation of 0.937. The

dummy variable guar has a mean value of 0.444, implying that there are more non-guaranteed bonds than guaranteed bonds in the sample. The average size of bonds is 1.28 billion RMB Yuan and the average term is 6.691 years. In terms of issuer characteristics, the issuers' ROE at issuance ranges from -15.97% to 104.7% and has a mean value of 6.834%. The long-term debt ratio at issuance ranges from 0 to 99.45% and has a mean value of 42.35%. We use a one-year treasury rate at the time of issuing to investigate the impact of benchmark interest rate on the dependent variables (guar & spread). During the past seven years, one-year treasury rate ranged from 88.7 BPS to 423.1 BPS with a mean value of 296.3 BPS. For Chinese corporate and enterprise bond issues, the most common embedded options are prepayment clauses or callable options with a mean value of 0.521. Issues with puttable options embedded or coupon adjustment terms also account for a considerable proportion of the total sample with the mean values of 0.367 and 0.361 respectively. The mean value of SOE is 0.856, indicating that only 14.4% of the bonds are issued by non-state-owned enterprises. 27.7% of the bond issuers are listed companies (listed), while the mean value of Corp is 0.308.

Table 3: Descriptive Statistics of Variables

Variable	Variable Description	Obs	Mean	Std. Dev.	Min	Max
Spread	Credit spread at issue	1962	2.950	0.937	0.513	6.966
Guar	Bond Guarantee Dummy(1=guaranteed)	1962	0.444	0.497	0.000	1.000
Size	Issue size	1962	12.82	10.99	0.500	160.0
Term	Issue term in years	1962	6.691	1.597	2.000	15.00
ROE	Return on shareholders' equity (%)	1962	6.834	7.176	-15.97	104.7
Long-term debt ratio	Long-term debt/total asset (%)	1962	42.35	25.41	0.000	99.45
One-year treasury rate	Benchmark interest rate	1962	2.963	0.677	0.887	4.231
Put	Dummy(1=bonds embedded with a put option)	1962	0.367	0.482	0.000	1.000
Prepay/Callable	Dummy(1=bonds with prepayment term)	1962	0.521	0.500	0.000	1.000
Coupon adjustment	Dummy(1=bonds with coupon adjustment term)	1962	0.361	0.481	0.000	1.000
SOE	Dummy (1=issued by a state-owned enterprise)	1962	0.856	0.351	0.000	1.000
Listed	Dummy (1=issued by a listed company	1962	0.277	0.448	0.000	1.000
Corp	Dummy (1=corporate bond)	1962	0.308	0.484	0.000	1.000
Rating outlook	Numeric (1=negative; 2=stable; 3=positive)	1962	1.962	0.202	1.000	3.000
Credit rating transition	Numeric(1=downgrade; 2=no transition; 3=upgrade)	1962	2.022	0.238	1.000	3.000

Table 4 reports the univariate t-test results of mean differences in credit spreads between guaranteed and non-guaranteed bonds when controlling bond ratings. The Breusch-Pagan (BP) test is used as it is one of the most common tests for heteroskedasticity. We regroup the sample into four groups according to bond ratings. The T-statistics in all the four groups (i.e., AAA, AA+, AA and AA-) indicate that the mean credit spreads of guaranteed bonds are significantly higher than those of non-guaranteed bonds. For example, in Group AA, the mean credit spread of guaranteed bonds is 358.5 BPS while that of non-guaranteed bonds is 315.3 BPS, and the t-statistics is -8.6424 showing that the mean difference between the two is significant at 1% level. Furthermore, Table 4 shows the mean issue spread of bonds is increasing with bond ratings decrease, probably suggesting that bond ratings are playing an informational role and bonds are priced according to bond ratings. The univariate t-test results of Table 4 confirm Hypothesis 2.

Table 4: T-Test on Credit Spreads Between Guaranteed and Non-Guaranteed Bonds under Different Bond Ratings

Bond ratings	guar=1(N=872)			guar=0 (N=1090)			
	N	Mean	Std	N	Mean	Std	T-statistics
AAA	189	1.8619	0.6483	97	1.6810	0.4511	-2.4588**
AA+	357	3.0239	0.7873	204	2.4911	0.7260	-7.9289***
AA	321	3.5856	0.8770	774	3.1536	0.6950	-8.6424***
AA-	5	5.3294	1.4469	15	4.4848	1.0705	-1.4042

Empirical Results: Table 5 reports the empirical results of probit models presented in Equation 1, where the dummy variable, guar, is the dependent variable. We conduct empirical studies on corporate bonds and enterprise bonds in one model and use a dummy variable Corp to identify two different types of bonds. Column (1) reports the results of regression that contains issuer characteristics while Column (2) shows the results that contain characteristics of bond issues and issuers. Column (3) displays the empirical results after controlling the characteristics of issues, issuers and macro-economy. All three columns indicate that rating has a negative impact on the independent variables. Most of the variables have the same signs in all three results. Specifically, in Column (3), Wald Chi2 statistics is 288.579, suggesting the probit model is significant at the 1% confidence level. Controlling issuer characteristics, the coefficient of the key variable, rating, is -0.538 with a significance level of 0.001. This result suggests that an issuer's rating is negatively related to the probability of obtaining a bond guarantee. In other words, the probability of choosing a guarantee decreases once credit quality improves.

Moreover, the coefficients of the long-term debt ratio show a negative relationship of long-term debt with the probability of purchasing a bond guarantee. The coefficient of the issue term in the natural log form is 0.644 with the 1% significance level, indicating that the issue term is positively related to the probability of obtaining a bond guarantee. The coefficient of the dummy variable listed is -0.840 with the 1% significance level, suggesting that a listed company is less likely to issue a guaranteed bond than a non-listed company. The coefficient of the dummy variable SOE is 0.633 with the significance level of 1%. We postulate that a SOE that normally maintains a good relationship with the state receives some kinds of governmental support (such as credit, favorable operation policy) at the time of issuing; such support is, to some extent, similar to a guarantee. Bonds with a prepayment clause are less likely to be issued with a guarantee. In addition, the dummy variable Corp is positively related to the dependent variable guar, indicating that a corporate bond issuer is more likely to issue guaranteed bonds. There is no evidence that issue size, coupon adjustment terms, issuers' ROE, and the benchmark interest rate have a significant influence on an issuer's guarantee choice.

Table 5: Relationship Between Probability of Bond Guarantee and Credit Rating

	Dependent variable: guar			
Independent variable	**Expected sign**	**(1)**	**(2)**	**(3)**
Rating	–	-0.430***	-0.647***	-0.538***
		(-12.02)	(-12.84)	(-10.16)
Credit rating outlook		-0.397**	-0.332**	-0.332**
		(-2.47)	(-2.04)	(-1.96)
Credit rating transition		0.111	0.032	0.011
		(0.87)	(0.25)	(0.08)
ROE		0.007	0.003	-0.003
		(1.37)	(0.62)	(-0.46)
Long-term debt ratio		-0.002	-0.002	-0.003*
		(-1.34)	(-1.57)	(-1.85)
Listed	–	0.840***	-0.691	-0.645
		(8.04)	(-1.10)	(-0.97)
SOE		0.598***	0.633***	0.547***
		(5.11)	(5.08)	(4.24)
Ln(size)	–		0.075	-0.082
			(1.14)	(-1.20)
Ln(term)	+		0.743***	0.644***
			(4.49)	(3.79)
Put			-0.652**	-0.811**
			(-1.96)	(-2.20)
Prepay/Callable			-1.345***	-0.995***
			(-10.24)	(-7.40)
Coupon adjustment			-0.277	-0.141

		(-0.85)	(-0.39)
Corp		1.401**	1.368**
		(2.24)	(2.06)
One year treasury rate			-0.081
			(-0.91)
_cons	2.060***	2.684***	3.514***
	(4.99)	(4.97)	(5.26)
Industry	Controlled	Controlled	Controlled
Year			Controlled
N	1962	1962	1962
r2_p	0.097	0.156	0.185
chi2	204.791	255.040	288.579

Note: This table presents the probit model results that examine the relationship between a bond issuer's underlying credit rating and probability of purchasing a guarantee in China. The dependent variable is a binary variable that takes value of 1 if a firm uses guarantee for a bond issue, 0 otherwise. Rating is the issuer's underlying credit rating. The rest of control variables are the same as described in Section 4. 2. Robust Z statistics in parentheses, *p< 0.1, **p< 0.05, ***p< 0.01.

Table 6 reports the empirical results of OLS regression models as shown in Equation 2, where a bond credit spread at the time of issuing is the dependent variable. Following Wooldridge's (2002) procedure to address the problem of self-selection, we use the fitted values estimated from the probit model of Column (3) in Table 5 as an instrumental variable of the issuers' guarantee choice guar. Regression (1) is the base OLS model with the ordinal bond rating variable. F statistics is 102.894, which suggests our probit model is significant at the 1% confidence level. The coefficient of prob (guar), which is estimated from Equation (1), is positive and statistically significant at the level of 1%. The coefficient of variable br_rating is also signed as expected and statistically significant. Regression (2) is the robust estimation and it converts bond ratings from an ordinal variable into a series of dummy variables. In this model, the bonds rated below AA are the omitted class. Regression (2) shows that prob (guar) is significantly positive. Three bond rating dummy variables provide important meanings: compared with the bonds below AA class, the bonds rated as AAA and AA+ class can lower the credit spread if holding other variables constant, which is the same for AAA bond class. These results suggest that the higher bond rating, the lower the credit spread, which is consistent with the coefficient of Br_rating in Regression (1). In addition, the results also indicate that the issue size and the dummy variables listed and Corp have no significant impact on the credit spread of corporate bonds at the time of issuing. Both Regressions (1) and (2) suggest that a bond guarantee plays a signalling role in predicting a bond issuer's default risk.

Table 6: Regression Results Between Bond Guarantees and Yield Spreads

	The dependent variable: spread		
Independent variable	**Expected sign**	**(1)**	**(2)**
Prob(guar)	+	1.807***	1.868***
		(13.62)	(13.96)
BR_AAA	–	-1.569***	
		(-6.30)	
BR_AA+	–	-1.297***	
		(-5.33)	
BR_AA	–	-1.044***	
		(-4.31)	
ROE	–	-0.003	-0.003
		(-1.07)	(-1.00)
Long-term debt ratio	+	0.002**	0.002**
		(2.26)	(2.53)
Ln(size)	–	-0.034	-0.034
		(-0.97)	(-0.97)

Ln(term)	+	-0.520***	-0.548***
		(-6.81)	(-6.93)
Put		0.331	0.384*
		(1.62)	(1.80)
Prepay/Callable		0.782***	0.819***
		(12.15)	(12.69)
Coupon adjustment		0.028	0.007
		(0.14)	(0.03)
Listed	–	-0.544	-0.514
		(-1.41)	(-1.35)
SOE	–	-0.806***	-0.837***
		(-12.11)	(-12.58)
Corp		-0.154	-0.192
		(-0.39)	(-0.50)
One year treasury rate		0.147***	0.151***
		(3.42)	(3.52)
Br_rating	–		-1.571***
			(-2.68)
Br_rating^2			8.298**
			(2.21)
_cons		3.726***	1.772**
		(10.05)	(2.37)
Industry		Controlled	Controlled
Year		Controlled	controlled
N		1962	1962
r2_a		0.558	0.554
F		102.894	106.683

Note: This table presents the OLS regression results that examine the relationship between bond guarantees and yield spreads in China. The dependent variable is a bond issue yield spread. Prob (guar) is estimated by the probit model in Table 5. The rest of control variables are the same as described in Section 4. 2. Robust Z statistics in parentheses, *p< 0.1, **p< 0.05, ***p< 0.01.

Robustness Test: To address the problem of selection bias and the dummy endogenous variable, Maddala (1983) and Pagano et al. (2015) estimate the probit model described in Equation (1) at the first stage and then use the inverse Mills ratio (IMR) as an independent variable in the second stage of regression model of credit spreads. This approach is similar to a Heckit Two-stage Model. We also adopt the similar approach to a robustness test in both the corporate bonds sample and enterprise bonds sample. As the results of the first stage probit model are the same as those presented before, we do not report the results here. Table 7 presents a robustness test of the second stage regression presented in Equation (2). Regressions (1) and (2) indicate that even controlling the selection bias with the inverse Mills ratio, the dummy variable guar is still positively related to credit spreads with significantly high t statistics. The inverse Mills ratio (IMR) is significantly different from zero, which confirms that issuers do self-select into guaranteed bonds (Pagano et al., 2015).

Table 7: Robustness Test on the Relationship Between Bond Guarantees and Yield Spreads

		The dependent variable: spread	
Independent variable	**Expected sign**	**(1)**	**(2)**
Guar	+	1.458***	1.516***
		(9.90)	(10.13)
IMR		0.121***	0.122***
		(4.84)	(4.80)
BR_AAA	–	-1.832***	
		(-7.36)	
BR_AA+	–	-1.466***	
		(-6.12)	
BR_AA	–	-1.123***	
		(-4.75)	

ROE	−	-0.004	-0.003
		(-1.23)	(-1.18)
Long-term debt ratio	+	0.001*	0.001**
		(1.82)	(2.09)
Ln(size)	−	-0.034	-0.034
		(-0.98)	(-0.98)
Ln(term)		-0.475***	-0.503***
		(-6.28)	(-6.43)
Put		0.261	0.312
		(1.29)	(1.48)
Prepay/Callable		0.691***	0.728***
		(10.38)	(10.91)
Coupon adjustment		0.029	0.008
		(0.15)	(0.04)
Listed	−	-0.560	-0.530
		(-1.49)	(-1.43)
SOE	−	-0.745***	-0.775***
		(-11.28)	(-11.73)
Corp		-0.086	-0.123
		(-0.23)	(-0.33)
One year treasury rate		0.144***	0.148***
		(3.37)	(3.47)
Br_rating	−		-1.615***
			(-2.80)
			7.993**
			(2.18)
Cons		4.061***	2.266***
		(10.98)	(3.07)
Year		Controlled	Controlled
Industry		Controlled	Controlled
N		1962	1962
r2_a		0.564	0.560
F		102.295	105.447

Note: This table presents the robustness test results that examine the relationship between bond guarantees and yield spread in China. The dependent variable is a bond issue yield spread. Guar is a binary variable that takes value of 1 if a firm uses a guarantee for a bond issue, 0 otherwise. IMR is the inverse Mills ratio (Maddala, 1983; Pagano et al, 2015) and the rest of control variables are the same as described in Section 4. 2. Robust Z statistics in parentheses, *p< 0.1, **p< 0.05, ***p< 0.01.

5. Conclusion

Given a large percentage of bonds issued with a guarantee in the past decade, there has been increasing policy interest in trying to understand the role of a guarantee for bond issues. Our study provides an important contribution to the limited literature seeking to understand the role of a guarantee for corporate bond issues. Based on a sample of China's bond market for the period of 2008 to 2015, our study shows that the corporate bond issuers with lower credit ratings are more willing to purchase a bond guarantee and guaranteed bonds have the higher issue spread yields than those non-guaranteed bonds with the same credit rating. Our findings imply that moral hazard would be the reason in explaining the choice of a guarantee by corporate bond issuers in China's capital market. Prior to a bond issue credit rating signal provides a mechanism to mitigate information inequality between bond issuers and investors, while a bond guarantee helps relieve information asymmetry afterwards. Our study has limitations. First, our model that examines the signalling and incentive effects of bond guarantees in the context of mitigating information asymmetry between borrowers and investors has not incorporated the uncertainty of the regulatory regime. It is a well-known fact that in China, bond issues and associated provision of bond guarantees by the state agents and third-party firms are largely subject to governmental policies and regulatory changes. Second, we examine the effect of a bond guarantee on information asymmetry without reference to the actual guarantee costs. This choice was driven by the unavailability of bond guarantee fees data. Addressing these limitations would

generate a quantum leap forward in our understanding of the role of a bond guarantee in the bond market and the issuers' behaviors.

References

Akerlof, G. A. (1970). The Market for "Lemons: Quality Uncertainty and the Market Mechanism. *The Quarterly Journal of Economics*, 84(3), 488-500.

Altieri, M., Manconi, A. & Massa, M. (2016). Corporate Bond Guarantees and the Value of Financial Flexibility. INSEAD Working Paper No. 2016/72/FIN (October 17, 2016).

Barro, R. J. (1976). The Loan Market, Collateral, and Rates of Interest. *Journal of Money, Credit and Banking*, 8(4), 439-456.

Berger, A. N., Frame, W. S. & Ioannidou, V. (2011). Tests of Ex Ante Versus Ex Post Theories of Collateral Using Private and Public Information. *Journal of Financial Economics*, 100(1), 85-97.

Berger, A. N. & Udell, G. U. (1995). Relationship Lending and Lines of Credit in Small Firm Finance. *Journal of Business*, 68(3), 351-381.

Besanko, D. & Thakor, A. V. (1987a). Collateral and Rationing: Sorting Equilibria in Monopolistic and Competitive Credit Markets. *International Economic Review*, 28(3), 671-689.

Besanko, D. & Thakor, A. V. (1987b). Competitive Equilibrium in the Credit Market under Asymmetric Information. *Journal of Economic Theory*, 42(1), 167-182.

Bester, H. (1985). Screening Vs. Rationing in Credit Markets with Imperfect Information. *The American Economic Review*, 75(4), 850-855.

Boot, A. W. A., Thakor, A. V. & Dell, G. F. (1991). Credible Commitments, Contract Enforcement Problems and Banks: Intermediation as Credibility Assurance. *Journal of Banking & Finance*, 15(3), 605-632.

Borisova, G., Fotak, V., Holland, K. & Megginson, W. L. (2015). Government Ownership and the Cost of Debt: Evidence from Government Investments in Publicly Traded Firms. *Journal of Financial Economics*, 118(1), 168-191.

Brick, I. E. & Palia, D. (2007). Evidence of Jointness in the Terms of Relationship Lending. *Journal of Financial Intermediation*, 16(3), 452-476.

Byoun, S. (2014). Information Content of Unsolicited Credit Ratings and Incentives of Rating Agencies: A Theory. *International Review of Economics & Finance*, 33, 338–349.

Campbell, J. Y. & Taksler, G. B. (2003). Equity Volatility and Corporate Bond Yields. *The Journal of Finance*, 58(6), 2321–2350.

Chakraborty, A. & Hu, C. S. (2006). Lending Relationships in Line-Of-Credit and Non-Line-Of-Credit Loans: Evidence from Collateral Use in Small Business. *Journal of Financial Intermediation*, 15(1), 86-107.

Chan, Y. S. & Kanatas, G. (1987). Asymmetric Valuations and the Role of Collateral in Loan Agreements. *Journal of Money, Credit and Banking*, 17(1), 84-95.

Chen, F., Huang, J. Z., Sun, Z. & Yu, T. (2015). Why Do Firms Issue Guaranteed Bonds? International Finance and Banking Society (IFABS) Annual Conference, 2015, Hangzhou, China.

Covitz, D. & Downing, C. (2007). Liquidity or Credit Risk? The Determinants of Very Short-Term Corporate Yield Spreads. *The Journal of Finance*, 62(5), 2303–2328.

Dougal, C., Engelberg, J., Parsons, C. A. & Van Wesep, E. D. (2015). Anchoring on Credit Spreads. *The Journal of Finance*, 70(3), 1039–1080.

Duffee, G. R. (1998). The Relation Between Treasury Yields and Corporate Bond Yield Spreads. *The Journal of Finance*, 53(6), 2225–2241.

Francesco, A. & Cardamone, P. (2008). R & D Spill over and Firms' Performance in Italy: Evidence from a Flexible Production Function. Empirical Economics, 34(1), 143-166.

Gonas, J. S., High field, M. J. & Mullineaux, D. J. (2004). When Are Commercial Loans Secured? *Financial Review*, 39(1), 79-99.

Harhoff, D. & Körting, T. (1998). Lending Relationships in Germany–Empirical Evidence from Survey Data. *Journal of Banking & Finance*, 22(10), 1317-1353.

He, Z. & Milbradt, K. (2014). Endogenous Liquidity and Defaultable Bonds. *Econometrica*, 82(4), 1443–1508.

Hsueh, L. P. & Kidwell, D. S. (1988). Bond Ratings: Are Two Better Than One? *Financial Management*, 17(1), 46-53.

Hsueh, L. P. & Liu, Y. A. (1990). The Effectiveness of Debt Insurance as A Valid Signal of Bond Quality. *Journal of Risk and Insurance*, 57(4), 691-700.

Jacoby, G., Liao, R. C. & Batten, J. A. (2009). Testing the Elasticity of Corporate Yield Spreads. *Journal of Financial and Quantitative Analysis*, 44(3), 641–656.

John, K., Lynch, A. W. & Puri, M. (2003). Credit Ratings, Collateral, and Loan Characteristics: Implications for Yield. *The Journal of Business*, 76(3), 371-409.

Kidwell, D. S., Sorensen, E. H. & Wachowicz, J. M. (1987). Estimating the Signalling Benefits of Debt Insurance: The Case of Municipal Bonds. *Journal of Financial and Quantitative Analysis*, 22(3), 299-313.

Kisgen, D. J. & Strahan, P. E. (2010). Do Regulations Based on Credit Ratings Affect a Firm's Cost of Capital? *Review of Financial Studies*, 23(12), 4324-4347.

Kolasinski, A. (2009). Subsidiary Debt, Capital Structure, and Internal Capital Markets. *Journal of Financial Economics*, 94(2), 327-343.

Leland, H. E. & Toft, K. B. (1996). Optimal Capital Structure, Endogenous Bankruptcy, and the Term Structure of Credit Spreads. *The Journal of Finance*, 51(3), 987-1019.

Liu, G. (2012). Municipal Bond Insurance Premium, Credit Rating, and Underlying Credit Risk. *Public Budgeting & Finance*, 32(1), 128-156.

Long staff, F. A., Mithal, S. & Neis, E. (2005). Corporate Yield Spreads: Default Risk or Liquidity? New Evidence from the Credit-Default Swap Market. *The Journal of Finance*, 60(5), 2213–2253.

Long staff, F. A. & Schwartz, E. S. (1995). A Simple Approach to Valuing Risky Fixed and Floating Rate Debt. *The Journal of Finance*, 50(3), 789-819.

Lu, C. W., Chen, T. K. & Liao, H. H. (2010). Information Uncertainty, Information Asymmetry and Corporate Bond Yield Spreads. *Journal of Banking & Finance*, 34(9), 2265-2279.

Maddala, G. S. (1983). Limited Dependent and Qualitative Variables in Econometrics. Cambridge University Press.

Moldogaziev, T. T. & Johnson, C. L. (2011). The Determinants of Bond Insurance Premium. Indiana University School of Public & Environmental Affairs Research Paper No. 2011-03-06, Available at SSRN: http://ssrn.com/abstract=1787429.

Neal, R., Rolph, D., Dupoyet, B. & Jiang, X. (2015). Interest Rates and Credit Spread Dynamics. *The Journal of Derivatives*, 23(1), 25-39.

Ono, A. & Uesugi, I. (2009). Role of Collateral and Personal Guarantees in Relationship Lending: Evidence from Japan's SME Loan Market. *Journal of Money, Credit and Banking*, 41(5), 935-960.

Opp, C. C., Opp, M. M. & Harris, M. (2013). Rating Agencies in the Face of Regulation. *Journal of Financial Economics*, 108(1), 46-61.

Pagano, M. S., Shin, Y. & Han, S. (2015). Ratings vs. Guarantees: Issuer Choices and Their Impact on Bond Yields. The Proceedings of the SFA Meeting.

Park, K., Chang, M. A., Kim, D. & Kim, S. (2013). An Empirical Study of Credit Spreads in an Emerging Market: The Case of Korea. *Pacific-Basin Finance Journal*, 21(1), 952-966.

Peng, J. & Brucato, P. F. (2004). An Empirical Analysis of Market and Institutional Mechanisms for Alleviating Information Asymmetry in the Municipal Bond Market. *Journal of Economics and Finance*, 28(2), 226-238.

Qi, T., Ge, H. & Meng, Z. (2012). Credit Risk Analysis of Chinese City Construction Investment Bonds Based on the Credit Spread. *Review of Investment Studies (in Chinese)*, 31(1), 15-24.

Sola, M. S. & Palomba, M. G. (2015). Sub-National Government's Risk Premia: Does Fiscal Performance Matter? IMF Working Paper, WP/15/117, International Monetary Fund.

Stiglitz, E. J. & Weiss, A. (1981). Credit Rationing in Markets with Imperfect Information. *American Economic Review*, 71(3), 393-410.

Thakor, A. V. (1982). An Exploration of Competitive Signalling Equilibria with "Third Party" Information Production: The Case of Debt Insurance. *The Journal of Finance*, 37(30), 717-739.

Wang, F. & Zhou, H. (2014). Types of Guarantees and Their Relation to External Auditing：Evidence from the Chinese Bond Market. *China Journal of Accounting Studies*, 2(4), 264-293.

Weber, T. A. (2014). Intermediation in a Sharing Economy: Insurance, Moral Hazard, And Rent Extraction. *Journal of Management Information Systems*, 31(3), 35-71.

Wooldridge, J. M. (2002). Econometric Analysis of Cross Section and Panel Data. Cambridge, Massachusetts: MIT Press.

Yu, F. (2005). Accounting Transparency and the Term Structure of Credit Spreads. *Journal of Financial Economics*, 75(1), 53-84.

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Determinants of Climate Change Awareness among Rural Farming Households in South Africa

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Abstract: Climate change and rural livelihood capitals remain the major inextricable dimensions of sustainability in this twenty-first century globally. It is known to be an important challenge facing food security status among African countries. Additionally, it is an indisputable fact that climate change and agriculture are intertwined. In view of this, climate change awareness needs to be strengthened in the rural farming households. The study was carried out in Ngaka Modiri Molema District Municipality, in the North West Province of South Africa to determine awareness of climate change. Stratified random sampling technique was used to select three hundred and forty-six (346) farmers who were interviewed from the study area. Data were analyzed using statistical package for social sciences (SPSS). The binary logistic regression model was employed to analyse the factors driving climate change awareness. The study established that majority of the rural farmers in the study area aware of climate change, in which farm size, education, who owns the farm, information received on climate change, source of climate change information, climate change information through extension services, channel of information received on climate change and support received on climate change are statistically significant ($p<0.05$) determinants of climate change awareness in the study area.

Keywords: *Climate change awareness, maize production, and binary logistic regression model.*

1. Introduction

Climate change and agriculture are two intertwined entities. A change in weather condition over a certain period of time is identified as climate change. The activities of agricultural production impact climate change adversely, vice versa. Climate change has become an imperative challenge facing African countries, while the impact is largely due to little revenue, more dependence on climate-sensitive sectors such as agriculture, and the lack or poor ability to get acclimatized to the changing climate (Belloumi, 2014). According to the United Nation Framework for Climate Change (UNFCCC, 2011), climate change significantly affects rural communities particularly in Africa who rely mainly on farming activities and natural forest resources for their livelihoods. Likewise, there is a collective confirmation that climate change will intensely affect the African continent and will be one of the thought-provoking concerns for future growth, particularly in the arid regions (Huq et al., 2004; Kurukulasuriya and Mendelsohn, 2006). James and Washington (2013) reported that temperatures in all African countries are estimated to rise faster than the global average increase during the 21st century. Subsequently, the African continent is anticipated to be the utmost affected and susceptible to the effects of climate change (Hummel, 2015; Bewket, 2012).

Resilience to climate change among small-scale farmers lies in adaptation strategies and coping mechanisms. However, adaptation to climate change can only be achieved when awareness is prioritised. Awareness to climate change is a form of knowledge or education where an individual is thought to be conscious of the prevailing climatic condition. Rural household farmers need an understanding and awareness of climate change in order to cope effects of climate change. To this effect, the study seeks to analyse the determining factors of climate change awareness among the rural farming households of North West Province in South Africa. The study is expected to foster better information and understanding of climate change, enable the stakeholders and the extension officers to understand what prevents awareness of climate change, and lastly, to improve adaptation strategies among the rural farming households in order to maximize profit, improve rural livelihood especially those who rely on agriculture for survival and enhance food security among rural farming households. Thus, there is a need to research on awareness about climate change in the study area, in other words, for rural household farmers to be aware of climate change, the above variables.

2. Literature Review

Agriculture is highly exposed to climate change, as farming activities directly depend on climatic conditions. It follows that global climate change impact on agricultural production should be considered important (Rosenzweig and Parry, 1994). Numerous global problematic challenges currently experienced in the world today stemmed from global scientific collaborations that rely mainly on the ecosystem. The upshots gave rise to the excessive and formidable environmental problem cited by Udenyi (2010). According to Houghton (2002), the earth's average surface temperature has increased by 10°F just over the last century and consequently, climate aggravates a serious negative impact on crop yield, which has occasioned a reduction in the production of food. IPCC (2001) verbalized that climate change is a statically significant difference in weather conditions that hold for a prolonged period of time, usually decades or more. Analogously, IPCC (2007) advanced that it is a change in the state of the climate that can be deciphered via the instrumentation of statistical examination. In consequence, the atmospheric variation is particularly recognizable through the changes in the mean and/or the variability of its properties, and that persevere for an extended period, typically decades or longer.

According to Hassan (2015) climate change refers to any change in climate over time, whether due to natural variability or as a result of human activity. Equivalently, UNFCCC (2009) attested that climate change is a change in the climate system that can be directly or indirectly ascribed to the activities engaged in by human beings, which subsequently eventuate in the alteration of the global atmospheric composition. Also, a change in climate variability such as rainfall, wind, and temperature are depictions of climate change. World Meteorological Organisation (WMO, 2009), vocalized that climate change is a representation of a statistical description of weather of a region, with regards to its mean and variability of the parameters, for example, when the variation of temperature and precipitation span over 30 years. Appositely, Cruz et al. (2007) indicated that climate change pictures changes that are marked by an increase in the occurrence and high events of extreme weather. Climate change can be characterized as an increased effect of global warming. Climate change is expressed as an extreme temperature, uncontrolled rainfall resulting in a flood, rainfall which exhibits notable spatial and temporal variability. In the same vein, Wang et al. (2010) explained that climate change will generate continuing variability regarding the rise in sea level, increased temperatures resulting from movement of climatic zones and changes in precipitation patterns.

The impact of climate change is very likely to affect food production at the global, regional, and local level. In every society, agriculture and food are issues that are very sensitive to climate change variability. Naturally, climate change will have overarching impacts on crop, livestock and fisheries production, and will increase the prevalence of crop pests (Campbell et al., 2016). For instance, Lobell et al. (2011) noted the negative impact of climate change on crop yield. Climate impact studies on crops are predominate, but impacts on fisheries and livestock production are equally preponderant (Creighton et al., 2015; Herrero et al., 2015). In this regard, rural household farmers need to be aware of the climate change impact. In order to understand the dynamics of climate change, there is a need for awareness. Sujit and Padaria (2010) emphasized that there was a mixed result among Indian farmers, in which the majority of the rural farmers lacked detailed information and understanding of climate change. Findings from Thaddeus et al. (2011), reported that the level of awareness about climate change among the local communities in the Niger Delta region of Nigeria was still low.

Majority of the farmers in the region (about 60%) knew nothing or little on climate change and its impacts. Adetayo (2012) explained that the level of climate change awareness among the poor resource rural farmers was still low. In the same frame of thought, Aphunu et al. (2007) reported that most farmers claimed to be aware of climate change but, the understanding and the level of knowledge on the impact and adaptation were still low. According to Tembo et al. (2017), it was reported that majority of the farmers (77.2%) were aware of issues related to climate change and its consequences on agricultural production and the environment. Also, Oduniyi (2014) indicated that climate change awareness among the small-scale maize farmers in Mpumalanga Province of South Africa was low. This study seeks to identify factors that determine climate change awareness among the rural household farmers in the North West Province of South Africa. This study was intended to add to existing literature and contribute to the body of knowledge on climate change awareness.

3. Methodology

Study Area: The study was carried out in the Ngaka Modiri Molema (NMM) District Municipality of the North West Province. The province is located in the north of South Africa sharing a border with the Republic of Botswana and the Kalahari Desert to the west, where Gauteng Province is found on the east and the Free State to the south. The district municipality is the capital of the province which is situated at the centre of the province. The district consists of Mahikeng, Ditsobotla, Ramotshere Moiloa, Tswaing, and Ratlou local municipalities. The area of the district is 28,206 km2 with a population of 842,699. The main economic activity in the district is agriculture, and the towns include Lichtenburg, Sannieshof, Delareyville, Zeerust, Mahikeng, Coligny, Disaneng, Mmabatho, Biesiesvlei, Groot Marico, Ottosdal, Setlagole, Madibogo, Kraaipan, and Ottoshoop.

Method of Data Collection: The study area is known as one of the largest maize producing areas in South Africa. Farming is the primary occupation for the rural households. The area was selected because of the high concentration of small-scale maize farmers in the area. The data used in the research were primary and secondary data. Data were collected using a validated, pre-tested structured questionnaire, which consisted of coherent questions related to household socio-economic characteristics (demography), climate change and its awareness. The questionnaires were explained to the local extension officers before the survey was undertaken because they understood the farmers better and could translate the questionnaires into the local language. This was followed by face to face interviews and focus group discussion in each local municipality where each session lasted for about 45 minutes.

Population, Sampling Procedure, and Sample Size: A total number of 346 questionnaires were administered to the farmers in the district using the stratified random sampling technique. The sampling was carried out by grouping the population of the small-scale maize farmers from the five local municipalities in the district into strata. Thereafter, a random sampling technique was used to select a specific number of individual farmers from each stratum. Thus, there is a need to determine the factors responsible for climate change awareness among rural farming households. The outcomes of this study are expected to help to develop policy measures and framework to improve rural awareness. The findings obtained, and the recommendation can also be used by the policymakers and the stakeholders in dealing with factors contending against climate change awareness.

Statistical Analysis: The collected data were coded, cleaned, captured, and analyzed using the statistical package for social sciences (SPSS). Multicollinearity analysis was employed to remove variables that were correlated to each other from the list of variables obtained from the questionnaires after which binary logistic regression model (BLRM) was used to determine if a rural household farmer is aware of climate change or not. Logistic regression is a multivariate technique used to study the relationship between a dichotomous dependent variable and one or more independent variables (Molla-Bauza et al., 2005). A dichotomous variable is a variable that takes only two values, 1 and 0 correspondingly. Assuming Y is a binary response (dependent) variable, and X, (X_1, X_2.....X_k) are a set of independent or explanatory variables which could be discrete, continuous, or a combination.

Let Yí = 1 (Aware of climate change) ……3.1

Yí = 0 (Unaware of climate change) ……3.2

$X = x_1 + x_2 + x_3 + x_4 + x_5 + x_6 + x_7$ ……. x_k ……3.3

Where X could be signified as of household gender (x_1), household age (x_2), farming as a major income (x_3), type of farm (x_4) ……x_k

Assuming that climate change awareness is a function of household gender (x_1), household age (x_2), farming as a major income (x_3), type of farm (x_4) ……x_k

The initial model will be given as:

Log it (π_i) = $\log\left(\frac{\pi_i}{1-\pi_i}\right)$ ……3.4

= $\beta_0 + \beta_1 Xi$ ……3.5

= $\beta_0 + \beta_1 x_{i1} + ... + \beta_k x_{ik}$ ……3.6

Then the logistic regression model can be expressed as:

Log it (πi) = $\log\left(\frac{\pi_i}{1-\pi_i}\right) = \beta_0 + \beta_1 Xi$ ……3.7

$\pi i = \frac{exp\,(\beta 0+\beta 1 xi)}{1+exp\,(\beta 0+\beta 1 xi)}$ ……3.8

Or $Y = \alpha + \beta_1 Xi + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \ldots\ldots + \beta_k X_k + \varepsilon$ ……3.9

Where:

The variable ε is called the error term or disturbance. It is termed "noise" reflecting other factors that influence climate change awareness. It captures the factors other than x affecting y.

Y = dependent variable

x_1 = independent variables

β_1 = regression coefficients

The model for logistic regression analysis assumes that the outcome variable, Y, is categorical (e.g., dichotomous), taking on values of 1 (i.e., yes) and 0 (i.e., no). Hypothetically, population proportion of cases for which Y = 1 is defined as p = P (Y =1). Then, the proportion of cases for which Y = 0 is 1 - p = P (Y = 0). In the absence of other information, we can estimate p by the sample proportion of cases for which Y = 1. However, in the regression context, it is assumed that there is a set of predictor variables, $x_1 \ldots\ldots x_k$, that are related to Y and, therefore, provide additional information for predicting Y.

Log it (Pi) = ln (Pi / 1-Pi) = $\alpha + \beta_1 Xi + \ldots\ldots + \beta_k X_k + Ut$ ……3.10

Where:

ln (Pi / 1-Pi) = log it for farmers awareness choices (Yes or No)

Pi = Aware of climate change;

1 - Pi = Unaware of climate change;

β = coefficient

x_1 = covariates

Ut = error term

When the variables are fitted into the model, the model is presented as:

ln (Pi / 1-Pi) = $\alpha + \beta_1 Xi + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \ldots\ldots + \beta_k X_k \ldots\ldots + Ut.$ ……3.11

4. Results and Discussion

This section presents the determinants of climate change awareness among the farming households in the study area. To achieve this, a binary logistic regression model was employed. Firstly, Pearson correlation analysis was carried out to determine the strength of association between variables, either positive or negative, as well as the relationship between the dependent variable and the independent variables. The independent variables employed included the socio-economic characteristics and climate-related information. However, out of all the independent variables, the following variables: farm size, level of education, land acquisition, support received on climate change were negatively associated with the dependent variable. On the other hand, variables such as marital status, who manages the farm, who owns the farm, information received on climate change, the source of information on climate change, extension services, were positively associated with the dependent variable. The dependent variable (climate change awareness categorized in its binary form) was regressed against the explanatory variables mentioned above. Test for multicollinearity among the variables was carried out, showing the variance inflation factor (VIF) for each variable, the mean VIF was 1.455 (See Table 1).

There occurred a high level of tolerance among the variables, which indicated that there was no serious multicollinearity among the variables used in the analysis. The value for Cox & Snell Square and Nagelkerke R Square were not statistically significant. This concludes that the data fit the model well. As shown in the results, out of the independent variables considered in the model (See Table 2), seven variables were statistically significant, and they determined the awareness of climate change among the respondents in the study area. The variables included farm size, education, who owns the farm, information received on climate change, source of climate change information, climate change information through extension services and the channel of information received on climate change. Farm size was strongly associated with climate change awareness. The variable farm size was statistically significant ($p<0.05$) with a negative coefficient (-2.354). This implied that the probability of the household farm size decreased as awareness was made on climate change in the study area with the odd ratio of 0.095.

Farming households would tend to operate on a small scale as climate change awareness increased. This reason is not far-fetched from the fact that, most small-scale household farmers in the study area were poor and less resourced, and coping with climate change was a challenge, even if they were aware. Farmers with large farm size mostly had resources and they were likely to have more capacity to try out and invest in climate risk coping strategies (Ali and Erenstein, 2017). Thus, farmers in the study area opted to reduce the amount of land cultivated as an adaptation measure (see Table 2) to climate change in other to maximize productivity. Climate change awareness and level of education were expected to enhance informed decision-making and a significant role in increasing the adaptation and mitigation capacities of household farming. In this study education was statistically significant ($p<0.05$) with a negative coefficient (-1.326), that is, education decreased the probability of climate change awareness with an odds ratio of 0.265. This finding implied that education had a negative influence on the farmers' awareness of climate change. This result was supported by Bayard et al. (2007), who reported similar results that education significantly, but negatively, affected climate change awareness.

Mandleni (2011) aligns with the findings of this current research because the researcher also submitted that education significantly but negatively affected awareness about climate change. On the contrary, the studies carried out by Deressa et al. (2009), Deressa et al. (2010) and Maddison (2006), recorded that education of household heads increased the probability of awareness on climate change. The variable (who owns the farm) was found to be statistically significant ($p<0.05$) to climate change awareness with a positive coefficient (2.899). Who owns the farm increased the probability of awareness to climate change? Majority of the households farming who owned the farm were individual households. This indicates that individual household who owns a farm tend to be more aware of climate change in order to cope and engage in adaptation measures to improve food production and sustain a livelihood. This is in consonance with Shultz et al. (1997) study, for the examination indicated that land ownership individually managed, is widely believed to encourage the awareness. Climate change awareness and the information received are positively associated. Receiving information on climate change increased the probability or likelihood of climate change awareness. The result revealed that information received on climate was statistically significant ($p<0.05$) to climate change.

Most of the farming households in the study area indicated that they had access to radios, flyers, magazine the local newspaper, amongst many others, which provided information on climate change awareness. Evenly, Deressa et al. (2009) reported that information on temperature and rainfall had a significant and positive impact on climate change awareness. Additionally, research on climate change by Bryan et al. (2009) enunciated that information on climate change was found to facilitate climate change awareness and adaptation among the poorest farmers. The source of climate change information was statistically significant ($p< 0.05$) but negatively affected climate change awareness in the study area. Majority of the respondents obtained climate change information from the media such as radio as they did not have access to the internet, an indication that information technology remained a challenge. This finding implied that sources of information were not increasing climate change awareness. The findings harmonized with Maponya and Mpandeli (2012), and Oduniyi (2014), who also found that most farmers in rural areas did not have access to other sources of information such as internet, magazines. Relatedly, Nwagbara and Nwagbara (2017) enounced that in a research conducted in Abia State, Nigeria, the role of radio stations in building awareness of climate change among crop farmers was vital.

The results of the analysis further showed that extension service was statistically significant ($p<0.05$), with a positive association, and it increased the likelihood or probability of climate change awareness. Extension services provided a vital source of information on climate change as well as agricultural production and management practices. This is not surprising because the investigation evinced that the majority of the farming household was already aware of climate change. Various studies in developing countries, including Ethiopia, reported a strong positive relationship between access to information and the adoption behavior of farmers (Yirga, 2007). The innovation and information obtained by the farmers on production activities are determined by the extension agents; thus, extension contacts are the carrier of change (Idris et al., 2012). IFPRI (2007) also attested to the notion that improving access to extension services for farmers has the potential to significantly increase farmers' awareness of changing climatic conditions.

The channel of information received on climate change by the farming households was statistically significant ($p<0.05$), although negatively associated with climate change awareness. This variable decreased the likelihood or the probability of climate change awareness with an odd ratio of 0.167. The channel of information determines climate change awareness and information dissemination, thus, improving adaptation and reducing the risk of climate change while concurrently sustaining households' livelihood. This is supported by Evelyne and Franzel (2015), who divulged that the channel of information plays a complementary role to facilitate the spread of agricultural technologies and improving farmers' capacities. Information channel is more effective and offers a wide-reaching alternative in supporting agricultural innovation (Ssemakula and Mutimba, 2011; Wellard et al., 2013).

Table 1: Multi Co Linearity Test of Variables

Variables	Colinearity Statistics	
	Tolerance	VIF
Number of years in farming	0.576	1.736
Farm size	0.725	1.379
Household size	0.762	1.313
Household gender	0.818	1.223
Household marital status	0.729	1.372
Education level	0.607	1.649
Farming as major source of income	0.566	1.768
Types of farm	0.789	1.268
Who manages the farm?	0.918	1.089
Who owns the farm?	0.791	1.265
Land acquisition	0.746	1.341
Information received on climate change	0.567	1.763
Source of climate change information	0.547	1.829
Climate change information through extension services	0.737	1.357
Channel of information received on climate change	0.745	1.342
Support received on climate change	0.631	1.586
Mean VIF		1.455

Source: Author's computation (2017)

Table 2: Parameter Estimates of the Binary Logistics Regression Model on Climate Change Awareness

Variables		B	S.E.	Wald	DF	Sig.	Exp(B)
	Years of farming	0.513	0.272	3.558	1	0.059	1.670
	Farm size	-2.354	0.805	8.550	1	0.003	0.095
	Household size	-0.112	0.526	.046	1	0.831	0.894
	Household gender	-2.258	1.504	2.254	1	0.133	0.105
	Marital status	1.150	0.620	3.443	1	0.064	3.159
0Step 1[a]	Education	-1.326	0.507	6.840	1	0.009	0.265
	Source of income	0.923	1.428	0.417	1	0.518	2.516
	Type of farm	0.042	0.363	0.013	1	0.909	1.043
	Who manages the farm?	-0.173	1.163	0.022	1	0.882	0.841
	Who owns the farm?	2.899	1.030	7.917	1	0.005	18.164
	Land acquisition	-0.226	0.247	0.839	1	0.360	0.797

	Information received on climate change	18.809	6.067	9.612	1	0.002	147421424.61
	Source of climate change information	-2.376	0.928	6.552	1	0.010	0.093
	Climate change information through extension services	4.912	1.206	16.604	1	0.000	135.941
	Channel of information received on climate change	-1.788	0.732	5.977	1	0.014	0.167
	Support received on climate change	-.409	0.258	2.524	1	0.112	0.664
	Constant	-7.763	4.034	3.703	1	0.054	0.000

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
	60.167[a]	0.322	00

Source: Author's computation (2017)
Note: $p < 0.05$; $p < 0.01$ at 5% and 1% level of significant respectively.0

5. Conclusion and Recommendations

The findings in this study revealed that majority of the respondents in the study area were aware but did not fully understand the concept of climate change. The research showed that out of the independent variables considered in the model (See Table 2), seven variables were statistically significant ($p<0.05$), and consequently determined the awareness of climate change among the respondents in the study area. The determinant factors to climate change awareness were: farm size, level of education, who owns the farm, information received on climate change, source of climate change information, climate change information through extension services and channel of information received on climate change. It is therefore recommended that the above-mentioned climate change awareness determinants should be considered in any local policy aimed at improving climate change awareness among the farmers in the study area.

References

Adetayo, A. & Owolade, E. (2012). Climate change and mitigation awareness in small farmers of Oyo State in Nigeria. Open Science Repository Agriculture, Online (open access).

Ali, A. & Olaf, E. (2017). Assessing farmers' use of climate change adaptation practices and impacts on food security and poverty in Pakistan. *Climate Risk Management*, 16, 183–194.

Aphunu G. O. & Nwabeze. X. (2007). Fish Farmers' Perception of Climate change impact on fish production in Delta State, Nigeria.

Bayard, B., Jolly, C. M. & Shannon, D. A. (2007). The economics of adoption and management of alley cropping in Haiti, *Journal of environmental management*, 84, 62 –70.

Belloumi, M. (2014). Investigating the Impact of Climate Change on Agricultural Production in Eastern and Southern African Countries. AGRODEP Working Paper 0003. Washington, DC: International Food Policy.

Bewket, W. (2012). Climate change perceptions and adaptive responses of smallholder farmers in Central Highlands of Ethiopia, *Int. J. Environ. Stud,* 69(3), 507-523.

Campbell, B. M., Vermeulen, S. J., Aggarwal, P. K., Corner-Dolloff, C., Evan, G., Loboguerrero, A. M., Ramirez-Villegas, J., Rosenstock, T., Sebastian, L., Thornton, P. K. & Wollenberg, E. (2016). Reducing risks to food security from climate change. *Global Food Security*, 11, 34 – 43.

Creighton, C., Hobday, A. J., Lockwood, M. & Pecl, G. T. (2015). Adapting Management of Marine Environments to a Changing Climate: A Checklist to Guide Reform and Assess Progress. Ecosystems, 1–33.

Cruz, R. V., Harasawa, H., Lal, M., Wu, S., Anokhin, Y., Punsalmaa, B., Honda, Y., Jafari, M., Li, C. & Huu, N. N. (2007). Climate Change: Impacts, Adaptation and Vulnerability. The contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Asia.

Deressa, T., Hassan, R. M., Alemu, T., Yesuf, M. & Ringler, C. (2008). Analyzing the determinants of farmers' choice of adaptation methods and perceptions of climate change in the Nile Basin of Ethiopia. IFPRI discussion paper 00798, September 2008.

Deressa, T. T., Hassan, R. M., Ringler, C., Alemu, T. & Yesuf, M. (2009). Determinants of farmer's choice of adaptation methods to climate change in the Nile Basin of Ethiopia. *Global Environmental Change,* 19, 248-255.

Deressa, T. T., Hassan, R. M. & Ringler, C. (2010). Perception and adaptation to climate change by farmers in the Nile Basin of Ethiopia. Journal of Agricultural Science, 1-9.

Evelyne, K. & Franzel, S. (2015). Farmer-to-farmer extension: opportunities for enhancing the performance of volunteer farmer trainers in Kenya.

Hasan, M. (2015). Impacts of Climate Change Will Make You More Worried. Impacts of Climate Change in Bangladesh.

Herrero, M., Wirsenius, S., Henderson, B., Rigolot, C., Thornton, P. K., Havlik, P., deBoer, I. & Gerber, P. (2015). Livestock and the environment: what have we learned in the past decade? *Annu. Rev. Environ. Resour*, 40, 177–202.

Houghton, D. (2002). Introduction to climate change: Lecture notes for meteorologists, 13-15.

Hummel, D. (2015). Climate Change, Land Degradation and Migration in Mali and Senegal – some Policy Implications, Migration and Development. Institute of Social-Ecological Research, Hamburger Allee 45, 60486 Frankfurt/Main, German.

Huq, S., Reid, H., Konate, M., Rahman, A., Sokona, Y. & Crick, F. (2004). Mainstreaming adaptation to climate change in LDCs. *Clim Policy*, 4(1), 25-43.

Idrisa, Y. L., Ogunbameru, B. O., Ibrahim, A. A. & Bawa, D. B. (2012). Analysis of awareness and adaptation to Climate Change among Farmers in the Sahel Savannah agro-ecological Zone of Borno State, Nigeria. *British Journal of Environment & Climate Change,* 2(2), 216-226.

IFPRI. (2007). Micro-Level Analysis of Farmers' Adaptation to Climate Change in Southern Africa. Centre for Environmental Economics and Policy in Africa (CEEPA) and Environment and production Technology Division. IFPRI Discussion Paper 00714, 25.

IPCC (Inter governmental Panel for Climate Change). (2001). Impacts, Adaptation and Vulnerability. IPCC working group II, Third assessment report. [McCarthy, J.J., Canziani, O.F., Leary, N.A., Dokken, D.J. and White K.S. (Eds.)]. Cambridge University Press.

IPCC. (2007). Climate Change 2007: Impacts, Adaptation and Vulnerability. In: Parry ML, Canziani OF, Palutikof JP, van der Linder PJ, Hanson CE (eds.), Contribution of Working Group II to the IPCC fourth assessment report. Cambridge University Press, Cambridge.

James, R. & Washington, R. (2013). Changes in African temperature and precipitation associated with degrees of global warming. *Clim. Change*, 117(4), 859-872.

Kurukulasuriya, P. & Mendelsohn, R. (2006). Crop selection: adaptation to climate change in Africa. CEEPA Discussion Paper No. 26, Centre for Environmental Economics and Policy in Africa, University of Pretoria, Pretoria.

Lobell, D. B., Schlenker, W. & Costa-Roberts, J. (2011). Climate trends and global crop production since 1980. *Science*, 333(6042), 616–620.

Maddison, D. (2006). The perception and adaptation to climate change in Africa. CEEPA Discussion Paper No.10. Centre for Environmental Economics and Policy in Africa, University of Pretoria.

Mandleni, B. (2011). Impact of climate change and adaptation on cattle and sheep farming in the Eastern Cape Province of South Africa. PhD thesis, University of South Africa, South Africa.

Molla-Bauza, M. B., Martinez-Carrasco, M. L, Poveda, A. M. & Perez, M. R. (2005). Determination of the surplus that consumers are willing to pay for an organic wine. *Spanish Journal of Agricultural Research*, 3(1), 43-51.

Maponya, P. & Mpandeli, S. (2012). Climate Change and Agricultural Production in South Africa: Impacts and Adaptation options.

Nwagbara, M. O. (2017). The Role of Radio Stations in Creating Awareness of Climate Change among Crop Farmers in Abia State. *The International Journal of Social Sciences and Humanities Invention*, 4, 4. *Transactions of the Institute of Geographers*, 16, 397 – 399.

Oduniyi, O. S (2014). Climate change awareness: a case study of small-scale maize farmers in Mpumalanga Province, South Africa. A dissertation submitted at the Department of Agriculture and Animal health, The University of South Africa.

Rosenzweig, C. & Parry, M. L. (1994). The potential impact of climate change on world food supply, 133-138.

Shultz, S., Fautino, H. & Melgar, D. (1997). Agroforestry and Soil Conservation; Adoption and Profitability in El Salvador. *Agro-Forestry Today,* 9, 16–17.

Smit, B. & Wandel, J. (2006). Adaptation, adaptive capacity and vulnerability. *Global Environmental Change*, 16(3), 282-292.

Ssemakula, E. & Mutimba, J. K. (2011). Effectiveness of the Farmer-to-farmer Extension Model in Increasing Technology uptake in Masaka and Tororo Districts of Uganda. *African Journal of Agricultural Extension,* 39(2), 30–46.

Sujit Sarkar. & Padaria, R. N. (2010). Farmers' Awareness and Risk Perception about Climate Change in Coastal the ecosystem of West Bengal. *Indian Res. J. Ext. Edu,* 10(2).

Tembo, M. C., Kuntashula, E. & Kalinda, Thomson. (2017). Climate Change Awareness and Joint Decision to Adopt Agro forestry and Conservation Agriculture Practices in Zambia.

Thaddeus C. N., Nnaemeka A. C., Chukwudumebi L. E. & Victoria C. A. (2011). Farmers' perception of Climate Change Governance and Adaptation Constraints in Niger Delta Region of Nigeria.

Udenyi, O. G. (2010). Impacts of Climate Change. Nigeria Social Network.

UNFCCC (United Nations Framework Convention on Climate Change). (2009).

UNFCCC, (2011). Application of methods and tools for assessing impacts and vulnerability and developing adaptation responses. UNFCCC, Bonn, German.

Wang, J., Huang, J. & Rozelle, S. (2010). Climate Change and China's Agricultural Sector: An Overview of Impacts, Adaptation and Mitigation, ICTSD–IPC Platform on Climate Change, Agriculture and Trade, Issue Brief No.5, International Centre for Trade and Sustainable Development, Geneva, Switzerland and International Food & Agricultural Trade Policy Council, Washington DC, USA

Wellard, K., Rafanomezana, J., Nyirenda, M., Okotel, M. & Subbey, V. (2013). A Review of Community Extension Approaches to Innovation for Improved Livelihoods in Ghana, Uganda and Malawi. *The Journal of Agricultural Education and Extension,* 19(1), 21–35.

WMO (World Meteorological Organization). (2009). Climate Observations and Climate Data Management Guidelines. WCDMP No. 68 – WMO/TD-No. 1481.

Yirga, C. T. (2007). The dynamics of soil degradation and incentives for optimal management in Central Highlands of Ethiopia. Ph.D. Thesis. Department of Agricultural Economics, Extension, and Rural Development, University of Pretoria, South Africa.

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An Empirical Investigation of Trade Liberalization and Trade Patterns in South Africa

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Abstract: The study made use of the gravity model to analyze the behavior of South Africa's trade patterns at industry level. Using SIC 2-digit level data for the period 1996-2013 based on two sub-samples, 1996-2004 and 2005-2013, the study found that trade liberalization was not universally influential on trade patterns. Some industries did not exhibit significant behavior changes as a result of tariff liberalization. The results show that Agriculture, mining ores, crude oil, machinery and transport are the only industries from the selected sample of nine that are significantly influenced by trade liberalization policy. Furthermore, empirical results indicate that trade liberalization hinders extensive margins and does not encourage intensive margins.

Keywords: *Gravity model, fixed effects, extensive margins, intensive margins, tariff liberalization.*

1. Introduction

Poverty reduction, improved industry productivity and greater access to a bigger market are all expected benefits that Stigliz (2002) associates with the idea of linking economies and generating greater integration. Fiestas (2005) highlights that theory expects trade liberalization to stimulate long-run growth and to improve economic performance through strengthening the performance of industries. It is also vital to understand how the structure of trade patterns has been influenced in order to achieve these goals. Trade liberalization is viewed as a policy that can enhance productivity and innovation. The impact of spillover effects through opening up an economy is that domestic industries are then exposed to new innovation and better production methods. Increased competition is expected to boost local production and innovation, translating to improved domestic capacity and the ability to diversify both production and exports, as was highlighted by Adenikinju, and Chete (2002). Given this theoretical background it cannot be assumed that industries are homogeneous and thus are not expected to behave in the same manner under trade liberalization. By investing and understanding how each industry reacts under trade liberalization in relation to its ability to export and import, the paper seeks to add to the body of knowledge in order to better equip policy makers in their decision making. Both classical and new trade theories explain how trade patterns can be influenced within an economy. New trade theories, made popular by Krugman (1980) and Melitz (2003), developed a dynamic model of international trade, which has its foundations in the assumptions that firms within industries are not homogenous with respect to their total factor productivity, operate under monopolistic competition and offer differentiated products.

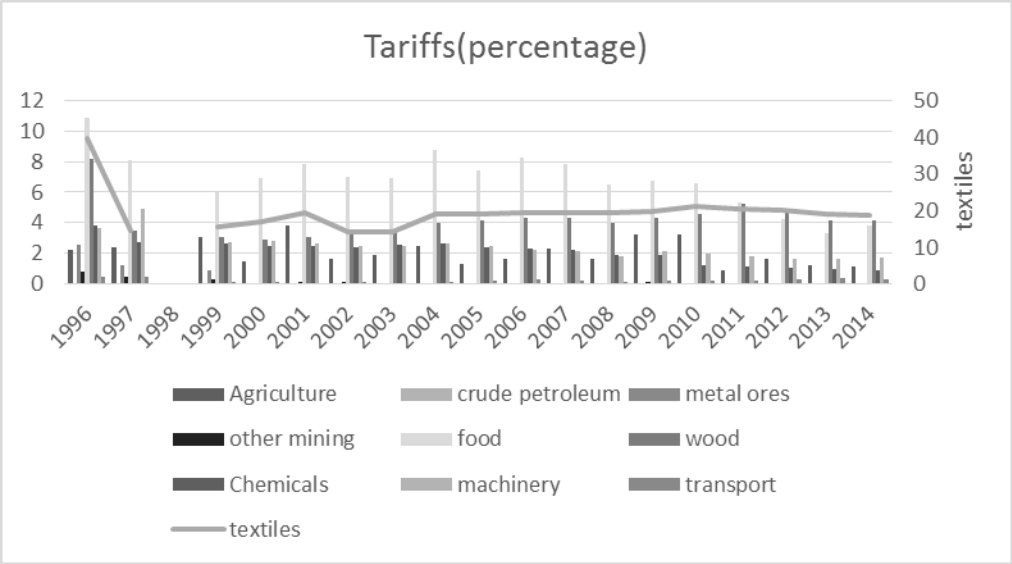
The paper based its investigation on this theoretical framework. Empirical evidence has generally looked at the influence of trade liberalization on growth in trade flows or the effect of productivity on extensive and intensive margins. Evidence in the case of South Africa shows, that imports generally increase (van der Westhuizen, 2006; Black 2001; Fedderke and Vaze, 2001). Moreover, empirical works on extensive and intensive margins demonstrate that higher demand elasticity increases the sensitivity of intensive margins while tariffs on a global scale have a greater impact on intensive rather than extensive margins (Buono and Lalanne, 2012). Chen (2013) noted that increased innovation is what drives growth in both intensive and extensive margins. Debaere and Mostashari (2010) find that on global scale tariffs can significantly influence extensive margins but that the effect is greatly reduced in relation to the global tariff's impact on trade flows. The lack of a consensus within empirical studies created a gap which the paper aimed to address with the goal of adding to the existing body of knowledge. The study thus seeks to understand how trade policy can influence trade patterns by looking at the role of trade liberalization policy and extensive and intensive margins have under the assumption of new trade theories. This is done by using the gravity model, which explains trade flows between South Africa and relevant trading partners, and how these could be influenced by trade liberalization measures. The empirical literature on South Africa has generally focused on the

aggregate or single industry impact of trade liberalization on the magnitude of trade flows but not at how trade patterns may be influenced.

2. Industry Trends for South Africa

Applied weighted tariff averages are currently lower than the 1996 period, as may be observed in figure 1. Tariff averages have been declining over the years for most of the selected industries excepting textiles and wood. Textiles and Wood have shown the greatest resistance to declining tariffs, indicating increased concern over domestic industries that are not as competitive as foreign counterparts. Moreover, the view that these are labor-intensive industries indicates that the primary policy goal is to limit job loss. Food and agriculture are the most volatile as these exhibits the highest frequency in terms of fluctuations. Their trajectory is also not as steep, thus indicating a general resistance to tariff liberalization. Figure 1 further indicates that tariff levels are reducing at a faster rate for industries with lower product classifications than those that are more diverse. This study thus adds to the literature on trade liberalization by looking at the effect on a panel of selected industries, taking into account industry dynamics. The paper is organized as follows: section 2 examines trends in export and import flows at the industry level, section 3 covers methodology and section 4 provides a discussion regarding the analysis of the results. Section 5 provides concluding remarks and section 6 supplies recommendations based on the findings from the analysis of results.

Figure 1: Industry-Level Tariffs



Source: adapted from Wits (2015)

In examining disaggregated values of exports in table 1(a) it is apparent that during the period of 1994-1999, growth in exports was driven by manufacturing, iron and steel, machinery and fuels. These are mainly capital-intensive industries. Trade liberalization policy appears to have had a greater positive impact on capital-intensive industries with respect to exports. This could be the effect of a buildup in inventory, as the increased engagement with the international market created an immediate market for their inventories. The period 2000-2008 shows a similar level in the growth rate of exports for all but fuel, mining and manufacturing, all of which showed resilience by maintaining high growth. Remaining industries, with the exception of textiles, have similar growth rates. The years 2009 and 2012 indicate that in all but one of the selected industries, values of exports declined. South Africa is not specializing in exports, but is diversifying the export base and working on improving exports in all sectors. The diversification of the export base is in line with policies the South African government has set to shift the focus of the economy to being outward orientated, in order to improve on extensive margins. In relation to manufacturing exports, SADC, EURO and NAFTA have been the major regional blocs that import South African manufactured products, as may be observed in figure 2. The first nine years after independence were characterized by stagnant values of exports to regional blocs. The magnitude of fluctuations in demand for South African manufactured products was

minimal. The period after 2003 saw growth in the value of South African manufactured products increase significantly, with the value of exports to EURO peaking at above US$7 Billion in 2008 and to SADC peaking at close to US$10 billion in 2011. The period after 2008 was portrayed by a decline in exports to the EURO area and an increase in exports to NAFTA.

Table 1(a): Industry-Level Export Flows

Exports Year	Agriculture	Food	Fuel and mining	Manufactu-ring	Iron and steel	Machinery and transport	Textiles
1994	2365.02		2985.60	10841.34	2127.37	1866.18	164.33
1995	2386.95		4764.24	13496.94	2785.00	2478.00	238.00
1996	2504.24		5217.50	13296.41	2418.00	2636.00	255.00
1997	2601.93		5588.53	19993.27	2558.00	3321.00	273.00
1998	2486.69		4680.89	18428.73	2444.00	3334.00	230.00
1999	2475.61		4828.96	18933.20	2318.15	4056.33	235.48
2000	3270.44	2232.01	5463.78	13997.13	2757.98	4569.98	237.37
2001	3199.61	2344.65	8983.58	13732.76	2176.22	5226.50	230.74
2002	3328.53	2448.94	5375.72	14131.44	2411.33	5257.28	246.24
2003	4237.76	3126.68	9125.40	18048.46	3877.44	6544.18	298.45
2004	4661.27	3510.23	12514.55	22703.52	5649.29	7937.49	301.16
2005	5246.02	3990.25	15327.35	26073.50	5863.90	9574.11	311.60
2006	4954.96	3734.15	19972.19	27343.01	5647.88	11293.34	302.32
2007	5573.69	4213.90	25541.15	32469.06	7460.14	13411.65	332.26
2008	7036.56	5428.72	28600.93	38098.02	8859.68	16229.15	300.77
2009	6678.82	5466.60	21761.64	25216.24	5116.16	10786.59	225.60
2010	9931.54	8230.26	32156.45	39773.25	7996.85	16296.16	415.20
2011	11101.71	9012.22	41504.62	44204.45	7926.66	18970.10	447.50
2012	10498.62	8742.28	36196.61	42741.20	6699.47	19088.34	426.33
2013	11137.23	9293.84	36469.76	40244.65	6204.26	17873.22	424.22
2014	11373.57	9455.05	31666.66	42292.46	6795.60	18692.52	407.31

In comparison imports, as shown in table 1(b), have also been on the rise. All industries experienced an increase in imports except in the year 2009, whereupon all industries exhibited contractions. Additionally, it may be observed from table 1(b) that the growth rate of imports in selected industries increased from the year 2000. In as much as global demand for South African goods on average increased over these years, so did the demand for foreign goods by the domestic economy. South Africa as an emerging economy is exhibiting high levels of intra-industry trade. Observations from table 1(b) show that the goal of import substitution was not being achieved.

Table 1(b): Industry-Level Import Flows

Imports Year	Agriculture	Food	Fuel and mining	Manufact-uring	Iron and steel	Machinery and transport	Textiles
1994	1800.13	1339.24	405.70	17642.88	322.49	10223.92	651.06
1995	2404.00	1787.00	2860.78	20810.00	415.00	12011.00	736.00
1996	2261.00	1719.00	3168.62	20943.00	428.00	11945.00	675.00
1997	2242.00	1713.00	4205.98	21002.00	355.00	12086.00	679.00
1998	1804.00	1395.00	2842.28	19869.00	354.00	11835.00	597.00

1999	1666.65	1306.17	3068.00	18788.00	322.83	10635.00	562.27
2000	1650.29	1254.43	4536.00	18265.95	323.57	9839.32	569.38
2001	1461.22	1114.57	4312.84	17664.55	316.20	9800.44	507.30
2002	1686.99	1302.85	3918.09	18184.63	337.19	9826.94	532.72
2003	2198.63	1716.42	5042.93	24055.54	451.96	13595.00	640.17
2004	2968.07	2362.42	8193.80	32365.67	655.60	18829.87	817.79
2005	3047.69	2450.93	9254.96	37919.89	828.44	21672.15	872.16
2006	3649.23	2976.62	14732.63	44796.84	1130.89	25890.30	964.49
2007	4888.29	4128.45	17479.28	51676.35	1572.56	29795.18	1015.42
2008	5363.84	4588.64	22492.53	53893.31	1549.02	30670.04	1019.07
2009	4730.48	4163.33	14850.53	40671.14	1029.63	22201.29	905.77
2010	6295.77	5482.67	17681.80	53592.80	1344.91	29012.50	1164.86
2011	8065.81	7008.69	23776.62	64735.98	1846.35	35680.43	1421.41
2012	8398.51	7448.28	25218.07	64113.81	1707.39	35037.37	1377.21
2013	7677.50	6777.07	24556.59	64932.72	2093.28	35438.24	1367.55
2014	7148.34	6272.23	25495.47	60630.40	1598.15	32416.18	1343.54

Source: WTO (2015)

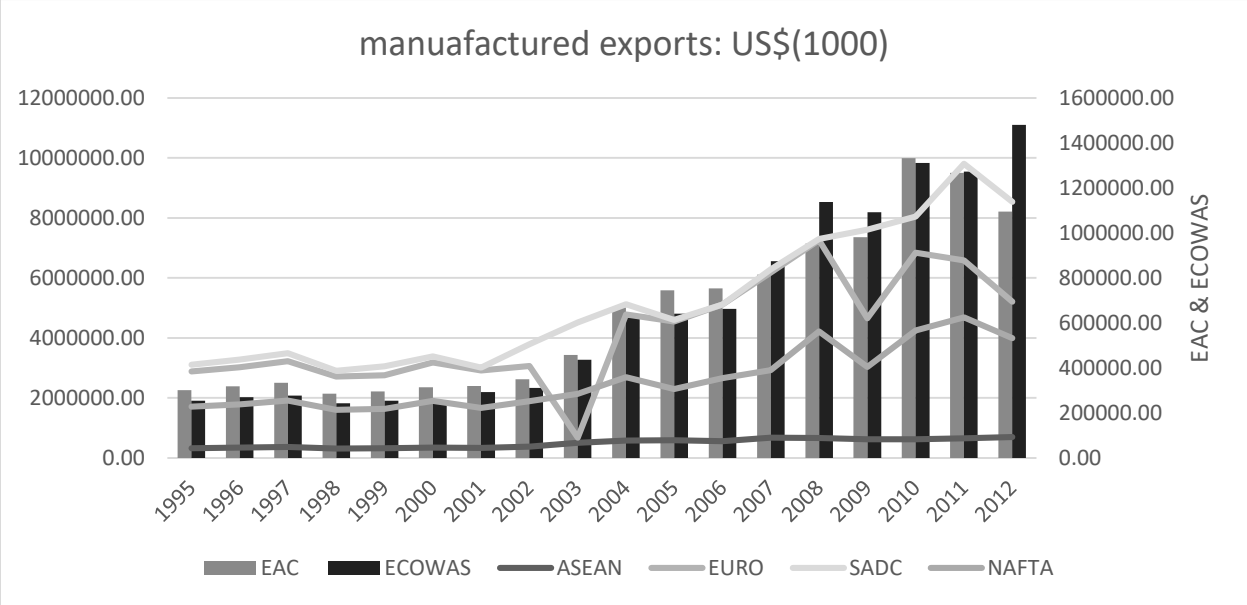
As shown in Table 1, manufacturing, machinery and equipment and textiles are the industries that consistently have negative net export values. This could be the result of excess domestic demand, consumer preferences or lack of competitiveness within these industries. This may also be an indication that local firms are not able to increase their production capacity. The lack of competitiveness in these industries highlights the high production costs that exist within the domestic economy relative to foreign firms. The high production costs hinder the expansion capabilities of the firms in these industries as this will result in firms experiencing decreasing returns to scale. One reason that can be applicable to the South African economy is the high cost of some of the factors of production required by these industries. Scarce factors of production will result in higher prices explaining the Samuelsson Stapler theory (Appleyard, Field and Cobb 2008: 136). Another consideration is product differentiation, which is subject to consumer preferences. The high imports within these industries can be attributed to choices made by the domestic market. On the other hand, the automotive industry has expressed fluctuations in terms of positive and negative net exports. The automotive industry experienced negative net exports during periods when the rand exchange rate depreciated. This indicates that foreign demand for automotive products is sensitive to the exchange rate, with the depreciation of the rand resulting in an increase in imports. The reason for this could be linked to the depreciation of the domestic currency (Rand) and reduced competitiveness from the EURO area.

3. Methodology

The gravity model is an adaptation of the gravity equation, an equation derived by Jan Tinbergen (Feenstra & Taylor, 2014). The gravity equation is based on the principle of gravity. The gravity equation explains trade patterns that exist between trading partners. The model explains trade flows between trade partners, how these could influence the level of intensive margins in relation to trade partners and also, to some extent, extensive margins. The gravity equation is necessitated by the assumption of monopolistic competition in explaining international trade. The assumption of monopolistic competition is the foundation of the relevance of the gravity equation. The gravity equation is therefore able to explain trade patterns that also involve intra-industry trade. Anderson and Wincoop (2003, p170) note that the gravity model has received good reviews in its ability to provide a link between trade flows, economic and institutional variables. Furthermore, Kanda and Jordaan (2010) found that when analyzing bilateral effects of trade, the gravity model is applicable to ex-post analysis as compared to the Computable general equilibrium model, which is more applicable to ex-ante analysis. Furthermore, trade liberalization does not encourage intensive margins but is expected to hinder

extensive margins. This lies in contrast to the views adopted by Melitz (2003), Debaere and Mostashari (2010) and Chen (2013).

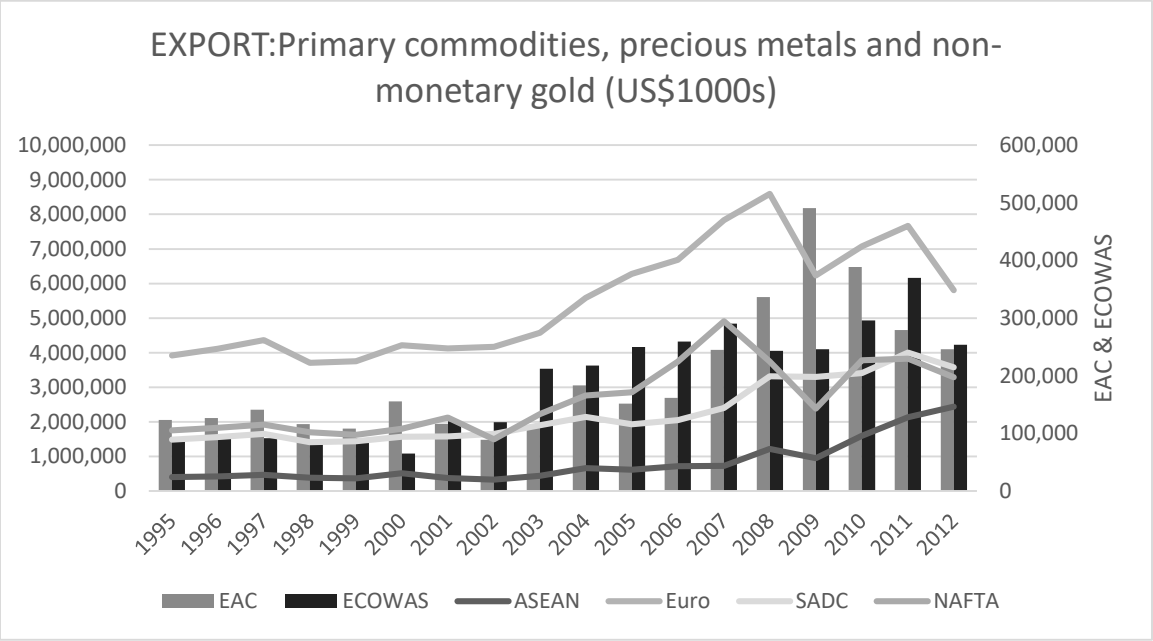
Figure 2: South Africa's Manufactured Exports by Regional Destination



Source: UNCTAD 2014

A breakdown of exports shows that the EURO area is the prevalent destination for primary commodities and precious metals. The high demand by EURO is driven by specialization as a result of comparative advantage. The EURO area has a comparative disadvantage in the production of primary commodities and precious minerals. In relation to the EURO area, South Africa has a comparative advantage in the production of primary and precious materials. The comparative advantage is driven by the different factor endowments between the two trading partners. South Africa is labor-intensive whilst the EURO area is capital-intensive.

Figure 3: South Africa's Primary Exports by Regional Destination



Source: UNCTAD 2014

NAFTA and SADC are behind the EURO area with regards to the acquisition of South African exports of primary commodities and precious metals. The demand for primary products from SADC has increased over the years and resulted in it being second after the EURO area in 2011 and 2012. This can be attributed to the strengthening of the SADC bloc by converting it into a free trade area and South Africa, being the dominant player, has benefitted greatly from the regional bloc. In relation to SADC economies, South Africa has an absolute advantage in terms of resources and factors of production. With the majority of countries in the region being classified as low income, but on the other hand a significant number of countries in SADC are resource rich in nature. According to Twerefou (2009:1) over half the world's reserves in minerals, such as diamonds and gold, are found in South Africa. The growth of South African exports to SADC could be a factor of the infancy stage of development of the other member states within SADC, which may not be in line with traditional trade theories.

The Gravity Model May be Expressed as Follows:

Log (bilateral $trade_{ij}$)=$\alpha + \beta \log(demo) + \beta(demod) + \gamma \log(Trade\ factors) + \gamma(trade\ factorsd)$ 1

Where demo represents a vector of demographic factors between trading partners expressed as nominal values, Trade factors represents a vector of factors that affect international trade expressed as nominal values, while demo and trade factors represent the variables expressed as dummy variables. The variables expressed in their nominal values will be logged. The augmented model is expressed as follows:

$$\log T_{ij} = \beta_o + \beta_1 \log(inc_i Inc_j) + \beta_2 \log(Pop_i pop_j) + \beta_3 \log dis_{ij} + \beta_4 devl_{ij} + \beta_5 bord_{ij} + \beta_6 Intgr_{ij} + \beta_7 ECOWAS_j + \beta_8 EAC_j + \beta_9 NAFTA_j + \beta_{10} EU_j + \beta_{11} \log exch_{ij} + \beta_{12} tarf_t + \beta_{13} dtar_t + \mu_{ij} \quad \ldots\ldots 2$$

Using Standard Industry Classification 2-digit data from the World Bank's data bank for the period 1996-2013, the two subsamples were analyzed using a semi-log model and log-linear model.

4. Results and Discussion

Results obtained from the gravity model indicate that trade flows for some of the selected industries will be influenced by trade liberalization. These industries are Agriculture, crude oil and natural gas, mining ores, machinery and transport equipment. Policy changes to tariff levels will influence the flow of trade, be it exports of imports, and thus influence trade patterns of South Africa and relevant industry partners.

Table 2: Results of the Agriculture Industry

sample	Imports 1996-2004		Imports 2005-2013		Exports 1996-2004		Exports 2005-2013	
	Model 1[4]	Model 2[5]	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Log income	0.006	-0.346	0.034*	1.097	0.081***	0.02	-.0285**	-0.266
Log population	0.017	-0.712	-0.022	-3.773	-0.382***	-1.312	0.1485**	1.364
Log distance	-0. 186	1.054	-0.138	-2.096	0.672***	2.027	-0.212**	-3.032
development			0.069*	11.463	0.044	-4.066***	-0.377**	-4.418***
Border dummy	-0.279***	-0.882	-0.124	-12.89***	0.388***		-0.044	2.074
Integration dummy	-0.017	0.233	-0.052	-9.238**	-0.039*	-0.41	0.118*	-1.047
ECOWAS	0. 308*	0.011	-0.066	-10.361***	-0.012	-2.38***	0.041	-1.421*
EAC	0. 026	0.284	0.024	1.926	-0.0617*	-0.67	-0.064*	0.712
Nafta			0.024	5.415*	-0.831***	-6.69	-0.088*	-1.886
EU	-0.062	-3.266	0.035	-5.45	-0.834***	-6.415	0.227	1.347
Exchange rate	-0.001	-0.014	0.0005	0.03	-0.002***	-0.02	0.0001	0.0001

[4] Semi- log model

[5] Double log model

tariff	-0 .015	-0.345	-0.003	-0.122	0.006	-0.183	0.001	-0.028
Tariff liberalis dummy	-0 .017	-0.733*	-0.019**	-0.527	-0.0004	-0.801*	0.0008	-0.074
Interaction dummy	-1.3e-11	8.0e-10	5.5e-11**	2.5e-09***	3.3e-11	9.2e-10	1.6e-11**	2.9e-10*
constant	1.01	33.66	0.174	85.112	4.225***	32.823	-1.802*	-9.311
Country 2	-0.233*	-9.662***	-0.103**	-12.472***	-0.173**		0.093***	2.058***
Country 3			-0.135*		-0.582***		0.133*	
Country 4					-0.377***		0.144*	
Country 5					-0.567***		0.327**	
Country 7					-0.672***		0.301**	4.536*
Country 8					0.344***	4.03*		
Country 9	0.439***		0.866***				0.075*	
Country 10							-0.327*	-0.796*
Country 11					-1.379***		0.630**	
Country 12							-0.372**	-1.88***
Country 13	-0 .4***	-2.838**			-0.574***		0.238**	
Country 14					0.277***		-0.11**	-1.799*
Country 15								-0.899*
Country 16		-4.485**			-1.013***		-0.335*	
Country 17	-0 .119*			-8.62*			0.241**	
Country 19			0.205***					
Country 20					-0.886***		0.352**	
Country 21				11.268*			-0.09*	
Country 22					-0.929***		0.242**	
Country 23	-0 .491*							
Country 24		-5.903***					0.708***	5.471*
Country 25				15*	-0.099**		-0.320**	-1.075**
Country 26			-0.138*	-2.597*	-0.539***		0.148**	
Country 27					0.084**			
Country 28				14.516*	-0.1**		-0.275*	
Country 30				-2.614*				
Country 31	0.194**			10.395*	-0.13***			
N	181	181	277	254	210	189	277	255
R2	0.89	0.87	0.94	0.76	0.732	0639	0.889	0.737
F	35.198	28.428	97.259	18.828	12.697	8.024	53.563	16.926
Prob>F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
*p<0.05			**p<0.01			***P<0.001		

Results obtained show that for agriculture, trade liberalization lowers the responsiveness of both exports and imports to changes in the determinants of trade flows. The movement towards lower elasticity levels limits the impact of the efforts of economic policy. In addition, the effects of trade liberalization lower the ratio of agriculture trade flows in relation to the total bilateral trade of trading partners. What has also been observed, is that under trade liberalization the number of significant trading partners is lower than when trade liberalization is not significant, indicating a reduction in extensive margins.

Table 3: Results of the Crude Oil and Natural Gas Industry

sample	Imports 1996-2004		Imports 2005-2013		Exports 1996-2004		Exports 2005-2013	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Log income	0.027	-1.9	-0.0824	0.1	-0.009	-0.702	-0.006	-1.577*
Log population	0.123	10.216	0.654*	1.405	0.042	4.593	-0.036	3.894
Log distance	-1.1289	-3.757	-0.837*	-1.88	-0.485	-11.375	0.053	-4.482
development	-0.353		0.363***	-6.5	-0.171		-0.029	-8.319
Border dummy	-2.617	-0.786	1.04		-1.361		-0.121	2.206
Integration dummy	-0.017	0.677	0.836*	4.939	-0.003	-0.432	-0.039	2.092
ECOWAS	-0.335	5.065	1.353***	3.251	-0.307*	9.439	0.0001	6.086
EAC	-0.085	-2.36	0.059	4.903*	-0.072*	-0.859	-0.006	2.967
Nafta			1.597**	0.551		13.941	-0.109	-0.272
EU	0.058	4.836**	1.243**	8.306	-0.095	8.318	-0.108	1.805
Exchange rate	0.00004	0.072	-0.0006	-0.01	0.0004	0.018	0.0002	0.037
tariff			-0.386	28.245			0.309	45.767
Tariff liberalis dummy			-0.02	1.09*			-0.002	1.089
Interaction dummy			7.0e-12	-4.2e-11			3.0e-11***	3.2e-10
constant	4.758		-13.179*	-43.95	3.551	-44.195	1.220	-24.042
Country 2		11.595**	1.231***	7.207**				4.986
Country 4		-8.943**	0.759*		-0.151*			
Country 5			1.438*					
Country 9			0.549*					
Country 11			3.359*					
Country 13				9.719***				
Country 14				6.758*				
Country 16			2.016*					
Country 17		6.176*						
Country 19							-0.063*	
Country 20			1.77*					
Country 21								
Country 23								
Country 24			1.472*					
Country 25								
Country 26								
Country 28								
Country 30								2.967*
Country 31			-1.303*	-5.835*				
N	248	137	277	194	248	204	277	246
R2	0.644	0.702	0.703	0.765	0.671	0.668	0.362	0.693
F	10.956	9.507	15.775	14.681	12.331	11.15	3.786	13.1
Prob>F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
*p<0.05			**p<0.01			***P<0.001		

Results from the crude oil and natural gas industry show that trade liberalization improved the level of elasticity of imports in the sub-sample 2005-2013. This made trade flows more sensitive to changes in the determinants, therefore aiding the impact of policy instruments in trying to support industry development both domestically and internationally. The trade liberalization variable does not influence the number of

significant trading partners but resulted in a change in the significant trading partners. In this case, trade liberalization does not aid-intensive margins but encourages a shift in trading partners.

Table 4: Results of Mining Ores Industry

sample	Imports 1996-2004		Imports 2005-2013		Exports 1996-2004		Exports 2005-2013	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Log income	0.0006	2.866	0.041	0.353	-0.062***	1.812	0.005	5.291*
Log population	0.008	-29.469	-0.215	-13.164	0.537***	-21.549	-0.025	-24.929*
Log distance	-0.024		0.278	5.072	-2.913***	18.65	0.032	1.771
development	-0.016		0.541		-1.711***		0.064	
Border dummy	-0.013	70.14	0.036	-2.351	-6.361***	8.289	0.018	-54.702*
Integration dummy	-0.00004	0.013	-0.212	8.781	0.038**	-2.289	-0.025	-18.449**
ECOWAS	0.028	87.187	-0.082		-1.631***	-9.246	-0.0096	-16.921**
EAC	-0.004	96.979	0.16*	11.046	-0.005		0.012	
Nafta		141.38	0.13	32.015	-0.211***	17.235	0.014	11.058
EU	0.023	100	-0.3		0.477***		-0.035	
Exchange rate	-0.0001	-0.17*	-0.002**	-0.233**	0.0013**	-0.034	0.00003	-0.023
tariff	0.002	-0.269			0.045***	-1.587		
Tariff liberalis dummy	0.001	-1.02			0.025**	-0.779		
Interaction dummy	1.2e-09	2.8e-06			5.5e-11	5.2e-09		
constant	-0.106	796.48263	3.065	399.70293	11.506***	495.229	0.331	588.73*
Country 2					-2.414***			
Country 3					1.466***			
Country 4					-0.384***			
Country 5				11.19*	-0.941***			
Country 6								55.659*
Country 7					1.256***			
Country 8					-0.789***			
Country 9					-1.571***			
Country 10					-1.454***			
Country 11								
Country 12					-1.475***		0.119*	15.759***
Country 13				11.553*	1.004***			
Country 14					-1.155			69.688*
Country 15					-1.646***			
Country 16								
Country 17			-0.3567*		-2.027***			
Country 19					-3.325***			
Country 20					0.603***			
Country 21		21.708*			1.78***			65.023*
Country 22								9.15*
Country 23					3.177***			
Country 24					0.7008***			14.166**
Country 25					-1.453***			
Country 26					1.107***			
Country 27					-2.6***			

Country 28					-1.194***			8.914**
Country 30					-3.481***			-9.443**
Country 31			0.1674**		1.941***			51.489*
N	247	52	277	74	248	52	277	75
R2	0.146	0.85	0.162	0.606	0.571	0.907	0.423	0.823
F	0.939	5.937	1.422	3.338	7.322	17.957	5.396	10.955
Prob>F	0.5759	0.00	0.072	0.0002	0.00	0.00	0.00	0.00
*p<0.05			**p<0.01			***P<0.001		

The findings from the mining ores sector show that trade liberalization improves the ratio of ore exports to total export bilateral trade for the trading partners. Improvements in this ratio indicate that ore exports improved, thus signifying enhanced competitiveness. Under trade liberalization the results show that 27 of the 31 trading partners are significant, whereas in sub-sample 2005-2013, when the trade liberalization variable is not significant, this number drops drastically. This means trade liberalization does encourage extensive margins.

Table 5: Results of Machinery Industry

sample	**Imports 1996-2004**		**Imports 2005-2013**		**Exports 1996-2004**		**Exports 2005-2013**	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Log income	0.007	-0.456	-0.055	-0.762	0.088**	0.534**	-0.073**	-0.353**
Log population	-0.094	1.191	0.036	3.78	-0.261*	-1.577*	0.29*	1.057
Log distance	0.75	-1.821	-0.091	-6.668	1.324*	2.114	-0.552**	-2.522**
development	0.296	-3.1	-0.31***	-4.753***	0.862*		-0.715*	-2.696
Border dummy	0.95	-1.268	-0.658**	-7.09*	2.808*		0.085	0.74
Integration dummy	-0.057	-0.233	0.073	1.015	0.065*	0.139	0.046	-1.299*
ECOWAS	0.102	-5.309***	-0.478***	2.085	0.599***	-1.736	-0.003	0.824
EAC	0.07	0.342	-0.616***	0.513	0.121**	0.385	0.014	0.264
Nafta			-0.165	3.035		-3.96*		0.025
EU	-0.012	-0.745	-0.364	2.644	-0.401***	-4.767*	0.368*	0.761
Exchange rate	-0.0006	0.0004	0.001	0.043	-0.001	-0.012*	0.003*	0.003
tariff	0.007	0.125	-0.008	-0.151	-0.003	0.003	-0.003	0.032
Tariff liberalis dummy	-0.061**	-0.345	0.009	0.211	-0.015	-0.098	0.002	0.042
Interaction dummy	9.1e-12	3.4e-11	2.1e-12	1.2e-11	8.9e-12	4.3e-11	6.8e-12***	8.5e-12
constant	-3.806	-3.210	3.04	-41.253	-7.444**	12.261	-1.305	2.929
Country 2			-0.598***	-3.899**	1.124*	-1.646*		0.712**
Country 3					-0.784*		-0.317**	-1.581**
Country 4						-1.781*	0.489***	1.292*
Country 5					0.515*			
Country 7					-0.393***	-1.676***	0.495*	
Country 8					0.631***	2.825***		
Country 9		-2.938***	-0.568***		0.967**			-1.529***
Country 10					0.854**			
Country 11						-6.607*		
Country 12					0.768**			

Country 13							0.536**	
Country 14			-0.261*	-3.97*			-0.33***	-1.748***
Country 15			0.125*		0.962**	0.761*		
Country 16						-4.695*		
Country 17					1.04*			
Country 18							-0.721***	-3.784***
Country 19		-3.825***	-0.744***	-4.557***	1.658*		-0.134**	-0.529*
Country 20					-0.386**	-4.962**		
Country 21					-1.54*			
Country 23								
Country 24					-0.341**	-3.206*	0.446*	
Country 25					0.806**			
Country 26					-0.552*		-0.361***	-2.108***
Country 27		-1.997***			1.227*			
Country 28					0.513*			
Country 30					1.739*			
Country 31				3.349*				-2.276*
N	247	238	277	272	248	215	277	257
R2	0.439	0.629	0.777	0.676	0.767	0.615	0.81	0.821
F	4.28	8.895	23.242	13.658	18.08	8.454	28.429	27.947
Prob>F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
*p<0.05			**p<0.01			***P<0.001		

With regards to machinery, a closer examination of imports reveals that trade liberalization reduced the ratio of imports to total bilateral trade. This means that the rate of change is faster for bilateral trade when compared to imports for trading partners. Trade liberalization hinders extensive margins, indicating greater competition in sub-sample 2005-2013, where the assumption of monopolistic competition is also supported.

Table 6: Results of the Transport Industry

sample	**Imports 1996-2004**		**Imports 2005-2013**		**Exports 1996-2004**		**Exports 2005-2013**	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Log income	0.053	-0.505	0.022	-0.197	0.014	-0.203	0.012	1.131**
Log population	-0.265	0.160	-0.051	-0.203	-0.123	-1.365	0.008	-3.918*
Log distance	1.294	1.86	0.086	2.497	0.576	1.029	0.246	3.709
development	0.586	-3.472	0.084	-2.037	0.262	-3.001	-0.093	4.646***
Border dummy	1.479	3.94	-0.063	-0.96	1.149		0.072	-5.165*
Integration dummy	0.118*	0.925	0.043	1.456	0.003	0.119	0.631***	-0.137
ECOWAS	0.298	-1.861	0.016	-2.26	0.126	-0.775	0.49***	-2.933
EAC	0.1	0.462	0.01	-1.195	-0.011	-0.323	-0.124*	2.492**
Nafta			0.108	-0.764				1.789
EU	-0.125	2.055	-0.024	-1.773	0.22*	1.294	0.338*	-1.58
Exchange rate	0.001	0.023	-0.0005	-0.001	-0.0007	-0.018	0.0007	-0.016
tariff	-0.037*	-0.209	0.016	-0.3	-0.017**	-0.392*	-0.023	-0.1007
Tariff liberalis dummy	0.048*	-0.062	-0.012	-0.33	0.0003	-0.435*	0.001	-0.08

Interaction dummy	-6.7e-13	1.8e-11	1.0e-12	1.9e-11	2.1e-11**	4.7e-10*	8.1e-12***	7.7e-11*
constant	-5.225	1.63	-0.184	-4.5	-1.529	52.882	-3.165	
Country 2								
Country 3								
Country 4	0.3901*							
Country 5								
Country 7								
Country 8								
Country 9							0.558***	4.186***
Country 10			0.095***				-0.827***	1.305**
Country 11								
Country 12			0.282***				-0.886***	1.075*
Country 13								1.412**
Country 14			0.161*					4.09***
Country 15							-0.911***	
Country 16	0.2306*							
Country 17							0.592***	
Country 18								
Country 19			0.082**					1.76**
Country 20								
Country 21								8.9*
Country 23								6.833*
Country 24								
Country 25			0.249***				-0.888***	
Country 26							0.194*	
Country 27								
Country 28			0.11***				-0.924***	
Country 30								
Country 31								7.45*
N	247	224	277	261	248	214	277	257
R2	0.49	0.718	0.86	0.657	0.712	0.716	0.868	0.737
F	5.267	12.783	41.03	11.93	13.591	13.3	43.77	17.081
Prob>F	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
*p<0.05			**p<0.01			***P<0.001		

An inspection of the transport manufacturing industry unveils that under trade liberalization, the ratio of imports to bilateral trade increases, meaning a rise in imports, when compared to a situation with no trade liberalization. The growth in imports shows a shift from the domestic market to the international market. Additionally, there are less significant trading partners in sub-sample 1996-2004 than 2005-2013. With exports, the trade liberalization variable reduced the elasticity of trade flows, thus limiting the impact of changes in policy aimed at improving trade flows.

5. Conclusion and Recommendations

The analysis reveals that the heterogeneity of industries examined results in different impact levels of trade liberalization on trade patterns. The tariff liberalization variable lowers the responsiveness of trade flows to policy changes in other determinants of the gravity model. This means that any policy action linked to other determinants tends to have a reduced influence on trade flows. This phenomenon is accompanied by a situation whereby tariff liberalization encourages less competition among trading partners as the number of

significant trading partners is lower when trade liberalization is significant, creating a stronger case for consolidation within international markets. This is substantiated by the findings who noted that huge demand elasticity increased the sensitivity of intensive margins. This may be attributed to the lack of improvement in terms of productivity, as a result of slow levels of innovation. It is also noted that trade liberalization can improve on extensive margins, but only in a few industries, and where there is also less evidence of improvement. Having analyzed the effect of trade liberalization on industry performance and on trade patterns, the study concludes that South Africa has not benefitted as much as expected. Some industries have fared better than others, but the general view based on results obtained is that trade liberalization has a limited effect on enhancing trade patterns. Various crises that have affected the Eurozone and individual European countries have contributed to the decline in exports to this area. On average, other regional blocs have seen a substantial rise in export values from South Africa to their economies since 2008.

Recommendations: Tariff liberalization lowers the responsiveness of trade flows to policy change in other determinants of the gravity model. This makes it difficult to influence trade flows. The ability of domestic industries to tap into International practices needs to be vastly improved as these stem the results of innovation. Research and development is vital for domestic industries in the international market; hence, policy aimed at improving the ability of domestic industries productivity levels, will amplify the positive effects of trade liberalization on both extensive and intensive margins. Consideration should be given to focusing on price elastic products, thus resulting in in a structural shift domestically.

References

Adenikinju, A. & Chete, L. (2002). Productivity, market structure and Trade liberalization in Nigeria. AERC Research paper, 126.

Anderson, J. E. & Wincoop, E. (2003). Gravity with gravitas: A solution to the border puzzle. *The American Economic Review*, 93, 170-192.

Appleyard, D., Field, A. & Cobb, S. (2008). International Economics. New York: McGraw-Hill.

Black, A. (2001). Globalization and restructuring in the South African automotive industry. *Journal of International Development*, 13, 779-769.

Buono, I. & Lalanne, G. (2012). The effect of the Uruguay round on the intensive and extensive margins of trade. *Journal of International Economics, Elsevier*, 86 269-283.

Chen, W. (2013). The extensive and Intensive margin of exports: The role of innovation. *The World Economy*, 36(5), 607-635.

Debaere, P. & Mostashari, S. (2010). Do tariffs matter for the extensive margin of international trade: An empirical analysis. *Journal of International Economics*, 81, 163-169.

Fedderke, J. & Vaze, P. (2001). The nature of South Africa's trade patterns by economic sector and the extent of trade liberalization during the course of the 1990's. The South African Journal of Economics, 69.

Feenstra, R. & Taylor, A. (2014). International Economics, 3rd edition. New York Worth Publishers.

Fiestas, I. (2005). The effects of trade liberalization on growth, poverty and inequality. CILAE, nota tecnica.

Kanda, P. T. & Jordaan, A. C. (2010). Trade diversion and Trade creation: Augmented Gravity model study for South Africa. Trade & industrial policy strategies paper series 2010.

Krugman, P. (1980). Scale Economies, Product Differentiation, and the Pattern of Trade. *The American Economic Review*, 70, 950-959.

Melitz, M. J. (2003). The impact of trade on intra-industry reallocations and aggregate industry productivity. *Econometrica*, 71, 1695-1725.

Stiglitz, J. (2002). Globalization and its Discontents. New York: Penguin group.

Twerefu, D. K. (2009). Mineral Exploitation, Environmental sustainability and sustainable development in EAC, SADC and ECOWAS regions. African trade policy centre, work in progress, 79.

Van der Westhuizen, C. (2006). Trade and poverty: A case study of SA clothing industry, Trade and poverty project, SALDRU, University of Cape Town.

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Modelling Real Private Consumption Expenditure in South Africa to Test the Absolute Income Hypothesis

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Abstract: This paper explores, the hotly debated topic among economists and policymakers, whether fiscal and monetary policies impact on households by examining the relevance of the absolute income hypothesis in explaining private consumption expenditure and its relationship with household disposable income in South Africa. Worldwide, private consumption expenditure remains a big puzzle for leading consumption function theories. Friedman's permanent income hypothesis posits that private consumption expenditure is not affected by how much consumers earn on a daily basis, but by what they expect to earn during their lifetime. Friedman's permanent income hypothesis is at odds with Keynes's absolute income hypothesis, that private consumption expenditure is affected by fiscal stimulus policies, which are effective for increasing economic activity and employment. Subscribing to the former underrates the potential power of fiscal stimulus policies and other monetary or trade policies that boost short-term income. The overarching objective of this paper is to ascertain whether patterns of private consumption expenditure in South Africa are determined by Friedman or Keynes's theory. The paper specified econometric equations with quarterly seasonally adjusted data from the South African Reserve Bank for the sample period 1984 to 2015 and estimated them with cointegration techniques consisting of the Engle-Granger two-step approach. The importance of the paper and its scientific novelty are that it is more realistic since it specified models that take into account the reaction time of the dependent variable when the independent variable changes by imposing lags on the variables. The empirical results indicate that in South Africa, when household disposable income changes over time, private consumption expenditure depends more on a household's previous disposable income than its current disposable income. The main empirical finding is that the absolute income hypothesis is not appropriate in explaining private consumption expenditure in this country. Even when the interest rate was included in a modified absolute income hypothesis, the overall estimates were not robust. Hence, estimates of the short- and long-run regression models were not consistent with the absolute income hypothesis. This is in line with arguments put forward in some extant studies using this model, that the fiscal stimulus policies might not generate the desired increased economic activity and employment. If households use money from the fiscal stimulus policies to bail themselves out of existing debts rather than consume additional goods and services which, would be the catalyzer to increase Gross Domestic Product (GDP).

Keywords: *Household budget constraint, income inequality, consumption function, patterns of consumption expenditure, poverty*

1. Introduction

The consumption patterns of South African households have been the subject of on-going debate. In particular, the adequacy of disposable income as an enabler of household (private) consumption expenditure has been widely discussed in extant studies. World Bank's statistics for the period 2003 to 2017 indicated that average private consumption expenditure as a share of Gross Domestic Product (GDP) ranges between 56% and 68% of GDP for selected countries that included, inter alia, the USA, Canada, UK, Germany and France. For emerging Asian countries and South Africa, the statistics ranged between 55% and 60% and 60% and 62% of GDP, respectively (Baker & Osmond, 2010; Koekemoer, 1999). Given private consumption, expenditure's substantial contribution to GDP, fiscal, monetary and trade policymakers seek further insight into its drivers. In applied microeconomics, the consumption function seeks to describe patterns of private household consumption expenditure. Generally, such expenditure is subject to budget constraints and choices based on preferences. However, economists agree that the question of whether Friedman (1957) best explains private consumption expenditure or Keynes's (1936) consumption function theories remains a puzzle. Friedman's permanent income hypothesis posits that private consumption expenditure is not affected by how much consumers earn on a daily basis, but by what they expect to earn during their lifetime. The hypothesis is based on the assumption that consumers prefer smooth rather than volatile consumption.

Hence, while their earnings could fluctuate significantly over time, they try to preserve constant consumption patterns. Should they experience a sudden, temporary loss of income – for example a spell of unemployment – they borrow money from the banking sector or financial service providers to ride out the dip. Similarly, if they receive a windfall such as a government stimulus check or a social welfare payment, they save it for a rainy day. Hence, consumers only adjust how much they spend when they believe that their future earning power has changed. This is comparable with Hall's (1978) life cycle-permanent income hypothesis that states that consumers have a tendency to smooth fluctuations in their earnings to facilitate savings during high-income periods and to make dis savings during low-income periods. They therefore need to decide whether a change in income is temporary or permanent. A temporary change will have a small effect on their consumption expenditure while a permanent one will have a greater impact. They will thus be more concerned with their permanent than their current income. Friedman's theory is at odds with Keynes's absolute income hypothesis that postulates that household consumption expenditure is affected by fiscal stimuli. This theory differs from the life cycle-permanent income hypothesis in that it is not forward-looking in explaining the consumption function; rather, it focuses on current income as the main objective factor that influences private consumption expenditure. Theoretical predictions regarding the effects of government fiscal and monetary policies on household consumption expenditure will thus differ. For instance, according to the absolute income hypothesis, an increase in taxes – a contractionary fiscal policy – or in money supply – an expansionary monetary policy – will always affect household consumption expenditure, but the life cycle-permanent income hypothesis predicts that the same fiscal and monetary policies will have no effect on such expenditure.

Heim (2007) noted that the Keynesian model, household current disposable income is the central and sole determining factor of household consumption expenditure. Fernandez-Corugedo (2004) argued that if this hypothesis holds true, there are two noteworthy consequences: (1) household consumption expenditure will be volatile, as any change in household current income will produce. A change in household consumption levels and patterns; (2) such a straightforward determination of household consumption expenditure creates a simple economic system for policymakers as there are no other influences on household consumption levels and patterns. Fiscal policy that excludes taxation and monetary policy tools would have no impact on household consumption expenditure. While some economists have suggested that Keynes (1936) initiated modern theories of consumption in his publication 'The general theory' in which he postulated the fundamental psychological law of private consumption expenditure, others argue that Friedman's theory does not hold as it underrates the potential power of fiscal stimuli and other policies that boost short-term income. Income inequality in South Africa is among the highest in the world and the country suffers high rates of unemployment and poverty. The World Bank notes that, the country's GINI index increased from 59.33% in 1993 to 63.14% in 2009. The broad unemployment rate increased from 43.88% in the 1990s to 49.07% in the 2000s and to 52% in 2012. However, the proportion of the population living below the poverty line fell from 31% in 1995 to 23% in 2007. Cash transfers to the country's poorest households are considered the most effective way of boosting aggregate demand.

The South African government argues that these cash transfers will boost poor households' consumption, enabling them to live a better life and will ensure all South Africans participate in the economy. R17, million was allocated to social welfare payments and services in the 2018/19 budget. Old age pensions increased to R1, 690 from 1 April and to R1, 700 a month from 1 October 2018. The childcare grant increased from R380 to R400 from 1 April and to R410 a month from 1 October 2018. The government also announced an increase in direct and indirect taxes alongside R85 billion government expenditure cuts over the next three years. Tax increases include inter alia, higher estate and luxury goods duties and an additional 52 cents per litre in fuel levies, to generate a further R36 billion for the national treasury. Value-added tax (VAT) was raised by one percentage point from 14% to 15%. These tax hikes are designed to fund inclusive economic growth and social spending, including free higher education and healthcare, social protection and drought relief. The effects of contractionary fiscal policy, such as an increase in VAT or income tax, when the South African economy is at initial equilibrium will shift the output market equilibrium schedule to the left, with a decrease in aggregate demand and GDP in the long-run, ceteris paribus. Learning and culture remain the biggest line item in South Africa's R1.67trillion 2018/19budget, at R351.1billion, with social development second at R259.4billion. The government has committed R57 billion over the next three years, to fund the progressive

introduction of free higher education for students from households earning less than R350, 000 a year with R12.4-billion available.

The 2018/19 financial year returning students' loans will be converted to non-repayable bursaries. Furthermore, the health budget currently stands at R205.4billion, including more than R4.2billion through adjustments to the medical tax credit to provide universal access to quality healthcare and HIV and AIDS initiatives. About R201billion was made available for peace and security, about R200 billion for economic development and R6 billion for drought relief. Let us consider social welfare payments and services in South Africa as a temporary form of income. On the one hand, Friedman's theory predicts that such a fiscal stimulus will not change consumers' private consumption expenditure patterns. However, in terms of Keynes's theory, as economic agents, South Africans are generally likely to increase their consumption expenditure patterns when their disposable income increases, but by less proportion than the rise in their disposable income. Therefore, in the basic Keynesian consumption function, household consumption expenditure in South Africa depends only on household disposable income. If Keynes's theory holds true, developing countries, the majority of which have social welfare payments and program me, should not expect this fiscal stimulus to have much of an effect in boosting their populations' private consumption expenditure. Given this on-going debate, it is important to explain the drivers of private consumption expenditure in South Africa by ascertaining whether the patterns of such expenditure are determined by Friedman's or Keynes's theory, or a combination of both. In seeking to understand the patterns of household consumption expenditure in South Africa, this paper applies the absolute income hypothesis. To estimate typical consumption functions on time series data of private consumption expenditure and the disposable income of South African households. The overarching objective of this research is to ascertain whether patterns of private consumption expenditure in South Africa are determined by Friedman or Keynes's theory. To this end, the research began by examining whether the Keynesian absolute income hypothesis is relevant in explaining household consumption expenditure in South Africa, given that it proposes that household disposable income is the key factor that determines household consumption expenditure.

The specific aims of this paper are to:

- Use regression models to examine the extent to which household consumption expenditure and disposable income are related.
- Examine short- and long-run household consumption expenditure when household disposable income changes over time.

The paper specified econometric equations with quarterly seasonally adjusted data from the South African Reserve Bank for the sample period 1984 to 2015 and estimated them with cointegration techniques consisting of the Engle-Granger two-step approach. The importance of the paper and its scientific novelty are that it is more realistic since it specified models that take into account the reaction time of the dependent variable when the independent variable changes by imposing lags on the variables. It thus offers insight into: (1) general consumption behavior as the main source of human welfare given, consumer budget constraints and choices; and (2) income disparities and socioeconomic backgrounds in relation to living standards in South Africa. To the best of our knowledge, no similar study has tested this hypothesis with data on household consumption expenditure and disposable income in South Africa. The paper aims to fill this gap by providing a comprehensive picture of the consumption-disposable income nexus faced by the country's households. The paper is structured in four sections. Section 1 introduces the Keynesian absolute income hypothesis, while section 2 discusses the paper's methodology, conceptual framework and data employed. Section 3 presents and discusses the empirical results and section 4 provides a conclusion and discusses policy implications.

2. Review of Literature

Keynes identified four subjective factors that motivate individuals to refrain from spending and are likely to influence household consumption expenditure: (1) willingness to enjoy an interest in order to consume more goods in the future, (2) building precautionary reserves, (3) building speculative reserves, (4) building reserves for bequests. Keynes did not treat consumption scientifically. Rather than using mathematical or

econometrics tools and theories to demonstrate the central principle of his consumption theory, he relied on intuition and his "knowledge of human nature", claiming to have collected evidence from "detailed facts" of experience. It was thus left to later generations of researchers to develop the micro-foundations of the model. Numerous studies have been conducted to examine the assertions of the Keynesian absolute income hypothesis. However, research using time series data on household (private) consumption expenditure is complicated by the fact that private consumption expenditure and consumption information are typically collected on a cross-sectional basis (Lafrance & LaRochelle, 2011). Furthermore, while Keynes did not base his consumption theory on the theory of intertemporal choice, he reached similar conclusions (Mishkin, 2011). Indeed, in some cases, the outcomes of the absolute income hypothesis lead to similar conclusions to those of the life cycle-permanent income hypothesis. For example, in concluding that private consumption expenditure does not exhibit smoothing because it only relates to current disposable income.

The absolute income hypothesis is consistent with the theory of intertemporal choice for households that have limited possibilities of borrowing from commercial banks and financial service providers, but not for those with unlimited borrowing opportunities. Several extant studies have produced results that support the theoretical predictions of the Keynesian model. Davis (1984) and Ferber (1966) estimated time series data on the aggregate consumption function in the US and estimated marginal propensity to consume for short-run consumption at between 0.79 and 0.88. The parameters estimated were consistent with the theoretical expectations of the Keynesian theory, as marginal propensity to consume was inferior to one. Furthermore, the estimates exhibited a shift in the regression lines over time. Ferber thus referred to the US' short-run consumption function as a cyclical one. In contrast, other extant studies failed to prove the accuracy of the Keynesian model predictions. Kuznets (1946) suggested that the household consumption expenditure in the US was not a function of income but a proportion of income since the equation of the model he used did not have the intercept. Kuznets' study was a turning point in the evolution of consumption theory as his findings contradicted the assumptions of the absolute income hypothesis; this is referred to as Kuznets' puzzle or empirical enigma (Alimi, 2013). Khan & Nishat (2011) observe that, to accommodate Kuznets' long-run consumption function as well as the Keynesian short-run consumption function, many theories of consumption emerged, including the relative income, life-cycle and the permanent income hypotheses.

Ganong & Noel, (2016) used individual-level data to examine how household consumption expenditure tends to change when social welfare benefits such as the Unemployment Insurance Fund (UIF) in South Africa kick in. When employees lose their, job their consumption expenditure generally falls and continues to drop. This is consistent with the credit-constraint model, as many unemployed people do not have access to loans from commercial banks and financial service providers that would enable them to maintain their previous lifestyle. Furthermore, when social welfare benefits are discontinued, consumption expenditure declines almost twice as much as when they first lost their jobs. This results in many South Africans, and indeed, people around the world, living from hand-to-mouth. This phenomenon is not explained by Friedman or Keynes's theory. While Kuznets in particular exposed the shortcomings of the absolute income hypothesis, resulting in the development of influential alternative models, the model is still in use and the results of recent studies such as Alimi (2013) show that the absolute income hypothesis model is still topical and valid since it could fit data from some countries.

For example, Khan & Nishat's (2011) study in Pakistan pointed to the strong validity of the absolute income rather than the permanent income hypothesis. This is encouraging since a single model (Oke & Bokana, 2017; Alimi, 2013) cannot explain the consumption function of all countries. While economists previously believed that an economy could only satisfy one consumption hypothesis at a time, Campbell & Mankiw (1990) showed that household consumption behavior can be explained simultaneously by both the absolute income and the permanent income hypothesis. Their consumption model assumed the existence of two portions (α and 1-α) in the entire population with different behavior. Forward-looking individuals (α) satisfied the permanent income hypothesis, while those that consume current income (1-α), prove the absolute income hypothesis (Khan at al., 2012). Heim (2007) suggested that the consumption function of a small portion of the US population satisfied the life-cycle hypothesis fit with Keynes's theory. Hillier (1991) pointed out that the interest rate can influence household consumption expenditure.

However, extant studies on the relationship between the interest rate and private consumption expenditure or savings produced ambiguous results, with some finding that the interest rate slightly and positively influences household consumption expenditure while others held that this relationship is negative. The Error Correction Model (ECM) has been used to study consumption expenditure in selected countries (Oke & Bokana, 2017; Vasilev, 2015; Singh, 2004; Goh & Downling, 2002. Alogoskoufis & Smith, 1990; Davis, 1984; Davidson & Hendry, 1981; Davidson et al., 1978). This is based on the concept of cointegration and is built on the assumption that two or more time series present an equilibrium relationship that drives both long- and short-run behavior (DeBoef, 2001). ECM combines the economic theory relating to the long-run relationship between variables, and short-run adjustment behavior (Utkulu, 2012). Remittances and earnings from the informal economy would thus not form part of household disposable income. The sample period 1980q1 to 2015q1 extends and revisits the 1971q1 to 1994q4 period of estimation used in Pretorius & Knox (1995).

3. Methodology

Justification for the Methodology Adopted: This paper follows the methodology conducted in South Africa by Pretorius & Knox (1995) who analyzed household consumption expenditure based on the permanent income hypothesis using the Engle-Granger (EG) two-step approach. The household consumption expenditure equations they applied in the macro-econometric model of South Africa's central bank – the South African Reserve Bank (SARB) – were predominantly based on this hypothesis. The equations in the macro-econometric model included a permanent income component, which was denoted by a weighted average of past consumer income, and a more volatile transitory component denoted by income from the household property. The current paper's scientific novelty lies in its test of the absolute income hypothesis (AIH) rather than the permanent-income hypothesis as in Pretorius & Knox (1995).

Modelling Considerations: Given the complications of non-linear models and the paucity of appropriate microeconomics data sets, the functional form in this paper is a single linear cointegration model. Several estimation methods have been suggested for single linear cointegration models. Among various ECM approaches, the Saikkonen's (1991) estimation approach, Engle-Yoo's (1991) three-step estimation approach and Engle & Granger's (1987) two-step estimation approach have been suggested as appropriate (Utkulu, 2012). However, the Engle-Granger (EG) two-step has been the most common approach as some econometricians argue that its ordinary-least-squares (OLS) regression parameters are both consistent and very efficient (Utkulu, 2012). The EG two-step approach offers the advantage of modelling the long-run equilibrium relationship, i.e. the cointegrating equation, by a direct regression including the levels of the variables such that no information is lost in the model regression. In the first step in this paper, a standard cointegrating equation (Equation 1) is estimated by OLS to obtain the regression's residuals, which will be used in the second step.

$$Y_t = \beta X_t + u_t \quad (1)$$

where Y_t and X_t variables are non-stationary and integrated of order one (I(1)). Theoretically, if two stochastic variables, Y_t and X_t say, exhibit similar secular properties then a scalar coefficient, s, may be found such that the linear combination $z_t = [Y_t - sX_t]$ is stationary. That is, Y_t and X_t are said to be cointegrated of order zero if (1) they are stationary in d^{th} differences (integrated of order **d**), and (2) if $s \neq 0$ exists such as that z_t is stationary - the estimated residuals from equation (1) are stationary (Engle & Granger, 1987). Given that the Granger Representation Theorem suggests that if variables are cointegrated, an ECM relating these variables will exist and vice versa, in the second step in this paper, a short-run model with an error-correction mechanism is estimated by the OLS. That is, we get back the estimate of β from Equation (1), and insert it in place of β in the error-correction term ($Y_t - \beta X_t$) in the short-run Equation 2:

$$\Delta Y_t = \alpha_1 \Delta X_t + \alpha_2 (Y_t - \beta X_t)_{t-1} + \varepsilon_t \quad (2)$$

where Δ represents first-differences and ε_t is the error term. Alternatively, as $Y_t - \beta X_t = u_t$, we practically substitute the estimated residuals from Equation (1) in place of the error-correction term. Grouping the two steps provides a model that combines both the static long run and the dynamic short-run timeframe. The estimated coefficient α_2 is *a priori* expected to have negative sign,a to be statistically significant, and to take a

value between -1 and 0 such to avoid an explosive process. However, some econometricians caution that EG static long-run regression presents drawbacks and biases. It neglects the lagged terms in small samples, which probably creates a bias in the parameters estimated (Banerjee et al., 1986).

The two main drawbacks of the two-step EG approach are (i) non-efficiency of the long-run static regression estimates even though they are consistent, and (ii) non-normality of the distribution of the estimators of the cointegrating vector, which could lead to wrong judgment on the significance of the parameters. To address these drawbacks and biases in the parameters estimated, many changes have been made to the EG two-step approach in an attempt to estimate alternative cointegrating regressions. On the one hand, dynamic components such as lags or differences have been added to the EG two-step approach (Saikkonen, 1991; Charemza & Deadman, 1992; Cuthbertson et al., 1992; Inder, 1993). On the other, corrections and modifications have been made to the static parameters estimated (Engle & Yoo, 1991; Phillips & Hansen, 1990; West, 1988). Inder (1993) employed a Monte Carlo study to compare different estimators of the long-run parameters and suggested that estimates that included the dynamics components were much more consistent. The Engle-Yoo (1991) three-step approach suggested the use of the static regression and correction of the small sample bias under the hypothesis of erogeneity of the regresses. In line with Engle-Yoo's (1991) suggestion, in this paper, a standard cointegrating equation (Equation 1) is estimated by OLS, then the regression residuals are computed and used in the following step.

On computing the residuals, a dynamic model from the modified Equation (2) is estimated using the lagged residuals from the cointegrating equation as an error-correction term as presented in Equation 3:

$$\Delta Y_t = \alpha_1 \Delta X_t + \alpha_2 (Y_t - \beta X_t)_{t-1} + \varepsilon_t \quad (3)$$

The next step consists of the regression of Equation 4:

$$\varepsilon_t = \eta (-\alpha_2 Y_t) + v_t \quad (4)$$

Then the suitable correction of the estimates in the first-step discussed earlier is given by Equation 5:

$$\beta_{cor} = \beta* + \eta \quad (5)$$

Where the correct standard errors for β_{cor} are given by the standard errors for η in the regression of Equation 4.

In addition, this paper applies Saikkonen's (1991) approach which suggests the simplified structure for the long-run estimator presented in Equation 6:

$$C_t = \beta_0 + \beta_1 Y_t + \beta_2 \Delta Y_{t-1} + \beta_3 \Delta Y_{t+1} + e_t \quad (6)$$

With the Saikkonen (1991) approach, a time domain correction is reached by adding ΔY_{t-1} and ΔY_{t+1} to the classical Engle & Granger type static long-run regression of Equation 1 discussed earlier where Δ is the first-difference operator. The asymptotic inefficiency of the OLS estimator is removed by using all the stationary information of the system to explain the short-run dynamics of the cointegration regression (Utkulu, 2012). Because the overarching objective of this paper is to examine whether the AIH is appropriate in explaining private consumption expenditure, Equation 7 presents consumption expenditure in South Africa, the AIH function:

$$C_t = \alpha + \beta Y_t \quad (7a)$$

Where C_t and Y_t denote real private consumption expenditure and household disposable income at period t, respectively, while α and β are private autonomous consumption and marginal propensity to consume, respectively. Autonomous consumption is understood as the amount of private consumption expenditure in South Africa. That is unrelated to household disposable income; while marginal propensity to consume is defined as an increase in private consumption expenditure from an additional unit of disposable income (Oke

& Bokana, 2017; Mishkin, 2011). There are three major assumptions from the AIH: (1) marginal propensity to consume is expected to be constant and close to one; (2) autonomous consumption α is projected. To be positive and very small; and finally, (3) average propensity to consume (apc) (ratio of private consumption expenditure and household disposable income). Should exceed marginal propensity to consume (mpc) in order for the income elasticity of consumption, determined by mpc/apc, to be less than unit (Fernandez-Corugedo, 2004).

Specification of the Econometric Model: To achieve its objectives, this paper sets three ECM specifications based on Keynes's theory: In the first specification, the long-run equilibrium relationship is estimated by OLS without all the dynamics as presented in Equation 7b:

$$Y_t = \beta X_t + u_t \quad (7b)$$

where Y_t and X_t variables are no stationary and integrated of order one (I(1)). Y_t and X_t are cointegrated if the estimated residuals from equation (1) are stationary. Given that the Granger Representation Theorem suggests that if variables are cointegrated, an ECM relating these variables will exist and vice versa, in the second specification, a short-run model with an error-correction mechanism is estimated by OLS. That is, we get back the estimate of β from Equation (7b), and insert it in place of β in the error-correction term ($Y_t - \beta X_t$) in the short-run Equation 7c:

$$\Delta Y_t = \alpha_1 \Delta X_t + \alpha_2 (Y_t - \beta X_t)_{t-1} + \varepsilon_t \quad (7c)$$

where Δ represents first-differences and ε_t is the error term. Alternatively, as $Y_t - \beta X_t = u_t$, we substitute the estimated residuals from Equation (7b) in place of the error-correction term. Adding up the two specifications provides a model that combines both the static long-run and dynamic short-run time frames. The estimated coefficient α_2 is *a priori* expected to have negative sign,a a to be statistically significant, and to take a value between -1 and 0 to avoid an explosive process.

Specification 1

Premised upon the above, the original AIH modelling the contemporaneous relationship between private consumption expenditure and disposable income, as presented in Equation 5 is now modified in Equation 8:

$$\Delta HCE_t = \beta_0 - \beta_1 \Delta HDI_t - \gamma (HCE_{t-1} - \alpha HDI_{t-1}) + v_t \quad (8)$$

where HCE_t and HDI_t are, respectively, private consumption expenditure and household disposable income, and β_i, γ, α and v_t are, respectively, short-run coefficients, the speed of adjustment, the long-run coefficient and the error term. $(HCE_{t-1} - \alpha HDI_{t-1})$ is the error correction mechanism of the model that measures the speed of adjustment of the system towards equilibrium. ΔHCE_t & ΔHDI_t are the first difference of the dependent and the independent variables and α, β_0 and β_1 are the estimates. A priori expectations are that, the coefficient β_1 is defined in the interval $[0 < \beta_1 < 1]$ (that is, the model is expected to be less than one and to have a positive sign) since it represents short-run marginal propensity to consume. The coefficient α is also expected to be less than zero and to have a positive sign since it stands for long-run marginal propensity to consume. Finally, the coefficient γ on the initial disequilibrium is expected to have a negative sign, meaning that the disequilibrium should be diminishing.

Specification 2

Here, it is assumed that lagged variables also have an impact on private consumption expenditure. This is done in order to check the consistency of the results from the original AIH model in Equation 8 above. To this end, a new specification is derived from Equation 8 where a number of lagged variables have been introduced using some selection criteria. This specification is presented in Equation 9:

$$\Delta HCE_t = \beta_0 - \sum_{i=0}^{k} \beta_i \Delta HDI_{t-i} - \gamma \left(\sum_{j=0}^{p} HCE_{t-j} - \sum_{i=0}^{k} \alpha_i HDI_{t-j} \right) + v_t \quad (9)$$

Specification 3

Keynes's theory allows some subjective factors to come into play in determining private consumption expenditure. Time series data of real interest rate have been identified among those subjective factors. Real prime overdraft rate (POR) as a proxy for real interest rate was added in Equation 9 to check the consistency of the results (Heim, 2007 & 2008; Hillier, 1991). The added time series data on real interest rate are expected to indicate the extent to which current private consumption expenditure could be sacrificed in favor of future consumption. On the one hand, if the rate of return on accumulated savings increases due to a higher interest rate, the opportunity cost associated with current private consumption expenditure will increase and thus raise the savings rate and reduce private consumption expenditure. On the other hand, the future income flows projected from the higher interest rate and a higher rate of return on savings which ensued could boost current private consumption expenditure. Therefore, the interest rate change creates the substitution and income effects. This is represented in Equation 10:

$$\Delta \mathrm{HCE}_t = \beta_0 - \sum_{i=0}^{k} \beta_{\mathrm{i}} \Delta HDI_{t-\mathrm{i}} - \sum_{i=0}^{n} \beta_{\mathrm{i}} \Delta POR_{t-\mathrm{i}}$$

$$-\gamma\left(\sum_{j=0}^{p} HCE_{t-\mathrm{j}} - \sum_{i=0}^{k} \alpha_i HDI_{t-\mathrm{j}} - \sum_{i=0}^{n} \alpha_i POR_{t-\mathrm{j}}\right) + v_t \qquad (10)$$

In Equation 10, a new variable, POR, a proxy for real interest rate has been included with its first differenced and lagged values. There is no a priori expectation on the sign of the coefficient of the interest rate as extant studies, have been inconclusive. The sign can be negative when an increase in the rate of interest increases the return on savings, increasing the opportunity cost of current private consumption expenditure. Households will opt for the increase in saving rates and therefore reduce their private consumption expenditure. However, the sign can be positive when projected flows of future income generated by the high-interest rate and high rate of return on savings, motivate current private consumption expenditure (Koekemoer, 1999). Consequently, firm conclusions cannot be reached on the net impact of variation in the interest rate. The scientific novelty of the models specified in this paper is that they are more realistic since they take into account the reaction time of the dependent variable when the independent variable changes by imposing lags on the variables.

Data Sources: Secondary quarterly seasonally adjusted data on household consumption expenditure (HCE) and household disposable income (HDI) were collected from the SARB. Secondary quarterly data on POR, a proxy for the interest rate, and the consumer price index (CPI) were collected from Statistics South Africa (Stats SA) for the period 1980q1 to 2015q4. The retrieved nominal time series data were converted using the CPI of December 2012 as the base period to deflate and obtain constant price values or the real values of HCE, HDI, and POR time series. The HCE and HDI data were also seasonally adjusted in order to remove cyclicality and to extract the core trend component of the time series data. In this paper, household disposable income is calculated as total earned income plus government transfers less taxes.

4. Results and Discussion

The empirical results of the estimated equations using the three quarterly seasonally adjusted series, namely, the HCE, the HDI and the interest rate (POR) are presented in this section.

Descriptive Analysis: Table 1 presents the descriptive statistics of the HCE, HDI and POR variables in level values as well as in logarithm values.

Table 1: Descriptive Statistics of the Level and Logarithm Variables for HCE, HDI and POR, 1980-2015

Variables	Mean	Standard deviation	Minimum	Maximum	Observations
HCE*	286 502	110 462	142 702	501 881	140
HDI*	290 528	106 162	137 636	505 744	140
RPOR	13.13	3.94	3.98	21.70	140
Log HCE	12.49	0.38	11.87	13.13	140
Log HDI	12.52	0.36	11.83	13.13	140

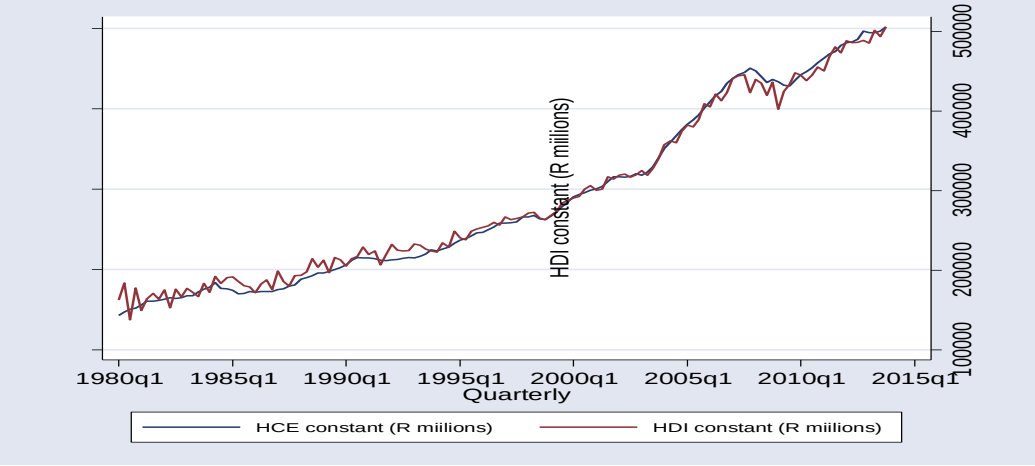
Log POR	2.53	0.33	1.38	3.08	140

* In millions of Rand

Source: Authors' Computation from SARB and Stats SA data

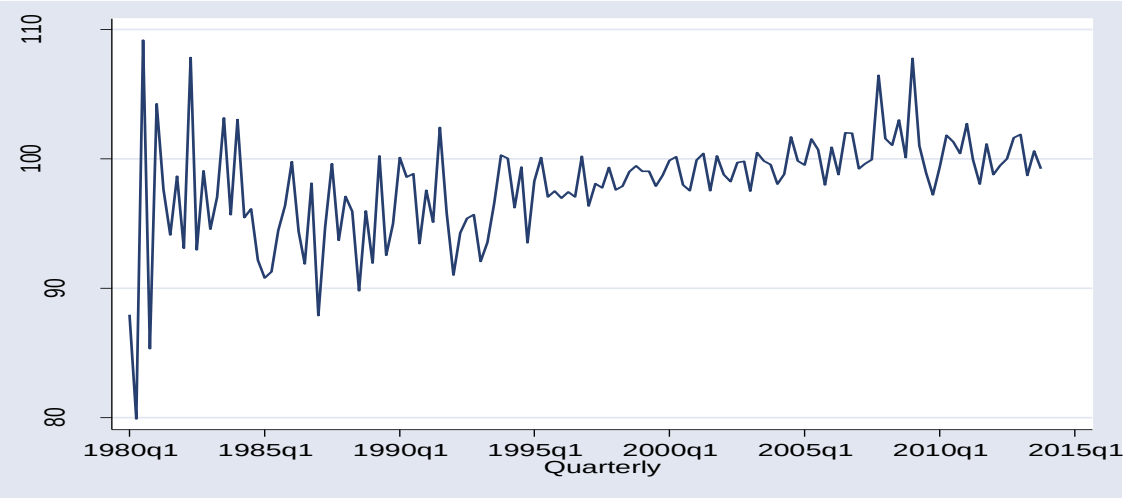
Table 1 shows that the standard deviations are higher than the mean for both the HCE (38.5%) and HDI (36.5%) variables in level. This demonstrates the higher volatility of both the HCE and HDI during the period under study. In logarithm form, this volatility is smoothed; for example, the standard deviations compared to the mean represent 3.0 percent for HCE and 2.9 percent for HDI, meaning that the log variables are less volatile than the level ones because the logarithms attenuate the volatility of the statistic series. Figure 1 shows South African HCE and HDI in constant millions of rand seasonally Adjusted from the first quarter of 1980 to the fourth quarter of 2015. It can be observed that the two aggregates' curves have an identical upward trend. These curves exhibit flatter slopes from 1980 to around 1995 then become steeper. It is worth examining one of the Keynesian model's assumptions, namely, average propensity to consume. This is usually assumed constant over long periods but it often exhibits short-term cyclical and other movements (Pretorius & Knox, 1995).

Figure 1: Household Consumption Expenditure (HCE) and Household Disposable Income (HDI) in South Africa: 1980-2015



Source: Authors' own computation-using data from the SARB and Stats SA

Figure 2: Depicts HCE Expressed as a Ratio of HDI, Referred to as the Consumption-To-Income Ratio (CIR) in South Africa: 1980-2015. The CIR Ratio Indicates the Extent to Which HDI Contributes to Financing HCE.



Source: Authors' own computation using data from the SARB

Figure 2 shows that over the years under analysis, the CIR in South Africa is volatile and trending upward, indicating that it has increased significantly over time. For every rand of HDI, households spent a high proportion on consumption items, leaving less money for other expenses and savings. This volatility was high during the period 1980 and 1992. It suggests that HDI levels were not sufficient to cover HCE levels throughout the period. If this trend continues, South African households' consumption levels will soon exceed their income levels. For many households, HDI will not be able to meet overall HCE, prompting these households to rely on other sources such as savings (if any) to finance their consumption expenditure. Broadly, speaking, South African consumers have very low-income levels that do not allow them to save; they experience liquidity constraints and have limited access to banking opportunities. Koekemoer (1999) argued that the majority of South African consumers are stuck in a relatively inflexible pattern of HCE. This paper, therefore, argues that in the South African context, households' savings are quasi-inexistent.

It can thus be anticipated that commercial banks and other financial service providers would allow households access to credit lines, enabling them to consume over and above their disposable income and triggering negative savings. Household consumption expenditure is oriented towards instant consumption for subsistence and excludes reactivity to changes in the central bank's interest rate. The premise upon the above, income elasticity is expected to be close to unity for HCE as a whole. In this paper, the key variable is absolute disposable income. Premised upon the above, the a priori expectations are that all the coefficients on the HDI (LHDI) represent marginal propensity to consume (MPC) in the short run and in the long run and have to be positive and less than zero. Since lagged household consumption, expenditure could be understood as the way South African consumers are adapting their consumption patterns, all the coefficients on the lagged private consumption expenditure (L.LHCE) might have positive or negative signs. The coefficient ρ, which stands for the speed of adjustment toward the equilibrium, is expected to be negative such that the disequilibrium will shrink over the periods under analysis.

Tests for Stationary and Co-Integration: To examine the empirical relevance of this paper's hypothesis, the time series data on HCE, HDI, and POR were used to estimate the model developed earlier. Note that the error correction model can only be applied when the variables are stationary in their differences and in that case, it takes into account the cointegrating relationships among the variables. There are a number of test statistics to check the order of non-stationary of a random variable, and determine the order of integration of the variables as well as determine if these variables are cointegrated. These include the Durbin-Watson (DW) detailed by Engle & Granger (1987), Dickey-Fuller (DF) and Augmented Dickey-Fuller (ADF) statistics, Phillips (1987), and West (1988).

Unit Root Tests: While there are many unit root (UR) tests, the ADF test - an extension of the Dickey-Fuller test - is the most prevalent and easiest to implement (Wooldridge, 2016) and is used in this paper. This test allows for a linear trend by adding a trend to the ADF regression during the UR test; and tests the null hypothesis of UR against the alternative of stationary. The Kwiatkowski, Phillips, Schmidt, & Shin (KPSS) (1992) is an alternative to ADF that differs from the other unit root tests in that it assumes the variables to be (trend-) stationary under the null hypothesis. The KPSS test is used to test a null hypothesis that an observable time series is stationary around a deterministic trend. Therefore, the ADF and the Kwiatkowski, Phillips, Schmidt, & Shin (KPSS) (1992) tests were performed to assess the stationary in order to set the order of integration of the variables. Table 2 reports the results of the tests for all variables in logarithms at level. The first column lists the variables tested. In the second column, the ADF test statistics are reported under the three hypotheses of no trend and constant, constant only and trend and constant with the lag length selected automatically using the Akaike Info Criterion (AIC). The third column reports the KPSS test statistics under the two hypotheses of constant only and trend and constant with the Bartlett kernel as a spectral estimation method and the bandwidth selected automatically using the Newey-West bandwidth. These should be tested with variables such as wealth, financial facilities, price expectation, existing debts, etc. This is in line with arguments put forward in some extant studies using this model, that the fiscal stimulus policies generally do not generate the desired increase in economic activity and employment. If households use money from the fiscal stimulus policies to repay their existing debts rather than consume additional goods and services which, would be the catalyzer to increase GDP.

Table 2: Unit Root Test on Level Variables (In Logarithm), 1980-2015

Variables	ADF			KPSS	
	No intercept no trend	Intercept	Intercept and trend	Intercept	Intercept and trend
LHCE	3.832	0.097	-2.411	1.453***	0.233***
LHDI	5.476	0.351	-2.007	1.447***	0.257***
LPOR	-0.234	-2.455	-3.639**	0.470**	0.256***

Legend: *10%, **5%, and ***1% level of significance
Source: Authors' own computation

The results from the ADF test in table 2 show that under the three hypotheses, all the variables, except the LPOR under intercept and trend hypothesis, have UR or are non-stationary, i.e. the test fails to reject the null hypothesis of UR (of non-stationary). The results from the KPSS test show that under the two hypotheses, all the variables are non-stationary, i.e. the test rejects the null hypothesis of stationary at 1% and 5% levels of significance. Therefore, the second series of UR tests are performed on first differenced variables. The results are compared in table 3.

Table 3: Unit Root Test on First-Differenced Variables, 1980 - 2015

Variables	ADF			KPSS	
	No intercept no trend	Intercept	Intercept and trend	Intercept	Intercept and trend
LHCE	-3.165***	-5.766***	-5.757***	0.066	0.063
LHDI	-2.049**	-4.380***	-4.474***	0.202	0.109
LPOR	-5.091***	-5.109***	-5.077***	0.166	0.034

Legend: *10%, **5%, and ***1% level of significance
Source: Authors' own computation

The three hypotheses in the ADF test reveal that all the variables are stationary, i.e. the test rejects the null hypothesis of UR (of non-integration) at 1% and 5% levels of significance. The results from the KPSS test show that under the two hypotheses, all the variables are stationary, i.e. the test fails to reject the null hypothesis of stationary. This is encouraging evidence, which indicates that these variables are integrated of order one, I (1); the next step is to test if these variables are cointegrated.

Co-Integration Test: The Engle & Granger (1987) and Phillips & Ouliaris (1990) tests are used to establish whether or not the variables are cointegrated. These are single-equation residual-based cointegration tests where UR tests are applied to the regression residuals under the null hypothesis of non-stationary against the alternative of stationary. The difference between the two tests resides in the manner of accounting for the serial correlation in the regression residual; the Phillips-Ouliaris test applies the non-parametric Phillips-Perron (PP) approach, while the Engle-Granger test applies the augmented Dickey-Fuller (ADF), an approach which is a parametric one. Cointegration regressions are reported in tables 4a, 4b, 5a and 5b, which provide the results of both the Engle & Granger (1987) and Phillips & Ouliaris (1990) tests where, alternatively, each variable is considered as a dependent variable. These tests are realized under four cointegrating equation specification hypotheses of (1) no intercept and no trend, (2) intercept, (3) linear trend and (4) quadratic trend; where the lags have been automatically specified using the Schwarz information criterion.

Table 4a: Cointegration Test for Lhce and Lhdi, 1980-2015

Hypotheses	Engle-Granger test statistics (tau-stat)	
	LHCE	LHDI
No intercept, no trend	-2.432	-2.436
Intercept	-14.686***	-14.802***
Linear trend	-4.981***	-15.109***
Quadratic trend	-4.570**	-15.370***

Legend: *10%, **5%, and ***1% level of significance of Tau-stat
Source: Authors' own computation

Table 4a provides the results of the Engle-Granger (1987) test with LHCE and LHDI alternatively being the dependent variables. The results show that except for the no intercept no trend hypothesis, the two variables (LHCE and LHDI) are cointegrated, taking any variable as the dependent variable, under all hypotheses, i.e. the test rejects the null hypothesis of non-cointegration at 5% and 1% level of significance.

Table 4b: Cointegration Test for Lhdi and Lhce, 1980-2015

Hypotheses	Phillips-Ouliaris test statistics (tau-stat)	
	LHCE	LHDI
No intercept, no trend	-11.051***	-11.052***
Intercept	-14.584***	-14.691***
Linear trend	-9.744***	-15.076***
Quadratic trend	-8.109***	-15.275***

Legend: *10%, **5%, and ***1% level of significance of Tau-stat
Source: Authors' own computation

Table 4b presents the results of the Phillips-Ouliaris (1990) test with LHCE and LHDI alternatively being the dependent variables. The results show that the two variables (LHCE and LHDI) are cointegrated, taking any variable as the dependent variable, under all hypotheses, i.e. the test rejects the null of non-cointegration at 1% level of significance.

Table 5a: Cointegration Test for LHDI, LRPOR and LHCE, 1980-2015

Hypotheses	Engle-Granger test statistics (tau-stat)		
	LHCE	LHDI	LRPOR
No intercept, no trend	-2.504	-2.561	-3.168*
Intercept	-17.464***	-17.338***	-3.086
Linear trend	-3.793	-18.186***	-3.222
Quadratic trend	-3.174	-18.172***	-3.472

Legend: *10%, **5%, and ***1% level of significance of Tau-stat
Source: Authors' own computation

Table 5a provides the results of the Engle-Granger test with lhce, lhdi and lrpor alternatively being the dependent variables. The results show that under the "no intercept, no trend" hypothesis, the variables are cointegrated only if the lrpor is selected as the dependent variable; and this at 10% level of significance. Under the "intercept" hypothesis the variables are cointegrated only if the lhce and the lhdi are selected as the dependent variables; and this at 1% level of significance. Under the "linear trend" hypothesis the variables are cointegrated only if the lhdi is selected as the dependent variable; this at 1% level of significance. Finally, under the "quadratic trend" hypothesis the variables are cointegrated only if the lhdi is selected as the dependent variable; and this at 1% level of significance.

Table 5b: Cointegration Test for LHDI, LRPOR and LHCE, 1980-2015

Hypotheses	Phillips-Ouliaris test statistics (tau-stat)		
	lhce	Lhdi	lrpor
No intercept, no trend	-13.325***	-13.370***	-3.078*
Intercept	-16.317***	-16.235***	-3.222
Linear trend	-10.560***	-17.134***	-3.399
Quadratic trend	-9.254***	-17.108***	-3.788

Legend: *10%, **5%, and ***1% level of significance of Tau-stat
Source: Authors' own computation

Table 5b provides the results of the Engle-Granger test with lhce, lhdi and lrpor alternatively being the dependent variables. The results show that under the "no intercept, no trend" hypothesis the variables are cointegrated regardless of the selected dependent variable; and this at 10% and 1% level of significance.

Under the intercept, linear trend and quadratic trend hypotheses the variables are cointegrated only if the lhce and the lhdi are selected as the dependent variables; and this at 1% level of significance. In light of the cointegration test results provided in the above tables and given in the model developed earlier in this paper the lhce is the dependent variable. Furthermore, considering the intercept hypothesis for the cointegrating equation, this paper concludes that these variables are cointegrated. The next step is the estimation of the models developed earlier.

Estimation and Empirical Results: Given that a stationary linear combination exists between lhce and lhdi, the next step is to examine the error correction properties of these time series. The regression results from the three specifications discussed in (2.3) are presented as the long-run relationship (error correction mechanism) as well as the error correction model that combines the short- and long-run relationship. These results were obtained by applying the Engle-Granger two-step approach to estimate the models. The cointegrating equation, error correction mechanism or long run regression results from the three specifications are depicted in table 6.

Table 6: Cointegrating Equation, Long-Run Relationship

Dependent Variable: Household consumption expenditure - lhce			
Covariates	**SPEC 1**	**SPEC 2**	**SPEC 3**
Lhdi	1.050***	0.099**	0.100**
L.lhce		1.163***	1.174***
L2.lhce		-0.162	-0.126
L3.lhce		-0.078	-0.168
L4.lhce		-0.126	-0.037
L.lhdi		0.026	0.012
L2.lhdi		0.016	0.019
L3.lhdi		0.006	-0.006
L4.lhdi		0.066*	0.042
Lrpor			0.008
L.lrpor			-0.002
L2.lrpor			-0.019
L2.lrpor			0.008
L2.lrpor			0.005
cons	-0.653***	0.143*	-0.116
Adjusted R-squared	0.990	0.999	0.999
F-stat	13026	17078	10925
Prob-F	0	0	0

Legend: *p<0.10; **p<0.05; and *** p<0.01
Source: Authors' own computation

Summary of Empirical Results: Economists have long debated whether Friedman or Keynes's theory fits the facts in the real world. The answer to this question is important because, when policymakers or researchers, among others, apply these theories to consumption expenditure patterns for purposes of forecasting and policymaking, they could be led astray. The results from Keynes's original model (Specification 1) reveal that all the coefficients are significant at all levels of significance. While disposable income elasticity is positive and higher than one, the constant is negative. Specifications (2) and (3) check the consistency of the results from the original Keynes model. The results from the specification (2) show that only current and four lagged HDI, one lagged HCE and the constant are significant at 1%, 5% or 10% level of significance; while in the specification (3) only current HDI and one lagged HCE are significant. In both the specifications, one lagged HCE, at 1.163 and 1.174 in specifications (2) and (3), respectively, appears to be the key determinant of consumption.

The results from the three specifications of the error correction model that combine the short- and long run equations are depicted in table 7. These results show that only in specification (1) is there an adjustment to equilibrium in case of a shock, i.e. the speed of adjustment of -0.102 is negative and significant at 10% level of significance, while in both specifications (2) and (3) there is no adjustment to the equilibrium because the speed of adjustment is positive. In both specifications (2) and (3), only current, and lagged one and two HDI, as well as the constant are significant at 1%, 5% or 10% level of significance. This means that, in the short run, consumption is influenced only by these variables.

Table 7: Short-Run Relationship (Error Correction Model)

Dependent variable: household consumption expenditure (d.lhce)

Covariates	**SPEC 1 (1)**	**SPEC 2 (2)**	**SPEC 3 (3)**
L.e	-0.102*	0.195*	0.183
D.lhdi	0.078**	0.101**	0.102**
LD.lhdi		0.097**	0.100**
L2D.lhdi		0.097**	0.089*
L3D.lhdi		0.040	0.051
L4D.lhdi		0.038	0.046
D.lrpor			0.005
LD.lrpor			0.003
L2D.lrpor			-0.012
L3D.lrpor			-0.012
L4D.lrpor			-0.001
_cons	0.009***	0.006***	0.006***
Adjusted R-squared	0.042	0.14	0.128
F-stat	3.945	4.526	2.714
Prob-F	0.022	0.000	0.004

Legend: * p<0.10; ** p<0.05; and *** p<0.01
Source: Authors' own estimation

The HDI long-run elasticity of 1.050 shows that, in the long run, a 1% increase in disposable income is expected to increase HCE by 1.050% points. The assessment of goodness of the models estimated is based on the normality, heteroscedasticity and the serial correlation tests on the regression residuals given that the OLS technique has been used. No issues can be raised about the normality even though the test results on all the models reject the null hypothesis of the normality of the residuals. This is because the sample used in this paper is a large one. Lumley et al. (2002) demonstrated that in large samples, the t-test and linear regression are valid for normally and non-normally distributed outcomes. The Lagrangian and Szroeter's tests with a null hypothesis (H_o) of homoscedasticity have been used to check the heteroscedasticity of the regression residuals.

While these tests respectively provide p-values of 0.391 and 0.094 for model (1) indicating non-rejection of the null hypothesis H_o for the Lagrangian test and rejection of the null hypothesis H_o at 10% for the Szroeter's test, the p-values for the models (2) (0.000; 0.021) and (3) (0.000; 0.024) show the existence of heteroscedasticity in the regression residuals. The Breusch-Godfrey LM and Durbin's alternative tests with a null hypothesis (H_o) of no serial correlation have been used to check the serial correlation of the regression residuals. The results for the three models are: for Breusch-Godfrey LM, 0.000, 0.071 and 0.012 respectively, and for Durbin's alternative, 0.000, 0.077 and 0.015, respectively. These results show that the null hypothesis H_o has been rejected for all the models, suggesting the existence of serial autocorrelation in the regression residuals. In order to fix the heteroscedasticity and serial correlation issues this paper uses the Newey West

Standard Errors approach that provides the heteroscedasticity and autocorrelation consistent, or HAC, standard errors (Wooldridge, 2016).

Discussion of the Results: The results displayed in table 8 indicate a slow adjustment to equilibrium since the error correction term (the coefficient on the lagged residual) is -0.1560. This coefficient is significant at 10% level of significance, meaning that at this level of significance, there is long-run causality running from disposable income to household consumption expenditure such that only 15.60% of the disequilibrium in household consumption expenditure in any time period is corrected by the following period. The results in tables 9 to 12 indicate that not almost all the estimates of the modified model are better than those of the basic model, expected the long-run estimate. The absolute income hypothesis predictions are too extreme and unrealistic because it considers only disposable income as the a priori factor expected to influence consumption expenditure. In South Africa, household consumption expenditure tends to be less subject to change than income. It is more likely to be influenced by socioeconomic background, income disparities, wealth distribution and cultural differences. Furthermore, fiscal, monetary or trade policies have to be perceived as being permanent before they can be expected to have any lasting impact on South African consumers' consumption behavior (Pretorius & Knox, 1995). Therefore, omitting other factors can in many cases lead to contradictions between the simple Keynesian consumption model and empirical evidence. This evidence suggests that the absolute income hypothesis model is not appropriate to explain private consumption expenditure in South Africa. There is thus a need for different models that are not based on Keynes's theory.

5. Conclusion and Recommendations

This paper examined whether the patterns of household consumption expenditure in South Africa are best determined by Friedman or Keynes's theory. Its main objective was to investigate the relevance of the Keynesian absolute income hypothesis in explaining household consumption expenditure in South Africa since the theory assumes that disposable income is the core factor that explains household consumption expenditure. Applying the Engle-Granger two-step error correction model on time series data from the SARB from 1980 to 2015, three models were specified, namely the original, the basic and the modified models according to the absolute income hypothesis. These estimations determined the extent to which disposable income explains private consumption expenditure in South Africa, and the nature of the relationship between these variables. The empirical results indicate that private consumption expenditure in South Africa depends more on its lagged values than on absolute disposable income. Magnifying the estimates from the basic model by including the interest rate in a modified model did not yield an alternative hypothesis. Not all the coefficients on the interest rate were significant such that the Adjusted-R square compared to that of the basic model fell from 25.11% to 17.34%. These findings suggest that the Keynesian absolute income hypothesis model is not suitable to explain private consumption expenditure in South Africa because it identifies disposable income as the key element to determine household consumption expenditure.

Consumer behavior is more short-term than predicted in almost any mainstream model. Social welfare payments exhaustion is hardly a surprise. South African consumers know exactly when they will receive such payments and when these are going to stop arriving or run out. Based on Keynes's theory, when South Africans receive a windfall, government welfare payments, a new job or a new stimulus check, they tend to spend some of it immediately. In terms of behavioral economics, consumers are short-termist. When money or social welfare payments stop coming, South African consumers cut back on private consumption expenditure, even if they know they will probably get a new job or social welfare payments in the relatively near future. This point to short-term thinking among consumers it is argued that South Africans might respond to temporary income changes because they are unable to borrow from the commercial banks and financial service providers. Therefore, if one wants to spend more, but has maxed out his or her credit cards and his or her home-equity credit line, a windfall from the government might free him or her from the tyranny of the bank. This suggests that there is more to this issue than commercial banks or financial service providers' unwillingness to lend. As noted earlier, economists regard credit constraints as a way to save Friedman's basic idea. If borrowing limitations hold as they are for the majority of citizens the world over, South Africans would have saved more beforehand, knowing their benefits were going to stop arriving or run

out. This finding is in line with international studies, which argue against the attempt to explain household consumption expenditure using Friedman or Keynes's theory.

Recommendations: Policymakers have yet to come to grips with the realities of the developing world, which do not fit with the notion that only fiscal monetary and trade, policy transmission mechanisms determine the patterns of household/private consumption expenditure. Put simply, policymakers who subscribe to either Friedman's or Keynes's theory underrate the factors and variables that determine such expenditure patterns. Based on the findings of this paper, a systems analysis approach is recommended to understand the determinants of household/private consumption expenditure in South Africa by putting together many systems. Multivariate models should be adopted that enable numerous variables such as culture, financial inclusion, price expectation, socio-economic background, and wealth, among others to be accounted for. This was facilitated by the emergence of the econometrics field, which raised interest in testing the claims of Keynes's absolute income hypothesis (Alimi, 2013).

References

Alimi, R. S. (2013). Keynes absolute income hypothesis and Kuznets paradox, Munich Personal RePEc Archives, 49310.

Alogoskoufis, G. & Smith, R. (1990). On error correction models; specification, interpretation, estimation. Discussion Paper No. 6/90, Birbeck College.

Baker, M. & Orsmond, D. (2010). Household consumption trend in China. Reserve Bank of Australia Bulletin. March Quarter 2010.

Baranzini, M. (2005). Modigliani's life-cycle theory of savings fifty years later. BNL Quarterly Review, LVIII (233-234), 109-72.

Banerjee, A., Dolado, J. J., Hendry, D. F. & Smith, G. (1986). Exploring equilibrium relationships in econometrics through static models: some Monte Carlo evidence. *Oxford Bulletin of Economics and Statistics*, 48, 253-277.

Blinder, A. & Deaton, A. (1985). The time series consumption function revisited. *Brookings Papers on Economic Activity*, 2, 465-521.

Campbell, J. & Mankiw, N. (1990). Permanent income, current income, and consumption. *Journal of Business and Economic Statistics*, 8, 265-279.

Charemza, W. W. & Deadman, D. F. (1992). New directions in Econometric Practice, Edward Elgar Publishing Limited.

Cuthbertson, K., Hall, S. G. & Taylor, M. P. (1992). Applied econometric techniques, New York: Philip Allan.

Davidson, J. E. H. & Hendry, D. F. (1981). Interpreting econometric evidence: consumers' expenditure in the UK. *European Economic Review,* 16, 177-192.

Davidson, J. E. H., Hendry, D. F., Srba, F. & Yeo, S. (1978). Econometric modelling of the aggregated time series relation between consumption and income in the UK. *Economic Journal*, 88(352), 661-692.

Davis, T. E. (1984). The consumption function in macroeconomic models: a comparative study. *Applied Economics*, 16, 799-838.

DeBoef, S. (2001). Testing for cointegrating relationships with near-integrated data. *Political Analysis*, 9, 78–94.

Engle, R. F. & Granger, C. W. J. (1987). Dynamic model specification with equilibrium constraints: co-integration and error correction. *Econometrica*, 55, 251-276.

Engle, R. F. & Yoo, B. S. (1991). Cointegrated economic time series: an overview with new results. In Engle R. F. & Granger C. W. J. (eds.), Long-run economic relationships: readings in cointegration, New York: Oxford University Press.

Ferber, R. (1966). Research on household behavior: Survey of economic theory. American Association and Royal Economic Society, New York and London.

Fernandez-Corugedo, E. (2004). Consumption theory. Centre for Central Banking, Bank of England. No. 23.

Friedman, M. (1957). A theory of the consumption functions, Princeton, N.J: Princeton University Press.

Ganong, P. & Noel, P. (2016). How does unemployment affect consumer spending? Working paper

Goh, K. L. & Downing, R. (2002). Modelling New Zealand consumption expenditure over the 1990s. New Zealand Treasury Working Paper 02/19, 1-28.

Hall, R. (1978). Stochastic implications of the life-cycle permanent income hypothesis. *Journal of Political Economy*, 86(6), 971-987

Heim, J. J. (2007). Was Keynes right? Does current year disposable income drive consumption spending? Rensselaer Polytechnic Institute Working Papers, 0710.

Heim, J. J. (2008). Consumption function. Rensselaer Polytechnic Institute Working Papers, 0805.

Hillier, B. (1991). The macroeconomic debate: Models of the closed and open economy, Oxford, New-Jersey: Basil Blackwell.

Inder, B. (1993). Estimating long-run relationships in economics. *Journal of Econometrics*, 57, (1-3), 53-68.

Kankaanranta, P. (2006). Consumption over the life cycle: A selected literature review. Aboa Centre for Economics, Discussion, 7.

Keynes, J. M. (1936). The general theory of employment, interest, and money. New York: Harcourt Brace.

Khan, K. & Nishat, M. (2011). Permanent-income hypothesis, myopia and liquidity constraints: A case study of Pakistan. *Pakistan Journal of Social Sciences (PJSS)*, 31(2), 299-307.

Khan, K., Yousaf, H., Abbas, M. G., Memon Che, M. H. & Nishat, M. (2012). Permanent-income hypothesis, myopia and liquidity constraints: A case study of Pakistan. *Asian Economic and Financial Review*, 2(1), 155-162.

Koekemoer, R. (1999). Private consumption expenditure in South Africa: The role of price expectation and learning. PhD Thesis, Faculty of Economic and Management Sciences, University of Pretoria.

Kuznets, S. (1946). National income: A summary of findings. National Bureau of Economics Research - NBER, New York.

Kwiatkowski, D., Phillips, P. C. B., Schmidt, P. & Shin, Y. (1992). Testing the null hypothesis of stationary against the alternative of a unit root. *Journal of Econometrics*, 54 (13), 159-178.

Lafrance, A. & LaRochelle-Côté, S. (2011). Consumption patterns among ageing Canadians: a synthetic cohort approach. Economic Analysis Research Paper Series, Statistics Canada Catalogue No. 11F0027M, No. 067, Ottawa.

Lumley, T., Diehr, P., Emerson, S. & Chen, L. (2002). The importance of the normality assumption in large public health data sets. *Annual Reviews in Public Health*, 23, 151-169.

Mishkin, F. S. (2011). Monetary policy strategy: Lessons from the crisis. National Bureau of Economics Research - NBER Working Paper Series, 16755.

Modigliani, F. (1986). Life cycle, individual thrift, and the wealth of nations. American Economic Review, *American Economic Association*, 76(3), 297-313.

Modigliani, F. & Brumberg, R.E. (1954). Utility analysis and aggregate consumption function: An interpretation of cross-section data. In Post Keynesian Economics, K.K Kurinara (ed) New Brunswick: Rutgers University Press.

Oke, D. M. & Bokana, K. G. (2017). Understanding the theory of consumption in the context of a developing economy. *Journal of Economics and Behavioral Studies*, 9(5), 219-229.

Palley, T. I. (2008). The Relative income theory of consumption: A synthesis of Keynes, Duesen berry, and Friedman model. Political Economy Research Institute, UMASS, Working Paper Number 170.

Parker, J. A., Souleles, N. C., Johnson, D. S. & McClelland, R. (2011). Consumer spending and the economic stimulus payment of 2008. National Bureau of Economic Research, Working Papers 16684.

Patterson, K. D. (1986). The stability of some annual consumption functions. *Oxford Economic Papers*, 38, 1-30.

Phillips, P. C. B. (1987). Time series regression with a unit root. *Econometrica*, 55, 277-302.

Phillips, P. C. B. & Perron, P. (1988). Testing for a unit root in time series regression, Biometrika.

Phillips, P. C. B. & Hansen, B. E. (1990). Statistical inference in instrumental variables regression with I (1) processes. *Review of Economic Studies*, 57, 99-125.

Phillips, P. C. B. & Ouliaris, S. (1990). Asymptotic properties of residual-based tests for cointegration. *Econometrica*, 58, 73-93.

Pretorius, C. J. & Knox, S. (1995). Private consumption expenditure in the macro-econometric model of the Reserve Bank, working paper.

Saikkonen, P. (1991). Asymptotically efficient estimation of cointegration regressions. *Econometric Theory*, 7, 1-21.

Schuh, S. (2017). Measuring consumer expenditures with payment diaries. Working Papers, Federal Reserve Bank of Boston, No. 17-2.

Singh, B. (2004). Modelling real private consumption expenditure – an empirical study on Fiji. Economics Department Reserve Bank of Fiji, Working Paper 2004/2005, 1-32.

Utkulu, U. (2012). How to estimate long-run relationships in economics: an overview of recent development.

Vasilev, A. (2015). Modelling real private consumption expenditure in Bulgaria after the currency board implementation (1997-2005). *Zagreb International Review of Economics & Business*, 18(1), 81-89.

West, K. D. (1988). Asymptotic normality, when regresses have a unit root. *Econometrica*, 56, 1397-418.

Wooldridge, J. M. (2016). Introductory Econometrics: a modern approach (6th ed), Mason, OH: South-Western College Publishing, Cengage Learning.

Yazdan, G. F. & Merabirad, S. (2013). The testing of Hall's permanent-income hypothesis: A case study of Iran. *Asian Economic and Financial Review*, 3(3), 311-318.

Zarinah, Y. & Pereira, J. (2012). Consumption invariant to the economic downturn? Evidence on the propensity to consume. *International Journal of Trade, Economics and Finance*, 3(6).

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High-Quality Input Choice under Uncertainty and Ambiguity: An Exploratory Study of Costa Rica's Coffee Sector

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Abstract: The purpose of the present study was to analyze the effect of multiple variables on the decision to invest in high versus regular-quality coffee production inputs. Thereby, a laboratory experiment was conducted with one hundred twenty-three undergraduate students, and posterior logistic regressions with random intercept were executed to analyze the collected data. The results showed that when there is a difference in the investment cost between a coffee of higher quality and a coffee of lower quality (regular), there is a slight increase in the odds ratio of investment in quality coffee, when going from an uncertainty condition of income to one with certainty in income of a higher quality coffee. On the other hand, when the cost is equal for both types of coffee, there is a strong increase in the odds ratio when going from an uncertainty condition to one with certainty. In addition, it was found that both the possibility of loss if there is an investment in a higher quality coffee and the ambiguity in the probability of facing a favorable business climate, reduce the odds ratio of investing in higher-quality coffee.

Keywords: *Coffee, input investment, uncertainty, loss aversion, income ambiguity.*

1. Introduction

The maximization of agricultural production efficiencies has long been studied from different approaches, including the management of nutrients, diseases or soil (Huettel, Narayana, & Odening, 2011; Mulebeke, Kironchi, & Tenywa, 2015). The former has been a particular concern for economies that reply to their welfare and global transactions on agricultural activities (Welbaum, Sturz, Dong, & Nowak, 2004). Regarding tropical agriculture, coffee is the most extensively traded commodity in the world (Whelan & Newsom, 2014). In Costa Rica, coffee has been an integral part of its culture, politics, and economics for more than two centuries, and thereby it functions as a structural backbone to its rural economy (Díaz, 2015). Costa Rica's coffee production predominantly operates through small and medium-sized farms, with intensive practices concerning fertilizers, pesticides, higher-yield varieties and high-density planting (Courville, 2003). Following this line, the sector is regulated by the government via its semi-autonomous Coffee Institute (Icafe), which protects the quality and reputation of Costa Rica's coffee (Snider, Gutiérrez, Sibelet, & Faure, 2017). However, according to Díaz (2015) most small and medium-sized farms tend to focus on the production of regular-quality coffee instead of high-quality coffee, since the majority of Costa Rica's production comes from organizations that blend and sell different coffee quality varieties at a single price, usually based on the international stock market.

Such a predominant system opposes to the differentiated-receptacle system, which, under fixed contract conditions, offers an economic incentive for both regular- and high-quality production (Lewin, Giovannucci, & Varangis, 2004). The aforementioned, is gaining importance as coffee prices set at the New York Board of Trade have fallen amid a rise in the overproduction of coffee of less quality (e.g., robust variety) and its consequent blending with higher quality coffee (Jaffee, 2014). In order to identify key elements that influence the decision to invest more money in the production of higher-quality coffee versus regular-quality coffee, the present study analyzed the effect of the following variables in the decision-making process: a) income ambiguity associated with producing higher-quality coffee; b) equalization of the production costs between higher-quality coffee and regular-quality coffee; c) money loss probability due to investing in higher-quality coffee; and d) favorable versus unfavorable business climate ambiguity. The present investigation provides new evidence to Costa Rica's coffee production sector, which can contribute to increase high-quality coffee production, through the improvement of incentives that take into consideration current production and market constraints (Saenger, Qaim, Torero, & Viceisza, 2013).

2. Literature Review

Based on the above, we conducted a previous exploratory qualitative study with small and medium-sized Costa Rican coffee producers. After a series of in-depth interviews, we found potential biases that can influence the decision to invest in regular-quality coffee, instead of high-quality coffee. Below, we describe such biases and then explain how they relate to product decisions. Especially, since there is scarce empirical evidence concerning proper contract design in the small farm context (Bellemare, 2010; Hueth, Ligon, Wolf, & Wu, 1999; Saenger, Qaim, Torero, & Viceisza, 2013)

Status Quo and Loss Aversion: During decision-making, there are a number of elements that can condition an election of choice. According to Samuelson and Zeckhauser (1988), for instance a person can either decide to make no decision, make a new decision, or keep the original decision. However, according to the authors, when people are faced with new alternatives, they tend to persist on maintaining the old ones as a course of action, due to the influence of factors, such as the fear of losing status quo by taking a radical decision. Following this line, Samuelson and Zeckhauser (1988) explain the above according to three categories: rational decision-making, erroneous cognitive perceptions and psychological commitment. Regarding rational decision, the status quo bias can occur in two situations: 1) when the costs of making a change outweigh the benefits (i.e., transition costs); 2) when facing uncertainty. In this case, the option that is already known to be reliable is maintained. Concerning the erroneous cognitive perceptions, there are also two alternatives: 1) when these perceptions are linked to a feeling of loss or gain, 2) when new decisions are made based on the initial decisions. Finally, psychological commitment refers to the desire to firmly hold an initial decision. At a scientific level, it is argued that the status quo bias is based on the bias of aversion to loss, because the status quo functions as an initial reference point, from which the extra benefits on the current situation are considered (Eidelman & Crandall, 2012; Kahneman, Knetsch, & Thaler, 1991; Anderson C. J., 2003). Tversky and Kahneman (1991) point out the loss aversion as the perception that wins are lower than losses. People prefer to avoid the suffering of a loss than the benefits of a gain.

An aspect that is highlighted in the study by Tversky and Kahneman (1991) is that when a subject must define what they are willing to receive for delivering an asset that he/she evaluates the possibility of losing because of obtaining less than expected. This bias can be present when the farmer faces the decision to change the production from regular coffee to high-quality coffee. In this sense, we found that the interviewed coffee producers shared a concern over the possibility of losing money in the process amid a possible increase in their investment, since the production of higher quality coffee implies a bigger investment on input quality and wages. Because of this finding, we evaluated if the possibility of losing money in a scenario of coffee inversion influence the decision to produce regular coffee instead of high-quality coffee that might provide more gains. Following this line, we determined that such loss aversion bias could be reduced if the coffee cooperative provides a credit that incentivizes the production of higher quality coffee in its small and medium-sized associates. As sustained by Tversky and Kahneman (1991), people adapt to gains or losses depending on their reference points; hence, a monetary aid could provide a more promising expected future state (Van Raaij, 2016). In this way we assessed in a scenario of coffee inversion if a credit given to reduce the increasing cost in the production of high-quality coffee that is discounted from de earning of the coffee production, incentives the inversion in high-quality coffee. Hence, we expected that the credit would hinder the negative effect of loss aversion.

Ambiguity Bias: People tend to dislike the uncertainty more than the risk; therefore, they prefer not to bet when they do not know the probability of occurrence of an event (Pompian, 2006). This was discovered in a simple game carried out by Ellsberg (1961). In an urn, he placed 50 red balls and 50 black balls, while in another urn there were 100 balls that might be red or black, hence there was an unknown probability distribution for each player. Ellsberg found that under this environment the majority of the people prefer to bet when in the first urn, when they know the probability distribution. The results obtained by Ellsberg have been confirmed in different population and regions, for example with non-student subjects (Butler, Guiso, & Jappelli, 2014; Dimmock, Kouwenberg, Mitchell, & Peijnenburg, 2013; Dimmock, Kouwenberg, & Wakker, 2015), with non-Western subjects (Akay, Martinsson, Medhin, & Trautmann, 2012; Engle-Warnick, Escobal, & Laszlo, 2007), with children (Sutter, Kocher, Glätzle-Rützler, & Trautmann, 2013), monkeys (Hayden, Heilbronner, & Platt, 2010), etc.

The ambiguity aversion is influenced by the context in which the decision is taken. For example, Fox and Weber (2002), found four aspects of context that can make ambiguity more attractive or less attractive. These aspects are as follows a) people find an ambiguous situation more attractive when it shown after a situation less familiar and on the contrary finds an ambiguous situation less attractive when a more familiar ambiguous situation has been shown previously. b) An ambiguous family situation is more attractive if it is exposed later to a less familiar situation, with respect to whether it is exposed first. c) An ambiguous situation becomes less attractive when you are exposed to diagnostic information that people do not know how to use. 4) In situations of competition, people who feel more competent see ambiguity as more attractive, however when there is no competition, the opposite occurs. In the qualitative interviewee we identified a possible ambiguity aversion bias since the interviewees were not sure about the total amount of retribution they were going to get if they produced higher quality coffee, which implied missing information that could inhibit the decision to invest in a higher quality coffee.

The ambiguity aversion bias alludes to people's tendency to consider options as less attractive when the probability of gaining is ambiguous (Ellsberg, 1961), since people are usually more uncomfortable with ambiguity than with risk (Pompian, 2006). Lastly, we determined that stochastic conditions could also affect the quantity-quality trade-off, since under malign conditions the output quality tends to vary due to a variation in the access to optimal production inputs (Saenger, Qaim, Torero, & Viceisza, 2013). In this line, the data showed that Costa Rica's business climate represents a stochastic component that can affect the potential outcome of coffee production since for instance an elevated inflation rate or limited economic incentives can hinder the investment on high-quality production inputs and technology. Due to the above conditions, we evaluate through a coffee investment game if the ambiguity in the income of the highest quality coffee and the ambiguity in the probity of the business climate influence the decision to invest in higher quality coffee.

3. Method

Experimental Design: Participants assumed the role of a coffee producer who has 1500 ECUs available to invest in the production of the crop. They had to decide to invest that amount in either producing type "A" (higher- quality) or type "B" (regular-quality) coffee. Each type of coffee had a specific investment cost and a sales income that varied depending on favorable or unfavorable business climate. Both business climates were associated with a probability of occurrence. Each subject obtained a profit from the experiment that depended on the following formula: 1 ECU = 1500 - Investment cost + sales income. The exchange rate of ECUs to Costa Rican colons was of ₡1.9/ECU. The average payment was $ 7.9 per subject. The lowest earner received $ 3.3, and the highest earner received $11.9. The experiment had different treatments, using a mixed-design. Therefore, it had both a between-subjects and within-subjects design. The treatments between subjects derived from a 2*2 factorial design.

The factors were:

- The difference in costs between types of coffee. It had two levels: a) costs differentiated by type of coffee and b) same costs. This equalization in costs represented a temporary subsidy, in which the investment cost in coffee "A" was reduced. However, the reduced amount was deducted at the end from the sales income.
- Ambiguity in the sales' income of the highest quality product. It had two levels: a) with ambiguity and b) without ambiguity. Ambiguity occurred when a range of income was provided instead of a specific amount. With the combination of these two factors, the experiment was set with four treatments, as detailed in table 1.

Table 1: Distribution of the Treatment between Groups.

Factor Costs	Factor income ambiguity	
	With ambiguity	Without ambiguity
Differentiated	T0	T2
Equal (temporal subsidy)	T1	T3

Notes: T0stands for treatment group 1; T1 for treatment group 2; T2 for treatment group 3; T3 for treatment group 4.

The participants were randomly assigned to different treatments as follows: 31 in the treatment T1, 29 in the treatment T2, 31 in the treatment T3, and 32 in the treatment T4. Each subject had to face four rounds, which represented different scenarios. The scenarios also derived from combining two factors, of two levels each:

- Ambiguity in the probability of the business climate that will occur. It had two levels: a) without ambiguity; and b) with ambiguity. When there was no ambiguity, the probability of facing a favorable climate consisted of 0.60. Otherwise, it was not indicated and a random probability between 0 and 1 was randomly generated for payment purposes.
- The possibility of loss when investing in the higher quality product when the weather is unfavorable. It had two levels: a) with no possibility of loss; and b) with the possibility of loss. When there was a possibility of loss, the investment cost could be higher than the sales income, if an unfavorable climate occurred. The combination of these factors defined the four scenarios, as detailed in table 2. As those scenarios were within-subjects the order in which each player faced them was randomized.

Table 2: Scenarios in Each Treatment

Ambiguity in probability of business climate	Possibility of loss	
	With no possibility	With possibility
Without ambiguity	S1	S2
With ambiguity	S3	S4

Notes: S1 stands for scenario number one; S2 for scenario number two; S3 for scenario number three; S4 for scenario number four.

In the appendix, we present the investment cost and income values according to the business climate assumed by each treatment, between subjects for the four scenarios. Regardless of the treatment, in scenarios S1 and S2, the difference in the expected payment between coffee “A” and coffee “B” was of 200 ECUs, while in scenarios S3 and S4 the difference consisted of 100 ECUs, assuming a probability of 0.5. In this way, in any treatment, there was a higher income for coffee “A”. In terms of the data analysis approach, two logistic linear regression models were executed for each scenario to test the effects of ambiguity in sales and differential cost, using the selection of coffee “A” against coffee “B” as the dependent variable. In the first model, the variables ambiguity in sales for coffee “A” and differential cost were added. In the second model, the variables mentioned and the interaction between them were included. Finally, to test the effects of ambiguity in the probability of a specific business climate and the possibility of losing, two mixed logistic models with a random intercept were executed, using the selection of coffee “A” against coffee “B” as the dependent variable. These models were applied as individuals were nested in rounds (scenarios), which may have affected the independence of residuals.

Participants: The experiment was conducted during October 2017, at the Experimental Economics Lab (LEXTEC) from the Costa Rica Institute of Technology (TEC). The experiment was programmed with the computer-programming language Java. A total of one hundred twenty-three undergraduate students participated in the experiment, from which forty-one percent were women and fifty-nine percent were men, with an average age of 21.4 years (ages ranging from 18 to 32 years). The sample size was estimated according to the budget available. The students were distributed among seven sessions, lasting approximately 15 minutes. The recruitment was possible through LEXTEC’s own SR 1.0 system, which allowed the participants to register and consequently participate in the study. The researchers made sure

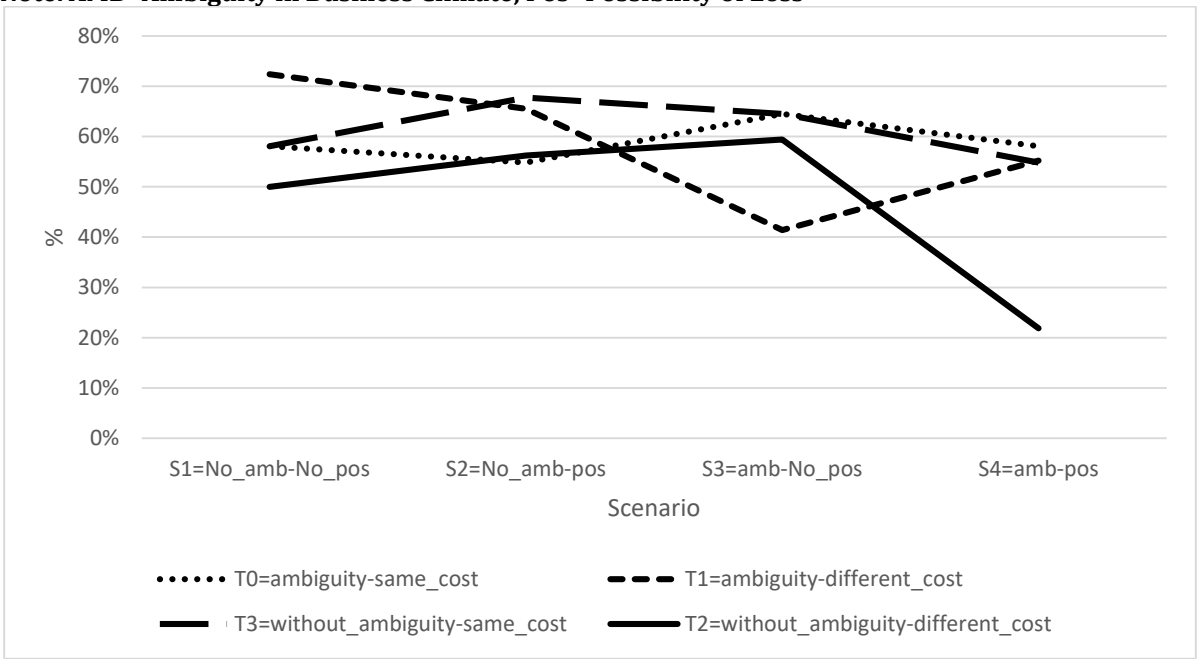
that all participants had never been on one of LEXTEC's previous experiments, and that each one read and signed an informed consent before the experimental session. We use students because of the difficulty to find farmers available in the harvest time and because the cost of participating in an experiment for a student is certainly lower (Fréchette, 2011) it is a common practice in laboratory experimental economics use students as subjects (Danielson & Holm, 2007). Besides, student and nonstudent subjects have shown similar behavior in the laboratory in different research (Charness & Villeval, 2009; Güth & Kirchkamp, 2012; Güth, Schmidt, & Sutter, 2007; Alm, Bloomquist, & McKee, 2015).

Analysis Method: Logistic regression models were generated to analyze the effect of income ambiguity, differentiated cost and the interaction between these variables on the decision of inversion in each scenario. Logistic regression is used because the decision of inversion is composed of two options, high-quality coffee (coffee A) or regular-quality (coffee B). Finally, to analyze the effects of the possibility of loss and ambiguity in the probability of facing a favorable climate, as well as the interaction between these variables, two logistic regression models were generated with random intercept. A multilevel model was used because all the experimental subjects faced the scenarios from combining these two variables. In this way, there was a correlation between the residuals of the model that must be considered, before estimating the standard errors of the coefficients. Ignoring this situation by estimating classic logistic regressions would lead to the analysis of biased standard errors and therefore to flawed conclusions about the significance level of the coefficients (Snijders & Bosker, 1999).

4. Results

Figure 1 contains the percent of subjects who chose coffee high-quality (coffee "A") by treatment and scenario. It shows that the percentage of each treatment varies through each scenario considerably. Moreover, there are scenarios where a single treatment is the most effective, while in others it is the least effective. For example, T1 has the highest percentage in S1, but the lowest in S3.

Figure 1: Percentage of Subjects Choosing Option a, by Treatment (T) According to Each Scenario (S). Note. AMB=Ambiguity in Business Climate, Pos=Possibility of Loss



Among the most relevant results, the highest investment in high-quality coffee (coffee A), approximately 72%, happened on S1 (probability of favorable climate known, and without a possibility of loss) and T1 (equal costs and ambiguity in income). The lowest investment approximately 22%, occurred on S4 (probability of known favorable climate, and a possibility of known loss) and T3 (same costs and without ambiguity in

income). These results suggest that in the most unfavorable conditions the equality of costs has an adverse effect if the income is known with certainty. However, under favorable conditions, the equality of costs generates the most positive effect, if there is ambiguity in income. The analysis of data by treatment provides a general perspective of the results obtained. However, it does not allow identifying variables or effects that significantly influence the choice of high-quality coffee (coffee A) over regular-quality (coffee B). Additionally, logistic regression models were generated, with the results detailed in Table 3 and Table 4. Table 3 shows the effect of income ambiguity and cost equality on the choice of option A.

For each scenario, two models were generated. In the first one, the simple effects were analyzed, while in the second, the interaction between income ambiguity and cost equality was examined. The results indicate that only in S4 – where the conditions were more unfavorable due to a possibility of loss in the case of coffee "A" and ambiguity in the probability of a favorable climate – the two variables exerted a significant influence on the choice of coffee "A". Specifically, in S4 there was an effect of interaction between the two variables.

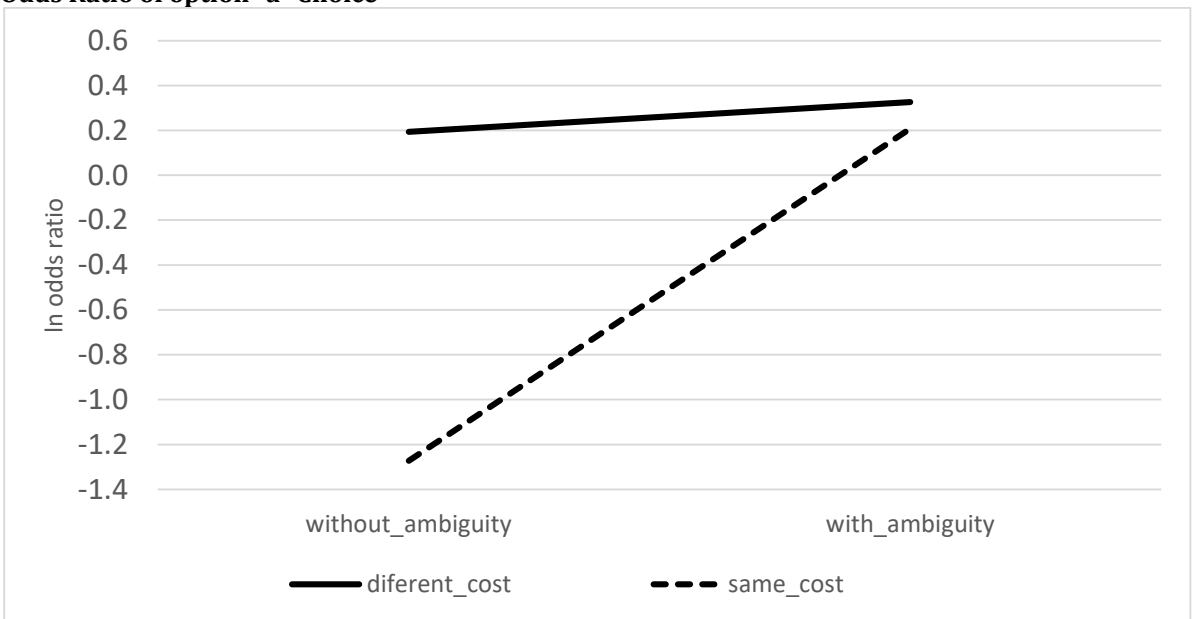
Table 3: Logistic Regression Coefficients of Ambiguity and Cost Effects on an Option Choice

Effects	Scenario 1		Scenario 2		Scenario 3		Scenario 4	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
(Intercept)	0.09	0.33	0.5	0.74*	0.79*	-0.6	-0.11	0.19
AMB	0.46	0.00	-0.08	-0.55	-0.37	0.00	0.76**	0.13
Cost	0.12	-0.33	-0.03	-0.49	-0.58	-0.22	-0.77**	-1.47**
AMB*cost		0.97		0.94		-0.73		1.35**

Notes: AMB= ambiguity in income (1=yes, 0= no); cost= same cost (1=yes, 0= no);
*p<0.10, **p<0.05

Figure 2 shows the effect of the interaction between ambiguity in income and difference in cost. In this sense, the data show that when there were differences in the cost there was a slight increase in the odds ratio of high-quality coffee (coffee A) when going from an unambiguous condition of income to one with ambiguity in income. On the other hand, when the costs were equal, there was a substantial increase in the odds ratio when going from an unambiguous condition to one with ambiguity. Even in the case of non-ambiguity, the equality of costs inhibited the choice of option A, while ambiguity propelled it positively.

Figure 2: Interactions between Ambiguity in Income and Difference in Cost on Natural Logarithm Odds Ratio of option "a" Choice



Finally, to analyze the effects of the possibility of loss and ambiguity in the probability of facing a favorable climate, as well as the interaction between these variables, two logistic regression models were generated with random intercept. A multilevel model was used because all the experimental subjects faced the scenarios from combining these two variables. In this way, there was a correlation between the residuals of the model that must be considered, before estimating the standard errors of the coefficients. Ignoring this situation by estimating classic logistic regressions would lead to the analysis of biased standard errors and therefore to flawed conclusions about the significance level of the coefficients (Snijders & Bosker, 1999).

Table 4: Logistic Regression Coefficients of Ambiguous Probability and Loss Possibility Effects on an Option Choice

Effects	Model 1	Model 2
Fixed		
(Intercept)	0.22	0.22
Position	0.23	0.21
Loss	-0.42*	-0.3
AMB pro	-0.62**	-0.5
loss* AMB pro		-0.18
Random		
(Intercept)	0.48	0.48

Notes: loss= loss possibility (1=yes, 0= no); AMB pro = Ambiguous probability (1=yes, 0= no); *p<0.10, **p<0.05.

Table 4 shows the coefficients of the two models. In the first model, two simple effects were evaluated, while in the second, the interaction between the two was analyzed. It should be noted that in both models, the position or game round in which each effect appears is added as a control variable. In model 2, it was observed that there is no interaction between both effects, but there is a significant influence of the simple effects on the choice of high-quality coffee (coffee A). Specifically, it was found that the possibility of loss reduces the logarithm of the odds ratio by -0.42, and the odds ratio in 34% (1-exponent of -0.42), while the ambiguity in the probability of facing a favorable climate reduces the logarithm of the odds ratio in -0.62 and the odds ratio to 46%.

Discussion: In order to identify key elements that influence the decision to invest more money in the production of higher-quality coffee versus regular-quality coffee, the present study analyzed the effect of the following variables in the decision-making process: a) income ambiguity associated to producing higher-quality coffee; b) equalization of the production costs between higher-quality coffee and regular-quality coffee; c) money loss probability due to investing in higher-quality coffee; and d) favorable versus unfavorable business climate ambiguity. In terms of the effect of income ambiguity and the equalization of costs on the decision to invest more on higher-quality coffee, the researchers launched the proposition that when there was a financing of the additional costs concerning the production of higher-quality coffee, there would be an increase in the investment on such production input (even though such financial aid had to be returned after profiting). The above, was based on the premise that people tend to adapt to gains or losses based on their reference points, hence a financial aid that equalizes the costs for both regular and higher-quality coffee production, would imply a new perspective on gain instead of loss (Tversky & Kahneman, 1991). Still, the results obtained show that the expected premise was not accomplished. In three of the four formulated scenarios, when combining the possibility of loss and ambiguity with the probability of facing a favorable business climate, cost equality did not reflect a significant difference on the decision to invest in higher-quality coffee.

Even more, in the scenario with the highest uncertainty (i.e., people were unaware of the possibility of facing a favorable business climate and of losing money by investing in higher-quality coffee), differentiated costs were preferred. Conversely, it was observed that when there was income ambiguity, the equalization of costs increased the decision to invest in higher-quality coffee. A possible explanation is that the equality of costs might operate as a defense mechanism that mitigates the uncertainty arising from the ambiguity of income, the possibility of loss, and the missing probability of occurrence of an unfavorable scenario. As a practical

implication, this result suggests that cost equalization mechanisms could be furtherly assessed as a mechanism to reduce the fear of investment in scenarios of greater uncertainty. Another result was that the ambiguity in the probability of occurrence of a favorable business climate hurts the investment in higher quality coffee, which is justified by the ambiguity aversion that has been demonstrated since the pioneering study of Ellsberg (1961). In this study, they found that people usually consider options as less attractive when the probability of gaining is ambiguous. Therefore, people tend to prefer options with risk than options where there is ambiguity (Eichberger, Oechssler, & Schnedler, 2015). Finally, there was also an adverse effect on investment in higher quality coffee due to the possibility of loss in the event of an unfavorable business climate. This effect is explained by the loss aversion bias, which has shown that subjects tend to give more weight to an eventual loss than to a possible gain (Tversky & Kahneman, 1991). The main limitation of the present research was the external validity, mainly since it was carried out with undergraduate university students, amid a limited financial budget and access to experimental subjects in the coffee sector. Having addressed the problem of a specific population the study should be replicated with a sample matching the corresponding population of Costa Rican coffee producers.

In which case the form of application must also be modified since it is not convenient to use computers because of the level of education of the population. The mixed design used, between and within subjects, facilitated the evaluation of several effects, which is an advantage considering that it is a first exploratory study. However, it does not allow the deepening into specific relationships for example, the interaction between the possibility of loss and the equality of costs, or ambiguity in the business climate and cost equality, among others. Also, future studies could be aimed at the producer's reaction to scenarios where there are different sources of ambiguity in the investment decision of both regular coffee and higher quality coffee. The contributions of studies such as those of Eliaz and Ortoleva (2015), Eichberger et al. (2015) can be valuable in this type of problems.

5. Conclusion and Recommendations

In the academic context, this study is the first to assess several variables associated with cognitive biases that can influence the decision to invest in higher quality products. New studies could deepen the analysis of new variables or biases that influence investment decisions. Additionally, efforts to take laboratory experiments to field experiments should be made to strengthen the external validity of these findings. As a practical implication, these results suggest that, as much as possible, some information should be given of the possibility of a favorable/unfavorable scenario or business climate to encourage investment in higher quality coffee. In addition, if the farmers know that they can lose money if an unfavorable climate occurs when investing in higher quality coffee, the investment will be reduced.

References

Akay, A., Martinsson, P., Medhin, H. & Trautmann, S. T. (2012). Attitudes toward uncertainty among the poor: an experiment in rural Ethiopia. *Theory and Decision,* 73(3), 453-464.

Alm, J., Bloomquist, K. M. & McKee, M. (2015). On the external validity of laboratory tax compliance experiments. *Economic Inquiry,* 53(2), 1170-1186.

Anderson, C. J. (2003). The psychology of doing nothing: forms of decision avoidance result from reason and emotion. *Psychological Bulletin,* 129(1), 139-167.

Bellemare, M. F. (2010). Agricultural extension and imperfect supervision in contract farming: evidence from Madagascar. *Agricultural Economics,* 41(6), 507-517.

Brenner, L., Rottenstreich, Y., Sood, S. & Bilgin, B. (2007). On the psychology of loss aversion: Possession, valence, and reversals of the endowment effect. *Journal of Consumer Research,* 34(3), 369-376.

Brink, A. G. & Rankin, F. W. (2013). The effects of risk preference and loss aversion on individual behavior under bonus, penalty, and combined contract frames. *Behavioral Research in Accounting,* 25(2), 145-170.

Butler, J. V., Guiso, L. & Jappelli, T. (2014). The role of intuition and reasoning in driving aversion to risk and ambiguity. *Theory and Decision,* 77(4), 455-484.

Charness, G. & Villeval, M. C. (2009). Cooperation and competition in intergenerational experiments in the field and the laboratory. *American Economic Review,* 99(3), 956-78.

Courville, S. (2003). Use of indicators to compare supply chains in the coffee industry. *Greener Management International,* 43, 93-105.

Danielson, A. J. & Holm, H. J. (2007). Do you trust your brethren?: Eliciting trust attitudes and trust behavior in a Tanzanian congregation. *Journal of Economic Behavior & Organization,* 62(2), 255-271.

Díaz, D. (2015). *Costa Rica: How quality pays for coffee farmers.* Zurich: Responsibility Investments AG.

Dimmock, S. G., Kouwenberg, R. & Wakker, P. P. (2015). Ambiguity attitudes in a large representative sample. *Management Science,* 62(5), 1363-1380.

Dimmock, S. G., Kouwenberg, R., Mitchell, O. S. & Peijnenburg, K. (2013). Ambiguity attitudes and economic behavior. National Bureau of Economic Research.

Eichberger, J., Oechssler, J. & Schnedler, W. (2015). How do subjects view multiple sources of ambiguity? *Theory and Decision,* 78(3), 339-356.

Eidelman, S. & Crandall, C. S. (2012). Bias in Favor of the Status Quo. *Social and Personality Psychology Compass,* 6(3), 270-281.

Eliaz, K. & Ortoleva, P. (2015). Multidimensional Ellsberg. *Management Science,* 62(8), 2179-2197.

Ellsberg, D. (1961). Risk, ambiguity, and the Savage axioms. *The quarterly journal of economics,* 75(4), 643-669.

Engle-Warnick, J., Escobal, J. & Laszlo, S. (2007). Ambiguity aversion as a predictor of technology choice: Experimental evidence from Peru. CIRANO - Scientific Publications 2007s-01.

Fox, C. R. & Weber, M. (2002). Ambiguity aversion, comparative ignorance, and decision context. *Organizational behavior and human decision processes,* 88(1), 476-498.

Fréchette, G. R. (2011). Laboratory Experiments: Professionals Versus Students. In G. R. Fréchette, & A. Schotter, Handbook of Experimental Economic Methodology (pp. 360-389).

Güth, W. & Kirchkamp, O. (2012). Will you accept without knowing what? The Yes-No game in the newspaper and in the lab. *Experimental Economics,* 15(4), 656-666.

Güth, W., Schmidt, C. & Sutter, M. (2007). Bargaining outside the lab–a newspaper experiment of a three-person ultimatum game. *The Economic Journal,* 117(518), 449-469.

Hayden, B., Heilbronner, S. & Platt, M. (2010). Ambiguity aversion in rhesus macaques. *Frontiers in neuroscience,* 4, 166.

Hueth, B., Ligon, E., Wolf, S. & Wu, S. (1999). Incentive instruments in fruit and vegetable contracts: input control, monitoring, measuring, and price risk. *Review of agricultural economics,* 21(2), 374-389.

Huettel, S., Narayana, R. & Odening, M. (2011). Measuring dynamic efficiency under uncertainty. Sieg-Working paper 10.

International Coffee Organization. (2018). Trades Statistics Tables. Retrieved from International Coffee Organization: http://www.ico.org/trade_statistics.asp

Jaffee, D. (2014). Brewing Justice: Fair trade coffee, sustainability, and survival. Oakland, California: University of California Press.

Kahneman, D., Knetsch, J. L. & Thaler, R. (1991). The endowment effect, loss aversion, and status-quo bias. Journal of Economic Perspectives, 193-206.

Lewin, B., Giovannucci, D. & Varangis, P. (2004). Coffee markets: new paradigms in global supply and demand. World Bank Agriculture and Rural Development Discussion Paper No. 3.

Mulebeke, R., Kironchi, G. & Tenywa, M. M. (2015). Exploiting Cropping Management to Improve Agricultural Water Use Efficiency in the Drylands of Eastern Uganda. *Sustainable Agriculture Research,* 4(2), 57-69.

Pompian, M. M. (2006). Behavioral Finance and Wealth Management: How to Build Optimal Portfolios That Account for Investor Biases. New Jersey: John Wiley & Sons, Inc.

Saenger, C., Qaim, M., Torero, M. & Viceisza, A. (2013). Contract farming and smallholder incentives to produce high quality: experimental evidence from the Vietnamese dairy sector. *Agricultural Economics,* 44(3), 297-308.

Samuelson, W. & Zeckhauser, R. (1988). Status quo bias in decision making. *Journal of Risk and Uncertainty,* 1(1), 7-59.

Snider, A., Gutiérrez, I., Sibelet, N. & Faure, G. (2017). Small farmer cooperatives and voluntary coffee certifications: Rewarding progressive farmers of engendering widespread change in Costa Rica? *Food Policy,* 69, 231-242.

Snijders, T. & Bosker, R. (1999). Multilevel Analysis: An introduction to basic and advanced multilevel modelling. London: SAGE Publications.

Sutter, M., Kocher, M. G., Glätzle-Rützler, D. & Trautmann, S. T. (2013). Impatience and uncertainty: Experimental decisions predict adolescents' field behavior. *American Economic Review,* 103(1), 510-31.

Tversky, A. & Kahneman, D. (1991). Loss aversion in riskless choice: A reference-dependent model. *The quarterly journal of economics,* 106(4), 1039-1061.

Van Raaij, W. F. (2016). Understanding Consumer Financial Behavior: Money Management in an Age of Financial Illiteracy. England: Palgrave Macmillan.

Welbaum, G. E., Sturz, A. V., Dong, Z. & Nowak, J. (2004). Managing Soil Microorganisms to Improve Productivity of Agro-Ecosystems. *Critical Reviews in Plant Sciences,* 23(2), 175-193.

Whelan, T. & Newsom, D. (2014). Sustainable coffee farming: Improving income and social conditions protecting water, soil and forests. New York: Rainforest Alliance. Retrieved from https://www.rainforest-alliance.org/sites/default/files/2016-08/sustainable-coffee-farming-report.pdf

Appendix

Game values for T0

Scenario	**Coffee**	**Cost**	**Favorable income**	**Unfavorable Income**	**Favorable climate probability**
1	A	1500	3550 y 3050	2050 y 1550	0.6
	B	1000	2350 y 1850	2050 y 1550	
2	A	1500	3050 y 2550	1550 y 1050	0.6
	B	1000	1850 y 1350	1550 y 1050	
3	A	1500	3550 y 3050	2050 y 1550	unknown
	B	1000	2350 y 1850	2050 y 1550	
4	A	1500	3050 y 2550	1550 y 1050	unknown
	B	1000	1850 y 1350	1550 y 1050	

Game values for T1

Scenario	Coffee	Cost	Favorable income	Unfavorable Income	Favorable climate probability
1	A	1000	3050 y 2550	1550 y 1050	0.6
	B	1000	2350 y 1850	2050 y 1550	
2	A	1000	2550 y 2050	1050 y 550	0.6
	B	1000	1850 y 1350	1550 y 1050	
3	A	1000	3050 y 2550	1550 y 1050	unknown
	B	1000	2350 y 1850	2050 y 1550	
4	A	1000	2550 y 2050	1050 y 550	unknown
	B	1000	1850 y 1350	1550 y 1050	

Game values for T2

Scenario	Coffee	Cost	Favorable income	Unfavorable Income	Favorable climate probability
1	A	1500	3300	1800	0.6
	B	1000	2100	1800	
2	A	1500	2800	1300	0.6
	B	1000	1600	1300	
3	A	1500	3300	1800	unknown
	B	1000	2100	1800	
4	A	1500	2800	1300	unknown
	B	1000	1600	1300	

Game values for T3

Scenario	Coffee	Cost	Favorable income	Unfavorable Income	Favorable climate probability
1	A	1000	2800	1300	0.6
	B	1000	2100	1800	
2	A	1000	2300	800	0.6
	B	1000	1600	1300	
3	A	1000	2800	1300	unknown
	B	1000	2100	1800	
4	A	1000	2300	800	unknown
	B	1000	1600	1300	

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On the Unemployment–Output Relation in South Africa: A Non-Linear ARDL Approach

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Abstract: The central aim of this paper is to establish the asymmetric effects of cyclical output on South Africa's unemployment rate. To achieve this objective, the non-linear autoregressive distributed lag model (NARDL) is applied on quarterly data spanning the periods 1994Q1–2017Q4. For every 10% economic contraction and expansion respectively according to the results, the response of the labour market is asymmetric in the long-run in that it loses more workers during contraction (10.3%) than it employs during recoveries (8%) supporting the labour market hysteresis. This is particularly true post the 2009 Global crisis suggesting that firms might have become more risk-averse to short-lived recoveries in recent years. The weak response of the labour market during expansions supports IMF's recent proposition that economic recovery alone may not be enough to address South Africa's unemployment problem.

Keywords: *Unemployment, Cyclical Output, Non-Linear ARDL, South Africa*

1. Introduction

South Africa has faced the problem of unemployment since the advent of democracy. According to Statistics South Africa (Stats SA), its quarterly official unemployment rate has averaged 24% since 1994 and is currently stagnant at its highest rate of 27.7% in the post-Apartheid era. Joblessness according to the expanded definition rose to 36.4% from 35.6% in 2017 (IMF). In addition, the unemployment rate for persons below the age of 25, using the expanded definition, is 67.4%. Such shockingly high rates of unemployment require close monitoring as they potentially create economic disorder such as organised crimes (Narayan and Smyth, 2004), social tensions and political instability. Given this background, the immediate question becomes: what is driving South Africa's unemployment rate? Although the role of structural factors, shortage of skill, inadequate private investment and low business confidence cannot be downplayed, two commonly held propositions at policy level are that recessionary episodes are massively destroying jobs while recoveries have not been robust enough to absorb labour. These propositions are grounded in the highly celebrated Okun's law which predicts an inverse relationship between cyclical output and the unemployment rate. In particular, the Okun's (1962) law stemmed from the observation that a 3 percentage point increase in the US' quarterly output growth was required to reduce the rate of unemployment by a margin of 1 percentage point. Despite this law having laid a foundation from which most empirical studies on unemployment-output have been based, it remains mulled by empirical debates on its validity with its criticisms ranging from a lack of a clear theoretical explanation to a lack of an appropriate functional form.

As a result, empirical model specifications on this subject have largely been influenced by statistical data considerations rather than the theory itself (Phiri, 2014). While empirical literature on this topic has grown rapidly, most of them (Lal et al., 2010., Alhawarin and Kreishan, 2010., Fatai & Bankole., 2013, Leshoro, 2013., Tombolo and Hasegawa., 2014., Pehlivanoğlu and Tanga., 2016) are based on approaches that assume symmetry and linearity in the unemployment and cyclical output relation. It has been argued that the symmetric and linearity assumption on the unemployment-cyclical output relationship is restrictive and could be empirically misleading (see Cuaresma, 2003; Holmes and Silverstone, 2006). Take for instance Stats SA figures which confirm that agriculture lost 44000 jobs in 2018 on the back of droughts and weak economic performance. It is not reasonable to expect that exactly 44000 jobs will be created in agriculture if the economy recovers. In the words of Marinkov and Geldenhuys (2007), asymmetry in this case would imply that the rate of unemployment is either more (less) responsive to positive (negative) output changes and vice versa. There are several explanations as to why the labour market's response to output changes may be asymmetric and non-linear. First, there is a general tendency by firms to fire more workers during economic recessions than they employ when the economy recovers. Second as argued by Shin et al. (2014) and

Blanchard and Summers (1986), this may be explained by the labour market hysteresis in which cyclical output shocks may have a permanent effect on structural unemployment.

Blanchard and Summers (1986) in particular argue that there is no systematic tendency for the labour market to revert back to its initial state even after the economy has fully recovered due to the asymmetric adjustment costs of labour. Several estimation techniques have been proposed thus far to accommodate asymmetries in macroeconomic relations and they include the threshold error correction model (TECM), smooth transition regression (STRECM) and the Markov-switching ECM among others. In this paper however, we apply the recent non-linear autoregressive-distributed-lag-model (NARDLM) proposed by Shin et al. (2014). The advantage of this approach over the others is that it incorporates the asymmetries both in the short and long-run irrespective of the underlying data generating process. In addition to that, when evaluating the speed and path of short-run adjustment, the NARDLM generates dynamic multipliers which do not require forecasting of any of the cointegrating variables and this feature makes it less susceptible to the common uncertainty surrounding the conventional impulse response analyses (Shin et al., 2014). Given these advantages, this paper contributes by applying the NARDLM approach in the context of South Africa. The rest of the paper proceeds as follows, section 2.0 provides literature review, section 3.0 outlines materials and methods 4.0 presents the empirical results while 5.0 provides a summary and policy implications.

2. Literature Review

Analysing the unemployment-output relationship has a long history in macroeconomics. Intuitively, this relationship can be broadly viewed as the connection between the labour market and the goods market and has mainly been examined within the auspices of the Okun's law. What the Okun's law posits is that changes in cyclical output are inversely related to changes in the unemployment rate. This relation is intuitive in that when the economy contracts, firms fire workers to cut production costs and when the economy recovers through demand management policies such as expansionary monetary and fiscal policies, firms begin to employ which later reduces the rate of actual unemployment. Such a mechanism happens especially when the economy is closing the gap between its actual output and its potential output otherwise at full potential output, the goods and the labour market will be at equilibrium such that the labour market will only be characterised by the natural rate of unemployment which may not be influenced by demand management policies. The Okun's law is central in the formulation of aggregate supply-side models by combining it with the Phillips-curve. It also provides a benchmark when measuring the cost of unemployment such as the effectiveness of a disinflationary policy (Jardin and Gaétan, 2011). Notwithstanding its relevance and simplicity in understanding the labour-goods market connection, an important issue drawn from the literature relates to its lack of a clear and robust specification (Phiri, 2014). Knotek (2007) for instance argue that the Okun's law is a statistical and not a structural macroeconomic relationship hence it does not have a unique functional form that has been predominantly preferred to the other (Weber, 1995). As a result, studies testing the validity of the Okun's law have done so using different specifications guided by data properties and statistical tests on the appropriate functional form.

Empirically, there is a common understanding today that the relationship between the unemployment rate and output changes is asymmetric and non-linear owing to a number of theoretical reasons. First as argued by the labour market hysteresis, firms tend to fire more workers during a recession and employ less during economic expansion. The fear of having a short-lived expansion coupled with the need to recover lost profit during a recession explains why firms may be reluctant to employ more workers when the economy expands. The second reason may be restrictive interventions by the state and labour market institutions. For example, firms may be unable to fire workers in the short-run due to labour laws that may not allow the firing of workers at short notice. The insiders-outsiders theoretical model has also been used to explain why the unemployment rate may not return to its initial level when the economy recovers. According to this theoretical model, negative shocks which increase the unemployment rate increases the number of unemployed workers (outsiders) and reduces the number of insiders (currently employed workers). Insiders have a bargaining power hence they can set the equilibrium-wages which ensure and secures their own and not the outsiders'. This phenomenon explains the persistence of unemployment even when the recession ends (Jardin and Gaétan, 2011). Empirically, Lee (2000) concludes that output significantly affects employment but the relationship is unstable over time. For South Africa, Geidenhuys and Marinkov (2007)

confirm validity of Okun's law and that the relation is asymmetric. Similarly, Villaverde and Maza (2009) conduct a test for the output-employment relation in the case of Spain between 1990 and 2004 and find the Okun's holding but argue that Okun's estimates vary from region to region due to productivity differences. Moosa (1999) estimates Okun's coefficients for the US economy based on quarterly data from 1947 to 1992.

Coefficients from Harvey's structural time series technique are found to be -0.16 and -0.38 for the short-run and the long-run respectively. Also confirmed is that that the coefficients from the dynamic model are closer to the Okun's coefficients. In the case of Pakistan, Javed (2005) examine the association between the unemployment rate and output growth based on annual time series data for the time period 1981 – 2005. Results from the error correction mechanism confirm an inverse and long-run association between the rate of unemployment and output growth. Fatai and Bankole (2013) tested the validity of Okun's law in the case of Nigeria, relying on annual time series data between 1980 and 2008. Results from the fully modified ordinary least squares method reveal a positive coefficient which implies a rejection of the Okun's law. In the Swedish economy, Arshad and Erixon (2010) applies the error correction model and find results supportive of the Okun's law. Contrary to that in the case of Jordan, Kreishan (2011) do not find the Okun's law holding suggesting that economic output cannot solve the unemployment problem. For Driouche (2013), the link between growth and unemployment is found to be statistically insignificant, in the long-run for Algeria. The majority of studies above rely on estimation approaches that assume symmetry and linearity which could be empirically misleading. The asymmetric relation between the labour market and output changes has long been validated in earlier studies such as Bodman (1998), Acemoglu and Scott (1994), Lee (2000), Cuaresma (2003) and more recently Beaton (2010) and Phiri (2014). Jardin and Gaétan (2011) apply a semi-parametric non-linear approach and find evidence of a non-linear Okun's law among European countries supporting the view that unemployment responds more to economic contraction than economic expansion and they attribute this non-linear behaviour to the risk version phenomena of firms.

Cevik, Dibooglu and Barişik (2013) rely on the Markov Regime Switching Model and find that Markov Regime Switching Model has more predominant results relative to linear models. For South Africa, Phiri (2014) applies a Threshold Adjustment Model and confirm an asymmetric relation between unemployment and output changes. Marinkov and Geldenhuys (2007), between 1970 and 2005, in South Africa find evidence of asymmetries. Other studies such as Leshoro (2013), Tombolo and Hasegawa (2014), Pehlivanoğlu and Tanga (2016) have assumed symmetry and linearity when examining the validity of Okun's law. Leshoro (2013) does not find causation from growth to unemployment while Pehlivanoğlu and Tanga (2016) do not find the Okun's law valid in South Africa. Banda and Choga (2016) apply the Johansen cointegration test and confirm a positive impact of GDP on unemployment. The available evidence clearly suggests that the debate on unemployment and output remains on-going which necessitates further empirical evidence on the matter. Our paper contributes to this discussion by ascertaining the asymmetrical effects of cyclical output on the rate of unemployment for South Africa. It also applies a dataset that stretches up to the 4th quarter of 2017 which makes it likely to capture recent output dynamics.

3. Methodology

Our analysis is based on quarterly data spanning the periods 1994Q1 – 2017Q4. Selection of this sampling period is influenced by data availability on the unemployment rate. Despite the data availability issue, this sampling period starts from the first quarter of the year in which South Africa attained independence hence the analysis can be interpreted as evidence of the output-unemployment relationship in the democratic era. By definition, unemployment is measured by the official unemployment rate while output is seasonally adjusted GDP per capita at constant prices (2010=100). Data are sourced from South African Reserve Bank (SARB).

Model Specification: The empirical model applied in this paper is theoretically based on the Okun's law following most studies in literature. Okun (1962) considered several specifications which fall under two broad categories namely the difference approach and the gap approach. The former regresses differenced quarterly unemployment rate on differenced output while the later estimates the cyclical unemployment – cyclical output relation. In addition to the cyclical unemployment – cyclical output relation, Okun (1962) also

considered a version that relates the level of the unemployment to the cyclical output. In this paper, we consider this last specification and it takes the following form.

$$U_t = \vartheta_0 + \vartheta_1(Y_t^A - Y_t^*) + \varepsilon_t \quad (1)$$
$$t = 1994Q1, \dots, 2017Q4$$

where subscript t denotes time in quarters, U signals the level of official unemployment rate, Y_t^A represents actual output and Y_t^* denotes the time-varying path of potential output so that $Y_t^A - Y_t^*$ measures output gap (Y_t^C). Put differently, the gap between observed output and potential output measures the level of cyclical output. Parameter $\vartheta_0$is the intercept while $\vartheta_1$is the slope estimate of interest which governs how unemployment rate links with cyclical output. The random term, represented by ε_t, and is expected to be white-noise. The challenge with defining the output gap i.e. $Y_t^A - Y_t^*$ is that Y_t^* is unobserved and hence has to be estimated. This creates uncertainty as the choice of an estimation technique may significantly influence the final results. In this paper, the Hodrick-Prescott filter method proposed by Hodrick and Prescott (1997) is applied[6]. This technique essentially categorises a time series into a two elements – cyclical component (c_t) and the trend (T_t). Assuming therefore that the time series is generated by the process $J_t = T_t + c_t + \mu_t$, then a positive of the multiplier λ exists so that T solves the following minimization problem:

$$\min_{\tau}\left(\sum_{t=1}^{T}(J_t - T_t)^2 + \lambda\sum_{t=2}^{T-1}[(T_{t+1} - T_t) - (T_t - T_{t-1})]^2\right)$$

The first term i.e. squared deviations, $(J_t - T_t)^2$ penalizes short-run cyclical fluctuations in the time series J while the second multiple term penalizes the time series' deviations in the growth of J's trend (Hodrick and Prescott, 1997). Parameter λ is assumed to be 1600 (Hodrick and Prescott, 1997) since we are dealing with quarterly data. Having generated the cyclical output as represented in our model by Y^C, we proceed to re-specify equation (1) into a dynamic model and apply the ARDL bounds testing procedure. This procedure is selected for several reasons. First, relative to the Johansen multivariate co-integration test, the ARDL provides super-consistent estimates particularly in small samples (Narayan and Narayan, 2005). The alternative Engle-Granger (1987) approach is exposed to small sample bias as argued by Mah (2000). Second, the ARDL bounds testing procedure can be applied even if the underlying covariates have an I (0) and 1(1) mixture of integration (Pesaran and Shin, 2001). Third, it deals with endogeneity problems and handles well hypothesis testing on long-run coefficients unlike the Engle and Granger (1987). Accordingly, the bound testing procedure addresses endogeneity problems when the optimum lags are included, and it simultaneously allows one to correct for serial correlation in residuals. Fourth, unlike the Engle–Granger approach, the ARDL bounds testing procedure possess a desirable statistical property that it does not necessarily forces the short-run dynamics of the model into the residuals (Pattichis, 1999). Fifth, both the long-run and short-run model parameters can be simultaneously estimated. The conventional linear ARDL with our two variables in an unrestricted error correction representation form looks as follows:

$$\Delta U_t = \delta_0 + \delta_1 U_{t-1} + \delta_2 {Y^C}_{t-1} + \sum_{j=1}^{p-1}\gamma_j \Delta U_{t-j} + \sum_{j=0}^{q-1}\emptyset_j \Delta {Y^C}_{t-j} + \varepsilon_t \quad (2)$$

&

$${Y^C}_t = Y_t^A - Y_t^*$$

This specification assumes linearity and symmetry in the way cyclical output affects unemployment which is too restrictive given the potential non-linarites in the way these two variables relate. Jardin and Gaétan (2011) for instance argue that the assumption of linearity and symmetry when modelling the unemployment-output relationship produces misleading forecasts. As a result, we improve specification (2) by re-specifying it in the form of a non-linear (NA0RDL) suggested by Shin et al. (2014). The NARDL starts by decomposing cyclical output into positive and negative changes so that the effect of economic expansion and economic contraction on unemployment can be established respectively.

$${Y^C}_t = {Y^C}_0 + Y_t^{C+} + Y_t^{C-} \quad (3)$$

Where

[1] Robustness checks indicated that the choice of alternative methods did not significantly change the central result of the paper.

$$Y_t^{C+} = \sum_{i-1}^{t} \Delta Y_t^{C+} = \sum_{i=1}^{t} \max(\Delta Y_i, 0) \quad (4)$$

&

$$Y_t^{C-} = \sum_{i-1}^{t} \Delta Y_t^{C-} = \sum_{i=1}^{t} \min(\Delta Y_i, 0) \quad (5)$$

Where

$$\Delta Y_t^C = Y_t^C - Y_{t\,t-1}^C$$

The long-run association between U_t and Y_t^C is thus given by:

$$U_t = B_0 + B^+ Y_t^{C+} + B^- Y_t^{C-} + \varepsilon_t \quad (6)$$

where symbols B^+ and B^- represent the long-run coefficients to be estimated for positive and negative changes in Y_t^C respectively. From a theoretical viewpoint, the labour market hysteresis postulates that the rate of unemployment rate reacts more strongly to economic recessions than to booms hence we expect $|B^+| < |B^-|$. Following Shin et al. (2014), we can transform equation (2) into an unrestricted or conditional error correction form of a non-linear ARDL model:

$$\Delta Ut = \vartheta 0 + \delta Ut-1 + \theta + Yt-1C+ + \theta - Yt-1C- \Sigma \gamma j \Delta Ut-i + \Sigma(\varphi i + \Delta Yt-1C+ + \varphi i - \Delta Yt-1C-)\, q-1i=0\, p-1i=1 + \varepsilon t \quad (7)$$

The positive (+) and negative (-) signs in equation (7) are essentially positive and negative partial sum processes and symbol p represents the lag order of the differenced unemployment rate while q is for the distributed exogenous variable. The NARDL model firstly estimates equation (7) by the conventional OLS approach and tests for an asymmetric cointegrating relationship between Y_t^C and U_t. The null hypothesis of no long-run relationship i.e. $\delta = \theta^+ = \theta^- = 0$ can be tested using an F test. Thirdly, long-run and short-run asymmetry is tested with the former being represented by the test for $\theta^+ = \theta^-$ via a standard Wald test. Short-run strong form symmetries requires:

$$\varphi_j^+ = \varphi_j^-$$
$$\text{for all } j = 1, \dots, q = 1$$

while weak short-run symmetry requires:

$$\sum_{j=0}^{q-1} \varphi_j^+ = \sum_{j=0}^{q-1} \varphi_j^-$$

The last step of the NARDL procedure derives the positive and negative multipliers with Y_j^{C+} and Y_j^{C-} computed as:

$$m_h^+ = \sum_{j}^{h} \partial U_{t+j} \Big/ \partial\, Y_T^{C+}$$

&

$$m_h^- = \sum_{j}^{h} \partial U_{t+j} \Big/ \partial\, Y_T^{C-}$$

where $h = 0, 1, 2, ..$ for Y_t^{C+} and Y_t^{C-} respectively. Noteworthy is that $h \to \infty$, $m_h^+ \to \beta^+$ and $m_h^- \to \beta^-$. These dynamic multipliers add useful information towards the analyses of the asymmetric adjustment path taken by the model following a short-run disequilibrium with initial positive or negative partial cyclical output. The NARDL model requires none of the variables to be I (2). Therefore, we first perform stationary tests to make sure that none of the variables violates this condition. We use the break-point unit root test which is essentially a modified Augmented Dickey Fuller test that accommodates structural breaks considering that standard tests for stationary such as the ADF test, Elliot, Rothenberg and Stock (ERS) and Phillips-Perron (PP) are generally biased towards a false null hypothesis if the time series has a structural break (Bai and Perron, 1998).

4. Results and Discussion

Table 1 reports Breakpoint unit root tests results. With and without the trend in the specification, the rate of unemployment in South Africa is generated by a non-stationary process but is integrated of order one. On the other hand, the cyclical output series is integrated of order zero.

Table 1: Break Point Unit Root Test

Variable	Innovation Break-Type		Additive Break-Type		Order of Integration
	Intercept	Intercept & trend	Intercept	Intercept & trend	
U	-3.733	-4.091	-3.685	-4.134	I(1)
ΔU	-11.304***	-11.246***	-11.425***	-11.391***	
Y^C	-4.578**	-4.737*	-4.997***	-4.988	I(0)
ΔY^C	----------	---------	--------	----------	

Note: *, **, *** denotes p<0.1, p<0.05 & p<0.01 respectively. Corresponding probability values represent Vogelsang (1993) asymptotic one-sided p-values.

The results in table 1 provide justification for the non-linear ARDL approach since none of the model variables is I (2). The non-linear ARDL bounds testing depends on four factors (i) number of regressors (k), (ii) assumption about the intercept and trend in the cointegrating equation, (iii) number of observations (n) and (iv) whether variables are I(0) and (I(1). Here, n=96, k=1 since positive and negative cyclical output changes are constructed from one variable, assumption III, intercept and no trend and an I(1) and I(0) variable. The non-linear ARDL bounds testing procedure is performed after the estimation of equation (7). Based on the Schwarz Information Criterion (SIC), a non-linear ARDL (1, 0, 0) is selected (see figure 3 in the appendix). Bounds testing results are therefore presented in table 2. The F-statistic of 6.89 is above 5.85 implying that we cannot reject the null hypothesis. This means unemployment, cyclical dips and booms move together in the long-run.

Table 2: Non-Linear ARDL Bounds Testing Procedure

Dependent Variable	Function						F-statistic
U_t	$U_t = f(Y_t^{C+}, Y_t^{C-})$						6.89
	1%		5%		10%		
Critical Values	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	
	6.34	7.52	4.87	5.85	4.19	5.06	

Note: Asymptotic critical values are based on Case III – unrestricted intercept and no trend

Having established the presence of a long-run relationship, we present long-run estimates in table 3. Both in terms of size and statistical significance, the results show that unemployment responds more to economic dips (represented by negative cyclical output changes) than economic booms (represented by positive cyclical output changes). The coefficient of positive output changes is negative and significant at 5% level. The interpretation of this coefficient is that the unemployment rate falls by 0.803 percentage points in the long-run if cyclical output increases by one unit. On the other hand, the coefficient associated with negative output changes is larger, negative and significant at 1% level. The interpretation of this coefficient is that a reduction of cyclical output by one unit raises the unemployment rate by 1.03 percentage points in the long-run. This result clearly indicates that South Africa's labour market is more responsive to economic recessions than economic expansions. Judging on the size of the coefficients, we can infer some asymmetries in that more workers are fired when the economy dips but less of them are employed when the economy recovers. This result is consistent with that observed in Jardin and Gaétan (2011) using a different methodology. Their findings strongly support that the effect of output changes on the unemployment rate is larger when the economy is contracting that when the economy is recovering. The asymmetries are theoretically consistent with the labour market hysteresis which says that the labour market responds more strongly to economic dips than economic booms. A formal test is conducted to check whether the effect is truly asymmetric. Results from the lower part of table 1 show that the null hypothesis of long-run symmetry is rejected at 1% level which validates the hypothesis that the labour market's response to changes in cyclical output is indeed

asymmetric. Given this result, imposing the symmetry and linear restriction on the unemployment-output relationship could produce misleading policy inference.

Table 3: Long-Run Coefficients (Total Sample)

Variable		Coefficient	Std. Error	t-Statistic	Prob.
Y_t^{C+}	θ^+	-0.802754	0.371905	-2.158492	0.0336
Y_t^{C-}	θ^-	-1.034448	0.331479	-3.120708	0.0024
C		0.232097	0.020939	11.084539	0.0000
Long-run Symmetry		$\theta^+ = \theta^-$	F stat =7.19		0.0087

We proceed to decompose the sample into two sub-samples in order to check whether the relationship has changed over time. The first sub-sample comprises the period 1994Q1 – 2008Q4 while the second sub-sample comprises the 2009Q1 – 2017Q4. This decomposition is interesting in that it enables us to establish the output-unemployment relationship pre and post the 2009 Global Economic Recession. Results in table 4 reveal some interesting observations. First, we observe that the relationship between the two has changed in recent years. In particular, the results show that in the build-up to the 2009 Global Economic Recession, economic expansions did not significantly reduce South Africa's unemployment rate while economic contractions significantly increased the rate of unemployment. The former result echoes the sentiment that for the best part of the period since 1994, South Africa has experienced "jobless growth." This means that whenever the economy grew during this period, it did so without creating enough jobs. This is in line with the IMF's recent proposition that economic recoveries alone may be necessary but not sufficient to address the unemployment problem in South Africa. Another observation is that post the Global Economic Recession; the negative effect of economic recessions on job creation has become stronger (-1.307) relative to the pre-crisis period (-0.91). At the same time, the effect of economic recoveries turns out to be statistically significant but relatively lower in terms of size after the crisis (0.639) as compared to the period before the crisis. These two observations i.e. the increase in the number of people losing jobs during recession versus the decrease in the number of jobs created during recoveries, could reflect the fact that firms have become more risk averse on account of short-lived economic booms post the crisis period.

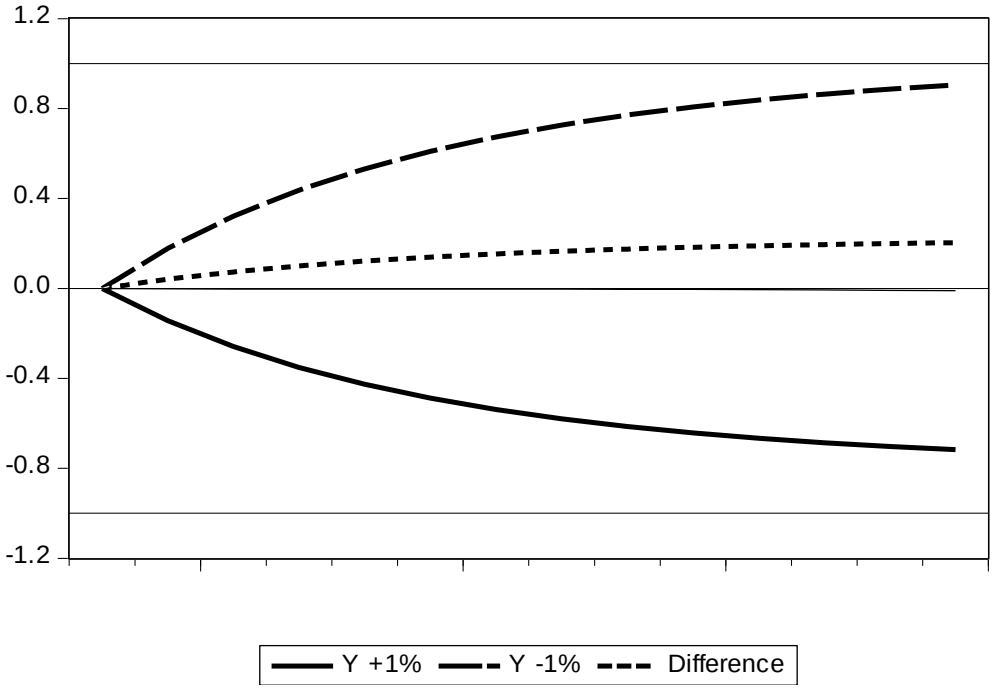
Table 4: Long-Run Coefficients Pre and Post the 2009 Global Crisis

Variable		1994Q1-2008Q4 Coefficient	Prob	2009Q1-2017Q4 Coefficient	Prob
Y_t^{C+}	θ^+	-0.735883	0.1409	-0.639494	0.0093
Y_t^{C-}	θ^-	-0.919242	0.0202	-1.307275	0.0001
C		0.234689	0.0000	0.160664	0.0000
Long-run Symmetry		$\theta^+ = \theta^-$	0.0814		0.0533

The change in the unemployment-output relationship reported in table 4 is also confirmed in Owyang and Sekhposyan (2012) in the context of US. The model's short-run dynamics are presented in table 5 for the total sample. Judging by the sizes of the coefficients, the labour market still appears to respond more to the recession (0.14) than to recoveries (0.18) albeit slightly. Both the negative and positive changes have expected negative signs suggesting that increases in cyclical output reduce the unemployment rate while reductions in a cyclical output increase the unemployment rate. A formal test however does not find enough evidence reject the null hypothesis of symmetry as the probability value, 0.2117, is above 10%. This confirms that South Africa's labour market response to output changes is symmetrical and asymmetrical in the short-run and long-run respectively. The symmetrical short-run response is perhaps not surprising given the prevalence of restrictive labour unions in South Africa. The symmetrical labour market response to changes in cyclical output in the short-run confirmed here for South Africa has also been confirmed in other countries where there is the presence of restrictive labour institutions.

Shin et al. (2014) for instance confirmed a similar result in the case of Japan where restrictive labour institutions are highly prevalent. For South Africa, the interventions of labour unions in the labour market may also account for the slow short-run speed of adjustment, 0.177, which shows that only 17.7% of short-run disequilibrium is corrected each quarter. Noteworthy is that the significant connection between output changes and the rate of unemployment confirmed in table 5 contradicts with finds reported in Pehlivanoğlu and Tanga (2016) for South Africa. The difference could be emanating from the fact that they assumed linearity and symmetry. Shin et al. (2014) argue that studies based on the restrictive symmetric and linearity assumption can be suspects given the empirically asymmetrical response of the labour market. The short-run symmetrical relationship can be inferred through dynamic multipliers in figure 1 where the labour market is equally slow to respond to both negative and positive changes in cyclical output. The response gradually increases with time and becomes stronger in the long-run for negative output shocks relative to positive shocks. This corroborates the results reported in table 3 and 5. This kind of response is quite similar and to the response reported in Shin et al. (2014) in the context of the Japanese labour market which bears many features in common with South Africa.

Figure 1: Dynamic Multipliers for South Africa (Total Sample)



To check for model adequacy, the baseline model was subjected to a battery of diagnostic tests and the results presented in the appendix section clearly show that none of the relevant diagnostics was violated. In particular, the model does not suffer from autocorrelation, heteroscedasticity, model misspecification, residual non-normality and parameter instability. Overall, our main result is consistent with previous literature that confirms non-linearities in the unemployment-output relationship (Cuaresma, 2003, Cevik, Dibooglu and Barişik, 2013, Phiri, 2014, Marinkov and Geldenhuys, 2007). Despite the use of different functional forms, the results demonstrate that the labour market responds in the same way to economic recessions and economic contractions in the short-run while the long-run effect is asymmetric.

Table 5: Short-Run Error Correction Model (Total Sample)

Variable		Coefficient	Std. Error	t-Statistic	Prob.	
ΔY_t^{C+}	φ^+	-0.142270	0.043691	-3.256267	0.0016	
ΔY_t^{C-}	φ^-	-0.183333	0.054400	-3.370062	0.0011	
COINT EQ(-1)		-0.177228	0.061993	-2.858832	0.0053	
Short-run Symmetry		$\varphi^+ = \varphi^-$				0.2117

5. Conclusion

The relationship between cyclical output and the rate of unemployment has been examined for South Africa using the recently developed Non-Linear ARDL to capture non-linearities and asymmetries. The main result is that the labour market's response is symmetric in the short-run and is characterised by a slow speed of adjustment. Secondly, we find that the response of the labour market is asymmetric in the long-run and that it responds more strongly to economic dips than to economic booms. The evidence has suggested that in the long run, the labour market loses more workers than it employs during recoveries and this result is found to be particularly true for the post-2009 Global Economic Recession period. The weak response of the labour market to economic expansion implies that economic booms may not be sufficient in attenuating the unemployment problem in South Africa. Put differently, short-run macroeconomic stabilization tools such as the fiscal and monetary policies may not suffice in reducing the high unemployment rate prevailing in South Africa.

Declaration of Interest Statement: We declare no conflict of interest.

References

Acemoglu, D. & Scott, A. (1994). Asymmetries in the cyclical behaviour of UK labour markets. The Economic Journal, 1303-1323.

Alhawarin, I. M. & Kreishan, F. M. (2010). An Analysis of Long-Term Unemployment (LTU) in Jordan's Labor Market. *European journal of social sciences*, 15(1), 56-65.

Arshad, Z. & Erixon, L. (2010). The Validity of Okun's Law in the Swedish Economy. Stockholm: Department of Economics Stockholm University.

Banda, H. & Choga, I. (2016). The impact of economic growth on unemployment in South Africa: 1994-2012.

Beaton, K. (2010). Time variation in Okun's law: A Canada and US comparison (No. 2010, 7). Bank of Canada Working Paper.

Blanchard, O. J. & Summers, L. H. (1986). Hysteresis and the European unemployment problem. *NBER macroeconomics annual*, 1, 15-78.

Bodman, P. M. (1998). Asymmetry and duration dependence in Australian GDP and unemployment. *Economic Record*, 74(227), 399-411.

Cevik, E. I., Dibooglu, S. & Barişik, S. (2013). Asymmetry in the unemployment–output relationship over the business cycle: evidence from transition economies. *Comparative Economic Studies*, 55(4), 557-581.

Cuaresma, J. C. (2003). Okun's law revisited. *Oxford Bulletin of Economics and Statistics*, 65(4), 439-451.

Driouche, D. (2013). Economic Growth and Unemployment in Algeria: An Econometric Study, *Al-Najah University Journal for Research,* 27, 6, 1301-1318.

Engle, R. F. & Granger, C. W. (1987). Co-integration and error correction: representation, estimation, and testing. Econometrica: Journal of the Econometric Society, 251-276.

Fatai, B. O. & Bankole, A. (2013). Empirical test of Okun's Law in Nigeria. *International Journal of Economic Practices and Theories*, 3(3), 227-231.

Geidenhuys, J. & Marinkov, M. (2007). Robust estimates of Okun's coefficient for South Africa, Working Paper.

Hodrick, R. J. & Prescott, E. C. (1997). Post-war US business cycles: an empirical investigation. Journal of Money, credit, and Banking, 1-16.

Holmes, M. J. & Silverstone, B. (2006). Okun's law, asymmetries and jobless recoveries in the United States: A Markov-switching approach. *Economics Letters*, 92(2), 293-299.

Huang, S. M., Wei, C. W., Yu, P. T. & Kuo, T. Y. (2005). An empirical investigation on learners' acceptance of e-learning for public unemployment vocational training. *International journal of innovation and learning*, 3(2), 174-185.

Jardin, M. & Gaétan, S. (2011). How Okun's law is non-linear in Europe: a semi-parametric approach. Rennes, University of Rennes.

Javed, U. (2005). Okun's law: empirical evidence from Pakistan 1981-2005, master thesis, Södertörn University, School of Social Sciences, Sweden.

Knotek, II, E. S. (2007). How useful is Okun's law. *Economic Review-Federal Reserve Bank of Kansas City*, 92(4), 73.

Kreishan, F. M. (2011). Economic growth and unemployment: An empirical analysis. *Journal of Social Sciences*, 7(2), 228-231.

Lal, I., Muhammad, S., Jalil, M. A. & Hussain, A. (2010). Test of Okun's law in some Asian countries co-integration approach.

Lee, J. (2000). The robustness of Okun's law: Evidence from OECD countries. *Journal of Macroeconomics*, 22(2), 331-356.

Leshoro, T. L. (2013). Does Economic Growth Lead Employment in South Africa? *Journal of Economics and Behavioral Studies*, 5(6), 336.

Mah, J. S. (2000). An empirical examination of the disaggregated import demand of Korea—the case of information technology products. *Journal of Asian Economics,* 11(2), 237-244.

Marinkov, M. & Geldenhuys, J. P. (2007). Cyclical unemployment and cyclical output: An estimation of Okun's coefficient for South Africa. *South African Journal of Economics*, 75(3), 373-390.

Moosa, I. A. (1999). Cyclical output, cyclical unemployment, and Okun's coefficient a structural time series approach. *International Review of Economics & Finance*, 8(3), 293-304.

Narayan, S. & Narayan, P. K. (2005). An empirical analysis of Fiji's import demand function. *Journal of Economic Studies*, 32(2), 158-168.

Narayan, P. K. & Smyth, R. (2004). Crime rates, male youth unemployment and real income in Australia: evidence from Granger causality tests. *Applied Economics*, 36(18), 2079-2095.

Okun, A. M. (1962). Potential GNP: Its Measurement and Significance. In Proceedings of the Business and Economics Statistics Section. Alexandria, VA: American Statistical Association, 98-10

Owyang, M. T. & Sekhposyan, T. (2012). Okun's law over the business cycle: was the great recession all that different? Federal Reserve Bank of St. Louis Review, 94(September/October 2012).

Pattichis, C. A. (1999). Price and income elasticities of disaggregated import demand: results from UECMs and an application. *Applied Economics*, 31(9), 1061-1071.

Pehlivanoğlu, F. & Tanga, M. (2016). An Analysis of the Validity of Okun's Law: Case of Turkey and BRICS. *Uluslararası Ekonomik Araştırmalar Dergisi*, 2(3).

Bai, J. & Perron, P. (1998). Estimating and testing linear models with multiple structural changes. Econometrica, 47-78.

Pesaran, M. H., Shin, Y. & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics*, 16(3), 289-326.

Phiri, A. (2014). Nonlinear co-integration between unemployment and economic growth in South Africa. *Managing Global Transitions,* 12(4), 303.

Shin, Y., Yu, B. & Greenwood-Nimmo, M. (2014). Modelling asymmetric cointegration and dynamic multipliers in a nonlinear ARDL framework. In Festschrift in Honor of Peter Schmidt (pp. 281-314). Springer, New York, NY.

Tombolo, G. A. & Hasegawa, M. M. (2014). Okun's law: evidence for the Brazilian economy.

Villaverde, J. & Maza, A. (2009). The robustness of Okun's law in Spain, 1980–2004: Regional evidence. *Journal of Policy Modelling*, 31(2), 289-297.

Weber, C. E. (1995). Cyclical output, cyclical unemployment, and Okun's coefficient: A new approach. *Journal of applied econometrics*, 10(4), 433-445.

Appendices

Diagnostic Tests

Ramsey RESET Test
Equation: NARDL01
Specification: UNEM UNEM(-1) Y_NEG Y_POS C
Omitted Variables, Squares of fitted values

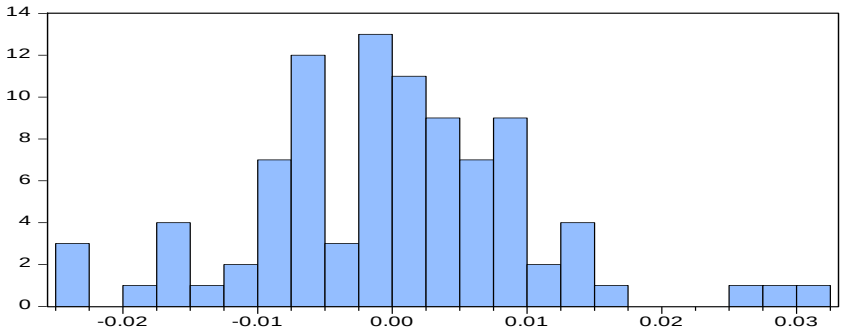
	Value	DF	Probability
t-statistic	0.998145	89	0.3209
F-statistic	0.996293	(1, 89)	0.3209

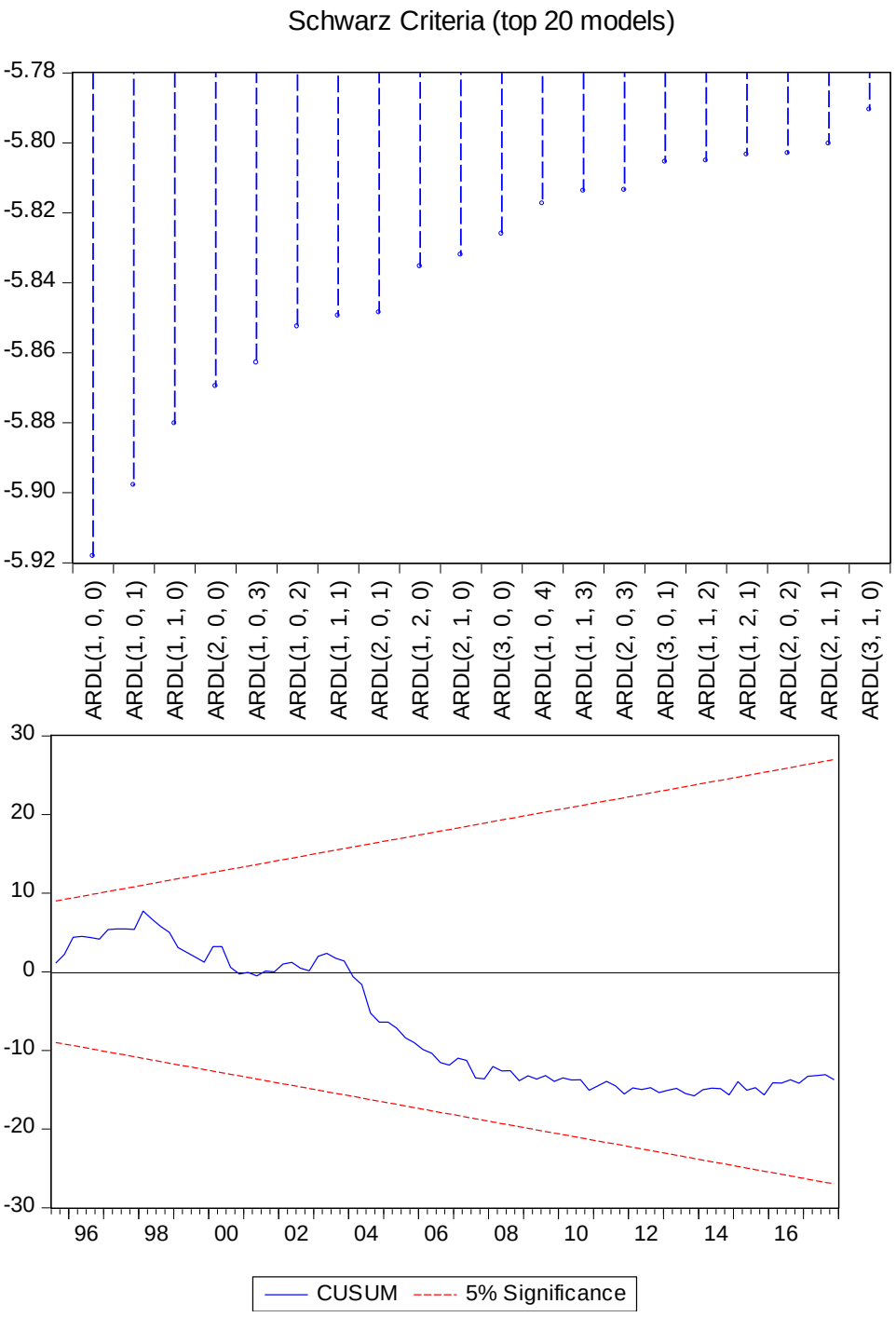
Breusch-Godfrey-Serial-Correlation LM Test

F-statistic	0.211900	Prob-F(2,88)	0.8095
Obs,*R-squared	0.450525	Prob-Chi-Square(2)	0.7983

Heteroskedasticity Test; Breusch-Pagan-Godfrey

F-statistic	0.124651	Prob-F(4,89)	0.9732
Obs,*R-squared	0.523680	Prob-Chi-Square(4)	0.9712
Scaled-explained SS	0.950968	Prob-Chi-Square(4)	0.9171




Schwarz Criteria (top 20 models)
-5.78
-5.80
-5.82
-5.84
-5.86
-5.88
-5.90
-5.92
ARDL(1, 0, 0)
ARDL(1, 0, 1)
ARDL(1, 1, 0)
ARDL(2, 0, 0)
ARDL(1, 0, 3)
ARDL(1, 0, 2)
ARDL(1, 1, 1)
ARDL(2, 0, 1)
ARDL(1, 2, 0)
ARDL(2, 1, 0)
ARDL(3, 0, 0)
ARDL(1, 0, 4)
ARDL(1, 1, 3)
ARDL(2, 0, 3)
ARDL(3, 0, 1)
ARDL(1, 1, 2)
ARDL(1, 2, 1)
ARDL(2, 0, 2)
ARDL(2, 1, 1)
ARDL(3, 1, 0)
30
20
10
0
-10
-20
-30
96
98
00
02
04
06
08
10
12
14
16
CUSUM
5% Significance

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Investigating the Cost Management Practices of Indigenous Firms in the Ghanaian Construction Industry

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Abstract: Cost management is key to project implementation and an important tool for maximizing profit nonetheless it has been a major challenge for most indigenous construction firms in Ghana. The study seeks to investigate the important factors influencing cost management practices among indigenous construction firms in Ghana and to ascertain whether there is a significant difference between the responses of the categories of the firm (construction and consultancy firms) in Ghana. A total of 82 questionnaires were retrieved from 100 administered questionnaires to professionals with indigenous construction firms representing 82% response rate. Data gathered were analyzed descriptively using Mean Item Score (MIS) via SPSS version 24 to identify the most important factors. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's test of sphericity conducted showed a KMO score of 0.894. Bartlett's test of sphericity also revealed a significance level of 0.000 ($p<0.05$). The ANOVA suggest that there is no significant difference between the responses between the categories of firms. Indigenous firms are encouraged therefore to consider managing disagreement between project team members by ensuring constant project implementation meetings and to understand ground conditions of projects by visiting proposed sites prior to estimation and tendering. Finally, communication and expenditure control measures should be enhanced and introduced respectively. The implication of this study while contributing to the discourse on cost management practices of indigenous constructions firms in Ghana, also outlines the major (highly ranked) factors influencing indigenous firms in the management of project cost, before, during and after project implementation.

Keywords: *Cost management, Ghana, Indigenous firms, Materials management, Project implementation,*

1. Introduction

Cost is an essential component in the life cycle of projects which is used to define the success or failure of a project (Ali and Min 2017). Cost management (CM) therefore is a major component of project management and an important indicator to keep firms in the business. CM is necessary to ensure that the anticipated project is designed and developed within the projected cost to ensure value for money (Keith, 2008). John and Michael (1994) inform that CM requires careful identification of the activities that generate cost expenditures and ensuring such activities are carefully undertaken as planned. Similarly, Siebers et al., (2008) also inform that a major inefficiency among entities in the construction industry is due to its poor cost management practices. The menace of poor cost performance has been of concern globally (Zarina et al. 2014; Chen et al. 2016; Suk et al. 2016).

Nevertheless, the situation in developing countries is very alarming (Olatunji 2008) with Ghana not an exception, hence, the need for construction firms to adhere to cost management strategies is necessary to sustain profitability of all investments made as well as ensuring firm survival and growth (Ballard, 2010). Cost management includes tender estimating, cost planning and cost control. According to Tam, (2009) firms may lose its financial control and suffer cost overrun in a poor CM environment. Whiles the construction industry is dominated by indigenous firms, Pekuri et al., (2011) opines that indigenous firms are the most hit with the challenge of poor performance in managing project cost in the construction industry. The study therefore seeks to explore the important factors influencing cost management practices among indigenous construction firms in Ghana and to ascertain whether there is a significant difference between the responses of the categories of the firm (construction and consultancy firms) in Ghana.

2. Cost Management Practices of Indigenous Firms in the Ghanaian Construction Industry

Globally, the construction industry plays a significant role in contributing to the socio-economic development of every nation (Durdyev and Ismail, 2012). Durdyev and Ismail further describe the industry as powerful

and remarkable in contributing to economic development through output generation, employment creation, income generation and re-distribution (Durdyev and Ismail, 2012). Similarly, economic development has been informed as a function of the performance of the construction industry (Oke et al., 2016). The importance of the Construction Industry in Ghana cannot be overemphasized since it remains a major driver of the Ghanaian economy. A study conducted by Hillebrandt (2000) revealed that the construction industry employs up to 10% of the working population and responsible for about 50% of the gross fixed capital formation. As early as the year 2013, the Ghana statistical service estimated the construction industry's contribution to the country's gross domestic product at ten-point five percent (10.5%) (GSS, 2013) In spite of the gloomy impact of the construction industry however, cost planning and management is less practiced resulting in unsustainable cost overruns in the Ghanaian construction industry (Ernest et al., 2017) with indigenous contractors the worse culprits (Pekuri et al., 2011). The ensuing paragraph discusses the evolution of indigenous construction firm formation and the need for effective cost management practice by indigenous construction firms in Ghana.

The evolution of the indigenous contracting in Ghana dates as far back in the 1940's (Laryea and Mensah, 2010) and up to date have seen the proliferation of numerous indigenous construction firms emerged. Over the years the indigenous Ghanaian construction industry has attracted several expatriate construction firms who are competing for an opportunity in the industry. The indigenous firms have however been displaced due to the competitive advantage the expatriate firms exhibit; thus, advanced in construction technology and practice, project management practices and high level of manpower expertise. Contrary, many indigenous construction firms in Ghana today are confronted with the lack of capacity to carry out major projects because of low capitalization and poor organizational structures (Laryea and Mensah, 2010). This has seen the current construction market in Ghana being dominated by foreign contractors. The situation could be attributed to the harsh contracting environment faced by indigenous firms, and the late payment for work done (Laryea, 2010). Their technical capacity to manage projects explains the lapses accounted for in their cost management practices. Tengan et al., (2014) also blame indigenous firms for their poor planning and control techniques which have a burden on the cost implication of their operations.

The above-mentioned challenges hinder the core of cost management practices of indigenous firms. To overcome these cost challenges and be seen to grow in the Ghanaian construction industry, Laryea and Mensah, (2010) recommend that indigenous Ghanaian firms should establish strong organizational structures and pursue mergers and joint ventures to boost their financial, technical and managerial capacity. Similarly, Ghanaian indigenous firms ought to formulate the right strategic plans, develop innovative business strategies, and develop their professionalism to compete and remain relevant in their own environment. Project cost management, according to Godey, (2012) strategically focuses on the optimization of productivity and centres on the customer and on profitability. Hilton et al. (2001) inform that Project Cost Management is a "philosophy", an "attitude" and a "set of techniques" that guides the creation of more value at reasonable low cost. The need to have accurate cost and other vital information for decision making is met by effective project cost management. The accuracy of cost and the creation of more value at a lesser cost is a key factor in our world where only the fittest survive (Hilton et al., 2001). Proactive management of cost and behaviors includes the assessment, planning, controlling and evaluation of costs along the supply chain (Seuring, 2002).

To this, the significance of cost performance in the project cannot be overemphasized. It does not only highlight the profitability of a firm but also the productivity of the firm at any stage of the construction process (Meeampol and Ogunlan, 2006). CM is a thin000king of perfection by ensuring that the organization makes the right decisions to create more value at less cost to customers. Costs do not just happen but heavily depend on employing a set reliable technique (Hilton et al. 2001). CM generally takes one of the different forms, i.e., cost containment, cost prevention and cost lessening. A cost containment approach focuses on limiting or preventing future increases in fixed or unit variable costs. Cost prevention seeks elimination of activities generating costs that are not justifiable. Cost lessening lowers current fixed and variable costs associated with the crucial activity (John and Michael, 1994). Considering the nature of indigenous construction firms (small in size; low business capital; low human resource capacity etc.) and the poor project environment in which they operate (high competition; less technology adoption etc.) the need to manage cost in their operations is critical and a must do for indigenous firms to stay in the highly competitive construction industry.

The significance of Project Cost Management: The construction industry is heavily reliant on huge capital expenditure and must be managed well against both internal and external uncertainties. From construction management's point of view, the success of a project is measured based on the extent to which the project meets conforms to the agreed completion time, budget and quality. Whiles the importance placed on these success criterions may vary, the cost is the prime concern of the most client (Frimpong, 2000). Hence, Kim (2002) suggests that CM systems should include a set of processes such as cost estimating, cost control and cost projection to ensure that construction projects are completed within the approved budget. To ensure prudent CM the need to understand and analyse the cost structure of projects and its flow is imperative. Also, the reduction of inter-functional complexity, providing the tools that are necessary for cost management, involving stakeholders in cost related decisions, increase effectiveness and continuous improve on cost management. Finally measuring the decision made against the strategic plan of the project 000cannot be overstated. According to Horngreen et al., (1990) the strategic role of companies in staying relevant and competitive in the industry is significantly influenced by the effective implementation of CM by management. Andrea and Carlos, (2006) further argued in their study that a good project fails under poor management, and will usually face serious difficulties. Thus, poor project management structure have a detrimental effect on the construction process owing to the poor planning and coordination, ineffective communication among the project team, and late detection of defects in design. CM system should therefore be robust to support to protect the business from the harmful effects of uncertainty.

Factors Influencing Effective Cost Management Practices: Whiles it is imperative for indigenous construction firms in Ghana to manage cost to ensure firm growth, some practical challenges hinder their ability to effectively manage cost during the implementation of projects. A major canker that needs to be addressed properly is the cash flow of *the* project. John and Michael (1994) inform that strict adherence to relevant payment clauses and financial discipline by parties to the contract will keep project cash flow within budget. Similarly, poor budgetary and resource management, construction methods and ineffective communication will affect the effective CM practices of indigenous firms (Meeampol and Ogunlan, 2006). Ikediashi et al. (2014) also identified poor risk management, budget overruns, ineffective communication management, schedule delays and poor estimation practices as the top five significant cost failure factors. Furthermore, Memon et al. (2013) and Rahman et al. (2013) both identified money (finance) and contractors' site management related factors as critical factors affecting the cost performance in the Malaysian Construction Industry. Similarly, Al-Juwairah (1997) concluded that the most severe factors affecting construction costs from the contractors' perspective are: the unstable cost of construction materials; incorrect planning; contract management; wrong estimation methods; and lack of experience of the contractor in the management of project cost. This is further buttressed by Peeters and Madauss (2008), who also pointed out that the biggest contributing factor to poor cost management practices is the inaccuracy of project estimation due to poor project information available for the purpose of establishing initial project cost. A summary of the factors influencing effective CM practice is presented in table 1.

Table 1: Factors Influencing Effective Cost Management Practices

Factors	Sources
Lack of adherence to relevant payment clauses and poor financial discipline	John and Michael (1994)
Poor budgetary and resource management, construction methods and ineffective communication	Meeampol and Ogunlan, 2006
Poor risk management, ineffective communication management, schedule delays and poor estimation practices	Ikediashi et al. (2014)
Contractors' cash flow and site management challenges	Memon et al. (2013); Rahman et al. (2013)
Fluctuating cost of construction materials; incorrect planning; poor contract management; wrong estimation methods; and lack of experience of the contractor in the management of project cost	Al-Juwairah (1997)
Inaccuracy of project estimation due to poor project information available	Peeters and Madauss (2008)

3. Research Methodology

A descriptive research design was adopted. The population for the study comprised professionals working with indigenous construction and consultancy firms in the Ghanaian construction industry. They included

quantity surveyors, architects, engineers and clerk of works. These professionals were selected for the study owing to their association with the cost management activities of indigenous firms in project management. A hundred questionnaires were randomly administered to the target population. A total of eighty-two (82) questionnaires were received from forty-one (41) indigenous construction firms and forty-one (41) consultancy firms representing an eighty-two percent response rate. The Statistical Package for Social Science (SPSS) version 25 was utilized in analyzing the data collected. The Mean Item Score (MIS) of the factors influencing the cost management practices of indigenous firms in Ghana were analyzed to identify the most important factors. From Table 2, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's test of sphericity was conducted which recorded a KMO score of 0.894. Bartlett's test of sphericity also revealed a significance level of 0.000 ($p<0.05$). This suggests sample adequacy for the study. The analysis of variance (ANOVA) was further conducted to compare the views of respondents on the important factors on firms' characteristic.

Respondents were therefore asked to rate the level of importance of each significant variable on a 5-point Likert scale, where *1 = Not at all important to 5 = very important*. The assumption for the determination of an important factor for the current study is based on the minimum mean score of 3.50 (Tengan et al., 2018). Sinesilassie et al (2018) also identified critical challenging factors of cost performance in the Ethiopian public construction projects as scope clarity, project manager's competence, conflict among project participants and project manager's ignorance and lack of knowledge. These finding are corroborating the conclusion reached by Iyer and Jha (2005) who identified conflict among project participants; ignorance and lack of knowledge; poor project-specific attributes; the non-existence of cooperation; hostile socio-economic and climatic conditions; reluctance to make timely decisions; aggressive competition during tendering; and short bid preparation times as the predominant factors that influence cost performance.

Table 2: KMO and Bartlett's Test of Sphericity

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**.894**
Bartlett's Test of Sphericity	Approx. Chi-Square	418.506
	DF	15
	Sig.	.000

4. Findings

The analysis was done in two in phases. Mean Item Score (MIS) test was used in the first phase to establish the most important factors influencing cost management practices of indigenous firms in Ghana. The second phase of the analysis used the Analysis of Variance (ANOVA) to determine whether a significant difference in the responses to the categories of firms is being studied. The two phases of the analysis and subsequent discussion have been presented below.

Demographic Data: The descriptive statistics provided a brief of the data collection and analyses of the questionnaire survey. The demographic characteristics of the respondents with respect to firm description, number of years of working experience, profession and academic qualification. Table 3 below presents an overview of the demographic characteristics of the respondents. Engineers and clerk of works (CoW) constituted 35.4% (n=29) and 23.2% (n=19) respectively. Finally, a greater majority of respondents who possessed bachelor degrees were made up of 40 representing a percentage aggregate of 48.8%. This was followed by HND/ Diploma holders (n=21; 25.6%), masters (n=18; 22%) and PhD (n=3; 3.7%).

Table 3: Demographic Characteristics 0f Respondents

Characteristics	**Features**	**Frequency**	**Percentage**
A1: Firm Description	Contractor	41	50.0
	Consultant	41	50.0
	N	**82**	**100.0**
A2: Number of Respondents' Working Years' Experience	Less than 1 year	29	35.4%
	1-5years	33	40.2%
	5-10years	17	20.7%

	10years and above	3	3.7%
	N	**82**	**100.0**
A3: Respondents' Profession	Quantity Surveyor	12	14.6%
	Architect	22	26.8%
	Engineer	29	35.4%
	Clerk of Works	19	23.2%
	N	**82**	**100.0**
A4: Academic Qualification	HND/National Diploma	21	25.6%
	Bachelor	40	48.8%
	Masters	18	22.0%
	PhD	3	3.7%
	N	**82**	**100.0**

From Table 3, forty-one (41) respondents representating fifty percent (50.0%) constituted construction firms whiles consultatnt firms also consituted the remaining fifty percent (50.0%). Respondents years of esperience in the construction industry was categorised as less than 1 year (n=29; 35.4%), between 1 and 5 years (n=33; 40,2%), between 5 and 10 years (n=17; 20.7%) and above 10 years (n=3; 3.7%). Also, 14.6% (n=12) of respondents were quantity surveyors whiles 26.8% (n=22) constituted architedts.

Significant Factors Influencing Cost Management Practice among Indigenous Construction Firms: Table 4 shows the significant factors that influence cost management practice among indigenous firms in Ghana. Eighty-two (82) indigenous construction firm professionals rated the influence of twelve (12) factors on a 5-point Likert scale *ranging from 1 = Not at all important to 5 = very important, and* mean score (MS) ranging between 1.00 and 5.00. The study recorded a minimum and maximum mean score of 2.82 and 4.48 respectively indicating almost all twelve factors were rated important factors influencing cost management practices of indigenous firms. An assumed mean score greater than or equal to 3.5 was deemed a "very important" factor for each response (Tengan et al., 2018). From table 4, "Conflict between project parties/stakeholders" (client, contractors and consultant) was ranked the most significant factor influencing cost management among indigenous firms in Ghana recording mean score (MS=4.48) and standard deviation score (SD=0.741). This was followed by both "unexpected ground condition" and "poor communication among parties" with MS of 3.90. Poor project management (MS=3.78; SD=1.031), Lack of expenditure control (MS=3.73; SD=1.066), and Project variations/Design changes (MS=3.72; SD=1.069) were ranked fourth, fifth and sixth respectively. Factors such as unexpected weather conditions, government policies, fluctuation in prices of raw materials, shortage of materials, the high cost of transporting materials and fraudulent practices and theft all recorded mean score less than 3.5 (MS<3.5) suggesting they do not influence the cost management practices of indigenous firms in Ghana based.

Table 4: Significant Factors Influencing Cost Management Practice of Indigenous Construction Firms

Variables	N	MS	SD	Std. Error Mean	Rank
CMPF1: Conflict between project parties / stakeholders	82	4.48	.741	.082	1st
CMPF2: Unexpected ground conditions	82	3.90	.964	.106	2nd
CMPF3: Poor communication between project team	82	3.90	1.026	.113	3rd
CMPF4: Lack of expenditure control	82	3.73	1.066	.118	5th
CMPF5: Project variations/Design changes	82	3.72	1.069	.118	6th
CMPF6: Poor project management	82	3.78	1.031	.114	4th
CMPF7: Unexpected weather conditions	82	3.38	1.050	.116	7th
CMPF8: Government Policies	82	3.21	1.284	.142	8th
CMPF9: Fluctuation in prices of raw materials	82	3.16	1.083	.120	9th
CMPF10: Shortages of material	82	3.11	1.054	.116	10th
CMPF11: Fraudulent practices and theft	82	2.82	1.020	.113	12th
CMPF12: High cost of transportation of materials	82	3.00	1.030	.114	11th

Discussion: Sinesilassie et al (2018) and Lyer and Jha (2005) both in separate studies identified conflict among project participants as a major factor affecting cost performance of construction projects, corroborating the findings of the current study as a conflict between project stakeholders was ranked first among twelve other factors. Material price increases (fluctuation) and High cost of transportation emerged significant factors influencing cost management practice of indigenous construction firms. Considering the road construction industry, the key materials needed especially for surfacing works are not readily available especially in the Northern parts of Ghana. It is a common phenomenon to see a construction firm who has deposited money for quarry products, having to wait for very long periods before deliveries are made. Under such circumstances, contractors are compelled to wait for a very long period for the supply of the said materials or alternatively resort to buying the same materials paid for from another source. This normally causes lockup capitals of construction firms who are already running on low capital inflows. This has the tendency of delaying the project and pushing up project cost through payment of idle labour and increased price of materials. This is similar to the findings of Olawale, and Sun (2010) who suggested a lack of materials and equipment, among other factors, presented difficulties to contractors' efforts to control project costs.

The above findings are also supported by the findings of Ikediashi et al. (2014) who concluded that poor communication management and poor estimation practices were critical cost failure factors. The interpretation of this results could mean that some contractors are not willing to employ the needed skilled manpower to manage their projects for them. Similarly, no market survey or materials price updates are done for the purpose of achieving realistic rates for a tender. Contractors however, result in intuition and old rates without incorporating adjustments for price increases. In addition, no efforts are made to visit the site to ascertain the pertaining site conditions before estimation of the bill items. Hence if the contractors are awarded such projects, the likelihood to encounter unexpected ground conditions and fluctuation in the cost of raw materials among others are very high. Effective communication and reporting on projects increase the efficiency of site operations and decrease any dispute, leading to cost and time savings. For instance, considering a typical road project with a lot of interdependent and sequential tasks, increase reliance on information exchanges during construction will go a long way to solve a lot of communication-related issues which can reduce drastically the menace of cost management related issues.

Analysis of Variance of Factors Influencing Cost Management Practice of Indigenous Construction Firms: The results of the analysis of variance of the factors influencing cost management practice of indigenous firms are presented in Table 5. It is hypothesized that, there is no significant difference between responses by the categories of the firm (contractors and consultant) on the important factors influencing cost management practices of the indigenous firm. After conducting the ANOVA test, a significance level of 0.883 was found for the factor "conflict between project parties/stakeholders". Similarly, significant scores of 0.495, 0.669, 0.148, 0.609 and 1.00 were recorded for factors unexpected ground conditions, Poor communication between project team, Lack of expenditure control, Project variations/Design changes, and Poor project management respectively. This presents a significant p-value greater 0.05 ($p>0.05$). These findings indicate that for all important factors influencing cost management practice of indigenous firms, the responses of respondents are the same; hence the study failed to reject the null hypothesis. Thus, the cost management factors are significant in influencing cost management practices of indigenous firms in the Ghanaian construction industry

Table 5: Analysis of Variance of Factors Influencing Cost Management Practice of Indigenous Firms

		Sum Squares	of DF	Mean Square	F	Sig.
CMPF1: Conflict between project parties / stakeholders	Between Groups	.012	1	.012	.022	.883
	Within Groups	44.439	80	.555		
	Total	44.451	81			
CMPF2: Unexpected ground conditions	Between Groups	.439	1	.439	.470	.495
	Within Groups	74.780	80	.935		
	Total	75.220	81			
CMPF3: Poor communication between project team	Between Groups	.195	1	.195	.184	.669
	Within Groups	85.024	80	1.063		
	Total	85.220	81			

CMPF4: Lack of expenditure control	Between Groups	2.390	1	2.390	2.132	.148
	Within Groups	89.707	80	1.121		
	Total	92.098	81			
CMPF5: Project variations/Design changes	Between Groups	.305	1	.305	.264	.609
	Within Groups	92.244	80	1.153		
	Total	92.549	81			
CMPF6: Poor project management	Between Groups	.000	1	.000	.000	1.000
	Within Groups	86.049	80	1.076		
	Total	86.049	81			

5. Conclusion and Recommendations

To conclude, the study aimed at investigating the significant factors that influence cost management practice among indigenous firms in Ghana. The significant factors identified include conflict among project parties/stakeholders, unexpected ground conditions, poor communication between the project team, lack of expenditure control, project variations/design changes and poor project management. All the above six (6) factors had mean scores ranging between 3.72 to 4.48 which are well above the agreed mean score of 3.5 (MS≥3.5) (Tengan et al., 2018). Likewise, the Analysis of Variance (ANOVA) conducted revealed a significance p-value greater 0.05. These findings indicate that all six factors are significant in influencing cost management practice of indigenous firms in Ghana. The study recommends therefore that indigenous firms manage team disagreement specifically by involving and collaborating with all project team members at all level of the project implementation. Also, project team communication needs to be enhanced as well as minimize wasteful expenditure on the project. Estimation for tendering should proceed with a visit to the project site to ensure that all necessary details such as ground conditions are considered and included in the cost build up. Qualified and experienced estimators and quantity surveyors who are the cost managers of projects with in-depth knowledge in cost management should be engaged by indigenous firms to improve the cost management practice. Finally, variation and design change management should be documented and administered well to record omissions and additions in the cost administration process.

References

Ali Mohammed A. & Min Yi Chew. (2017). Simulation techniques for cost management and performance in construction projects in Malaysia, *Built Environment Project and Asset Management*, 7(5), 534-545.

Al-Juwairah, Y. (1997). Factors affecting construction cost in Saudi Arabia (master's thesis). King Fahd University of Petroleum and Mineral Dhahran Saudi Arabia.

Andrea, P. & Carlos T. (2006). A model for integrating cost management and production planning and control in construction, *Journal of Financial Management of Property and Construction*, 11(2), 75 - 90.

Ballard, H. G. (2010). The last planner system of production control. Thesis submitted for the degree of Doctor of Philosophy, Faculty of Engineering, The University of Birmingham, 137.

Chen, Q., Jin, Z., Xia, B., Wu, P. & Skitmore, M. (2016). Time and cost performance of design-build projects. *J Constr Eng Manage*. 142, 1–7.

Durdyev, S. & Ismail, S. (2012). Role of the construction industry in the economic development of Turkmenistan. *Changes*, 64, 0.

Ernest, K., Theophilus, A. K. & Edward, B. (2017). Exploring cost planning practices by Ghanaian construction professionals. *International Journal of Project Organization and Management*, 9, 83.

Frimpong, Y. (2000). Project management in developing countries: causes of delay and cost overruns in the construction of groundwater projects. Unpublished Masters Research Project, University of Technology, Sydney Australia.

Ghana Statistical Service (GSS 2013). (2010). Population & Housing Census: National Analytical Report. Ghana

Godey, Jim. (2012). Six Steps to Effective Cost Management (CPA in Industry), the CPA Journal Online Oct 1994.

Hillebrandt, P. M. (2000). Economic Theory and the Construction Industry, 2nd Edition. Macmillan, Basingstoke.

Hilton, R., Maher, M., Selto, F. & Sainty, B. (2001). Cost Management: Strategies for Business Decisions. 1st ed., Ryerson, New York, McGraw-Hill.

Horngreen, C. T., Foster, G. & Srikant, M. D. (1990). Cost accounting: a managerial emphasis. 7th ed. Englewood: Prentice-Hall, 148.

Ikediashi, D. I., Ogunlana, S. O. & Alotaibi, A. (2014). Analysis of project failure factors for infrastructure projects in Saudi Arabia: a multivariate approach. *Journal of Construction in Developing Countries*, 19, 35–52.

Iyer, K. & Jha, K. (2005). Factors affecting cost performance: Evidence from Indian construction projects. *International Journal of Project Management*, 23, 283–295.

John, C. Groth. & Michael, R. Kinney. (1994). Cost Management and Value Creation, *Management Decision*, 32(4), 52-57.

Keith Potts. (2008). Construction Cost Management Learning from case studies, Taylor & Francis 2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN page 3.

Kim, Y. (2002). Implications of a new production paradigm for project cost control. Berkeley, 149f. PhD Thesis, University of California.

Laryea, S. (2010). Challenges and opportunities facing contractors in Ghana, in: Laryea, S., Leiringer, R., Hughes, W. (Eds.), West Africa Built Environment Research (WABER) Conference. Accra, Ghana.

Laryea, S. & Mensah, S. (2010). The evolution of indigenous contractors in Ghana, in: Laryea, S., Leiringer, R., Hughes, W. (Eds.), West Africa Built Environment Research (WABER) Conference. Accra, Ghana.

Meeampol, S. & Ogunlan, S. O. (2006). Factors affecting cost and time performance on highway construction projects: Evidence from Thailand, *Journal of Financial Management of Property and Construction*, 11(1), 3-20,

Memon, A. H., Rahman, I. A., Azis, A. A. A. & Abdullah, N. H. (2013). Using structural equation modelling to assess effects of construction resource-related factors on cost overrun. *World Appl Sci J*, 21, 6–15.

Oke, A., Ogungbile, A., Oyewobi, L. & Tengan, C. (2016). Economic development as a function of construction project performance. *Journal of Construction Project Management and Innovation*, 6, 1447–1459.

Olatunji, O. A. (2008). A comparative analysis of tender sums and final costs of public construction and supply projects in Nigeria, *Journal of Financial Management of Property and Construction*, 13(1), 60-79.

Olawale, Y. & Sun, M. (2010). Cost and time control of construction projects: Inhibiting factors and mitigating measures in practice. *Construction Management and Economics*, 28 (5), 509 – 526.

Peeters, W. & Madauss, B. (2008). A proposed strategy against cost overruns in the space sector: The 5C approach. *Space Policy*, 24, 80-89.

Pekuri, A., Haapasalo, H. & Herrala, M. (2011). Productivity and Performance Management – Managerial Practices in Construction Industry. *International Journal of Performance Measurement,* 1(1), 39–58.

Rahman, I. A., Memon, A. H., Azis, A. A. A. & Abdullah, N. H. (2013). Modelling causes of cost overrun in large construction projects with partial least square-SEM approach: contractor's perspective. *Res J Appl Sci Eng Technol*, 5, 1963–1972.

Seuring, S. (2002). Supply Chain Costing – A Conceptual Framework, in: Cost Management in Supply Chains, Physica-Verlag, 15 - 30.

Siebers, P. O., Aickelin, U., Giuliana Battisti, Celia, H., Clegg, C., Fu, X., Hoyos, R. D., Iona, A., Petrescu, A. & Peixoto, A. (2008). Enhancing Productivity: The Role of Management Practices. AIM Working Paper Series - 062 - February 2008.

Sinesilassie, E. G., Tabish, S. Z. S. & Jha, K. N. (2018). Critical factors affecting cost performance: a case of Ethiopian public construction projects, *International Journal of Construction Management*, 18(2), 108-119.

Suk, S. J., Chi, S., Mulva, S. P. Caldas, C. H. & An, S. H. (2016). Quantifying combination effects of project management practices on cost performance. KSCE Journal of Civil Engineering, 1–13.

Tam, C. M. & Fung, Ivan W. H. (2009). Effectiveness of Safety Management Strategies on Safety Performance in Hong Kong, *Construction Management and Economics*, 16, 49-55.

Tengan, C., Aigbavboa, C. O. & Oke, A. E. (2018). Evaluation of UFPA quality assessment criteria for monitoring and evaluation system in the Ghanaian construction industry. African Journal Science, Technology Innovation Development, 1–5.

Tengan, C., Anzagira, L. F., Kissi, E., Balaara, S. & Anzagira, C. A. (2014). Factors Affecting Quality Performance of Construction Firms in Ghana: *Evidence from Small–Scale Contractors. Civ. Environ*, 6, 18–23.

Zarina, A., Zawawi, E. M. A., Yusof K. & Aris, N. M. (2014). Determining critical success factors of project management practice: a conceptual framework. In: Proceedings of the AMER International Conference.

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An Empirical Analysis of Exchange Rate Pass-Through to Prices in South Africa (2002-2016)

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Abstract: South Africa is currently running inflation targeting monetary policy since the year 2000 solely to achieve price stability. However, the persistent depreciation of the rand is making keeping inflation within the stipulated band very cumbersome. The objective of this paper is to find the duration taken by price indices to respond to exchange rate fluctuations. A Recursive VAR was used to investigate exchange rate pass-through (ERPT) to tradable prices in South Africa. Using monthly data, we find producer prices contributing highly to inflation with an average of 22% of fluctuations passed to prices. Large and persistent ERPT especially on import and producer prices accompanied by high wage demands and a depreciating currency are worrying factors for South Africa. Policy makers are advised to consider targeting the exchange rate if inflation is to be kept under control.

Keywords: *Inflation Targeting, Exchange Rate Pass-Through, Recursive, Monetary policy*

1. Introduction

The monetary policy exchange rate channel is of paramount importance mostly for small and open developing countries like South Africa (South African Reserve Bank, 2002). The country has been hit by a series of rand depreciations mainly after the 2008 financial crisis. Conventional wisdom in monetary economics assumes that persistent currency depreciation makes imports to be costly while exports become more competitive on the international market (Aron et al., 2012b). The South African Reserve Bank (SARB) adopted inflation targeting monetary policy with a sole objective to stabilize prices in the country. However, this objective has been cumbersome to achieve mostly because of a persistently depreciating rand leading to passing through of exchange rate changes to prices assumed to be playing a huge role (Kabundi and Schaling, 2013). The transmission or consideration of the exchange rate changes to prices is defined as Exchange Rate Pass-through (ERPT) depending on the asymmetric behavior of price adjustments (Choudhri and Hakura 2015). Aron et al., (2014a) defined ERPT as the degree to which exchange rate variations influence trade prices and through them to other domestic prices. However, Kabundi and Schaling, (2013) defined it alternatively as the link between nominal effective exchange rate and import prices (first stage) and finally as a link between import prices, producer price inflation and consumer inflation (second stage). Exchange Rate Pass-Through (ERPT) can be divided into two stages, the first stage which is the transmission form exchange rate to import prices and second stage pass through which comes from the import prices to other prices down the pricing chain e. g consumer prices. When imports control a bigger part of the domestic market, the magnitude of exchange rate pass-through is expected to be very high since imports constitute a large portion of the consumption basket.

Knowledge of exchange rate pass-through is very important for a number of reasons. Firstly, the level of ERPT is an approximation of international macroeconomic transmission and thus has implications for the timing of monetary policy intervention (South African Reserve Bank 2004). Hence, the degree and speed of pass-through are important for forecasting inflation and formulating monetary policy responses to inflation shocks (Parsley 2012). In addition, the adoption of inflation targeting demands knowledge of the speed and size of ERPT on inflation. Also, understanding ERPT at the macro and microeconomic levels gives insights into the strength of the international market power of domestic industries vis-à-vis their international counterparts. This objective of this paper is to investigate the speed and size of ERPT in South Africa. The focus will be on both the first stage (exchange rate to import prices) and second stage ERPT (import prices to the producer, export and consumer prices). This paper contributes to the body of knowledge by being the first paper in the context of South Africa to use only the period where the policy has been in place. Also this study is the only study in the South African context to use a Recursive VAR which has the biggest strength in the ordering of variables in the modelling aspect of our variables. A study by Korap, (2007), found the composition of industries in a country's basket to be a kingpin in determining ERPT. He adopted an unrestricted VAR model in examining the effects of exchange rate changes on domestic inflation.

2. Literature Review

This section will do a review of literature specifically from South Africa that was done on the area of research. The studies in question are by Aron et al., (2014a), Edwards and Garlick, (2008), Karoro et al., (2009), Jooste and Jhaveri (2014), Razafimahefa, (2012) and (Parsley, 2012). Aron et al., (2014a) analyzed the inflationary effects of inflation targeting and currency invoicing on import prices in South Africa. Using single equation models and systems to check the pass-through of import price, they discovered that depreciation and volatilities of the exchange rates can increase the options of hedging and foreign currency invoicing because of uncertainties. The moment exporters price their goods in producer currency (foreign currency) there is going to be an increase in the level of pass-through to prices in South Africa, considering the volatilities and depreciation of the exchange rate. Also they found the openness of trade and that of the current account to be culprits in increasing the pass through. Aron et al., (2012) estimated a Johansen Cointegration model and single equations for short-run Exchange Rate Pass-Through (ERPT) using monthly data on import price indices for 1980:1 to 2009:12. They reported an average pass-through of 50% within a year and 30 % in 6 months. They also found the long-run pass through to be 55%. The results concur with the general agreement that passes through on import prices is high but depending on the type of goods included in the import basket.

If the bundle has tradable goods that have less pass-through elasticity, then the average estimation will be low. Edwards and Lawrence, (2006) focused on an analysis of trade flows and exchange rate pass-through in South Africa based on the relationship between the nominal effective exchange rate (NEER) and trade flows; they also used a Johansen cointegration approach. Their empirical evidence supports the positive relationship between the balance of trade and real depreciation of the rand. This means that import or trade prices respond to changes in the exchange rate. After they used quarterly data from 1980 to 2005, they found that pass through to export prices had an estimation of 0.85 (85%) and that of import prices was at 0.89 (89%). Karoro et al., (2009) investigated the long-run pass-through in South Africa, employing the VECM. They checked the equilibrium pass through using the Johansen technique it was based on a VAR including two lags but they seemed very short of monthly data. They used various proxies for the exporter's costs of production and that resulted in long-run pass-through measurements that varied in the range of 0.75(75%) to 0.82(82%). Their findings of the equilibrium pass-through to import prices appeared to be higher for depreciation, 0.72 (72%) than that of appreciations 0.64 (64%).

They also found no significant asymmetry in the ERPT of large or small changes in the exchange rate. One of the recent studies was done by Jooste and Jhaveri, (2014) using a time-varying VAR as they investigated the effects of time-varying ERPT in South Africa. The methodological approach adopted in the study made use of the monthly import, export and consumer prices in South Africa from 1980 to 2011. Their results showed that, pass through is higher in the first period of the year than later but the long-term pass through is always higher than the short term. Export pass-through in the first period was 6% and 7 % in the 12th period, while the import pass-through was 3% in the first period and 7% in the 12th period. This concurs with research by Parsley, (2012) who also concluded that long-run pass-through is higher than the short-run one. Parsley, (2012) estimated the effects of exchange rate changes to import prices and services in South Africa using panel data of goods and services at the dock and using disaggregated homogenous import units. This study found a low pass through to the final consumer goods prices of between 14%-27% in two years after an exchange rate change.

There was an unusual phenomenon as it was found from this research that pass through of services is higher than that of goods. Under normal circumstances, services are domestic-oriented and hence are not much affected by exchange rate changes. This study attributed the decline in pass-through to changes in the consumption baskets of people, including more goods which are not affected by the exchange rate changes, and therefore with low ERPT; the researcher saw the decrease as not linked to changes in the monetary environment or pricing behavior of the firms. The study concurred with the idea that, exchange rate shocks affect domestic inflation in a specific manner and one which is estimated to be from the manufacturer's price down to the level of the consumer. He also concluded that countries with the fixed exchange rate and lower tariffs realize higher long-run ERPT to import prices than domestic prices as compared to those countries

with high tariffs and floating exchange rates like South Africa. Razafimahefa, (2012) checked on the asymmetries of the pass-through in South Africa using exchange rate data.

3. Methodology and Data Issues

Variables Description and Data Issues: The empirical work will use monthly data for a Recursive VAR as outlined by Ouliaris et al., (2016) who argue that SVAR is better specified using disaggregated data. The period captured in this research is motivated by the need to check the contribution of exchange rate changes within the period of the inflation targeting regime and by so doing it will cover the year 2002 January up to 2015 December. The primary source of the data is Quantec, a data house that gathers data from all over the world and makes it available to researchers at a cost. This makes the data more reliable since it comes from a recognized source. Below is a list of variables to be used in the model. He investigated the effects of the rand depreciation for 4 quarters and 8 quarters. Using the sign restricted VAR, he found that, pass through is less asymmetric after 4 quarters (13%) than after 8 quarters (16%). This means that prices respond more to depreciation than an appreciation but the level of response also depends on the size of the depreciation. If it is high, then exporters may choose to put markups on their prices but if it is small they may choose to just absorb the change so that they will protect their market share. It also depends on the level of completion and availability menu costs or costs of changing prices.

Output Gap: The output gap is the difference between the potential output of South Africa and the actual output produced in a given year. **Petrol Prices**: Petrol prices will be entered into the model representing the world oil price shocks. The oil prices represent the supply shocks in the model. **NEER**: Is the nominal effective exchange rate which is a proxy for the exchange rate. **IMP**: The import price index is used as a proxy to represent the prices of the goods and services imported by the country. **PPI**: Is the producer price index which is the average weighted value of the index of the goods and services produced for domestic use or international market consumption excluding the imports. **Expo**: Is the export price index of South Africa for goods and services produced in South Africa and sold in other countries. **CPI**: Is the consumer price index of South Africa representing a basket of goods and services sold to the consumers in South Africa.

Recursive VAR Approach: The recursive VAR framework on ERPT was borrowed from the work of McCarthy, (2000). The assumption of the estimation is that of a recursive ordering of the variables in which the international supply shocks in this case represented by petrol prices and demand shocks represented by the output gap enter the model first to affect all the other variables in the model without them being affected by any other variable in the model. The supply and demand shocks are exogenous to the exchange rate in period t. These exogenous variables to the exchange rate are determined in each period by the expectations of the previous period and an error. So in the ordering of say, Petrol prices, output gap and exchange rate, then we would exclude the contemporaneous values of the output gap and exchange rate from the equation of petrol prices. Exclude the contemporaneous value of the exchange rate from the equation of the output gap exclude no variable and meaning that we include petrol prices and the output gap in the equation of exchange rate.

The model has 7 variables and they are ordered in a way that the consumer prices will be affected by all the other variables in the model without it affecting any variable and that it is guided by the fact that the CPI is more of like inflation itself so we cannot allow it to affect any variable in the model.

$$\pi_t^{petr} = {}_{t-1}^{E}(\pi_t^{petr}) + \varepsilon_t^{petr} \quad (a)$$

$$Y_t = {}_{t-1}^{E}(Y_t) + a_1\, \varepsilon_t^{petr} + \varepsilon_t^{y} \quad (b)$$

$$\Delta e_{t=} {}_{t-1}^{E}(\Delta e) + b_1\, \varepsilon_t^{petr} + b_2 \varepsilon_t^{y} + \varepsilon_t^{\Delta e} \quad (c)$$

Where PETR is the world oil prices (international supply shock) to South Africa since which is a small open economy and a price taker. This shock can be inflationary if the oil prices go up and deflationary when it goes down, Y_t measures the output gap in the country and will be measured using the difference between actual output and potential output, Δe_t is the change in the exchange rate and ε_t are the respective shocks which occur at each stage. This exchange rate shock feeds into domestic inflation through the finished imported product or imported inputs by the manufacturers and then passed through to the producers and later to export and consumer prices.

$\pi_t^{imp} = {}_{t-1}^{E}(\pi_t^{imp}) + c_1\varepsilon_t^{petr} + c_2\varepsilon_t^{y} + c_3\varepsilon_t^{\Delta e} + \varepsilon_t^{imp}$ (d)

$\pi_t^{ppi} = {}_{t-1}^{E}(\pi_t^{ppi}) + d_1\varepsilon_t^{petr} + d_2\varepsilon_t^{y} + d_3\varepsilon_t^{\Delta e} + d_4\varepsilon_t^{imp} + \varepsilon_t^{ppi}$ (e)

$\pi_t^{cpi} = {}_{t-1}^{E}(\pi_t^{cpi}) + e_1\varepsilon_t^{petr} + e_2\varepsilon_t^{y} + e_3\varepsilon_t^{\Delta e} + e_4\varepsilon_t^{imp} + e_5\varepsilon_t^{ppi} + \varepsilon_t^{cpi}$ (f)

$\pi_t^{exp} = {}_{t-1}^{E}(\pi_t^{exp}) + f_1\varepsilon_t^{petr} + f_2\varepsilon_t^{y} + f_3\varepsilon_t^{\Delta e} + f_4\varepsilon_t^{imp} + f_5\varepsilon_t^{ppi} + f_6\varepsilon_t^{cpi} + \varepsilon_t^{exp}$ (g)

Other variables are: imp which is the import prices represented by the import price index for South Africa; PPI- producer price index for the national producers; EXP- the export price index for goods exported by South Africa into the world market, these goods become cheap when the currency is depreciating and cheap under the periods of depreciation and finally the CPI- the consumer price index in the country formed by a basket of goods and services representing all the goods and services consumed by South Africans.

Estimation Procedure: Any type of VAR starts with a reduced form VAR and after the traditional VAR has been run all other restrictions on the model can be done. The variables in the model are arranged in the following order: (Petrol prices, output gap, exchange rate, import prices, producer prices, export prices, consumer prices) starting with a structural representation of linear dynamic equations of the following form:

$A_0X_t = A(L)X_{t-1} + B\varepsilon_t$ (1)

In this case X_t will be the p(=7)- dimensional set vector housing the variables being used in the model, A_0 gives a description of the contemporaneous relationships amongst the variables in the model, A(L) is the finite-order matrix polynomial in the lag operator L and lastly ε_t is a vector of structural disturbances that can be interpreted and it is drawn from the list of equations spelling out the system with covariance matrix and the equations are those above showing the recursive structure of the model. Under lenient conditions (A_0 invertible), we can also show the p-dimensional Vector X_t in the following reduced form presentation:

$X_t = A_0^{-1}A(L)X_{t-1} + e_t$ (2)

In this case the VAR residual vector $e_t = A_0^{-1}Be_t$ is n.i.i.d. with full variance-covariance (VCV) matrix. After the above structural form equation, then we will be able to derive the relationship between the VCV matrices (unobserved) ε_t and e_t (observed):

$E(e_te_t') = A_0^{-1}BE(\varepsilon_t\varepsilon_t')B'A^{-1}$ (3)

In this case it then holds that $\widehat{\sum}_e = \hat{A}_0^{-1}\hat{B}I\hat{B}'\hat{A}_0^{-1}$. The identification demands the restrictions to be done on A and B. This ordering of the variables is best known as the Cholesky decomposition proposed by Sims, (1980), and it is the one also followed by McCarthy, (2000), Bonato and Billmeier, (2002) and others. On the issue of identification, the study used the AB model proposed by (Amisano and Giannini, 1997). As iterated previously, identification is the problem of interpreting the correlations in a model in a causal manner and that problem cannot be solved by a model itself by theoretical restrictions on the model. The number of restrictions in the model is determined by the difference between the known and unknown parameters in the model. In general terms the number of restrictions for our exact identification is $2n^2$-n (n+1)/2 on A and B matrices. On the AB model adopted from Amisano and Giannini, (1997), the B matrix is just there to identify structural shocks to the model.

In short it is called the identification matrix. The non-zero elements in the identification matrix (B) would then allow the structural shocks to affect more than a single variable in the model. By so doing the shocks will affect each and every variable in the model. Under this framework since the matrix B is the identification matrix and it has non-zero off-diagonal elements then matrix A is assumed to be lower triangular. In this scheme, the identification of shocks will depend on the variable ordering and in this context our recursive ordering of the variable is what will determine the identification of structural shocks in the model. Since all the variables are assumed to be endogenous under the VAR framework, the degree of endogeneity when the variables are ordered recursively rises along the variable ordering:

$$A = \begin{pmatrix} 1 & 0 & \cdots & 0 \\ a_{21} & 1 & & \\ \vdots & & \ddots & \vdots \\ a_{n1} & a_{n2} & \cdots & 1 \end{pmatrix}, B = \begin{pmatrix} b_{11} & & \cdots & 0 \\ 0 & b_{22} & & 0 \\ \vdots & & \ddots & 0 \\ 0 & 0 & 0 & b_{nn} \end{pmatrix}$$

In the VAR modelling, the contemporaneous correlations of the variables are then reflected in the cross-equation residual correlation. After restrictions are done of the matrix A and B then the Cholesky factorization is done to so that is sets to zero all the residual correlations amongst the variables in the model prior to causal ordering. Once the required and necessary restrictions to the model are done then a number of exercises can then be done like the impulse response functions and variance decompositions.

Data Issues

Unit Root Tests: The study uses time series data and the data was tested for stationary in their levels. Using the ADF and Phillips-Peron, we find that all our variables are non-stationary in their levels and they become stationary after first difference I (1). This conforms to the VAR requirements that all the variables should be integrated of the same order. The study did not go on to test for cointegration since the objective of the paper was not interested in knowing the long-run relationship of the variables but the duration is taken by the variables to respond to a shock of exchange rate prices and import prices. However, we went on to check for the lag length using the Schwarz Information Criterion (AIC) and the model chose 3 lags to be used by a system of equations in the Recursive VAR. For model stability we computed the Inverse Roots of AR Characteristic Polynomial and it confirmed that the model is stable we proceeded with estimation of main results.

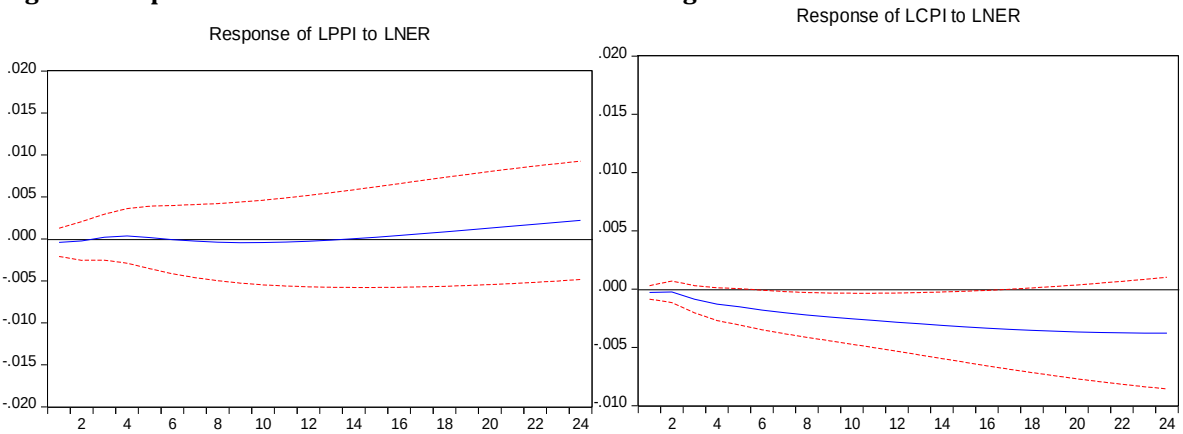
Table 1

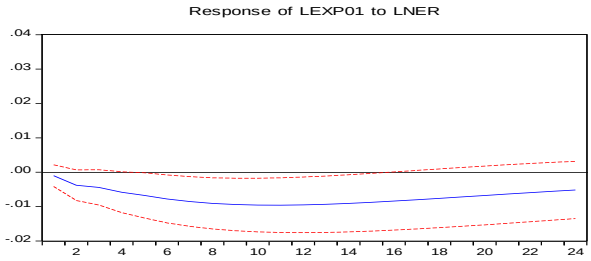
Variable	ADF		Phillips-Perron		I(d)
	Level	1st Diff	Level	1st Diff	I(1)
Gap	-0326162	-4.227060	-0.062317	-12.11775	I(1)
CPI	0.346201	-10.27714	0.074533	-10.93125	I(1)
PPI	-0.906680	-6.992048	-1.214282	-12.21109	I(1)
Imp	0.402233	-11.12141	0.077252	-11.24372	I(1)
PTR	-1.224015	-9.539517	-1.147970	-8.466560	I(1)
NER	-1.171132	-3.117750	-0.604433	-4.016799	I(1)
Exp01	-1.060832	-12.46426	-1.115891	-12.48133	I(1)

4. Research Findings and Discussion

Impulse Response Functions (Recursive VAR): Impulse responses identify the responsiveness of the endogenous variables in the VAR when a shock is put to the error term such as *u1* and *u2* on the equations in the system (Ngalawa, 2009). A unit shock of the exchange rate is applied to each of the above-mentioned variables to see its effect on the VAR system. According to McCarthy (2000), in the calculations of the impulse response functions, ordering of the variables is important and this study has adopted the Cholesky degrees of freedom that are adjusted in E views 9.5.

Figures: Response of Other Price Variables to an Exchange Rate Shock





An unexpected shock in the exchange rate corresponding to an unanticipated 1 percent change in the exchange rate is not immediately felt by the import prices in the South African economy. The shock is mostly felt between 4 to 6 months then its impact becomes less and less as time goes by. This means that the import prices respond to exchange rate changes with a lag. Import prices respond positively after a shock in the petrol prices also showing no immediate response. The petrol price shock is mostly felt by the import prices between 2 to 4 months then its impact goes down with time. There is an immediate negative response in the import prices as a result of an unexpected shock in the output gap between 0 to 2 months. In the fourth month is when the import prices respond positively to a shock in the petrol prices. Import prices respond positively at an increasing rate from the 10th month onwards. The impact of an unexpected import price shock down the pricing chain is immediately felt by the producer prices and the export prices with the impact fading away after 2 years in the export prices. This means that prices are easy adjusting upwards than downwards. Producer prices show a constant negative response with the shock felt considerably after one year but then the impact goes down with time at a constant rate. Consumer prices respond sluggishly to a shock in the VAR coming from the import prices. The shock will increasingly be felt in the consumer prices after a year (12 months) as it goes on increasing with time.

Variance Decompositions: The fluctuations in import prices are largely accounted for by own shocks of the cause but shocks to the exchange rate account for the highest percentage fluctuations in the import prices. After a shock to the exchange rate, the import prices respond by 17.27% after only 6 months. The effect of a shock into the exchange rate will increase the fluctuations in the import prices to 27.54% after one year. These results confirm or agree with the findings from studies by Parsley (2010) and (Aron et al., 2014). They found that the import prices were being accounted for by the exchange rate by the same magnitude. The effect of a shock to exchange rate on prices will increase as time goes by but at a decreasing rate after one year. This can be observed by a steady increase in the fluctuations from 15 months to 21 months since the fluctuations increased from 29.66% to 31.27% respectively. After 24 months the shock to the exchange rate will contribute to a 31.30% fluctuation in the import prices. This then means that the effect increases with time and its effect will be felt mostly after 2 years with half of the effects experienced 6 months after the shock has taken place.

A shock to import prices accounts for 31.47% fluctuations in the producer prices only one month after the shock meaning that the producer prices in South Africa quickly respond to changes in the import prices. However, although the effects are immediate, they decrease at almost a decreasing rate as time increases up to one year before it starts to increase again. It should be a worrying factor for the monetary policymakers because the arguments in the literature suggest that pass-through decreases with time but from the look of these results ERPT is not decreasing meaning to say that it will continue to cause more pressure on the average inflation figures. Petrol prices are not spared since they account for quite significant fluctuations in the import prices. A shock to the petrol prices leads to a 7.24% change in import prices after only 1 month meaning that the shock to import prices is immediately felt in the South African economy because the percentage is quite big and very significant. The fluctuations will then increase by more than 100% after 6 months increasing from 7.24% to 17.98% after only 3 months. The fluctuations after a shock to the petrol prices are immediate and they are quickly influential on the prices the South African importers pay.

This is basically because petrol or oil prices are one of the main production and operation costs that are immediately felt by any producer and that will force producers to quickly adjust their prices to remain making profits in business. However, the effect will be increasing at a decreasing rate over 6 months, 12 months, 18 months and finally 24 months (17.94%, 19.96%, 21.27% and 21.59% respectively). This is

observed by a decrease in the fluctuations in the producer by 23.94% after 3 months down from 31.47% after one month. After 6 months the shock in the import prices will account for 19.78% changes in the producer prices down from 23.94%. After one year the impact of the import price shock will account for 20.45%, after 18 months 21.64 and 21.09% meaning that the effect increased from 12 months up to 18 months although at a constant rate. After 24 months the effect starts to increase as well. The producer prices were assumed to be a big contributor to the changes in export prices but from the results import prices are contributing the most. Unexpected shocks in the Producer prices account for 3.05% after a month but the impact goes down to 1.34% after six months before it goes further down to 0.73% in 12 months' time and 0.58% after 2 years.

Although the effect of the shock as if it is immediately felt in the export prices it is its magnitude which is a worrying factor but the reason could be the fact that producer prices have not been changing much because of the low commodity demand on the world market and the adjustment of the prices especially for a small economy like South Africa not being easy to adjust. It is within the researcher's expectations to see that all the variables in the model are contributing to the fluctuations in the consumer prices. Since the model used a recursive approach, all the variables in the model have an effect without them being affected much by the fluctuations of the consumer prices. Direct ERPT is significant for consumer price increases as time elapses as can be observed from table 5.5.7 above. As a result of an unexpected shock in the exchange rate, the consumer prices respond by 0.51% after one month before they fluctuate by 1.36% after 3 months. The exchange rate accounts for a 5.49% fluctuation in the consumer prices after 6 months then by 11.55% after a period of 12 months (1 year). It can be observed that the effect of the shock increases as time increases. In the 24th month, the fluctuations in the consumer prices as a result of a shock to the exchange rate rise by 13.25%.

This confirms previous work of previous researchers on South Africa as they have also seen the effects of exchange rate changes to consumer prices at around the same range for example Razafimahefa, (2012), Rigobon, (2007) and Aron,et al. (2014) who found ERPT to CPI as 12%, 13% and 10% respectively. On the consumer prices the producer prices were expected to have made a mark but from the look of things the producer prices have got a paltry effect of 0.21% after one year, 0.89% after six months, 0.63% in the period up to one year and only an increase to 1.29% after two years. The assumption behind this is either that the producer prices take time to have an effect in the consumer prices or either the prices are sticky in South Africa especially after the changes in the exchange rate. There is quite a lot of competition amongst the local producers in South African and goods that are coming from abroad. The need for survival in the case of local producers is what might make the prices sticky and not being passed on much to the consumer prices which means that the consumer and export prices are being shaped by other variables in and outside this model.

5. Conclusion and Policy Recommendations

The objective of this paper was to see the duration is taken and magnitude of response by tradable prices in South Africa in response to an exchange rate shock. We find producer prices highly responding to an exchange rate shock more than other tradable prices with a 22% response after an exchange rate shock. The pressure from the depreciating rand on prices is facilitating a significant contribution to the average inflation in the country. This is witnessed by the inflation rates that have been always on the neck of the upper band and sometimes going outside the 6% upper band especially the 2015/2016 period. Findings from this lead us to advise that monetary policy authorities in South Africa need to keep track the contribution of the exchange rate volatilities on prices. Although the Inflation targeting frameworks succeeded during the early years from its inception, the past 3 years have seen monthly inflation in the upper band and sometimes outside the stipulated band. This means that targeting inflation is getting cumbersome since the target is sometimes missed. In the event that the current situation persists the following suggestions should be considered by the policymakers. The Reserve Bank should start to consider extending its objectives from solely price stability but also to exchange rate stability since it is evident that targeting inflation only is grappling save to the South African situation. This is evident by moderately high Exchange rate pass-through to import and producer prices. If the Reserve Bank could adopt a managed float, that could help to stabilize the exchange rate then prices since it is evident enough that exchange rate changes are contributing highly to inflation.

References

Amisano, G. & Giannini, C. (1997). Topics in Structural VAR Economics. Berlin: Springer.

Aron, J., et al. (2014(a). Exchange rate pass-through to import prices, and monetary policy in South Africa. *Journal of Development Studies*, 50(1), 144-164.

Aron, J., et al. (2012(b). Exchange rate pass-through in developing and emerging markets: A survey of conceptual, methodological and policy issues, and selected empirical findings. *Journal of Development Studies*, 50(1), 101-143.

Bonato, M. L. & Billmeier, M. A. (2002). Exchange rate pass-through and monetary policy in Croatia, International Monetary Fund.

Choudhri, E. U. & Hakura, D. S. (2015). The exchange rate pass-through to import and export prices: The role of nominal rigidities and currency choice. *Journal of International Money and Finance*, 51, 1-25.

Edwards, L. & Lawrence, R. Z. (2006). South African Trade Policy Matters: Trade Performance and Trade Policy. NBER Working Paper Series No. 12760.

Edwards, L. & Garlick R, (2008). Trade flows and the exchange rate in South Africa. ,"CID Working Papers 135, Center for International Development at Harvard University.

Jooste, C. & Jhaveri, Y. (2014). The Determinants of Time-Varying Exchange Rate Pass-Through in South Africa. *South African Journal of Economics*, 82(4), 603-615.

Kabundi, A. & Schaling, E. (2013). Inflation and inflation expectations in South Africa: an attempt at explanation. *South African Journal of Economics*, 81(3), 346-355.

Karoro, T. D., et al. (2009). Exchange rate pass-through to import prices in South Africa: is there asymmetry? 1. *South African Journal of Economics*, 77(3), 380-398.

Korap, L. (2007). Impact of exchange rate changes on domestic inflation: The Turkish experience. *Journal of Development Economics*, 14(2), 34-60.

McCarthy, J. (2000). Pass-through of exchange rates and import prices to domestic inflation in some industrialized economies. FRB of New York Staff Report, (111).

Ngalawa, H. P. (2009). Paper presented at the 14th Annual Conference of the African Econometric Society, 8-10 July 2009, Dynamic effects of monetary policy shocks in Malawi, Abuja, Nigeria.

Ouliaris, S., et al. (2016). Quantitative Macroeconomic Modeling with Structural Vector Auto regressions–An E Views Implementation.

Parsley, D. C. (2012). Exchange rate pass-through in South Africa: Panel evidence from individual goods and services. *Journal of Development Studies*, 48(7), 832-846.

Razafimahefa, I. F. (2012). Exchange rate pass-through in Sub-Saharan African economies and its determinants.

Rigobon, R. (2007). Through the Pass-Through: Measuring Central Bank Credibility. CID Working Paper No. 143, Center for International Development, Harvard University, 1.

Sims, C. A. (1980). Macroeconomics and reality Econometrica: Journal of the Econometric Society, 1-48.

South African Reserve Bank. (2002). Exchange Rate Pass-Through and South African Import Prices, SARB Working Paper WP/02/03. Pretoria: South Africa.

South African Reserve Bank. (2004). Experience of Inflation targeting in S. A. *SARB Quarterly Bulletin*, 242, S103.

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Investigating the Relationship between Workload-Resources and Exhaustion of Nurses and Police Officers in Namibia

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Abstract: A lot has been published on burnout within the service industry; however, an in-depth investigation of job stressors and burnout in both the safety and health sectors of Namibia has been left unexplored. This study investigated the relationship between job demands-resources and burnout. Burnout occurs when an individual is exposed to emotional and interpersonal stressors on the job (exhaustion, cynicism and professional efficacy). Job demands require continuous efforts and job resources are aspects of the organisation that are helpful in achieving goals, reducing costs of job demands and stimulating growth and development. The sample is made up of police officers (n=482) and nursing staff (n=672) from various regions within Namibia (n=1154). Results were analysed using the SPSS (version 24) to assess the relationships between the variables. The results revealed exhaustion had a relationship with the workload, resources and organisational support. Lower levels of workload, accompanied with higher levels of resources and organisation support would reduce exhaustion. The workload can be managed by making using of time-management training, improving delegation, and by ensuring the employees have mentors and supervisory support. Training opportunities improve work resources and reduce work stress. Healthy coping strategies, like being active and meditation help to alleviate stress (exhaustion). Having healthy work relations enhances organisational support and improves coping mechanisms of employees.

Keywords: *Job demands-resources, burnout, Namibia*

1. Introduction

In 1995 the Fraternal Order of Police (FOP) estimated that amongst law enforcement personnel the suicide rate was almost double (22/100,000) when compared to the general population (12/100,000) (Aamodt & Stalnaker, 2001). McIntosh (2016) found that those who constitute our protective services (police, military, etc.) experience an average of 295 suicides per year, of which males (266 suicides per year) make up the majority of this statistic. According to Stanley, Hom, and Joiner (2016), job dissatisfaction, burnout, marital status (single) and subjective health complaints are positively related to suicide ideation. As far as research on nurses' general health is concerned, the nurses at public hospitals are more prone to burnout because of their job setting (Van Der Doef, Mbazzi, & Verhoeven, 2012). Mudaly and Nkosi (2015) also revealed that anxiety in the workplace causes stress which leads to burnout, resulting in a higher rate of absenteeism in the nursing profession. This clearly shows that the job setting of nurses is not the only factor that results in burnout. According to a study done by Hawton et al. (2002), the main methods used for suicide by nursing staff were self-poisoning (72 cases, 67.9%), self-injury (32 cases, 30.2%) and 1.9% have tried both methods. They also added that most of these nurses who have been interviewed were heavily dependent on depression medication; they suffered from affective disorders that were the result of certain job stressors.

According to Chung et al. (2009), it is quite common for the quality of sleep of permanent night shift nurses to decline and eventually these nurses end up developing minor and cumulative sleep deficits. This is an indication of deteriorating health, which makes nurses prone to burnout. Quality sleep is important to a nurse's healthy functioning, as sleep is important in the area of self-care, it plays a major role in carrying out one's day-to-day activities and biological processes (Zhang, Punnett, & Nannini, 2016). Zhang et al., (2016) stated that the work-family conflict is a challenge for nurses and could lead to depression, an anxious state and poor health. Furthermore, Thuynsma and de Beer (2016) found that depressive symptoms and emotional load account for some variance in burnout. Considering the work that police officers and nurses do, they are exposed to emotionally straining encounters which impact on their burnout levels. Waschgler, Ruiz-Hernández, Llor-Esteban, and Garcia-Izquierdo (2012) found that apart from the job setting and anxiety, exposure to a violent work environment negatively impacts on job satisfaction and emotional exhaustion which results in burnout. This indicates that both the healthcare and safety/security sectors operate in an environment that exposes employees to high-risk workplace violence and this result in high levels of burnout.

Stress in the workplace is usually caused by the job demands which eventually lead to sickness and psychological distress making the individual prone to burnout (Edwards & Burnard, 2003). Burnout is constant exposure to emotional and interpersonal stressors at work, and it is defined by three dimensions namely exhaustion, cynicism and inefficacy (Maslach, Schaufeli, & Leiter, 2001). According to Bezuidenhout and Cilliers (2010) burnout is explained as a calamity in the individual's relationship with their work as opposed to a crisis in the individual's relationship with people at the workplace. Job demands can be regarded as the physical, psychological and personal expectations from the job that requires continuous effort (Bingham, Boswell, & Boudreau, 2005). According to Bakker, Demerouti and Verbeke (2004) job resources are aspects of the job related to physical, psychological, social or organisational needed to achieve organisational goals. Job resources may also inhibit job demands and the stimulation of personal growth and development. Resources may include salaries, career opportunities, organisational support from employer and colleagues, performance feedback, task significance and task identity. Khamisa, Oldenburg, Peltzer and Ilie (2015) outlined that burnout has an impact on the mental health and wellbeing of employees and is most likely to compromise efficiency, performance and the quality of service they provide. The purpose of this study is to investigate the relationship between job demands-resources and burnout experienced by the police force and nursing staff within Namibia. No study in Namibia has investigated this critical relationship nor focused on police officers and nurses or at this magnitude.

2. Literature Review

Burnout: The word 'burnout' was coined by Freudenberger (1974). It gives a description of employees' reaction to prolonged stress which is common in jobs that involve a lot of social interaction. The term 'burn-out syndrome' is applied to jobs that involve taking care of others which result in the failure of resources that provide energy and an adjustment to long-lasting stress. Maslach et al. (2001) defined burnout as a response that is a result of an individual being exposed to emotional and interpersonal stressors on the job, and is essentially characterised by the dimensions of an individual being tired, ineffective and distrustful. Schaufeli and Bakker (2004) provide a clear and comprehensive outline of the three dimensions that are interlocked when discussing burnout. They state that the first dimension, exhaustion, measures the level of tiredness without looking to other individuals as a source. They continue with the second dimension, which is cynicism, and it is the inappropriate attitude that an individual has towards his/her work in general and not necessarily present with other people within the working environment. Lastly, Schaufeli and Bakker (2004) state that professional efficacy involves both the social and non-social characteristics of the occupational requirements and the accomplishments the individual strives for. Burnout can be defined as a particular form of a work-related and long-lasting type of stress (Hamid, 2007). Hornby (2010) defines burnout as a feeling which is a result of doing something for too long and needs to rest. Maslach, Jackson and Leiter (1997) view burnout to be the opposite of engagement. Schaufeli, Taris, and Van Rhenen (2008) stated that engaged employees are energetic and are able to effectively connect with their work in addition to dealing with the demands of their job in an effective manner.

This is deemed as the opposite of those employees who suffer from burnout. The multidimensional theory of burnout is defined as an individual's experience of stress that is rooted in one's difficult social relationships, which includes the individual's notion of others and self (Maslach, 1998). It discusses three components of burnout; emotional exhaustion defined as feeling as if one is emotionally strained and one has used up all the emotional resources. This is a result of work overload and personal conflict in the work environment. Depersonalisation which occurs when one expresses detached responses to other people which develop as a result of emotional exhaustion. Lastly, reduced personal accomplishment which refers to a lowered sense of self-efficacy and feelings of one being incompetent at work, which is caused by no or little social support and a lack of opportunities to develop at work. According to Doulougeri, Georganta and Montgomery (2016, p. 1), "burnout is a well-studied syndrome in healthcare associated with various professional and personal consequences." The job demands-resources model states that burnout develops despite the type of job an individual has, as it all depends on whether the weight of job demands outweighs that of the job resources (Bakker, Demerouti, & Euwema, 2005). They added that some jobs that are designed in a poor way with high job demands and is responsible for physical and mental resources exhaustion of employees. This then results in energy depletion accompanied by deterioration in the health of employees. When job resources are not available, the sense of motivation is defied and this leads to cynicism and a low level of performance which is also characterised by burnout.

According to Bakker and Heuven (2006), police officers are expected to manage between their sentiments to achieve facial and physical expressions that appear to be neutral, firm, and meticulous. However, several studies have indicated that the regulation of these emotions as part of the work role may be stressful and detrimental to their health. They further emphasised that 25 years of research have proven that burnout is a complex variable and accounted for the individual stress experienced by contextualising it to the larger organisation with individuals' relations to their work. Burnout appears to be an important factor in nurses' retention and turnover rates, which badly affects their work performance and the quality of care provided (Bruce & Sangweni, 2012). According to Kop, Euwema, and Schaufeli (1999), police officers experience burnout due to the overflow of job stressors that includes negative aspects, such as staff shortages (81% of police officers), time pressure (74%), workload (71%), lack of communication (70%) and inadequate resources (78%). Operational stressors, such as violent arrests (49%), forceful measures (40%) and appearing in court (44%) were viewed as causing less occupational stress (Kop et al., 1999).

Hamid (2007) states that stress as a result of the workplace has long been acknowledged as one of the existing challenges in both the nursing and police profession. A negative relationship was found between hardy type personalities and burnout. It is suggested to strengthen the hardy personalities of individuals instead of reducing environmental stressors which could reduce the risk of burnout (Hamid, 2007). The theory of work engagement by Maslach et al. (1997) elaborates that engagement is a culmination of energy, involvement, and efficacy, and these three components are classified as the complete opposites of the burnout dimensions (Bakker, Schaufeli, Leiter, & Taris, 2008). These theorists argue that exhaustion will change into energy, cynicism will turn into involvement and, ineffectiveness or futility will change to efficacy when employees are engaged (Bakker et al., 2008). According to Bakker et al. (2005), burnout is transmittable, and there is a possibility that it can be transmitted from one employee to another. Their study reveals that employees observe burnout in one another and in the process it is then passed on from one employee to another. The results of their study among 12 different European countries provide evidence to support the contagion theory (Bakker et al., 2005).

They also emphasised, that it then led to the notion that the nurses who reported the highest prevalence of burnout in other colleagues, were most likely to experience burnout too. Bakker et al. (2005) emphasised that this contagion may have occurred through two different ways, burnout may have been passed on unconsciously by one nurse being 'emotionally exhausted' and the other nurse could have mimicked the behaviour of the other; the second way, of course, is on the conscious route which happens when nurses socialise after work or whilst still working. They pointed out that their study clearly shows that burnout is not limited to individuals and should be a concern for organisations. Bruce and Sangweni (2012) in their study in South African academic hospitals stated that rationalisation and positioning might be the factors that impact on burnout. They emphasised that the two constructs may affect work performance and staff turnover in the hospitals. Despite the low degrees of burnout and levels of satisfaction, a number of measures should be implemented to increase retention rates and job satisfaction with regards to their physical working conditions, promotion opportunities and recognition for good work (Bruce & Sangweni, 2012).

Job Demands-Resources: According to Rothmann and Jordaan (2006), job demands and resources are negatively related; working with clients can be regarded as demanding and as a result employees' are unable to use their job resources effectively. Job resources refer to the physical, psychological, social, or organisational aspects of a job that reduce the physiological and psychological costs of job demands, stimulate growth, learning and development within the individual and are functional in achieving work-related goals (Schaufeli & Bakker, 2004). According to Crawford, LePine and Rich (2010), job resources are characteristics included in a job that is efficient in achieving work goals, stimulate personal growth and development, thereby reducing demands and they're associated physiological and psychological costs. Job demands are essential factors with regards to a decrease in health outcomes of nurses and police officers. Employers should ensure that there is a balance between job demands and resources (Peters, de Rijk, & Boumans, 2009). Job demands are not necessarily negative; however excessive job demands may lead to anxiety, depression or burnout (Schaufeli & Bakker, 2004). According to Bakker and Demerouti (2007), employees may experience job strain when there is an imbalance between the job demands and the job-resources. However, Xanthopoulou, Bakker, Demerouti and Schaufeli (2007) suggest that even when job demands are high, high levels of resources prevent the manifestation of burnout. Consequently, the

relationship between job demands and burnout will only be predominantly strong when the job resources are reaching lower levels within the working environment.

In instances where job demands are a negative influence, Van Yperen and Hagedoorn (2003) recommends that employers allow employees more control or autonomy and social support instead of trying to reduce the job demands, affecting productivity or the services provided. Job resources foster employees to meet their goals and increase job performance. Employees may be motivated by job resources (Xanthopoulou et al., 2007). Job demands can be positive under the right circumstances. Demands and work efforts are usually buffered by the aspects of the job which are covered by job resources (Van Vegchel, De Jonge, & Landsbergis, 2005). Job demands do not always affect an individual especially if the job has sufficient resources. Another study carried out in Europe indicated that several job resources buffer the impact of certain job demands in relation to burnout. Bakker et al. (2005) concluded that the study provides an insight into how not only job demands and job control may be the predictors of strain but that several aspects of the job may interact with the job resources and impact burnout. Nahrgang, Morgeson and Hofmann (2011) indicated that there are many job demands and resources that exist in the work-place and it is imperative to recognise which of these job demands exhaust mental and physical resources.

Which job resources motivate the engagement levels of employees, Job demands are the essential factors in predicting fatigue with inclusion of long-term non-attendance. Whereas, job resources are the essential factors in predicting commitment or the lack of commitment and short-term absence (Bakker et al., 2005). As the JD-R theory suggests, all working environments or job characteristics can be modelled using two different categories, namely job demands and job resources. Job demands can be described as characteristics of the job that require continuous efforts that are associated with certain costs, or the outflow of resources (Bingham et al., 2005). Job resources refer to those aspects of the organisation that are helpful in achieving goals (Demerouti & Bakker, 2011). Although limited published research is available regarding the relationship between job demands-resources and authentic leadership, some research suggests that leadership does have an impact on the environment in which the employees operate. Certain studies suggest that when supervisors pay attention to working conditions that promote job satisfaction in an employee's environment, it can essentially improve their overall performance (Laschinger, Wong, & Grau, 2012). When managers and supervisors provide feedback and information, it encourages a sense of purpose for the employees and it enhances their abilities to make decisions that will eventually contribute to the organisation's goals.

Devonish (2013) noted that job demands might result in several issues, such as physical exhaustion and chronic diseases, anxiety and depression and absenteeism. Field and Buitendach (2014) emphasise that job demands and resources are related to work engagement. Whereas the limitation of job demands is related to negative work engagement, job resources turned out to be a great predictor of work engagement. Following to the two-factor job demands-resources theory, employees will perform their jobs as normally required without motivators but, with motivators, employees will exceed the minimum requirements at work (Bakker & Demerouti, 2016). Further research suggests that with the JD-R theory, it is possible to understand, explain, and make predictions about employee well-being and job performance (Bakker & Demerouti, 2016). Performance and well-being of employees may be in/directly affected by the interaction between job demands and job resources.

Job Demands-Resources and Burnout: Burnout is a very serious issue among employees, especially for nurses and police officers and it greatly impacts their general health. According to Imai, Nakao, Tsuchiya, Kuroda and Katoh (2004) a wide range of occupations experience burnout which includes nurses. The one aspect they all have in common is that they work with people. Under one of the dimensions of burnout, namely depersonalisation, employees treat their clients or patients as objects or things (Goodman & Wayne Boss, 2002). Demerouti, Bakker, Nachreiner and Schaufeli (2001) found that emotional exhaustion has been related to certain job stressors (e.g., workload and role problems) and certain attitudinal and behavioural aspects (e.g., turnover intention and absenteeism). When individuals experience feelings of exhaustion or fatigue, they have most likely endured an intense workload and conflict among their colleagues. It is also possible that certain actions, such as absenteeism and turnover intention on the part of the individuals, are also due to the increased workload and job demands. According to Bingham et al. (2005), individuals experiencing high control or high demand situations often experience anxiety and emotional exhaustion. High

job demands generate high levels of stress and burnout on employee well-being. Various studies across the world indicate that job demands are positively related to exhaustion and disengagement from work. Bakker et al. (2005) stated that earlier research pointed out the consequences of burnout on the individual and organisation, absenteeism, depleted emotional and physical well-being and employee turnover.

They further added that nurses who are exposed to high job demands with little resources are the likely victims of burnout. According to Van den Broeck, De Cuyper, Luyckx, and De Witte (2011), studies suggest that employees that have access to sufficient resources whilst experiencing high job demands may feel less burned out. An individual who experience a steady supply of resources and who is adequately familiar with and capable of meeting their job demands, would be efficient at work. Employees would experience work engagement when exposed to high job demands complemented by high job resources. Pienaar and Bester (2011) added that thousands of qualified nurses quit from the South African health sector annually based on various reasons, including burnout. Their research showed that demanding work circumstances could potentially influence employees to reconsider being part of the organisation. Respondents revealed that high levels of emotional exhaustion coupled with average levels of personal achievement and those respondents whose results were low on the two factors displayed a high degree of the intention to quit.

Organisational stress as a result of job demands and a clear lack of resources are the contributing factors to emotional exhaustion and depersonalisation (Pienaar & Bester, 2011). They emphasise that burnout is not primarily the result of the working environment but also the interaction between the individual's intra psychological aspects. Burnout in the long run can lead to depression (Thuynsma & de Beer, 2016). The job demands-resources model proposes that job resources encourage employee engagement through a motivational procedure and that job demands promote burnout (Crawford et al., 2010). Employers should ensure that employees possess traits that make employees less susceptible to the demands of the job, especially those that lead to tremendous levels of stress and burnout. Zito, Cortese and Colombo (2016) added that the promotion of job resources is vital as it helps buffer the impact of job demands on nurses and police officers, while minimising the state of distress they experience. Based on the literature discussed above, the following hypotheses have been developed.

Hypothesis 1: Workload has a positive relationship with burnout.

Hypothesis 2: Resources, organisational support, job security and advancement opportunities have a negative relationship with burnout.

Hypothesis 3: Significant differences exist regarding burnout of police and nursing employees in relation to gender, age tenure marital status, numbers of dependents, qualifications and region.

3. Research Methodology

Making use of cross-sectional research design, the data was collected by making use of a self-administered questionnaire (survey research), which was distributed to hospitals and police stations. This study was conducted with 1154 participants across different regions (Oshikoto, Kavango East, Oshana, Omaheke, Khomas and Erongo) within Namibia, employing a convenience sampling technique. The total population were estimated at 7286 of a police officer and 2405 nurses in the selected regions. As part of a research project, research assistants were assigned to these different regions to collect the data. The regions were allocated based on where the research assistants live. After permission was obtained from the Permanent Secretary of Health and Social Services and hospital matrons, the Ministry of Safety and Security, Lieutenant General of the Namibian Police force and station commanders, through the use of convenience sampling employees were approached to participate in the study. Employees were informed of their right to confidentiality and anonymity. A total number of 1300 questionnaires were distributed and 1154 completed questionnaires were returned (89.1% response rate). Descriptive statistics were calculated to describe the distribution of the data in terms of means and standard deviations. Participants were in no way harmed and questionnaires are stored for the next three years. Most of the participants were females (68.2%), between the ages of 24-28 (22.4%), had worked between 3-4 years (21.9%), single (59.7%), had between 1-2

dependants (36.0%), had obtained grade 12 (36.7%) and were from the Khomas region (24.5%). The rest of the biographical details are displayed in Table 1 below.

Table 1: Frequency Distribution of Sample (n=1154)

Item:	Category:	Frequency:	Percentage:
Gender	Male	359	31.1
	Female	787	68.2
	Missing values	8	0.7
Age	Below 24	153	13.3
	24-28	258	22.4
	29-31	178	15.4
	32-35	169	14.6
	36-40	114	9.9
	41-45	92	8.0
	46-50	75	6.5
	51 and older	106	9.2
	Missing values	9	0.8
Tenure	Less than 1 year	73	6.3
	1-2	188	16.3
	3-4	253	21.9
	5-6	145	12.6
	7-8	109	9.4
	9-10	85	7.4
	11-15	69	6.0
	16 and more	224	19.4
	Missing values	8	0.7
Marital status	Single	689	59.7
	Married	391	33.9
	Divorced	28	2.4
	Widowed	37	3.2
	Missing values	9	0.8
Number of Dependants	None	288	25.0
	1-2	415	36.0
	3-4	251	21.8
	5-6	111	9.6
	7-9	41	3.6
	10 and more	40	3.5
	Missing values	8	0.7
Qualification	Grade 12	424	36.7
	Certificate	272	23.6
	Diploma	236	20.5
	Degree	89	7.7
	Honours Degree	95	8.2
	Master's Degree	7	0.6
	PhD	2	0.2
	Missing values	29	2.5
Region	Oshikoto	263	22.8
	Kavango East	152	13.2
	Oshana	209	18.1
	Omaheke	97	8.4
	Khomas	283	24.5
	Erongo	150	13.0
TOTAL:		**1154**	**100.0**

Measuring Instruments: A biographical questionnaire was used to determine the participant's gender, age tenure marital status, numbers of dependants, highest qualification obtained and region of origin. Job demands-resources were measured using the Job Demands-Resources Scale (JDRS) by Jackson and Rothmann (2005). This scale comprises of 46 items which make use of a 4-point response scale (1-never, 2-sometimes, 3-often and 4-always). The items represent different domains such as workload ("Do you have too much work to do?"), resources ("Does your job offer you opportunities for personal growth and development"), organisational support ("Can you count on your colleagues when you come across difficulties in your work?"), job security ("Do you need to be more secure that you will keep your current job in the next year?"), and advancement opportunities ("Does your job give you the opportunity to be promoted?"). The following Cronbach alphas have been reported (workload- .76; resources- .86; organisational support- .92; job security- .89; and advancement opportunities- .83) (Rothmann, Mostert, & Strydom, 2006). Burnout was measured by the Maslach Burnout Inventory, developed by Maslach et al. (1997).

Statistical Analysis: The data analysis was conducted using SPSS Version 24.0 (SPSS, 2016). Cronbach alphas (α) were calculated to determine the reliability of the instruments. The Pearson product-moment correlation was calculated to determine the relationship between the variables. Non-parametric statistics were completed to assess significant differences within the sample, making use of the Mann-Whitney U test and the Kruskal-Wallis tests.

4. Results

Descriptive Statistics and Correlations: The means (M), standard deviation (SD), Cronbach's alpha and correlations were analysed and reported in Table 2 below. A mean of 23.01 was reported for the workload (average), 22.06 for resources (average), 62.49 for organisational support (average), 8.86 for job security (average), 11.63 for advancement opportunities (low) and 12.40 for exhaustion (average). A standard deviation of 4.55 was reported for workload, 4.74 for resources, 10.83 for organisational support 2.74 for job security, 4.84 for advancement opportunities and 9.20 for exhaustion.

Table 2: Mean, Standard Deviation, Cronbach Alpha and Pearson Product-Moment Correlation

Items	Mean	SD	A	1	2	3	4	5	6
1.JD-R_WL	23.01	4.55	.77	-					
2.JD-R_R	22.06	4.74	.74	.09*	-				
3.JD-R_OS	62.49	10.83	.88	-.01	.55++	-			
4.JD-R_JS	8.86	2.74	.80	.04	.23*	.26*	-		
5.JD-R_AO	11.63	4.84	.87	-.12*	.30*+	.29*	.15*	-	
6.BO_EXH	12.40	9.20	.86	.41*+	-.10*	-.17*	.01	-.07*	-

* Statistically significant: p ≤ 0,05 (small effect)
+ Practically significant correlation (medium effect): 0,30 ≤ r ≤ 0,49
++ Practically significant correlation (large effect): r > 0,50

JD-R – Job Demands-Resources
JD-R_WL = Job demands-resources (Workload)
JD-R_R = Job demands-resources (Resources)
JD-R_OS = Job demands-resources (Organisational Support)
JD-R_AO = Job demands-resources (Advancement opportunities)

BO – Burnout: BO_EXH = Burnout (Exhaustion)

Cronbach alphas were recorded for workload of .77, .74 for resources, .88 for organisational support, .80 for job security, .87 for advancement opportunities and .86 for exhaustion. Cynicism and professional efficacy did not meet the expected reliability of .70 and were excluded from further analysis in this study.
The study found significant relationships between job demands-resources and exhaustion. Making use of Pearson product-moment correlation, it was reported that workload had a positive relationship with resources ($r = .09$, $p < 0,05$; small effect). Workload and organisational support reported a negative relationship ($r = -.01$, $p < 0,05$; small effect). Workload was established to have a positive relationship with job security ($r = .04$, $< 0,05$, small effect). Workload has a negative relationship with advancement opportunities ($r = -.12$, $p < 0,05$; small effect). Workload was found to have a positive relationship with exhaustion ($r = .41$, $p < 0,05$; medium effect). Resources were found to have a positive relationship with organisational support ($r = .55$, $p > 0,05$; large effect). Resources were found to have a positive relationship with job security ($r = .23$ $p < 0,05$; small effect).

Resources were reported to have a positive relationship with advancement opportunities ($r = .30$, $p < 0,05$; medium effect). Resources reported a negative relationship with exhaustion ($r = -.10$, $p < 0,05$; small effect). Organisational support was found to have a positive relationship with job security ($r = .26$, $p < 0,05$; small effect). Organisational support reported to have a positive relationship with advancement opportunities ($r = .29$, $p < 0,05$; small effect). Organisational support and exhaustion were found to have a negative relationship ($r = -.17$, $p < 0,05$; small effect). Job security was also found to report a positive relationship with advancement opportunities ($r = .15$, $p < 0,05$; small effect). Job security and exhaustion had a positive relationship ($r = .01$, $p < 0,05$; small effect). Advancement opportunities was established to have a negative relationship with exhaustion ($r = -.07$, $p < 0,05$; small effect). No significant differences were found between gender and exhaustion (sig 0.275). Burnout (exhaustion) is similar across the categories of gender (Male- M=12.86 and female- M=12.23). The results reported no significant differences between the different age groups and how they experience burnout (exhaustion). The results of the age groups were; below 24 years (M=560.79), 24 to 28 years (M=534.06), 29 to 31 years (M=615.32), 32 to 35 years (M=576.02), 36 to 40 years (M=572.97), 41 to 45 years (M=560.12), 46 to 50 years (M=543.68), and 51 and older (M=538.33). The results showed no significant differences across the different age groups (sig 0.349). The Kruskal-Wallis test reported no significant mean differences for the years worked between less than 1 year (M=557.52), 1-2 years (M=567.76), 3-4 years (M=580.69), 5-6 years (M=487.67), 7-8 years (M=554.43), 9–10 years (M=638.64), 11-15 years (M=575.29), and 16 and more years (M=566.46).

The result indicated that there was no significant difference between tenure and the exhaustion experienced (sig. 0.066). This study indicated that there were no significant differences found between marital status and exhaustion. The mean differences reported by the Kruskal-Wallis test are represented as follows: being single (M=559.47), married (M=563.02), divorced (M=603.17), and widowed (614.34). Significance was recorded at sig 0.706. The test found no significant difference between the number of dependents a participant has and perceived exhaustion levels. The mean differences were recorded for the number of children each respondent had no children (M=558.11), 1-2 children (M=573.31), 3-4 children (M=573.07), 5-6 children (M=561.84), 7-9 children (M=503.65) and 10 or more children (M=521.67). The level of significance was recorded at sig 0.746. The Kruskal-Wallis test found significant differences amongst the participants' highest qualification obtained and burnout (exhaustion). The mean scores were as follows: grade 12 (M=493.78), a certificate (M=535.20), a diploma (M=630.97), a degree (M=720.28), an honours degree (M=519.11), a Master's degree (M=657.57), and a PhD (M=571.50). Significance was recorded at sig. 000. A significant difference was recorded for the region of employment and burnout (exhaustion) of the sample (sig. 000). The mean scores were: The Oshikoto region (M=478.71), Kavango East region (M=794.74), Oshana region (M=501.52), Omaheke region (M=652.19), Khomas region (M=555.82) and the Erongo region (M=547.89).

Discussion: This study aimed to investigate the relationship between job demands-resources and burnout of the police force and nursing staff in Namibia. This study also investigated if significant differences exist regarding burnout of police and nursing employees with regards to gender, age tenure marital status, numbers of dependents, qualifications and region. No study like this has been done in Namibia investigating this relationship, or with the focus on police and nursing staff and on this magnitude. Hypothesis 1: Workload has a positive relationship with burnout, was supported by this study. This indicates that when police and nursing staff have more workload requirements, they also become more exhausted (burnout). This

was supported by Bakker et al. (2005), Crawford et al. (2010), Demerouti et al. (2001), and Pienaar and Bester (2011). This indicates that when nurses are expected to work longer shifts, attend to more patients and other administrative duties, they will experience a higher level of exhaustion. The higher the job demands for police officers, such as attending to more calls, the public reporting crime, attending to crime scenes, investigating crime, they would become more exhausted. Workload includes having too much work to do under time pressure, being required to attend to multiple tasks at the same time, working in emotionally upsetting situations that affect you personally and working with difficult people (arrested people and complainants). Van den Broeck et al. (2011) also indicated that when employees are expected to cope with high workloads without the needed resources, they will experience higher levels of burnout even faster. This was also indicated by the results of this study, with resources having a negative relationship with burnout (exhaustion). Resources, organisational support and advancement opportunities reported a negative relationship with burnout (exhaustion), partly supporting hypothesis 2.

On the other hand, job security reported a positive relationship with burnout (exhaustion). The results indicate that when police officers and nurses are provided with the required resources to execute their duties, they are also less likely to become exhausted even when faced with a high workload (Pienaar & Bester, 2011; Van den Broeck et al., 2011). These resources include having variety in your work, opportunities for personal growth and development, the opportunity to work independently or make use of your own judgement and being included in decision making. The organisational support that would also buffer burnout (exhaustion) include being able to rely on colleagues and supervisors for support and guidance when faced with difficult tasks, having good interpersonal relations with colleagues, being informed about your responsibilities and expectations at work, being informed about your expected and current levels of performance at work, being kept up to date with relevant information within the workplace as well as having sufficient interaction with colleagues. Advancement opportunities include being paid salaries that are sufficient and equitable for the work that you do, being paid enough for you to make a living, being allowed to attend training courses and having the opportunity to be promoted.

Should police officers and nurses be allowed access to resources, organisational support and advancement opportunities, they would be less exhausted and more likely to handle a heavier workload (Bruce & Sangweni, 2012; Crawford et al., 2010; Demerouti et al., 2001; Zito et al., 2016). According to Hamid (2007), exhaustion can be reduced by focusing on personalities of employees and how they cope with the existing challenges within their own professions. By providing employees with better coping strategies, they will be able to cope with the occupational demands and have the knowledge on how to manage job resources effectively. This will lead to productivity and lower levels of exhaustion. Van Yperen and Hagedom (2003) supported such a statement by saying that an employee, who is subjected to high job demands and has low control over certain aspects regarding their environment, will experience significant levels of exhaustion. Gender, age, tenure, marital status and number of dependents did not present significant differences with regards to burnout (exhaustion), partly rejecting Hypothesis 3. The Kruskal-Wallis test found that participants with different qualifications experienced significant differences regarding burnout (exhaustion).

Employees with a degree experienced higher levels of burnout (exhaustion). Since these employees hold higher qualifications, it would seem that more occupational pressure is placed on them to reach certain organisational goals. Having obtained a degree and working in an environment where many of their colleagues have not obtained similar qualifications, may place more expectations on employees with higher qualifications. The imbalance between the employees with qualifications and those who did not pursue tertiary education, might also is an indication that all members might not be able to handle the expected duties which would likely be assigned to the educated employees. Certain work role requires a certain level of education and understanding. Thus, these employees with a degree may be required to take on more difficult duties but also duties that are more intellectually challenging. The Kruskal-Wallis test also revealed that the participants in the Kavango East region experienced a significantly higher level of burnout (exhaustion) when compared to the other regions in this study. When taking a closer look to better understand this significant difference, it was found that the Kavango East region experienced a high level of workload (even though they also experienced a high level of organisational support); high levels of workload affected their level of burnout (exhaustion). Based on Hypothesis 3, the biographical variables “highest level of education” and “region” indicated significant differences regarding burnout amongst the sample.

5. Conclusion and Recommendations

Baker et al., (2005) and Pienaar and Bester (2011) indicated that when employees are faced with a high workload without adequate resources or support, they are likely to become exhausted, be absent, emotionally and physically depleted and may even resign (turnover). Khamisa et al. (2015) stated that burnout can affect the mental health and well-being of both professions. This leads to lower levels of performance and the services that they provide to the public are ultimately affected in negative ways. This could be the reason why the public might view the nurses and police officers as being impersonal and incompetent. Schaufeli et al. (2008) and Crawford et al. (2010) argued that burnout is the opposite of engagement regarding their overlapping dimensions. In order to decrease burnout, the institutions should focus on increasing employees' levels of engagement by providing necessary resources and levelling the job demands that lead to exhaustion. Rothmann and Jordaan (2006), Devonish (2013) and Bakker et al. (2005) argue that job demands and resources are negatively related and that high demands could limit the utilisation of certain job resources.
These theorists state that levels of job demand and resources have an impact on the level of burnout experienced by employees. According to Bakker et al. (2007) and Xanthopoulou et al. (2007), high levels of job resources prevent the manifestation of burnout. Looking at the results of this study, the institution's improvement of resources would lead to lower levels of burnout. Bakker et al. (2005), Bakker et al. (2016), and Van Vegchel et al. (2005) stated that by providing an appropriate resource the high job demands that nurses and police officers experience will be balanced. Additionally, Ojedokun and Idemudia (2014) added that in order to minimise burnout, the organisations should provide adequate training to help employees develop adaptive capacities when coping with high job demands. Considering that nursing and policing are strenuous jobs and employees are required to function optimally with limited resources, the organisations could focus on enhancing employees' coping skills and build their level of resilience (Waschgler et al., 2012). This can be achieved by looking into adequate training programmes which can help employees cope better with high job demands and low job resources. Considering that nurses and police officers may be exposed to a stressful working environment, specifically related to death, dying, illness, hopelessness, tragedy and despair, it is also recommended that these employees attend mandatory counselling to help deal with these stressors.

Recommendations: Pienaar and Bester (2011) also indicated that health education for nurses will also help alleviate the severity of the high workload they are exposed to. Even though nurses are in a health-conscious profession, some nurses rarely make time to do some physical exercise or meditate to reduce stress. By providing the employees with opportunities for development and growth; organisational support; skill utilisation and task variety; and performance feedback, the institution will increase the resources for the employees to not only accomplish daily tasks, but also to achieve organisational goals. To enhance job resources, management and supervisors may be required to include employees more often regarding decision-making, having representatives on work teams who make decisions which may impact all employees. Being given the opportunity to provide insight or to be asked for your views, makes employees feel more included and considered within the organisation. When employees are allowed to work more independently, it also enhances their level of competence, with the needed supervision and guidance, and these employees may even become more engaged and want to do more (Laschinger et al., 2012).

Considering that many of these police officers have not pursued tertiary education, it is also recommended that this ministry investigate the possibility of implementing short courses to alleviate the immediate need for more employees. To also reduce the immediate pressure of staff shortages, it could be considered to delegate to employees who are fast learners and excel in what they do, with necessary guidance and support (Van Yperen & Hagedoorn, 2003). Qualified nurses are encouraged to attend continuous professional development courses to ensure that their skills remain relevant and updated. It may also be prudent to consider the possibility of joint funding between employees and the ministry to further educate police officers and nurses since this will serve multiple functions. Educating these employees will enhance their level of competence and skills, being able to execute more and challenging tasks. It will also improve the quality of services provided by police officers and nurses, improving customer satisfaction and leading to an improved perception of these professions. This will also improve the employees' chances of advancement within the organisation to more senior ranks and more meaningful tasks.

When these employees are promoted within the organisation, they are also more likely to get paid better salaries that will also enhance their quality of life and the perceived fairness for work done. The provision of continued professional development through short courses is encouraged to employees that may have obtained their qualifications already. It is suggested that future studies employ a qualitative approach to delve deeper into the understanding of the workload and needed resources of police and nursing employees. Considering that the questionnaire was in English and English is not the mother tongue of most of the participants, it is recommended to also develop a burnout inventory for this population. Developing a Namibian instrument could improve the reliability of the tool and effectiveness of future studies.

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References

Aamodt, M. G. & Stalnaker, N. A. (2001). Police officer suicide: Frequency and officer profiles. Suicide and Law Enforcement, 383-398.

Bakker, A. B. & Demerouti, E. (2007). The job demands-resources model: State of the art. *Journal of Managerial Psychology*, 22(3), 309-328.

Bakker, A. B. & Demerouti, E. (2016). Job Demands–Resources Theory: Taking Stock and Looking Forward. *Work and Wellbeing: Wellbeing: A Complete Reference Guide*, 3(1), 1-28.

Bakker, A. B. & Heuven, E. (2006). Emotional dissonance, burnout, and in-role performance among nurses and police officers. *International Journal of Stress Management*, 13(4), 423-440.

Bakker, A. B., Schaufeli, W. B., Leiter, M. P. & Taris, T. W. (2008). Work engagement: An emerging concept in occupational health psychology. *Work and Stress*, 22(3), 187-200.

Bakker, A. B., Demerouti, E. & Verbeke, W. (2004). Using the job demands-resources model to predict burnout and performance. *Human Resources Management*, 43(1), 83-104.

Bakker, A. B., Demerouti, E. & Euwema, M. C. (2005). Job resources buffer impact of job demands on burnout. *Journal of Occupational Health Psychology*, 10(2), 170-180.

Bezuidenhout, A. & Cilliers, F. V. (2010). Burnout, work engagement and sense of coherence in female academics in higher-education institutions in South Africa. *South African Journal of Industrial Psychology*, 36(1), 1-10.

Bingham, J. B., Boswell, W. R. & Boudreau, J. W. (2005). Job demands and job search among high-level managers in the United States and Europe. *Group and Organization Management*, 30(6), 653-681.

Bruce, J. & Sangweni, B. (2012). The relationship between burnout and job satisfaction among registered nurses at an academic hospital in Johannesburg, South Africa. *Africa Journal of Nursing and Midwifery*, 14(1), 89-104.

Crawford, E. R., LePine, J. A. & Rich, B. L. (2010). Linking job demands and resources to employee engagement and burnout: A theoretical extension and meta-analytic test. *Journal of Applied Psychology*, 95, (5), 834–848.

Chung, M. H., Kuo, T. B. J., Hsu, N., Chu, H., Chou, K. R. & Yang, C. C. H. (2009). Sleep and autonomic nervous system changes - enhanced cardiac sympathetic modulations. *Scandinavian Journal of Work, Environment and Health*, 35(3), 180-187.

Demerouti, E., Bakker, A. B., Nachreiner, F. & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied psychology*, 86(3), 499.

Demerouti, E. & Bakker, A. B. (2011). The Job Demands–Resources model: Challenges for future research. *South African Journal of Industrial Psychology*, 37(2), 974-1038.

Devonish, D. (2013). Job demands, health, and absenteeism: Does bullying make things worse? *Employee Relations*, 36(2), 165-181.

Doulougeri, K., Georganta, K. & Montgomery, A. (2016). Diagnosing burnout among healthcare professionals: Can we find consensus. *Cogent Medicine,* 3, 1-10.

Edwards, D. & Burnard, P. (2003). A systematic review of stress and stress management interventions for mental health nurses. *Journal of Advanced Nursing*, 42, 169–200.

Field, L. K. & Buitendach, J. H. (2014). Work engagement, organisational commitment, job resources and job demands of teachers working within disadvantaged high schools in Kwazulu-Natal, South Africa. *Journal of Psychology in Africa*, 22(1), 87-95.

Freudenberger, H. J. (1974). Staff burn-out. *Journal of Social Issues*, 30(1), 159-185.

Goodman, A. E. & Wayne Boss, R. (2002). The phase model of burnout and employee turnover. *Journal of Health and Human Services Administration*, 25(1), 33-47.

Hamid, N. (2007). The relationship between socio-demographic variables, job stressors and hardiness among nurses in Iran. *Africa Journal of Nursing and Midwifery*, 9(2), 46-6.

Hawton, K., Simkin, S., Rue, J., Haw, C., Barbour, F., Clements, A. E. E. A. & Deeks, J. (2002). Suicide in female nurses in England and Wales. *Psychological medicine*, 32(2), 239-250.

Hornby, A. S. (2010). Oxford advanced leaner's dictionary. (8th ed.). New York: Oxford University Press.

Imai, H., Nakao, H., Tsuchiya, M., Kuroda, Y. & Katoh, T. (2004). Burnout and work environments of public health nurses involved in mental health care. *Occupational and Environmental Medicine*, 61(9), 764-768.

Jackson, L. T. B. & Rothmann, S. (2005). Work-related well-being of educators in a district of the North West Province. *Perspectives in Education*, 23(1), 107-122.

Khamisa, N., Oldenburg, B., Peltzer, K. & Ilie, D. (2015). Work-related stress, burnout, job satisfaction and general health of nurses. *International Journal of Environmental Research and Public Health*, 12, 652-666.

Kop, N., Euwema, M. & Schaufeli, W. (1999). Burnout, job stress and violent behaviour among Dutch police officers. *Work and Stress,* 13(4), 326-340.

Laschinger, H. K. S., Wong, C. A. & Grau, A. L. (2012). The influence of authentic leadership on newly graduated nurses' experiences of workplace bullying, burnout and retention outcomes: A cross-sectional study. *International Journal of Nursing Studies*, 49(10), 1266-1276.

Louw, D., George, E. & Esterhuyse, K. (2011). Burnout amongst secondary school teachers in Namibia. *South African Journal of Industrial Psychology*, 37(1), 1-7.

Maslach, C. (1998). A multidimensional theory of burnout. In Cooper, L. (Ed). Theories of organizational stress. California, Oxford University Press.

Maslach, C., Jackson, S. E. & Leiter, M. (1997). The Maslach burnout inventory. In C.P.

Maslach, C., Schaufeli, B. W. & Leiter, P. M. (2001). Job burnout. *Journal of annual reviews Psychology*, 52, 397-422.

McIntosh, W. L. (2016). Suicide rates by occupational Group—17 States, 2012. MMWR. *Morbidity and Mortality Weekly Report*, 65(25), 641–645.

Mudaly, P. & Nkosi, Z. Z. (2015). Factors influencing nurse absenteeism in a general hospital in Durban, South Africa. *Journal of Nursing Management*, 23, 623–631.

Nahrgang, J. D., Morgeson, F. P. & Hofmann, D. A. (2011). Safety at work: a meta-analytic investigation of the link between job demands, job resources, burnout, engagement, and safety outcomes. *Journal of Applied Psychology*, 1, (1), 1-24.

Peters, V. P. J. M., de Rijk, A. E. & Boumans, N. P. G. (2009). Nurses' satisfaction with shift work and associations with work, home and health characteristics: a survey in the Netherlands. *Journal of Advanced Nursing*, 65(12), 2689–2700.

Pienaar, W. & Bester, C. L. (2011). The impact of burnout on the intention to quit among professional nurses in the Free State region — a national crisis. *South African Journal of Psychology*, 41(1), 113-122.

Rothmann, S. & Jordaan, G. M. E. (2006). Job demands, job resources and work engagement of academic staff in South African higher education institutions. *SA Journal of industrial psychology*, 32(4), 87-96.

Rothmann, S., Mostert, K. & Strydom, M. (2006). A psychometric evaluation of the job demands-resources scale in South Africa. *South African Journal of Industrial Psychology*, 32(4), 76-86.

Schaufeli, W. B. & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: A multi-sample study. *Journal of organizational Behavior*, 25(3), 293-315.

Schaufeli, W. B., Taris, T. W. & Van Rhenen, W. (2008). Workaholism, burnout, and work engagement: three of a kind or three different kinds of employee well-being? *Applied Psychology*, 57(2), 173-203.

Stanley, I. H., Hom, M. A. & Joiner, T. E. (2016). A systematic review of suicidal thoughts and behaviors among police officers, firefighters, EMTs, and paramedics. *Clinical Psychology Review*, 44(1), 25-44.

Thuynsma, C. & de Beer, L. T. (2016). Burnout, depressive symptoms, job demands and satisfaction with life: discriminant validity and explained variance. *South African Journal of Psychology*, 47(1), 46-59.

Van den Broeck, A., De Cuyper, N., Luyckx, K. & De Witte, H. (2011). Employees' job demands-resources profiles, burnout and work engagement: A person-centred examination. *Economic and Industrial Democracy*, 33(4), 691–706.

Van der Doef, M., Mbazzi, F. B. & Verhoeven, C. (2012). Job conditions, job satisfaction, somatic complaints and burnout among East African nurses. *Journal of Clinical Nursing*, 21, 1763-1775.

Van Vegchel, N., De Jonge, J. & Landsbergis, P. A. (2005). Occupational stress in (Inter) action: The interplay between job demands and job resources. *Journal of Organisational Behaviour*, 26(5), 535-560.

Van Yperen, W. N. & Hagedoorn, M. (2003). Do high job demands increase intrinsic motivation or fatigue or both? The role of job control and job social support. *The Academy of Management Journal*, 46(3), 339-348.

Waschgler, K., Ruiz-Hernández, J. A., Llor- Esteban, B. & Garcia-Izquierdo, M. (2012). Patients' aggressive behaviours towards nurses: development and psychometric properties of the hospital aggressive behaviour scale- users. *Journal of Advanced Nursing*, 69(6), 1418–1427.

Xanthopoulou, D., Bakker, A. B., Demerouti, E. & Schaufeli, W. B. (2007). The role of personal resources in the job demands-resources model. *International Journal of Stress Management*, 14(2), 121.

Zhang, Y., Punnett, L. & Nannini, A. (2016). Work-Family conflict, sleep, and mental health of nursing assistants working in nursing homes. *Journal of Workplace and Health Safety*, 10, 1-9.

Zito, M., Cortese, C. G. & Colombo, L. (2016). Nurses' exhaustion: the role of flow at work between job demands and job resources. *Journal of Nursing Management*, 24(1), 12–22.

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Influence of Socio-Psychological Factors on Consumer Willingness to Pay (WTP) for Organic Food Products

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Abstract: This study evaluates consumers' willingness to pay (WTP) a premium for organic vegetables and fruits in Pietermaritzburg metropolis, KwaZulu-Natal province, South Africa, using data collected from 210 consumers approached during their food shopping. The standard economic approach to valuation was extended by including psychological factors. The results from the empirical model show that psychological factors (behavioural control, attitude and subjective norms) exerted more influence on consumers' WTP for organic products. In addition, socio-demographic factors such as gender, education, number of children in a household, high income and race, are statistically significant in explaining consumers' WTP for organic food. Policy implications for advancement and improved promotion, sales and consumption of organic food products were discussed.

Keywords: *Organic food; price premium; consumers' perceptions; psychological factors; theory of planned behavior; ordered logit model*

1. Introduction

Organic food products are food produced by an agricultural production system without the use of artificial fertilisers, pesticides, and often do not contain artificial colouring, flavouring, aromatic substances, preservatives, nor genetically modified ingredients (DAFF 2012; Stobberlaar et al., 2006), which are generally more expensive and less harmful to the environment than their conventional counterparts are. Consumer perception of organic food's quality and safety as better than the conventional foods has driven the increase in demand for organic food products all over the world (Vindigni et al., 2002). This has resulted in an upsurge in the number of farmers, distribution networks/retail outlets and consumers' willing to buy and pay a premium price for nutritive and healthy organic foods (Sharfie and Rennie 2012; Sarma and Raha 2016; Nandi et al., 2017). For many consumers, food safety, quality and it's nutrition/health benefits have become a priority (Sarma and Raha, 2016). However, organic products are relatively expensive compared to conventional food products (Roitner-Schobesberger et al., 2008). The extra percentage charged on organic food when compared to the price of non-organic food is the price premium (Shafie and Rennie, 2012).

According to Hamm et al., (2002), food safety, nature conservation and taste are the most important attributes use in substantiating organic food price premium. While some consumer alleged that the organic food market charges more for organic food, others often assumed they cannot pay for organic food others (Whitehead and Nicholson, 2001), and therefore are not willing to pay a premium price. Evidently, one of the major determinants of organic food products purchase is the price. When there is a wide price gap, there is likely to be a substantial difference in consumers' WTP price premiums for organic foods (Thompson 1998). The maximum additional price premium charge on a product a consumer is willing to pay when compared with the price of an alternative product is the "willingness to pay" (WTP). Many studies (Gil et al., 2000; Corsi and Novelli 2003; Conner and Christy 2004; Goldberg and Roosen 2005; Onozaka et al., 2006; Ghorbani and Hamraz 2009; Hagjou et al., 2013) on consumers' WTP for organic food products, have applied Contingent Valuation Model (CVM) based on stated preferences. In order to value non-market goods, the CVM is one of the economic models often used.

In contrast to a price based preference model, the CVM model is a stated preference model, in which the consumers confront an assumed buying position. The consumers are expected to respond to questions on the price they are willing to pay for organic food products or if they are prepared to pay a certain premium stated as a sum of money or as a fraction over the reference price (Carmona-Torres and Calatrava-Requena 2006). While economists have tended to match intended or stated WTP with tangible payments, they have mostly failed investigates what motivates respondents to answer to higher price premium ab initio. An

understanding of respondents' behavioural intentions, for example, stated WTP involve the examination of psychological factors (Voon et al., 2011; Arvola et al., 2008; Ajzen et al., 1991).

The theory of planned behaviour, which is dependent or influenced by a combination three psychological factors of attitude, subjective and behavioural norms (Ajzen 1991) has been widely used in consumer behaviour study to explain buying intentions of consumers (Spash et al., 2009; Voon et al., 2011). Therefore, psychological factors can be included into contingent valuation model (CVM) to test the assumptions about motives for willingness to pay price premium (bids). For this reason, in this study, standard economic approach to valuation was extended to include the theory of planned behaviour and other socio-demographic factors based on empirical evidence from works on consumers' WTP for organic products. Health and environmental safety issues have led to changing food consumption patterns resulting in increased interest in organic food as well as creating an emerging market for organic food products throughout the world. Thus, there is a need for researchers to examine the influence of socio-demographic and psychological factors, which has not been tested or modelled within a contingent valuation model (CVM) in explaining consumers' WTP a price premium for organic food products in South Africa, which this study seeks to explore. An understanding of these elements is crucial for the design of an effective marketing stratagem for the local organic product market growth in South Africa.

2. Literature Review

The Theory of Planned Behaviour: The theory planned behaviour assumes a persons' intention is based on or influenced by a mix of behavioural attitudes (i.e. a persons' beliefs of the desirability of a behaviour); subjective norms (i.e. a persons' seeming relevance and importance of opinions of significant others); and behavioural control (i.e. an individual's sense of control over the behaviour) (Ajzen 1991). A person's attitude is a unique and most vital precursor for forecasting and elucidating consumers' selections across products and services as well as food products (Honkanen, et al., 2006). Attitude towards behaviour refers to a person's belief about the desirability of the behaviours i.e. either positive or negative assessment or consideration of the behaviour. It is defined as a psychological paradigm that represents a persons' willingness to behave or respond in a particular way (Jung 1971). It is a mental inclination that is borne by assessing a specific object with some amount of like or dislike (Eagly and Chaiken 1993), or a continuing evaluation of an entity alongside other alternatives, which is built on a person's emotions (affection), thoughts (cognition) and beliefs (values) towards the entity (Dossey and Keegan 2009; Hoyer and Maclnis 2004). Past research has hinged organic food consumption on behavioural attitudes such as environmental and health awareness, the trust of organic food claims and appeal of organic food qualities such as freshness, texture and taste (Aryal et al., 2009; Hughner, et al., 2007; Gil and Soler 2006; Thogersen 2006).

Since organic food is mostly perceived as more nutritive and harmless than conventionally produced food, there is a likelihood for health-conscious people to affirm the health-improving features of organic food (Michaelidou and Hassan 2008). Trust is defined as assurance in a person's anticipations, while needed behaviours are seen as definite while unwanted behaviours are not considered (Luhmann 1979). Organic food assertions trust is a strong reason for intention to consume due to organic food credibility stand. Credence food products are those that consumers are unable to appraise well because the consumption benefits are not observed immediately or directly. Consequently, consumers often rely on product tagging (labelling), advertisements and endorsements as pointers of the credibility of product claims. The degree which these provoke buyer trust will thus encourage organic food consumption intentions. In sum, a positive attitude towards organic food has the most likelihood of boosting a person's intention and WTP for organic food products. In another vein, subjective norms denote an individual's apparent relevance or social pressure or importance of opinions of significant others to perform a specific behaviour (O'Neal 2007; Ajzen 1991). Consumers' subjective norms reveal their opinions of how those they considered important to them, would see them when they take on certain behavior. In line with McClelland's (1987) theory of needs, a person is inclined to take on a behavior that is viewed necessary by referent group or loved ones, owing to their need for association and group participation.

This way, the likelihood of an individual's intention to consume organic food is boosted if they are of the opinion that the expectation of the ones they love is to do so, or if their intention is to be associated or

identified with some organic food-consuming households (Chen 2007). Behavioural control refers to a person's awareness of the extent they are able to accomplish a particular behavior (Ajzen 1991). It refers to the sense of control over the behaviour or the ease or difficulty of performing the behaviour. The basis of such awareness is a person's beliefs about the relative easiness or exertion in accomplishing the behavior and the degree to which the performance is up to them (Ajzen 1991, cited in Tarkiainen and Sundqvist 2005). If there is relative ease of performing a behavior, and is within the means of the person, there will be a reinforced intention to perform the behavior. Previous research has classified affordability as a subclass of behavioral control that influences behavioral intention (Oh and Hsu 2001; Notani 1997; Thompson and Thompson 1996). Affordability is the capability of bearing the cost of a behavior short of any severe loss to the capability for action. For buyers, affordability is strictly related to search (convenience) and monetary costs.

3. Methodology

Study Area: This study was conducted in Pietermaritzburg metropolis in KwaZulu-Natal Province, South Africa, using a multistage stage sampling method to collect cross-sectional data from consumers in the metropolis. Pietermaritzburg was selected due to its strategic location as the administrative headquarters of the KwaZulu-Natal Province. Furthermore, it provides a representative sample of interest because the Pietermaritzburg metropolis is seen as a liberal metropolis socially and economically. It is densely populated and is made up of people from diverse races, educational level and income class.

Research Procedure: Ethical clearance and permission to conduct this study were obtained from the, University of KwaZulu-Natal, Humanities and Social Science Research Ethics Committee.

Respondents and Data Collection: The respondents were requested to participate freely in the survey. They were assured of the privacy, anonymity, and confidentiality of the data collected from them and signed an informed consent form. Four enumerators were trained to administer questionnaires to respondent consumers personally at each of the six malls (Hayfields, Sidewalk, Scottsville, Maritzburg, Midlands and Edendale) and a traditional local market (Debbie Market) that were purposively selected in the first stage of the study to ensure a widespread across the metropolis. The second stage involved purposive and convenient selection of consumers during their shopping for organic foods (different fruits and vegetables) with the major safe food labels/tags, and the price displayed. This method is appropriate because of the challenge in identifying the target population and is suitable where group membership is difficult to establish in order to describe a particular identifiable group. Although, the sample group might not embody the broad populations, the fact the consumers were seen buying organic food products, implies that the chosen respondents provide a remarkable study group for this study. Thirty consumers were interviewed at each mall and the traditional market, giving 210 respondent consumers used for the study.

Measuring Instrument: The opinions of consumers that participated in the study were sought using open-ended and close-ended questions consisting of responses that were pre-coded in a face-to-face interview, using a structured questionnaire. This is a more reliable method in CVM studies (Carson and Hanemann 2005). The survey included questions on consumers' socio-economic and demographic characteristics of respondents, attitudes towards organic vegetables and fruits; perceived societal/social beliefs of organic food consumption; concern towards environment and health, and WTP premium prices for organic vegetables and fruits. The perceptions questions were measured on a five-point Likert scale (ranging from 5 = strongly agree, 4 = agree, 3 = neutral, 2 = disagree to 1 = strongly disagree). Reliability analysis of scores from the consumer willingness to pay survey purchase intention, showed Cronbach alphas of 0.96, which implies a great degree of internal dependability.

Conceptual Framework of CVM for Estimating Consumers' WTP for Organic Food Product: Within the framework of consumer-stated preference, consumers' WTP premium price for any food item is seen as a choice problem. In this framework, consumers' stated behaviour in a hypothetical setting was used to assess the value of non-market goods. It is assumed that a rational consumer *i* will choose from a package of organic food products $\left(\varphi^1\right)$ and conventional products $\left(\varphi^0\right)$ based on his/her consumers' attitude, behavioural control and subjective norms. Thus, if the expected consumers' attitude, behavioural control and subjective

norms toward consuming organic products $\boldsymbol{E}[\bigcup(\varphi^1)_i]$ is positive and higher than those associated with consuming conventional food products $\boldsymbol{E}[\bigcup(\varphi^0)_i]$, then the consumer is WTP premium price for the given organic food product. WTP premium price for an organic food product is stated as a function of a change in the consumers' attitude, behavioural control and subjective norms that arise based on the consumers' choice: WTP = $\boldsymbol{f}[\Delta\bigcup(\varphi^0)_i]$, where $\Delta\bigcup(\varphi)$ is a measure of the change in attitude, subjective norms and behavioural control.

A consumer will particularly choose organic food products φ^1 above conventional food products φ^0 if the change in attitude, subjective norms and behavioural control is positive $[\Delta\bigcup(\varphi) = \bigcup(\varphi^1) - \bigcup(\varphi^0) > 0]$ for all $\varphi^1 \neq \varphi^0$. However, a consumers' attitude, behavioural control and subjective norms are not observable, what is observable is whether a consumer chooses to pay a premium price for organic food, or not. In order to analyse the consumers' choice behaviour, the double-bounded dichotomous choice framework was used (Hanemann et al., 1991). This approach allows two successive bids to be offered to the consumer. The second bid is conditional on the reply to the first bid. A bid is the price of the organic food offered to the consumer. Since, the price of the organic food product is not determined by the consumers, neither do they negotiate on the price of chosen products, the WTP estimates used in this study are derived from a base price that is equivalent to the average market price of organic fruits and vegetables.

Furthermore, since selection for the study was based on consumer's interest in buying organic food products, the randomly selected consumers are expected to have a price for organic food products that is equal or above the price in the retail shops. Consequently, they were asked if they are willing to buy organic food products at higher prices that were 10%, 20%, 30%, 40% or more than 50% over the present price. Each consumer is asked if he/she would pay only one of these premium prices. If a consumer response was *"NO"* to the first bid, then the elicitation process ends. If the answer to the first bid was *'YES",* the consumer is offered a higher bid the other possible responses would be a *"YES", "NO",* implying an acceptance of the first bid, but rejection of the second bid, and a *"YES", "YES"* response, would imply acceptance of both the first and the second bids.

The Empirical Model: This study applied an ordered logit model (Greene 2008) to analyse consumers WTP a premium for the organic product. In the empirical application, three outcomes with respect to WTP for organic produce considered. The different outcomes are clearly ranked – (i) a consumer may not be WTP a premium, (ii) a consumer may accept the first bid but reject the second bid, or (iii) a willingness to pay a premium by accepting both bids.

The WTP model can be stated as follows:

$$\Psi_i^* = \boldsymbol{X}_i^{'}\beta + \varepsilon_i \qquad (1)$$

Where Ψ_i^* is a latent variable that is unobservable, reflecting the WTP for organic food products by consumer *i,* stated in terms attitude, subjective norms and behavioural control, to switch from conventional organic food to organic food. β is a vector of parameters showing the relationships amongst WTP a premium and the explanatory variables *X* while ε Is the stochastic error term. Ψ_i Is the observable event, which indexes consumers' WTP? The relationship between the unobserved Ψ_i^* and the observed outcome for consumer *i,* for Ψ_i (Ψ_i = 0, 1, 2) and is stated as follows:

$$\Psi_i = 0 \quad \text{if } \Psi_i^* \leq \mu_1$$
$$\Psi_i = 1 \quad \text{if } \mu_1 < \Psi_i^* \leq \mu_2$$
$$\Psi_i = 2 \quad \text{if } \mu_2 \leq \Psi_i^* \qquad (2)$$

Equation (2) is a system of censoring and the $\mu's$ unknown parameters, which would be estimated with β. It is assumed to be normally distributed through all observations. When the mean and variance of ε is normalised to 0 and 1 respectively, the resulting probabilities are:

$$\begin{aligned}
\Pr ob(\Psi_i = 0 \mid \boldsymbol{X}) &= f(-\boldsymbol{X}'\beta) \\
\Pr ob(\Psi_i = 1 \mid \boldsymbol{X}) &= f(\mu_1 - \boldsymbol{X}'\beta) - f(-\boldsymbol{X}'\beta) \\
\Pr ob(\Psi_i = 2 \mid \boldsymbol{X}) &= f(\mu_2 - \boldsymbol{X}'\beta) - f(\mu_1 - \boldsymbol{X}'\beta)
\end{aligned} \quad (3)$$

As all probabilities need to be positive, the condition $0 < \mu_1 < \mu_2$ is necessary and must satisfied and since the coefficients from the model are not equal to the marginal effects of the regresses X on the probabilities, the changes in the explanatory variables estimated as the marginal effects were calculated (Maddala 1991 and Greene 2008) as specified below:

$$\begin{aligned}
\frac{\partial prob(\Psi = 0 \mid \boldsymbol{X})}{\partial \boldsymbol{X}_i} &= -f(-\boldsymbol{X}'\beta)\beta \\
\frac{\partial prob(\Psi = 1 \mid \boldsymbol{X})}{\partial \boldsymbol{X}_i} &= [f(-\boldsymbol{X}'\beta) - f(\mu_1 - \boldsymbol{X}'\beta)]\beta \\
\frac{\partial prob(\Psi = 2 \mid \boldsymbol{X})}{\partial \boldsymbol{X}_i} &= [f(\mu_1 - \boldsymbol{X}'\beta) - (\mu_2 - \boldsymbol{X}'\beta)]\beta
\end{aligned} \quad (4)$$

Explanatory Variables Included in the Empirical Model: The theory of planned behavior was measured by psychological factors such as attitude (taste, environmental and health consciousness, trust of organic food claims by retailers, organic food product knowledge, presence of chemical residues in conventional vegetables and fruits); subjective norms (spouse and children approval of organic food) and behavioral control (availability and affordability) (See Padel and Foster 2005; Michaelidou and Hassan 2008; Nandi et al., 2017). In addition, empirical evidence from past studies has shown that consumers' WTP is also influenced by socio-demographic variables such as gender, age, marital status, education, number of children below age 18, household income and the race of the consumer. (See Chelang et al., 2013; Liu et al., 2009; Haghiri et al., 2009; Darby et al., 2008; Onyango et al., 2007; Krystallis and Chryssohoids 2005). The explanatory variables used in the empirical model for this study is presented in Table 1.

Table 1: Explanatory Variables Used in the Empirical Model

Variables	Description	Hypothesised signs
Socio-demographic variables:		
Gender of household head	D = 1 if female, 0 otherwise	-
Age	Respondent age in years	+/-
Education	Number of years of schooling	+
Marital status	D = 1 if respondent is married; 0 otherwise	+
Household size	Number of people in a household (per adult equivalent)	+/-
Children	Number of children younger than 18yrs	+
Low Inc	D = l if monthly household income is less than R5,000; 0 otherwise	-
Mid Inc[a]	D = l if monthly household income is less than R6,000-R10,000; 0 otherwise	+
High Inc	D = l if monthly household income is greater than R10, 000; 0 otherwise	+
Race	D =1 if African; 0 otherwise	+/-

Attitudinal variables:		
Taste#	Consumer perception on taste attribute of organic food	+
Health/nutrition benefits#	Consumer perception on health/nutritional attribute of organic food	
Knowledge#	Organic food products knowledge	+
Trust of retailers#	Consumer trust of retailers of organic food products	+
Chemical residues#	Consumer perception about chemical residues on convectional vegetables and fruits	+
Environmental benefit#	Consumer perception on environment benefits of organic food	+
Subjective norms variable:		
Loved ones expectations#	Consumer perception on spouse/children's expectation/approval of organic food purchase	+
Behavioural control variables:		
Product availability#	Consumer perception on availability of organic food	+
Affordability (Price)#	Consumer perception of the price of organic food	-

Based on a priori expectations

Note: [a] indicates the reference category, dropped from the model to avoid perfect collinearity. #indicates measurement on a 1 – 5 Likert Scale.

4. Results and Discussion

Descriptive Statistics of the Consumers' WTP for Organic Food: The majority of the consumers (about 67 percent) reported that they are WTP premium price for organic food products, while about 44 percent of them indicated WTP 10 percent premium price and are not WTP the 20 per cent premium price or any amount above the first bid). Only about 23 percent of the consumers indicated WTP between 10 percent premium (i.e. the first bid) and 20 percent premium (i.e. the second bid) but not any amount above 20 percent premium. The share of the consumer WTP the bid premium generally decreased with an increase in price. The distribution of consumers WTP premium price for an organic food product is presented in Table 2.

Table 2: Distribution of Consumers WTP Price Premium for Organic Food Product

Categories	Description	No of respondents	Percentage
No	Not willing to pay a price premium for organic products	69	33
Yes – No	Willing to pay 10 per cent price premium (i.e. the 1st bid) but unwilling to pay for the 2nd bid.	93	44
Yes – Yes	Willing to pay 10 per cent - 20 per cent premium (i.e. the 1st and 2nd bid) but not a price premium above 20 per cent.	48	23
Total		210	100

Source: Survey data analysis.

Determinants of Consumers' WTP for Organic Food Products: The parameter estimates of the ordered logit model and its marginal effects, calculated at the sample means are presented in Table 3. The ordered logit model results are explained using the marginal value (marginal effects), which is a probability measure of how a unit change in the explanatory variables affects the outcome variable categories.

Table 3: Result of the Ordered Logit Regression Model for the Determinants of WTP for Organic Food Products

Variables	(β)	SE	Marginal effects No	Yes-No	Yes-Yes
Socio-demographic variables:					
Gender	0.569***	0.181	-0.049	-0.039	0.089
Age	0.013	0.032	0.002	-0.001	-0.002
Education	0.310***	0.190	-0.040	-0.036	0.076
Marital status	0.0002	0.208	-0.000	-0.000	0.000
Household size	0.793	0.356	0.003	0.004	-0.014
Children	0.046**	0.023	-0.010	0.046	0.028
Low Income	0.039	0.052	0.015	0.012	0.032
High Income	0.945**	0.372	-0.050	0.023	0.046
African	-0.457***	0.250	0.066	-0.048	-0.114
Attitude variables:					
Taste	0.006	0.071	-0.080	0.037	0.068
Health/nutrition benefits	0.064**	0.025	-0.261	0.182	0.364
Knowledge	0.044**	0.022	-0.181	0.325	0.261
Trust of retailers	1.683**	0.751	-0.261	0.313	0.250
Chemical residues	2.320***	0.620	-0.281	0.321	0.363
Environmental benefit	1.533**	0.561	-0.162	0.143	0.284
Subjective norms variable:					
Loved ones expectations	1.453***	0.328	-0.213	0.461	0.542
Behavioural control variables:					
Product availability	1.290**	0.683	-0.162	0.321	0.473
Affordability (Price)	0.451**	0.163	0.174	0.290	0.305
Constant	5.219	0.111			

Number of observation: 210; Log likelihood = - 614.1; χ^2 Statistics = 0.471; Psudo R^2 = 0.764: Overall accuracy (correctly predicted): 84.5 per cent

Note: *** and ** indicate statistical significance at the 1% and 5% probability levels respectively.

The results presented in Table 3 shows that consumers' WTP for organic food products is influenced by both demographic and socio-psychological factors, with the latter exerting more influence on WTP as revealed by their marginal effects (column 3-5 in Table 3). Consumers' demographics (gender, education, number of children in a household, household income and race) have a statistically significant influence on the WTP for an organic food product. The probability of a consumers' WTP price premium for organic food product increases with female consumers the probability of a female consumer choosing a No premium option and a Yes-No option decreases by 4.9 percent and 3.9 percent respectively, while the probability of willingness to pay 20 percent premium increases by 8.9 percent. This implies that female consumers are more WTP premiums for organic products compared to their male counterparts. This is probably because women are more "family-oriented" and are concern about food nutrition, its safety and health benefits. This finding is consistent with those of Nandi et al., (2017); Omar et al., (2016); Gracia and de Magistris (2008); Liu et al., (2009); Onyango et al., (2007); Stobbelaar et al., (2006) and Krystallis and Chryssohoidis (2005), among others. The probability of a consumer choosing a No premium option and a Yes-No option decreases by 4.0 percent and 3.6 percent respectively with a year increase in education, while the probability of willingness to pay 20 per cent premium increases by 7.6 percent. The implication is that consumers are WTP premiums for organic food with a year increase in their educational attainment. These results concur with those of Gracia and de Magistris (2008); Krystallis and Chryssohoidis (2006), but the contrast with those of Boccaletti and Nardella (2000).

The educational acquisition has been shown to significantly influence consumers' attitude towards organic food products. Consumers who had acquired higher education are most likely to display positive attitudes towards organic food (Emadi and Rosta 2016; Omar et al., 2016; Liu et al., 2009; Gracia & de Magistris 2007; Darby et al., 2008). In addition, the number of children in a household shows that the probability of a

consumer choosing a No premium option decreases by 1.0 percent when the number of children in a household increase by one, while the probability of choosing a Yes-No and a Yes-Yes option increases by 4.6 percent and 2.8 percent respectively. This implies that a household with children age less than 18 years are WTP premiums for organic food produce. This finding is consistent with the findings of Chelang'a et al., (2013). Empirical study has shown that household with children exerts a positive influence on consumers' organic food attitude and buying behaviour (Essoussi and Zahaf 2008). The probability of high-income households choosing the No premium option decreases by 5 percent with an increase in income, while the probability of choosing the Yes-No option and the Yes-Yes option increases by 2.3 percent and 4.6 percent respectively. This implies that high-income households are WTP premium for organic food produce and more likely to form positive attitudes towards organic food (Nandi et al., 2016; Emadi et al., 2016; Adekunle et al., 2016; Gracia and de Magistris 2007; Haghiri et al., 2009; Aryal et al., 2009). The probability of an African consumer choosing the No premium option increases by 6.6 percent, while the probability of choosing the Yes- No and Yes-Yes option decreases by 4.8 percent and 11.4 percent respectively. The implication is that consumers of African descent are not WTP premium price for organic food.

A possible explanation could be that in South Africa, the majority of the African population are still poor and do not possesses economic and production assets compared to other racial groups. Furthermore, the results presented in Table 3 also shows that psychological factors such as consumers' attitude, subjective norms and behavioural control are statistically significant in explaining consumers' WTP for organic food. Specifically, consumers' attitude (knowledge of organic food product, the trust of retailers, perception on chemical residues, health/nutritional benefit, environmental benefits) are statistically significant factors influencing WTP for an organic food product. Consumers' knowledge/awareness of organic food products shows that the likelihood of choosing the No premium option decreases by 18 percent, with an increase in consumers' knowledge/awareness of organic food. The probability of choosing the Yes-No and Yes-Yes options increases by 32 percent and 26 percent respectively, implying that consumers are WTP premium price for an organic product with an increasing knowledge or awareness. The result is consistent with those of Adekunle et al., (2016); Haghiri et al., (2009); Gracia and de Magistris (2008); Gil and Soler (2006) and Govindasamy et al., (2005). Consumers' trust of organic food retailers shows that the likelihood of selecting the No premium option decreases by 26 percent, with an increase in trust perception of organic food retailers. The probability of choosing the Yes-No and Yes-Yes options increases by 31 percent and 25 percent respectively, implying that consumers are WTP premium price for an organic product with increasing trust of retail outlets/shops. Also, consumers' perception on nutrition/health benefits of organic food show that the likelihood of a consumer opting for the No premium decreases by 26 percent, with an increase in their perceptions on nutrition/health benefits.

The likelihood of choosing the Yes-No and Yes-Yes options increases respectively by 18 per cent and 36 per cent, implying that consumers are willing to pay a price premium for an organic product if they perceived that the nutrition/health benefits are great. According to Michaelidou and Hassan (2008), consumers are expected to develop positive attitudes towards the health-improving qualities of organic food products since they are mostly seen as more nutritious and safer than conventionally produced food. Furthermore, Nandi et al., (2017); Sarma and Raha (2016); Batte et al., (2007) and Padel and Foster (2005) have shown that health concern was a key factor for WTP for a product with a high percentage of organic content. Consumers' perception of conventional vegetables and fruits containing chemical residues has a statistically significant influence on WTP for organic food products. Consumers' perception of chemical residues on conventional vegetables/fruits shows that the likelihood of choosing the No premium option decreases by 28 percent, with an increase in chemical residue perception of conventional vegetables/fruits. The probability of choosing the Yes-No and Yes-Yes options increases by 32 percent and 36 percent respectively. The implication is that consumers are WTP premium price with increasing perception of the presence of chemical residues in conventional vegetables and fruits, because of the associated health risks with conventional vegetables and fruits. Consumers' perception of the environmental benefit of organic food show that the likelihood of a consumer opting for the No premium decreases by 16 percent, with an increase in their perceptions on environmental benefits.

The probability of choosing the Yes-No and Yes-Yes options increases respectively by 14 percent and 28 percent. The implication is that consumers are WTP premium price for organic food if they are perceived as

beneficial to the environment. The empirical evidence of this finding is consistent with Honkanen et al., (2006) and Nandi et al., (2017). Studies have shown that consumers appear to support agricultural food products that are environmentally friendly and discourage any action that is detrimental to the environment and increases pollution (Lucas et al., 2008; Magnusson et al., 2003). Consumers' subjective norm (perception of loved ones approval of organic food) show that the likelihood of a consumer opting for the No premium decreases by 21 percent with an increasing approval of loved ones organic food purchase. The likelihood of choosing the Yes-No and Yes-Yes options increases by about 46 percent and 54 percent respectively, implying that consumers are WTP premium price if they perceived that their loved ones approved of their organic food products purchases. The result is consistent with Voon et al., (2011), consumers' intention to consume organic food product is strengthened if they consider that it is the expectation of their loved ones for them to do so. Consumers' behavioural control (availability and affordability) has a statistically significant influence on WTP for organic food products. The marginal value in respect of perception on product availability shows that the likelihood of a consumer opting for the No premium decreases by 16 percent with an increasing organic product price.

The likelihood of choosing the Yes-No and Yes-Yes options increases by about 32 percent and 47 percent respectively, implying that consumers are WTP premium price if they perceived organic products are readily available in the market. Consumers who are willing to buy organic food products are more likely to buy in larger quantities, if they were readily available (Gracia and de Magistris 2007; Nandi et al., 2017). Consumers' perception of price shows that the likelihood of a consumer opting for the No premium increases by 17 percent with an increasing organic product price. The likelihood of choosing the Yes-No and Yes-Yes options increases by about 29 percent and 35 percent respectively, implying that consumers were WTP premium price even when they perceived organic food product prices are too high. The result is contrary to those of Adekunle et al., (2016), Gracia and de Magistris (2008), they asserted even though there is an increasing demand for higher quality and healthy food products by consumers, they still respond changes in price. A plausible explanation for this is consumers could perceive organic food that cheap as of low quality and have fewer benefits. As a result, the organic product may lose its unique and distinctive elements and appeal among consumers. Consumers who have been convinced of the benefits of organic food and have made it consumption a lifestyle are less likely to be deterred by high prices. However, affordability could be an issue for those who do not consume organic food frequently or are yet to be influenced by its many benefits (Hughner et al., 2007; Voon et al., 2011).

5. Conclusion and Policy Implications

Consumers' perception of the organic food product is crucial, as it will determine the buying behaviour. The study findings show that the availability of organic food in the market will increase price and purchases. Consumers seem to be willing to accept higher prices for the organic product as they see it as a payment for the desired benefits and needed attributes of organic food. Therefore, marketers/producers should focus on how to develop strategies for increasing sales of organic food products and 00help local farmers to improve their farm production methods. In addition, in order to offer effectively their organic product lines, producers and retailers have a duty to cautiously review the price premiums charged and create awareness for organic food consumption (especially among the African population). Price is a limitation for organic food consumption. The prevailing gaps between organic and conventional food prices need to be reduced in order to encourage and promote the consumption of organic food. The provision of relevant information and developing educational promotional campaigns on organic food products are imperative for the growth of the local organic food market. Marketing strategies could include promotional trials of the products in retail outlets and by providing information on how organic foods are produced, as well as on the health, nutritional and environmental benefits.

This will attract new consumers and increase their understanding of the term "organic". Furthermore, individuals whom consumers hold in high regard should continue to influence them through their active advice or opinions as well as passively through their own behaviours. In addition, since the socio-economic and psychological factors determining consumers' WTP premium price for organic food products are varied, marketing approaches for promoting organic food consumption will be successful if salespersons target educated female consumers, with a high income and young children. However, a limitation of the study is the

restriction of the survey only to Pietermaritzburg metropolis. Therefore, more studies covering larger geographical areas could build on the findings of this study and expand the strength of the results. Secondly, this study is based on willingness to pay (intention/stated preference); future studies may focus on actual purchase (revealed preference).

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References

Adekunle, C. P., Akerele, D., Adekunle, A. K. & Amodemaja, T. S. (2016). Consumers' willingness to pay for organic leafy vegetables in Abeokuta South West Nigeria. Double bounded dichotomous choice approach. *Nigerian Journal of Agriculture, Food and Environment,* 12(1), 17-23.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes,* 5(2), 179–211.

Arvola, A., Vassalo, M., Dean, M., Lampila P., Saba, A., Lahteenmaki, L. & Shepherd, R. (2008). Predicting intentions to purchase organic food: The role of a00ffective and moral attitudes in the Theory of Planned Behavior, *Appetite,* 50, 443-454.

Aryal, K. P., Chaudhary, P., Pandit, S. & Sharma, G. (2009). Consumers' willingness to pay for organic products: a case from the Kathmandu valley. *Journal of Agriculture and Environment,* 10, 12-22.

Batte, M. T., Hooker, N., Haab, T. C. & Beaverson, J. (2007). Putting their money where their mouths are: consumer willingness to pay for multi-ingredient, processed organic food products. *Food Policy,* 32(2), 145-159.

Boccaletti, S. & Nardella, M. (2000). Consumer willingness to pay for pesticide-free fresh fruit and vegetables in Italy. *International Food and Agribusiness Management Review,* 3(3), 297-310.

Carmona-Torres, M. & Calatrava-Requena, J. (2006). Bid design and its influence on the stated willingness to pay in a contingent valuation study. Contributed paper prepared for presentation at the International Association of Agricultural Economists Conference, Gold Coast, Australia.

Carson, R. T. & Hanemann, W. M. (2005). Contingent valuation in Maler, K. G. and J. R. Vincent (Eds), *Handbook of Environmental Economics,* 2, 517-1103.

Chelang'a, P. K., Obare, G. A. & Kimenju, S. C. (2013). Analysis of urban consumers' willingness to pay a premium for African leafy vegetables (ALVs) in Kenya: a case study of Eldoret Town. *Food Security,* 5, 591-595.

Chen, M. F. (2007). Consumer attitudes and purchase intentions in relation to organic foods in Taiwan: Moderating effects of food-related personality traits. *Food Quality and Preference,* 18, 1008-1021.

Conner, D. S. & Christy, R. D. (2004). The organic label: how to reconcile its meaning with consumer preferences. *Journal of Food Distribution Research*, 35(1), 40–43.

Corsi, A. & Novelli, S. (2003). Measuring quantity constrained and maximum prices consumers are willing to pay for quality improvements: The case of organic beef meat. Proceedings of the 25th IAAE Conference, Durban, South Africa.

Darby, K., Batte, M. T., Ernst, S. & Roe, B. (2008). Decomposing local: A conjoint analysis of locally produced foods. *American Journal of Agricultural Economics,* 90(2), 76-486.

DAFF. (2012). National policy on organic production. Confidential discussion paper 7th draft. Department of Agriculture, Forests and Fisheries, Pretoria. Republic of South Africa.

Dossey, B. M. & Keegan, L. (2009). Holistic Nursing: A Handbook for Practice, Sad bury, MA: Jones and Bartlett Publishers.

Eagly, A. H. & Chaiken, S. (1993). The psychology of attitudes. Harcourt Brace Jovanovich, ISBN 0155000977 Fort Worth, Texas, USA.

Emadi, A. & Rosta, A. (2016). Valuation of organic dairy products, proteins and factors affecting willingness to pay study fittings in the city of Shiraz. *International Journal of Applied and Basic Sciences,* 10(1), 51-58.

Essoussi, L. H. & Zahaf, M. (2008). Decision-making process of community organic food consumers: an exploratory study. *Journal of Consumer Marketing,* 25(2), 95-104.

Ghorbani, M. & Hamraz, S. (2009). A survey on factors affecting on consumer's potential willingness to pay for organic products in Iran (a case study). *Trends in Agricultural Economics* 2, 10–16.

Gil, J. M., Gracia, A. & Sanchez, M. (2000). Market segmentation and willingness to pay for organic products in Spain. *International Food and Agribusiness Management Review,* 3(2), 207-226.

Gil, J. M. & Soler, F. (2006). Knowledge and willingness to pay for organic food in Spain: Evidence from experimental auctions. *Food Economics,* 3, 109-124.

Gracia, A. & de Magistris, T. (2007). Organic food product purchase behavior: a pilot study for urban consumers in the South of Italy. *Spanish Journal of Agricultural Research,* 5(4), 439-451.

Gracia, A. & de Magistris, T. (2008). The demand for organic foods in the South of Italy: A discrete choice model. *Food Policy,* 33, 386-396.

Goldberg, I. & Roosen, J. (2005). Measuring consumer willingness to pay for a health risk reduction of salmonellosis and campylo bacteriosis. EAAE Congress, Copenhagen, Denmark, August 24–27.

Govindasamy, R., DeCongelio, M. & Bhuyan, S. (2005). An evaluation of consumer willingness to pay for organic produce in the northeastern US. *Journal of Food Products Marketing*, 11(4), 3-20.

Greene, W. (2008). Econometric Analysis. 6th Edition. Prentice Hall, Upper Saddle River, New Jersey.

Haghiri, M., Hobbs, J. E. & McNamara, M. L. (2009). Assessing consumer preferences for organically grown fresh Fruit and Vegetables in Eastern New Brunswick. *International Food and Agribusiness Management Review,* 12(4), 81-100.

Haghjou, M., Hayati, B., Pishbahar, E., Mohammadrezaei, R. & Dashti, G. (2013). Factors affecting consumers' potential willingness to pay for organic food products in Iran: a case study of Tabriz. *Journal of Agricultural Science and Technology,* 15, 191–202.

Hamm, U., Gronefeld, F. & Haplin, D. (2002). Analysis of the European market for organic food: organic marketing initiatives and rural development, School of Management and Business. Ceredigion, Wales.

Hanemann, M. W., Loomisand, J. B. & Kanninen, B. J. (1991). Statistical efficiency of double-bounded dichotomous choice contingent valuation. *American Journal of Agricultural Economics,* 73(4), 1255–1263.

Honkanen, P., Verplanken, B. & Olsen, S. O. (2006). Ethical values and motives driving organic food choice. *Journal of Consumer Behavior,* 5(5), 420–430.

Hoyer, W. D. & Maclnis, D. J. (2004). *Consumer Behavior*. Boston: Houghton Mifflin.

Hughner, R. S. P., McDonagh, P., Prothero, A. Shultz, C. J. & Stanton, J. (2007). Who are organic food consumers? A compilation and review of why people purchase organic food, *Journal of Consumer Behavior,* 6, 1-17.

Jung, C. G. (1971). Psychological Types, Collected Works, Volume 6. Princeton, NJ: Princeton University Press.

Krystallis, A. & Chryssohoidis, G. (2005). Consumers' willingness to pay for organic food: factors that affect it and variation per organic product type. *British Food Journal,* 107(4/5), 320-343.

Liu Y., Zeng, Y. & Yu, X. (2009). Consumer willingness to pay for food safety in Beijing: A case study of food additives. Contributed paper prepared for presentation at the International Association of Agricultural Economists Conference, Beijing, China, 16-22.

Lucas, M. R. V., Röhrich, K., Marreiros, C., Fragoso, R., Kabbert, R., Clara, A. M. & Böhm, S. (2008). Quality, safety and consumer behavior towards organic food in Germany and Portugal. University of Evora, CEFAGE-UE (Portugal).

Luhmann, N. (1979). Trust and Power. Chichester: Wiley.

Maddala, G. S. (1991). Limited-dependent and Qualitative Variables in Econometrics. Cambridge University Press. Cambridge, UK, 46-49.

Makatouni, A. (2002). What motivates consumers to buy organic food in UK? Results from a qualitative study. *British Food Journal,* 104(3/4/5), 345-352.

Magnusson, M. K., Arvola, A., Hursti, U. K. K., Åberg, L. & Sjödén, P. O. (2003). Choice of organic foods is related to perceived consequences for human health and to environmentally friendly behavior. *Appetite,* 40, 109 –117.

McClelland, D. C. (1987). Human Motivation. New York: Cambridge University Press.

Michaelidou, N. & Hassan, L. M. (2008). The role of health consciousness, food safety concern and ethical identity on attitudes and intentions towards organic food. *International Journal of Consumer Studies,* 32(1), 163-170.

Nandi, R. Bokelmann, W. Gowdru, N. V. & Dias, G. (2017). Factors influencing consumers' willingness to pay for organic fruits and vegetables: empirical evidence from a consumer survey in India. *Journal of Food Products Marketing,* 23(4), 430-451.

Notani, A. S. (1997). Perceptions of affordability: their role in predicting purchase intent and purchase. *Journal of Economic Psychology,* 18, 525-546.

O'Neal, P. W. (ed.) (2007). Motivation of Health Behavior. New York: Nova Science Publishers Inc.

Onozaka, Y., Bunch, D. & Larson, D. (2006). What exactly are they paying for? Explaining the price premium for organic fresh produce. *Update: Agricultural and Resource Economics,* 9, 1-4.

Oh, H. & Hsu, C. H. C. (2001). Volitional degrees of gambling behaviors. *Annals of Tourism Research,* 28(3), 618-637.

Onyango, B. M., Hallman, W. K. & Bellows, A. C. (2007). Purchasing organic food in US food systems: A study of attitudes and practice. *British Food Journal,* 109(5), 399-411.

Omar, N. A, Nazri, M. A., Osman, L. H. & Ahmad M. S. (2016). The effects of demographic factors on consumers' intention to purchase organic products in the Klang Valley: an empirical study. *Malaysian Journal of Society and Space,* 12(2), 68-82.

Padel, S. & Foster, C. (2005). Exploring the gap between attitudes and behavior. *British Food Journal,* 107(8), 606-625.

Roitner-Schobesberger, B., Darnhofer, I., Somsook, S. & Vogl, C. R. (2008). Consumer perceptions of organic food in Bangkok, Thailand. *Food Policy,* 33, 112-121.

Sarma, P. K. & Raha, S. K. (2016). Consumers' willingness to pay for organic beef: evidence from Dhaka city. *Journal of Bangladesh Agricultural University,* 14(1), 83-91.

Shafie, F. A. & Rennie, D. (2012). Consumer perceptions 00towards organic food. *Procedia – Social and Behavioral Sciences,* 49, 360-367.

Spash, C. L., Urama, K., Burton, R., Kenyon, W., Shannon, P. & Hill, G. (2009). Motives behind willingness to pay for improving biodiversity in a water ecosystem: economics, ethics and social psychology. *Ecological Economics,* 68(4), 955-964.

Stobbelaar, D. J., Casimir, G., Borghuis, J., Marks, I., Meijer, L. & Zebeda, S. (2006). Adolescents' attitudes towards organic food: a survey of 15 to 16-year-old schoolchildren. *International Journal of Consumer Studies,* 31(4), 349–356.

Tarkiainen, A. & Sundqvist, S. (2005). Subjective norms, attitudes and intentions of Finnish consumers in buying organic food. *British Food Journal,* 107(11), 808-822.

Thogersen, J. (2006). Predicting Consumer Choices of Organic Food: Results from the CONDOR Project, in Proceedings of European Joint Organic Congress, eds. Andreasen C.B., L. Elsgaard, S. Sondergaard, L. Sorensen and G. Hansen. 30-31, Odense, Denmark.

Thompson, N. J. & Thompson, K. E. (1996). Reasoned action theory: an application to alcohol free beer. *Journal of Marketing Practice,* 2, 35-48.

Thompson, G. D. (1998). Consumer's demand for organic foods: what we know and what we need to know. *American Journal of Agricultural Economics,* 80(5), 1113-1118.

Vindigni, G., Janssen, M. A. & Jager, W. (2002). Organic food consumption: a multi-theoretical framework of consumer decision making. *British Food Journal,* 104(8), 624-642.

Voon, J. P., Ngui, K. S. & Agrawal, A. (2011). Determinants of willingness to purchase organic food: and explanatory studying using structural equation modeling. *International Food and Agribusiness Management Review,* 14(2), 103-120.

Whitehead, P. & Nicholson, S. (2001). Organic food: niche or mainstream, IGD, Letch more Heath Wart ford.

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Modelling the BRICS Exchange Rates Using the Vector Autoregressive (VAR) Model

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Abstract: The paper modelled the BRICS exchange rates using the Vector Autoregressive (VAR) model. Monthly time series data ranging from January 2008 to January 2018 was used. All the analysis was computed using the R programming software. The study aimed to determine a suitable VAR model in modelling the BRICS exchange rates and determine the linear dependency between the financial markets (in particular BRICS exchange rates). Optimal lag length of one (1) was selected using the SIC. The VAR model with lag length one was fitted and the parameters were estimated. The results revealed that there is a unidirectional relationship amongst the BRICS exchange rates. The VAR (1) model did not satisfy all the diagnostic tests, therefore forecasting future values of the BRICS exchange rates could not be computed. Recommendations for different approaches were formulated.

Keywords: *VAR model, BRICS Exchange rates, Volatility, linear dependency and forecasting*

1. Introduction

The volatility and interdependence in the BRICS exchange rates play a key role in inter-trade relations. According to Wang and Zivot (2006) interdependence is referred to as "observed behavioral pattern on a variable due to the influence of another variable". The Vector Autoregressive (VAR) model is used to model the behavioral pattern. The VAR models are basically useful for examining the dynamic behavior and interdependency by modelling the conditional mean of the financial time series data. The VAR model is effective in modeling the mean or the first order moment of the series (Lama et al., 2016). It creates a better understanding of the series, modelling and forecasting volatility. VAR models assume a constant one-period forecast variances. The paper hopes to build on previous studies conducted to look into the performance of VAR, models on the time-varying integrated data specifically BRICS exchange rates. The VAR model is chosen due to its ability to deal with data containing heteroskedastic problems as it is a problem contained in exchange rates. The buying power of the BRICS countries is dependent on the set exchange rates and inter-government trade is also influenced by the exchange rates. BRICS have a set Memorandum of Understanding (MOU) governing their market efficiencies. In the main, exchange rates data are volatile in nature and therefore the variance and covariance ought to be included in modelling any volatile data.

The exchange rates in foreign economies are regarded as the most liquid of all the asset market. These sectors play a major role in all trades involving the cross-border trading, more specifically in the BRICS economies. It is therefore important that there is cooperation and MOUs among inter-trading countries signed to regulate trade. The signed MOUs allow for interdependence among financial markets and it brings about possible gains of two or more interrelated countries. Losses may be contained by taking into account time-varying variance and covariance's. MOUs therefore create a clear understanding and linkages between different economies. Exchange rates increase the will for the BRICS countries to work together to formulate and implement relevant policies that helps in governing trade. The paper investigates and reviews the characteristics of the time-series models that shall be considered. The paper also wishes to determine an appropriate VAR (p) model and estimate the linear dependency between the financial markets (in particular BRICS exchange rates). The rest of the paper is arranged as follows: In Part 2, the literature review is presented; Part 3 gives an outlines of the methodology. In Part 4, results and discussions are presented. Part 5 provides the conclusion of the paper.

2. Literature Review

The VAR processes are well known in economics and other sciences since they are flexible and simple models for multivariate time series data. Sims (1980) advocated "for VAR models as alternatives since he questioned the way classical simultaneous equations models were specified and identified". VAR model is a generalization or natural expansion of the univariate autoregressive (AR) model to dynamic multivariate time

series. The VAR models provide for interesting features that assist in analyzing dynamics within the time series (Adenomon et al., 2013). McMillin (1991) and Lu (2001) are of the view that the model can be used to determine the relationship between the lagged values and the current values of all variable in the system. The VAR model has turned out to be particularly helpful for describing the dynamic conduct of financial and economic time series and for predicting future values. It regularly gives superior forecasts than those from univariate time series models and elaborate theory-based simultaneous equations models.

The causal impacts that follow from the unexpected shocks or innovations to specified variables on the variables in the model are summarized. These causal impacts are normally compressed with impulse response functions and forecast error variance decomposition. As of late, because of its flexibility, VAR model is every now and again utilized for financial and economic data modelling. Furthermore, they have been utilized in many empirical studies of a different discipline. VAR model was utilized to study different variable by different authors including amongst other but not limited to: Bessler (1984); Estenson (1992); Backus (1986); Ono (2011); and Enders and Sandler (1993). Freeman et al. (1989) on the other hand drew a comparison between the VAR model and Structural equation (SEQ) to study politics. Bagliano and Favero (1998) used a VAR model to measure monetary policy as an evaluation. In fact, the empirical literature of the VAR process is numerous. Athanasopoulos et al. (2011) conducted a study in which a joint determination of the lag-length, the dimension of the cointegrating space and the rank of the matrix of short-run parameters of VAR model using model selection criteria.

Monte Carlo simulations were used to measure the improvements in the accuracy of the forecasts. The study applied two empirical of inflation of Brazil and macroeconomic aggregates growth rates of U.S. respectively and the results showed the usefulness of the model-selection strategy proposed in the study. VAR model was utilized to examine the dynamic relationship between the Nigerian rainfall and temperature time series data. The data used was of the Meteorological station covering periods January 1981 to December 2010. The VAR model was further interpreted using the impulse response function and the forecast error variance decomposition. The lag eight for the VAR model was selected by Akaike Information Criterion (AIC) and Hannan-Quinn Information Criterion (HQ). The results showed that modelling the Nigerian rainfall and temperature together will improve the rainfall predictions and temperature respectively (Adenomon et al., 2013). VAR model has had numerous successes in the modelling and forecasting of time series data. Eklund (2007) considered modelling and forecasting Icelandic business cycles. The study used the VAR model to model the general business cycle. The method of selecting monthly variables, coincident and leading, that mimic the cyclical behavior of the quarterly Gross Domestic Product (GDP) is described.

Using the estimated VAR model bootstrap forecasting procedure was applied, point and interval forecasts of the composite coincident were estimated. The findings revealed that there is a positively significant difference response of the oil price indicators to Russia, India and China. The results further revealed a significant asymmetric effect of oil shocks on Indian returns. The association among ISE 100 Index and four macroeconomic variables were examined by Başçı and Karaca (2012) using the VAR model. Those microeconomic variables are Exchange, Gold, Import and Export. A total of 190 observations were used for a period ranging from January 1996 to October 2011. The one standard deviation shock for each series and their response were given after determining the optimal lag order. The results from the variance decomposition revealed that 31% of the exchange was explained by the share indices. Similarly, the study by Chamalwa and Bakari (2016) used VAR cointegration and Vector Error Correction Model (VECM) approach to investigate the association between economic growth (GDP), money supply and credit to the private sector for the period 1981 to 2012.

The findings of the study indicated that all the three variables are stationary after the first differencing. The VAR (1) was selected as the optimum length. The three variables are cointegrated with at most one cointegrating equation. The findings of the study further revealed that there is a b-bidirectional causality running between the three variables. The VECM model found a long run relationship amongst the three (Chamalwa and Bakari, 2016). Enisan and Olufisayo (2009) explored "the long run and casual relationship between stock market performance and economic growth from seven sub-Saharan Africa. The study reported a bidirectional relationship between the development of stock markets and economic growth for Cote D'Ivoire, Kenya, Morocco and Zimbabwe."

The stock market indexes of South Africa (SA), Indian and the USA was explored by Mohanasundaram and Karthikeyan (2015) to see if there is any association and existence of short-run and long-run relationships between them. Monthly data of stock indexes of JALSH (S.A), NIFTY (India) and NASDAQ (USA) was used covering the period of April 2004 to March 2014. The lag length of order one was selected by Final Prediction Error criterion (FPE), the AIC, the HQ and the Schwarz Information Criterion (SIC). According to the VAR model the results obtained shows that the USA and the SA stock markets are estimated by their own past lags. Ijumba (2013) studied the multivariate analysis of the BRICS financial markets using the BRICS weekly returns ranging from the first month of 2000 to last month of 2012. The VAR model was used to determine the linear dependency between the BRICS markets. The study fitted the VAR model with a lag length of order one selected by AIC, HQ and SIC. The VAR model revealed that there is one directional dependency of the two markets (India and China) on the Brazil market. However, the study did not forecast the BRICS markets since the VAR (1) model failed to satisfy all the diagnostic tests features.

3. Methodology

The data used cover the scope before the inception of BRICS ranging from January 2008 to January 2018 and it has 121 observations. The paper employed the monthly exchange rates of the five BRICS countries. The data involves currency exchange rates monthly average. The data used in this paper is a national currency of each of the five countries per US Dollar. It was obtained from the Organization for Economic Cooperation and Development (OECD) website. The BRICS countries are also known as emerging economies. Data analyses in this paper are carried out using R 3.4.4 programming language. Most of the time series used in modelling are non-stationary in nature. By non-stationary, the mean, variance, and autocovariance may depend on time t. A time series is said to be stationary if its mean, variance, and autocovariance are independent of time. In Box-Jenkins setting, if the mean of the series is less than its corresponding standard deviation, it is representable as:

$$X_t = \sum_{j=1}^{p} \phi_j X_{t-j} + \varepsilon_t + \sum_{k=1}^{q} \theta_k \varepsilon_{t-k}, \quad (1)$$

where ϕ_j: j=1,2,3,....p are the AR parameters of order p, and θ_k: k=1,2,3,...q are the moving average parameters of order q. Formal tests for non-stationary have now become a standard starting point in applied time series analysis. Several test statistics have been proposed to test the need for differencing the series before modeling. Notable among these are due to Dickey and Fuller (1979), Phillips and Perron (1988), and Hall (1989). The unit root test procedures reviewed in this paper are the Augmented Dickey-Fuller (ADF) test and Phillips-Perron (PP) test. The computed ADF and PP test statistic are given by the following equations respectively:

$$\hat{\tau}_{adf} = \frac{\hat{\phi}_1 - 1}{Se(\hat{\phi}_1 - 1)}, \quad (2)$$

$$\hat{\tau}_{pp} = \left(\frac{t_{\phi_1 - 1}}{\xi}\right) \Gamma_0^{\frac{1}{2}} - \frac{N}{2}\left(\frac{\xi^2 - \Gamma_0}{\xi \hat{\sigma}}\right) S_e(\phi_1 - 1), \quad (3)$$

where $t_{\phi_1 - 1}$ is the t-statistic of $\phi_1 - 1$, $S_e(\phi_1 - 1)$ is the standard error of $\phi_1 - 1$, and $\hat{\sigma}$ is the standard error of the test regression. The asymptotic distributions of the PP test statistics are the same as those of the ADF test statistics. The null hypothesis of a unit root is rejected if the $\hat{\tau}$ (tau) p-values are less than 5% significance value.

The Vector Auto Regression Model: This section discusses both the univariate and multivariate VAR models. Multivariate time series use models such as VAR for their ease of utilization nature. The model can also be used as a tool to describe the behaviour of time series and predicting its future occurrences. The model is however effective in describing the different behaviour of the time series and their related forecasts. It gives better forecasts to those from univariate time series models. Zhang et al., (2016) highlighted that "the forecasts derived from VAR models are flexible and can be made conditional on the potential future paths of specified variables in the model". VAR model was introduced by Sims (1980) and are used to capture the dynamic behaviour and multivariate time series interdependency. It is considered as a generalization of

univariate AR models or a combination between the two or more models and the univariate time series models. Each variable in a VAR is explained by its own lagged values and the lagged values of all the other variables in the equation. The basic VAR (p) model is: given by:

$$Y_t = G + E_1 Y_{t-1} + E_2 Y_{t-2} + \cdots + E_p Y_{k-p} + \varepsilon_t \quad (4)$$

where, G is n × 1 vector of intercepts, E_I is $k \times k$ matrices of parameters where $i = 1, 2, \ldots, p$ and $\varepsilon_t \sim$ iid, $N(0, S)$. The number of parameters to be estimated in the VAR model is $k(1 + kp)$ which increases with the number of variables (k) and number of lags (p). The inclusion criterion of the lags (p) in the equations is done using a test of system reduction and the AIC is used to determine the lag length of VAR model. The following criterions are also used: HQ and SIC. The AIC, HQ and SIC and they are represented using the following equation respectively:

$$AIC\ (p) = \ln\left|\bar{\sum}(p)\right| + \frac{2}{T} pk^2 \quad (5)$$

$$HQ\ (p) = \ln\left|\bar{\sum}(p)\right| + \frac{2 \ln \ln T}{T} pk^2 \quad (6)$$

$$SIC\ (p) = \ln\left|\bar{\sum}(p)\right| + \frac{\ln T}{T} pk^2 \quad (7)$$

where T is the sample size and $\bar{\sum}(p) = T^{-1} \sum_{t-1}^{T} \hat{\mu}_t \hat{\mu}_t'$. According to Liitkepohl (1991), the AIC criterion asymptotically is said to be overestimating the positive probability of the lag order, while the HQ and BIC criterions do not overestimate. Therefore, the selection is based on the lowest value of the minimum value of the three criterions.

Model Parameter Estimation: The VAR (p) coefficients can be estimated efficiently using either the Maximum Likelihood Estimation (MLE) or the Ordinary Least Squares (OLS) methods. Tsay (2005) confirms that the OLS or the MLE methods are asymptotically similar. This study uses the MLE method to draw an approximation of the coefficients of VAR (p). The matrix process of the VAR model can be presented as:

$$R = DW + \xi \quad (8)$$

where

$$R = (r_1 \ldots \ldots \ldots r_Z)' \quad (9)$$

$$D = (c. G_1 \ldots \ldots \ldots G_p)' \quad (10)$$

$$W_t = (1. r_t \ldots \ldots \ldots r_{t-p+1}) \quad (11)$$

$$W = (W_0 \ldots \ldots \ldots W_{Z-1})' \quad (12)$$

$$\xi = (\mu_1 \ldots \ldots \ldots \mu_Z)' \quad (13)$$

R, D, W and ξ are (M × Z), (M × (Mp + 1)), ((Mp + 1) × Z) and (M × Z) matrices respectively. The MLE of the VAR (p) model is given as:

$$r = vec\ (R) \quad (14)$$

$$d = vec\ (D') \quad (15)$$

$$\mu = vec\ (\xi) \quad (16)$$

$$R^* = (r_{1-\mu} \ldots \ldots \ldots r_{Z-\mu}) \quad (17)$$

$$X = (R_0^*, \ldots \ldots \ldots, R_{Z-1}^*) \quad (18)$$

$$\alpha = (G_1 \ldots \ldots \ldots G_p) \quad (19)$$

where r, d, μ and α are $(MZ \times 1)$, $((M^2p + M) \times 1)$, $(MZ \times 1)$, and $(M^2p \times 1)$ vectors respectively. R^* and X are (M × Z) and (Mp × Z) matrices. The probability density function of μ is presented as follows:

$$f_\mu(\mu) = \frac{1}{(2\pi)^{\frac{MZ}{2}}} \left|\sum_\mu\right|^{-\frac{1}{2}} \exp\left(-\frac{1}{2} \mu' \sum_\mu \mu\right) \quad (20)$$

where

$$\mu = r - \mu^* - (X' \otimes I_M)\alpha \tag{21}$$

such that

$$\mu^* = (\mu', \dots, \mu') \tag{22}$$

Equation (23) is obtained from equation (21)

$$\begin{aligned} f_r(r) &= \left|\frac{\partial \mu}{\partial r'}\right| f_\mu(\mu) \\ &= \frac{1}{(2\pi)^{\frac{MZ}{2}}} |I_Z \otimes \sum_u|^{-\frac{1}{2}} \exp\left(-\frac{1}{2}(r - \mu^* - (X' \otimes I_M)\alpha)'(I_Z \otimes \sum_u^{-1})\right)(r - \mu^* - (I_M \otimes X')\alpha)' \end{aligned} \tag{23}$$

Therefore, the likelihood function

$$\begin{aligned} \log L(\mu, \alpha, \sum_u) = & -\frac{MZ}{2}\log(2\pi) - \frac{Z}{2}(\sum_u) - \frac{1}{2}(r - \mu^* - (X' \otimes I_M)\alpha)'((I_Z \otimes \sum_u^{-1}) \times ((I_Z \otimes \sum_u^{-1}) \\ &= -\frac{MZ}{2}\log(2\pi) - \frac{Z}{2}\log|\sum_u| - \frac{1}{2}\sum_{t=1}^{Z}((r_t - \mu) - \sum_{i=1}^{P} G_i\,(r_{t-i} - \mu))'\sum_\mu \times ((r_t - \mu) \\ & - \sum_{i=1}^{P} G_i\,(r_{t-i} - \mu)) \\ &= -\frac{MZ}{2}\log(2\pi) - \frac{Z}{2}\log|\sum_u| - \frac{1}{2}\sum_t \left(r_t - \sum_i G_i r_{t-i}\right)' \sum_u^{-1} \left(r_t - \sum_i G_i r_{t-i}\right) \\ & + \mu'\left(I_M - \sum_i G_i\right)' \sum_u^{-1} \sum_t \left(r_t - \sum_i G_i r_{t-i}\right) - \frac{Z}{2}\mu'\left(I_M - \sum_i G_i\right)' \sum_u^{-1} \left(I_M - \sum_i G_i\right)\mu \\ &= -\frac{MZ}{2}\log(2\pi) - \frac{Z}{2}\log|\sum_u| - \frac{1}{2}\mathrm{tr}[(R^* - GX)'\sum_u^{-1}(R^* - GX)] \end{aligned} \tag{24}$$

To find the MLE of $\mu, \alpha, \sum_\mu$, first order of the $\partial f(x; r)\ \partial x$ of the likelihood function is considered:

$$\begin{aligned} \frac{\partial \log L}{\partial \mu} &= \left(I_M - \sum_i G_i\right)\sum_u^{-1}\sum_t \left(r_t - \sum_i G_i\, r_{t-i}\right) - \left(I_M - \sum_i G_i\right)' \sum_u^{-1}\left(I_M - \sum_i G_i\right)\mu \\ &= (I_M - G[k \otimes I_M])'\sum_u^{-1}\left(\sum_t (r_t - \mu - GR^*_{t-1})\right) \\ \frac{\partial \log L}{\partial \mu} &= (X \otimes I_M)\left(I_Z \otimes \sum_\mu^{-1}\right)(r - \mu^* - (X' \otimes I_M)\alpha) \\ &= (X \otimes \sum_u^{-1})(r - \mu^*) - (XX' \otimes \sum_u^{-1})\alpha \\ \frac{\partial \log L}{\partial \sum_u} &= -\frac{Z}{2}\sum_u^{-1} + \frac{1}{2}\sum_u^{-1}(R^* - GX)(R^* - GX)'\sum_u^{-1} \end{aligned} \tag{25}$$

where k is a s × 1 vector of 1's. The following MLE will result from equating the system of derivatives to zero:

$$\hat{\mu} = \frac{1}{Z}\left(I_M - \sum_i \hat{G}_i\right)' \sum_t \left(r_i - \sum_i \hat{G}_i\, r_{t-i}\right) \tag{26}$$

$$\hat{\alpha} = \left(\left(\hat{X}\hat{X}'\right)^{-1}\hat{X} \oplus I_M\right)(r - \hat{\mu}^*) \tag{27}$$

$$\hat{\sum}_u = \frac{1}{Z}\left(\hat{R}^* - \hat{G}\hat{X}\right)\left(\hat{R}^* - \hat{G}\hat{X}\right)' \tag{28}$$

Diagnostic Tests: Diagnostic tests are meant to test the adequacy of the model. After fitting VAR (p) model it is important to ensure that the fitted residuals satisfy the assumptions of the model. Edgerton and Shukur (1999) introduced the test called Portmanteau to test the nonexistence of serial correlation. Null hypothesis H_0: the residual is not serially correlated is tested against the alternative H_1: the residual is serially correlated. The test statistic is given as:

$$Q_h = T^2 \sum_{i=1}^{h} \frac{1}{T-i} \mathrm{tr}\left(\hat{C}_i' \hat{C}_0^{-1} \hat{C}_j' \hat{C}_0^{-1}\right) \quad (29)$$

where $\hat{C}_i = \frac{1}{T}\sum_{t=i+1}^{T} \hat{u}_t \hat{u}_{t-i}$. The test statistic Q_h is asymptotically distributed as a $\chi^2(N^2h - n)$ where n denotes deterministic term of a VAR (p) model. Lütkepohl (2007) introduced ma ultivariate Jarque-Bera (JB) test which was firstly introduced by Jarque and Bera (1980). According to Pfaff (2008), "the test can be computed using the residuals standardized by a Choleski decomposition of the variance-covariance matrix of a VAR (p) model". It is also based on the third and fourth ($E(y^3 = 0)$ and $E(y^4 = 3)$) moments of a Gaussian distribution. The following are the hypothesis tested for the above test:

H_0: The residual is symmetrically distributed.
H_1: The residual is not symmetrically distributed.

The JB test statistic in a multivariate setting is described as follows:

$$JB_{mv} = \tau_k + \tau_s \quad (30)$$

where τ_k and τ_s are computed as

$$\tau_k = \frac{T(b_1 - 3_N)'(b_1 - 3_N)}{24} \quad (31)$$

$$\tau_s = \frac{T b_0' b_0}{6} \quad (32)$$

where b_0 and b_1 are 3rd and 4th non–central moment vector of the standardized residuals $\hat{\mu}_t^s = \hat{P} - (\hat{\mu}_t - \bar{\hat{\mu}}_t)$ and $\hat{P}$ denotes a lower triangular matrix. It comprises of diagonal positive values such that $\hat{P}\hat{P}' = \hat{\sum}_u$representing the Choleski decomposition of the residual covariance matrix. Breusch (1978) introduced Multivariate ARCH-LM test and it is used to test for heteroskedasticity in the fitted residuals. The test is based on the following equation:

$$\hat{u}_t = d + G_1 y_t + \cdots + G_p y_{t-p} + \cdots + E\hat{u}_{t-1} + \cdots + E_i \hat{u}_{t-i} + \epsilon_t \quad (33)$$

where G_i and E_i are coefficients matrices and $\epsilon_t$is the error term from the regression model. The null hypothesis tested is $E_1 = E_2 = \cdots = E_i = 0$ (absence of ARCH errors) against the alternative H_1 which test that $E_i \neq 0$. The ARCH-LM test statistic in a multivariate setting is denoted as:

$$LM_i = T\hat{d}_i' \hat{\sum}_d^{-1} \hat{d}_i \quad (34)$$

where $d_i = (D_1 \ldots \ldots D_i)'$ such that $D_i = \frac{1}{T}\sum_{t=i+1}^{T} u_t u_{t-i}'$,$\hat{\sum}_d$ is the covariance matrix of the residuals.

Forecasting: Amongst others the multivariate time series analysis aims to predict future values based on the past observed values of a time series. After a VAR model is found adequate from the relevant diagnostic tests, it may be used for predicting future values. For a given VAR (p), h-step ahead forecast is computed using the chain-rule of forecasting as:

$$y_{T+i|T} = d + G_1 y_{T+i-1} + \cdots + G_p y_{T+i-p|T} \quad (35)$$

where $y_{T+j|T} = t_{T+j}$ for $j \leq 0$. The h-step prediction errors are expressed as follows:

$$y_{T+i} - y_{T+i|T} = \sum_{s=0}^{i-1} \Psi_s u_{t+i-s} \quad (36)$$

The matrices Ψ_s are determined by a recursive substitution

$$\Psi_s = \sum_{j=1}^{p-1} \Psi_{s-j} G_j \quad (37)$$

where $\Psi_0 = I_N$ and $G_j = 0$ for $j > p$. If all the forecast errors have a zero expectation value then the forecasts are unbiased and MSE matrix of $y_{t+i|T}$ is

$$\sum(i) = \mathrm{MSE}\left(y_{T+i} - y_{T+i|T}\right) = \sum_{j=0}^{i-1} \Psi_j \sum \Psi_j' \quad (38)$$

The confidence interval of the forecasts was represented as follows:

$$\left[y_{k,T+i|T} - d_{1-\frac{\gamma}{2}}\sigma_k(i), y_{k,T+i|T} + d_{1-\frac{\gamma}{2}}\sigma_k(i)\right] \quad (39)$$

where $d_{1-\frac{\gamma}{2}}$ implies the $\left(1-\frac{\gamma}{2}\right)$ relative point of the symmetry and the σ (std dev) of the kth variable h-step ahead is denoted by $\sigma_k(i)$.

4. Results and Discussion

This section presents the results of the procedure carried out for fitting a VAR model. The lag length selection is presented in Table 1 below.

Table 1: Lag Length Selection

Fit	Model	AIC	HQ	SC
1	VAR(1)	-38.653	-38.362	-37.937
2	VAR(2)	-39.083	-38.550	-37.770
3	VAR(3)	-38.922	-38.147	-37.012
4	VAR(4)	-39.749	-37.732	-36.243
5	VAR(5)	-38.751	-37.492	-35.645
6	VAR(6)	-38.828	-37.326	-35.128

Table 1 above shows that AIC and HQ selected lag length 2, while SC selected lag length 1 as an optimal length. Therefore, VAR (1) was computed and presented with its parameters in Table 2.

Table 2: Parameter Estimation

BRICS Exchange rate	Parameter	Variable	Estimate	Std. Error	t-value	p-value
Brazil	$AR(1)_{11}$	$Brazil_{t-1}$	0.906	0.075	12.017	< 2e-16 ***
	$AR(1)_{12}$	$China_{t-1}$	-0.375	0.119	-3.154	0.002 **
	$AR(1)_{13}$	$India_{t-1}$	-0.154	0.082	-1.873	0.064 ·
	$AR(1)_{14}$	$Russia_{t-1}$	0.030	0.033	0.909	0.365
	$AR(1)_{15}$	$SouthAfrica_{t-1}$	0.137	0.073	1.879	0.063 ·
China	$AR(1)_{21}$	$Brazil_{t-1}$	0.009	0.013	0.740	0.461
	$AR(1)_{22}$	$China_{t-1}$	0.968	0.020	48.782	<2e-16 ***
	$AR(1)_{23}$	$India_{t-1}$	-0.004	0.014	-0.306	0.760
	$AR(1)_{24}$	$Russia_{t-1}$	0.001	0.005	0.213	0.832
	$AR(1)_{25}$	$SouthAfrica_{t-1}$	-0.002	0.012	-0.188	0.851
India	$AR(1)_{31}$	$Brazil_{t-1}$	-0.020	0.039	-0.524	0.601
	$AR(1)_{32}$	$China_{t-1}$	-0.214	0.061	-3.504	0.001 ***
	$AR(1)_{33}$	$India_{t-1}$	0.843	0.042	19.942	< 2e-16 ***
	$AR(1)_{34}$	$Russia_{t-1}$	-0.002	0.017	-0.114	0.909

BRICS Exchange rate	Parameter	Variable	Estimate	Std. Error	t-value	p-value
	$AR(1)_{35}$	$SouthAfrica_{t-1}$	0.098	0.037	2.618	0.010 *
Russia	$AR(1)_{41}$	$Brazil_{t-1}$	0.052	0.092	0.565	0.573
	$AR(1)_{42}$	$China_{t-1}$	-0.364	0.145	-2.517	0.013 *
	$AR(1)_{43}$	$India_{t-1}$	-0.162	0.100	-1.620	0.108
	$AR(1)_{44}$	$Russia_{t-1}$	0.923	0.040	23.123	<2e-16 ***
	$AR(1)_{45}$	$SouthAfrica_{t-1}$	0.127	0.089	1.426	0.157
South Africa	$AR(1)_{51}$	$Brazil_{t-1}$	0.146	0.076	1.916	0.058 ·
	$AR(1)_{52}$	$China_{t-1}$	-0.297	0.120	-2.469	0.015 *
	$AR(1)_{53}$	$India_{t-1}$	-0.117	0.083	-1.400	0.164
	$AR(1)_{54}$	$Russia_{t-1}$	-0.035	0.033	-1.047	0.298
	$AR(1)_{55}$	$SouthAfrica_{t-1}$	0.930	0.074	12.604	< 2e-16 ***

Note: '***', '**', '*' and '·' indicate significant codes at 0.001, 0.01, 0.05 and 0.1 respectively

Table 2 presents the parameter estimates of the VAR (1) model. All the estimated parameters with the probability values less the 0.1 are considered significant and are flagged with an asterisk. From the above Table 1, the following are the significant autoregressive matrix coefficients: $AR(1)_{11}$, $AR(1)_{12}$, $AR(1)_{13}$, $AR(1)_{15}$, $AR(1)_{22}$, $AR(1)_{32}$, $AR(1)_{33}$, $AR(1)_{35}$, $AR(1)_{42}$, $AR(1)_{44}$, $AR(1)_{51}$, $AR(1)_{52}$, and $AR(1)_{55}$ implying that there exists a linear dependency between Brazil and its own lagged values, Brazil and lagged values of China, Brazil and lagged values of India, Brazil and lagged values of South Africa, China and its own lagged values, India and lagged values of China, India and its own lagged values, India and lagged values of South Africa, Russia and past values of China, Russia and its own lagged values, South Africa and lagged values of Brazil, South Africa and lagged values of China and lastly South Africa and its own lagged values. All the linear dependencies take one direction. The study by Mohanasundaram and Karthikeyan (2015) revealed similar results of the VAR model. The equations of the VAR (1) model for every variable which possesses the significant parameters are written as follows:

$$\text{Brazil} = 0.906(\pm 0.075)\,\text{Brazil}_{1,t-1} - 0.375(\pm 0.119)\,\text{China}_{2,t-1} - 0.154(\pm 0.082)\,\text{India}_{4,t-1} + 0.137(\pm 0.073)\,\text{SouthAfrica}_{5,t-1} + \mu_{1,t} \quad (40)$$

$$\text{China} = 0.968(\pm 0.020)\,\text{China}_{2,t-1} + \mu_{2,t} \quad (41)$$

$$\text{India} = -0.214(\pm 0.061)\,\text{China}_{2,t-1} + 0.843(\pm 0.042)\,\text{India}_{3,t-1} + 0.098(\pm 0.037)\,\text{SouthAfrica}_{5,t-1} + \mu_{3,t} \quad (42)$$

$$\text{Russia} = -0.364(\pm 0.145)\,\text{China}_{2,t-1} + 0.923(\pm 0.040)\,\text{Russia}_{4,t-1} + \mu_{4,t} \quad (43)$$

$$\text{SouthAfrica} = 0.146(\pm 0.076)\,\text{Brazil}_{1,t-1} - 0.297(\pm 0.120)\,\text{China}_{2,t-1} + 0.930(\pm 0.074)\,\text{SouthAfrica}_{5,t-1} + \mu_{1,t} \quad (44)$$

Table 3 below presents the covariance matrix of the BRICS exchange rates.

Table 3: Covariance Matrix

Variable	BRAZIL	CHINA	INDIA	RUSSIA	SOUTH AFRICA
BRAZIL	1.393e-03	5.877e-05	0.0004356	6.990e-04	9.318e-04
CHINA	5.877e-05	3.882e-05	0.0000138	7.618e-05	4.497e-05
INDIA	4.356e-04	1.380e-05	0.0003683	2.545e-04	4.135e-04
RUSSIA	6.990e-04	7.618e-05	0.0002545	2.067e-03	5.456e-04
SOUTH AFRICA	9.318e-04	4.497e-05	0.0004135	5.456e-04	1.431e-03

The results presented as equations 40 to 44 illustrate that there is a presence of concurrent relationship amongst all the BRICS exchange rates. Table 4 presents the model diagnostic tests of the VAR (1).

Table 4: Diagnostic Tests

Test	Statistic	DF	p-value
Portmanteau Test	243.75	125	<0.001***
JB-Test	381.00	10	<0.001***
Skewness	52.783	5	<0.001***
Kurtosis	328.220	5	<0.001***
ARCH	1468.100	1350	0.0131**

Note: '***', '**', '*' and '·' indicate significant codes at 0.001, 0.01, 0.05 and 0.1 respectively

Table 4 above gives the summary of the diagnostic tests results for the fitted VAR (1) model. All the probability values including the ARCH p-value are significant at 5%. This implies that serial correlation was observed from the residuals of the model fitted, there is the presence of ARCH errors and is not symmetrical. The model does not satisfy all the diagnostic tests and cannot be further utilized to predict the following BRICS exchange rates.

5. Conclusion

The paper modelled the BRICS exchange rates using the VAR model. The paper used monthly time series data ranging from January 2008 to January 2018. The estimated model and their parameters were presented. All the parameter estimates with the p-values less the 0.1 were considered significant. The model does not satisfy all the diagnostic tests and cannot be used to predict future values of the BRICS exchange rates. The study by Mohanasundaram and Karthikeyan (2015) and Ijumba (2013) revealed similar results of the VAR model. The paper recommends that a similar study could be undertaken to compare the univariate and the multivariate settings. The paper also recommends that a similar study could be reproduced using a high-frequency data (daily or weekly) using the same methodology. The study recommends that BRICS countries should develop policies that allow for the very slow increase of the exchange rates to encourage trade amongst the BRICS countries. The weak exchange rate makes currency more attractive and volatile exchange rates negatively affect trade and reduce investor confidence.

References

Adenomon, M., Ojehomon, V. T. & Oyejola, B. (2013). Modelling The Dynamic Relationship Between Rainfall and Temperature Time Series Data In Niger State, Nigeria.

Athanasopoulos, G., de Carvalho guillén, O. T., Issler, J. V. & Vahid, F. (2011). Model selection, estimation and forecasting in VAR models with short-run and long-run restrictions. *Journal of Econometrics,* 164, 116-129.

Backus, D. (1986). The Canadian--US Exchange Rate: Evidence from a Vector Autoregression. The Review of Economics and Statistics, 628-637.

Bagliano, F. C. & Favero, C. A. (1998). Measuring monetary policy with VAR models: An evaluation. *European Economic Review,* 42, 1069-1112.

Başçi, E. S. & Karaca, S. S. (2012). The determinants of stock market index: VAR approach to the Turkish stock market. *International Journal of Economics and Financial Issues,* 3, 163-171.

Bessler, D. A. (1984). Relative prices and money: a vector autoregression on Brazilian data. *American Journal of Agricultural Economics,* 66, 25-30.

Breusch, T. S. (1978). Testing for autocorrelation in dynamic linear models. *Australian Economic Papers,* 17, 334-355.

Chamalwa, H. A. & Bakari, H. R. (2016). A Vector Autoregressive (VAR) Cointegration and Vector Error Correction Model (VECM) Approach for Financial Deepening Indicators AND Economic Growth in Nigeria. *American Journal of Mathematical Analysis,* 4, 1-6.

Dickey, D. A. & Fuller, W. A. (1979). Distribution of the estimators for autoregressive time series with a unit root. *Journal of the American statistical association,* 74, 427-431.

Edgerton, D. & Shukur, G. (1999). Testing autocorrelation in a system perspective testing autocorrelation. *Econometric Reviews,* 18, 343-386.

Eklund, B. (2007). Forecasting the Icelandic business cycle using vector autoregressive models.

Enders, W. & Sandler, T. (1993). The effectiveness of antiterrorism policies: A vector-autoregression-intervention analysis. *American Political Science Review,* 87, 829-844.

Enisan, A. A. & Olufisayo, A. O. (2009). Stock market development and economic growth: Evidence from seven sub-Sahara African countries. *Journal of economics and business,* 61, 162-171.

Estenson, P. S. (1992). The Keynesian theory of the price level: an econometric evaluation using a vector autoregression model. *Journal of Post Keynesian Economics,* 14, 547-560.

Freeman, J. R., Williams, J. T. & Lin, T. M. (1989). Vector autoregression and the study of politics. American Journal of Political Science, 842-877.

Hall, A. (1989). Testing for a unit root in the presence of moving average errors. *Biometrika,* 76, 49-56.

Ijumba, C. (2013). Multivariate Analysis of the BRICS Financial Markets. University of KwaZulu-Natal, Durban.

Jarque, C. M. & Bera, A. K. (1980). Efficient tests for normality, homoscedasticity and serial independence of regression residuals. *Economics letters,* 6, 255-259.

Lama, A., Jha, G., Gurung, B., Paul, R. K. & Sinha, K. (2016). VAR-MGARCH Models for Volatility Modelling of Pulses Prices: An Application.

Liitkepohl, H. (1991). Introduction to multiple time series analysis. Berlin et al.

Lu, M. (2001). Vector autoregression (VAR)—an approach to dynamic analysis of geographic processes. *Geografiska Annaler: Series B, Human Geography,* 83, 67-78.

LüTkepohl, H. (2007). New introduction to multiple time series analysis.

Mcmillin, W. D. (1991). The velocity of M1 in the 1980s: evidence from a multivariate time series model. Southern Economic Journal, 634-648.

Mohanasundaram, T. & Karthikeyan, P. (2015). Cointegration and stock market interdependence: Evidence from South Africa, India and the USA. *South African Journal of Economic and Management Sciences,* 18, 475-485.

Ono, S. (2011). Oil price shocks and stock markets in BRICs. *The European Journal of Comparative Economics,* 8, 29-45.

Pfaff, B. (2008). VAR, SVAR and SVEC models: Implementation within R package vars. *Journal of Statistical Software,* 27, 1-32.

Phillips, P. C. & Perron, P. (1988). Testing for a unit root in time series regression. *Biometrika,* 75, 335-346.

Sims, C. A. (1980). Macroeconomics and reality. Econometrica: Journal of the Econometric Society, 1-48.

Tsay, R. S. (2005). Analysis of financial time series, John Wiley & Sons.

Wang, J. & Zivot, E. (2006). Modeling Financial Time Series with S-PLUS.

Zhang, T., Yin, F., Zhou, T., Zhang, X. Y. & Li, X. S. (2016). Multivariate time series analysis on the dynamic relationship between Class B notifiable diseases and gross domestic product (GDP) in China. *Scientific reports,* 6**,** 29.

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End-User Adoption of Bitcoin in South Africa

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Abstract: Since its introduction in 2008, the value and popularity of Bitcoin have risen exponentially. Despite being 10 years old, the concept of crypto currency is fairly new in South Africa. The increase in the value of Bitcoin, together with extensive media coverage, has led to the creation of a Bitcoin economic system with many South Africans jumping on the Bitcoin bandwagon. This study aims to identify the determinants affecting end-user adoption of Bitcoin in South Africa and to determine the main use of the crypto currency by South Africans. A research model was developed utilising constructs from the technology acceptance model and theory of planned behaviour. The model was then tested empirically by utilising two survey-based questionnaires, one for current users of Bitcoin and one for non-users. For users, perceived usefulness and access to facilitating conditions were the primary determinants influencing their decision to adopt the crypto currency while lack of trust and social influences were the primary reasons non-users chose not to adopt Bitcoin.

Keywords: *Bitcoin, Crypto currency, South Africa*

1. Introduction

User acceptance of digital transactions has increased significantly since the introduction of the internet and electronic commerce. The rapidly changing world of technology has introduced many new technologies, one of which is the introduction of crypto currency. Crypto currency is a digital or virtual currency that uses cryptography for security. The defining feature of crypto currency is that it is not issued by any central authority or bank, rendering it theoretically immune to government interference or regulatory bodies (Sontakke & Ghaisas, 2017). The world's first and most popular crypto currency, Bitcoin, was developed in 2008 by an individual or group known under the pseudonym Satoshi Nakamoto (Whigham, 2017). Originally, the creators of Bitcoin used the currency for Internet-related tasks, like trading Bitcoin for programming assistance. Since then, the use of Bitcoin has expanded and has gained increasing acceptance in broader contexts globally (Rice, 2013). Since its inception, the value of Bitcoin (which is driven by supply and demand) has increased exponentially. In 2010, a single bitcoin traded for USD0.06. Fast forward to December 2017 and the value of Bitcoin peaked at USD19 783 (Zhao, 2017). This unprecedented increase in value together with extensive media coverage has led to the development of an active economic system around Bitcoin. The crypto currency is now being used in online shopping, held as an asset class and traded via online exchanges (Silinskyte, 2014). These factors, together with the fact that there is a limited supply of Bitcoin (21 million coins), has resulted in increased demand for these coins with many end-users purchasing Bitcoin as a speculative instrument. Around the world, Bitcoin is accepted by a wide variety of businesses and retailers. In countries like the USA, Canada and Austria, Bitcoin automatic teller machines can be found which allows individuals to buy and sell Bitcoin for cash (Madeira, 2017).

In December 2017, the first ever Bitcoin futures became available by the Chicago Board Options Exchange increasing its appeal for mainstream traders. Futures are a type of contract where investors agree to buy or sell an asset on a specific future date at a specific price (Pauw, 2017). The trading of Bitcoin futures represents a historical event for Bitcoin because while the price of Bitcoin remains unregulated, Bitcoin futures will be traded on regulated exchanges. This event resulted in the public showing an even greater interest in Bitcoin which caused the price of Bitcoin to hike by 10% within an hour of the first futures being launched. South African's have shown a great interest in crypto currencies, with South Africa consistently ranking highest worldwide in search interest for "Bitcoin" according to data from Google Trends (McKane, 2018). It is therefore no surprise that Bitcoin transactions are gaining traction in South Africa. Pay fast (one of South Africa's largest online payment processing companies) has introduced Bitcoin as a method of payment. Takealot.com, South Africa's largest online store is also accepting Bitcoin as a payment method using Pay fast (Ngubeni, 2014). South Africans can also now pay traffic fines using Bitcoin via the company Fines4U (Slabbert, 2017). Red & Yellow, a business school in South Africa, is now accepting Bitcoin as a payment

method for all their degrees and online courses (Steyn, 2018). Even though this crypto currency has taken these massive leaps forward, Bitcoin (and crypto currency in general) is still a relatively new concept for South Africans.

Due to the anonymity of Bitcoin transactions, it is difficult to estimate how many South Africans own or have transacted with the crypto currency. As of August 2017, data reveals that the market capitalisation of South African Bitcoin holdings were just over R1 billion compared to a global market capitalisation of over USD70 billion (Naidoo, 2017). Bid or Buy, South Africa's biggest online marketplace, reported that transactions using Bitcoin represent only a fraction of the sites overall revenue (Kelso, 2017). As the crypto currency market is relatively new, it is not clear what the requirements for successful Bitcoin adoption in South Africa should be. Compared to other countries such as the USA and Japan which accounts for 29% and 52% of the market share of the global Bitcoin exchange market respectively (Young, 2017), the adoption of Bitcoin in South Africa is significantly lower. Despite the unprecedented growth of Bitcoin and its growing uses in South Africa, to the researcher's knowledge, no research has been conducted to determine the Bitcoin adoption factors by end-user individuals in South Africa. Often described as a disruptive technology, many researchers believe that Bitcoin has the potential to change the landscape of financial services and usher in a new era of banking and transacting while creating more dilemmas for regulatory authorities and policymakers (Trautman, 2016). In order for Bitcoin to gain increased acceptance amongst all economic participants, it is important to identify and understand the Bitcoin adoption factors. The research problem that this study therefore aims to address is the identification of the determinants affecting end-user adoption of Bitcoin in South Africa. Factors that influence adoption need to be determined in order to be able to give a better perspective of the future of Bitcoin in South Africa. Therefore, the research objectives of this study are: To identify possible determinants of Bitcoin adoption amongst end-user individuals in South Africa; To identify possible barriers that prevent potential end-user individuals from adopting Bitcoin in South Africa; To determine how actual end-users utilise Bitcoin in South Africa.

Whilst research has been conducted on the adoption of Bitcoin in other countries including the USA (Schuh & Shy, 2015), Netherlands (Silinskyte, 2014) and Indonesia (Gunawan & Novendra, 2017), to the researcher's knowledge, a study of this nature has not been conducted in South Africa. This study therefore posits that by determining and understanding adoption factors, researchers and the various businesses who plan to or are currently transacting in Bitcoin, can get a better understanding of the reasons end-users choose to adopt Bitcoin or not. From a practical point of view, the results of this study could be used in a company's strategy (including trading exchanges) for Bitcoin adoption in order to gain knowledge and an understanding of actual users and non-users of Bitcoin. Currently, Bitcoin is being utilised as a speculative instrument for profit making, an investment in the crypto asset class and as a form of currency to make purchases online. In South Africa, legislation has not been able to keep up with crypto currency phenomenon resulting in tax losses for the South African Revenue Services (SARS) as there is no way to trace profits made by South Africans due to the unregulated trading of crypto currencies. SARS relies on the honesty of taxpayers as the onus is on the taxpayer to declare any profits made from trading of crypto currencies. This study will provide insight as to what percentage of users of Bitcoin are currently utilising the crypto currency for profit-making motives and what percentage are using Bitcoin to effect payments in online transactions. In an effort to improving their strategic planning for the identification of crypto currency profits, SARS can therefore benefit from the results of this study and use it to extend and enhance their knowledge of how Bitcoin is being used in South Africa.

2. Theoretical Background

The Introduction and Rise of Bitcoin: Over the past decade, virtual currencies have made great leaps. Bitcoin, which was developed in 2008 by a person or group using the pseudonym Santoshi Nakomoto, was the first virtual currency which simultaneously serves as a medium of exchange (by making use of a peer-to-peer payment system) as well as a store of value (in the form of a decentralised virtual currency) (Bohr & Bashir, 2014). Bitcoin is described as "an electronic payment system based on cryptographic proof instead of trust, allowing any two willing parties to transact directly with each other without the need for a trusted third party" (Nakamoto, 2008). Essentially, when users complete a transaction using Bitcoin, the transaction is logged digitally. This transaction log is called the "blockchain" and records every single transaction and the ownership of every single Bitcoin in circulation (Kumar, 2013). Through a process called "mining", all

transactions are verified through the cryptographic proof in the peer-to-peer network (Bohr & Bashir, 2014). In return for their services, miners are paid fees by the merchants for each transaction and are also rewarded with Bitcoin (Tschorsch & Scheuermann, 2016). As there is no third party involvement, transaction fees are low. A major downside is that once a transaction has been entered into, it cannot be reversed (Silinskyte, 2014).

Bitcoin is decentralised and unregulated meaning it is not issued by any central authority (e.g. a government or bank) (Bamert, Decker, Elsen, Wattenhofer, & Welten, 2013). In addition to this, users of Bitcoin are anonymous as they are not identified by their actual identities but are only identified by public keys (Reid & Harrigan, 2013). This characteristic has had a negative impact on the crypto currency as it became popular as a medium of exchange for illicit goods including banned substances and illegal weapons (Gunawan & Novendra, 2017). Being a virtual currency, Bitcoin is susceptible to digital security threats. In 2014, Mt GOX, the largest Bitcoin exchange at that time, was a victim of a cyber-attack resulting in 450 million dollars' worth of Bitcoin being stolen (Li, Jiang, Chen, Luo, & Wen, 2017). Due to the fact that Bitcoin is unregulated, as of December 2017, it is banned in countries such as Bolivia, Ecuador and Bangladesh. In addition to this, China has also announced the closure of crypto currency exchanges (Williams, 2017). Even though there have been setbacks, the value of 1 Bitcoin has skyrocketed since its introduction. The price of Bitcoin is measured against fiat currencies and is based on demand and supply. Unlike fiat currencies, there is no official international Bitcoin price and its price varies across the various exchanges internationally (Ram, Maroun, & Garnett, 2016).

The price of Bitcoin is extremely volatile. Bohr & Bashir (2014) suggest that this could be due to the fact that speculators got involved with Bitcoin as an investment rather than treating it as a practical traditional currency. As a result of its significant growth over a relatively short period of time and extensive media coverage, South Africans have taken a keen interest in Bitcoin. Luno, one of the registered Bitcoin exchanges in South Africa, reports that in November 2017, out of its 2 000 Bitcoin transactions per day, over 750 Bitcoin transactions took place in South Africa (MyBroadband, 2017). The reasons why South Africans purchase Bitcoin vary a survey conducted by Luno in 2017 revealed that 39% of the respondents purchase Bitcoin as an investment while 13% and 14% transact with the currency for payments and trading/speculation respectively (Edmunds, 2017). Even though the South African Reserve Bank does not recognise Bitcoin as legal tender (Raviv, 2016), many retailers and merchants in South Africa have started accepting Bitcoin as a payment method. Despite the continuous growth and exposure of Bitcoin in South Africa, not much research has been done to identify the factors that promote or hinder the adoption of Bitcoin amongst end-users and non-users of the crypto currency. Previous research into Bitcoin adoption in other countries suggests that being a form of technology (by virtue of being a digital currency), technology acceptance and its various theoretical models provide an understanding of the factors that contribute to the adoption of Bitcoin.

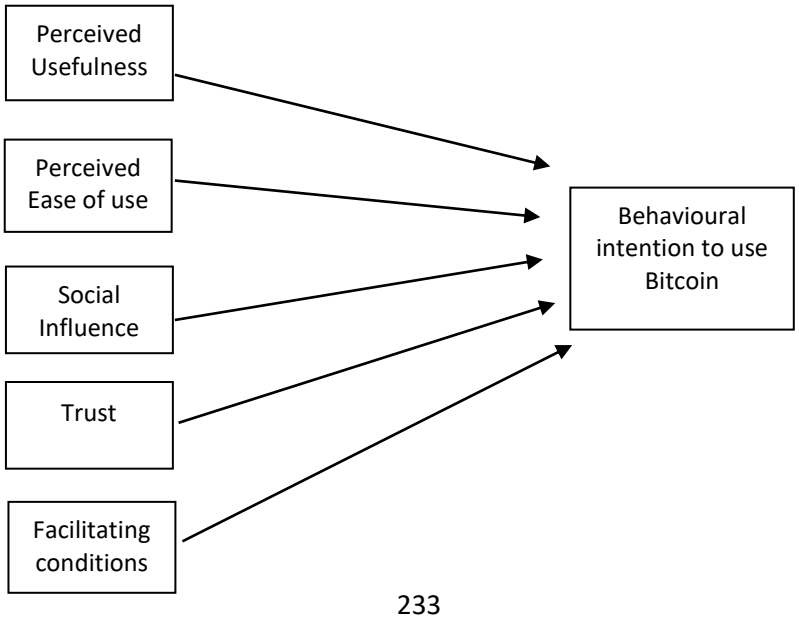
Development of the Research Model: Like many other technological innovations before it (including the internet, electronic mail, internet banking, etc.), Bitcoin, a digital currency, is an information technology (hereafter IT) innovation. Extensive research into technology acceptance has resulted in the development of several theoretical models which have been tested empirically. In the development of these models, various factors have been considered including information systems, psychology and sociology (Venkatesh, Morris, Davis, & Davis , 2003). A significant aspect in the literature on technology acceptance has been the effect of intention-based models which use behavioural intention (hereafter BI) to predict actual usage of the technology being examined (Chau & Hu, 2001). The objective of these models is to determine the various factors that can influence an individual's behavioural intention to adopt and consequentially use a specific technology. Considerable empirical research has reported a significant causal link between intention and actual behaviour (Chau & Hu, 2001). These studies report that an individual's intention to use a specific technology is positively correlated with their actual use of the technology (Sheppard, Hartwick, & Warshaw, 1988). In a scenario where the technology being investigated is currently available for use (like Bitcoin that is available in South Africa), intentions are the preferred predictor of actual usage (Szajna, 1996). Based on this, an intentions-based model was considered the most appropriate for this study as users of Bitcoin and non-users are being investigated. Previous studies on Bitcoin adoption that used an intentions-based model concluded that there is a significant positive correlation between intention to use Bitcoin and its actual usage (Silinskyte, 2014; Gunawan & Novendra, 2017). One of the earliest and most widely used acceptance models

is the Technology Acceptance Model (hereafter TAM) which was developed through a doctoral dissertation by Davis in 1986. In this model, actual usage of a system or technology is determined by BI, while BI is viewed as being jointly determined by the perceived ease of use (hereafter PEOU) and perceived usefulness (hereafter PU) of the system (Davis, 1989) One of the biggest limitations of TAM was that it focused on basic information systems usage and hence has limitations in being applied beyond the workplace (Fu, Farn, & Chao, 2006).

This has led to various modifications of the original model being successfully applied to a variety of non-organisational settings including predicting usage for online shopping (Gefen, Karahanna, & Straub, 2003), wireless internet (Venkatesh & Ramesh, 2006) and internet banking (Cheng, Lam, & Yeung, 2006).
Over the years following the development of TAM, various other intentions based models were developed including the Theory of Planned Behaviour (hereafter TPB) by Ajzen in 1991. This model posits that BI is determined jointly by an individual's attitude, subjective norms and perceived behavioural control (an individual's perceived ability to operate a system as well as having the necessary resources to do so). Significant research has been conducted in many fields on the accuracy of TPB in predicting intention including IT adoption in the work environment (Venkatesh, Morris, Davis, & Davis , 2003), acceptance of e-Government services (Hung, Chang, & Yu, 2006) and adoption of virtual banking (Liao, Shao, Wang, & Chen, 1999). These studies have found that TPB predicts behavioural intention accurately. In developing an intentions-based model for this study, the constructs of both the aforementioned models were used. These specific models were chosen for their parsimony and explanatory power in various scenarios. In addition to this, neither of the two has been found to be a superior predictor of intention than the other. The following modifications have been made to the original models in the development of a research model for this study.

The "attitude" construct from the original TPB has been decomposed using PU and PEOU from TAM. This was proposed by Mathieson in the development of his model "The Decomposed Theory of Planned Behaviour" in 1991. Many empirical studies have considered the role that "attitude" has the intention to use information technology systems. Venkatesh and Davis (2000) removed the "attitude" construct from their model because attitude did not appear to fully mediate the effect of PU and PEOU on BI as was initially believed. A new construct in the form of "trust" has been added to this research model as a direct determinant of intention to use. Bitcoin is a virtual currency and hence trust of the Bitcoin network and its' intermediaries is required by users and potential users of the crypto currency. Whilst other studies on Bitcoin adoption utilise models such as the Unified Theory of Acceptance and Use of Technology model (Silinskyte (2014) and Novendra & Gunawan (2017)) or the Diffusion of Innovations theory (Connolly & Kick, 2015), these models were not considered appropriate for this study as these are generally used to examine adopters of a certain technology. This study aims to identify the determinants of Bitcoin adoption by both users and non-users.

Figure 1: Research Model



Constructs and Development of the Hypotheses

Perceived Usefulness (PU): PU refers to the extent to which a person perceives that using a particular technology would improve his or her performance (Davis, 1989). Chau & Hu (2001) concluded empirically that PU is the most significant construct for the adoption of technology. In the Bitcoin context, a user will most likely adopt Bitcoin if they find the technology useful as a payment method, speculative investment or asset class. In their study on the acceptance of Bitcoin in Indonesia, Novendra & Gunawan (2017) report that PU has a positive and significant effect on BI of using Bitcoin.
H1: Perceived Usefulness will have a positive influence on behavioural intention to use Bitcoin.

00Perceived Ease of Use (PEOU): PEOU refers to the extent to which an individual perceives that using a particular information system will be free of effort (Davis, 1989). In the Bitcoin context, an end user's positive or negative feelings concerning the Bitcoin system, in particular their perceptions on the level of difficulty associated with the use of the technology will have an impact on their decision to use or not to use Bitcoin. Silinskyte (2014) and Folkinshteyn & Lennon (2017) determined empirically in their respective studies that ease of use has a positive influence on an individual's BI to use Bitcoin. This was also concluded by Abramova & Bohme (2016) in a study on the determinants of Bitcoin use in Europe thus the hypothesis being tested.

H2: Perceived Ease of Use will have a positive influence on behavioural intention to use Bitcoin.

Social Influence (SI): Referred to in other studies on technology acceptance as subjective or social norms, social influence (SI) is defined as an individual's perception of significant others' opinions on whether or not he or she should perform a particular behaviour or use a particular system (Chau & Hu, 2001). A potential Bitcoin user will be more likely to adopt its usage if those important to him/her (e.g. supervisors, mentors, friends, family etc.) are currently using Bitcoin or advocate for it. The hypothesis being tested is:

H3: Social influence will have a positive influence on behavioural intention to use Bitcoin.

Trust: Trust in the Bitcoin context refers to users trust in Bitcoin technology experienced before, during, and after engaging in online transactions (Sas & Khairuddin, 2015). In order for end- users to ultimately trust the Bitcoin technology, they must be satisfied that their Bitcoin account is secure and that the exchanges they are trading from have implemented the necessary safeguards to prevent any breach in security. Silinskyte (2014) reports that out of the 13 respondents who did not use Bitcoin in his study, 4 cited "no trust" as the primary reason why. Presthus & O'Malley (2017) found that one of the main reason non-users of Bitcoin have not adopted the technology is due to security concerns. The hypothesis being tested is:

H4: Trust will have a positive influence on behavioural intention to use Bitcoin.

Facilitating Conditions (FC): In the Bitcoin context, facilitating conditions (hereafter FC) refers to the degree to which a user or potential user believes that a technical infrastructure exists to support the use of the crypto currency (Venkatesh, et al., 2003). This infrastructure includes the necessary resources to assist with learning about Bitcoin and compatibility with existing technologies that have been adopted by the individual. FC also includes the technology and facilities to access the Bitcoin network and transact with the crypto currency. Gunawan & Novendra (2017) and Silinskyte (2014) report that there is a positive relation between FC and use of Bitcoin. The hypothesis being tested is:

H5: Facilitating conditions will have a positive influence on behavioural intention to use Bitcoin.

3. Research Design

This is an empirical study in which new data was collected relating to the research objectives identified. The inquiry strategy that was used to obtain the data necessary for this study is that of survey research. In general, a survey involves the collection of information from individuals about themselves or a specific phenomenon being investigated (Forza, 2002). Survey research entails obtaining data about the attitudes and opinions of a sample of individuals, with the objective of extrapolating their responses to that of a greater

population (Leedy & Ormrod, 2010). For this study, which seeks to determine the factors that influence the adoption of Bitcoin in South Africa and uses a theoretical model to test hypotheses developed, a quantitative, survey-based inquiry strategy was considered the most appropriate. A study of this nature involves the willingness of individuals to voluntarily provide responses to questions that test the hypotheses developed. Due to many factors that affect an individual's willingness to assist, such as time constraints, general attitude and interest in the problem being researched, a quantitative survey-based research strategy was utilised to obtain data and this was considered the most appropriate method. This choice is supported by previous empirical studies in other countries that have also used quantitative survey approaches to determine factors that influence or deter the use and adoption of crypto currency.

Sampling: The target population consisted of users and non-users of Bitcoin located in South Africa. Representative sampling poses a challenge to analyse Bitcoin usage as the system is designed to be anonymous, decentralised and voluntary to use. Thus, there is no central database to identify Bitcoin users and non-users and studies on Bitcoin adoption have concluded that Bitcoin users are hard to reach population (Henry, Huynh, & Nicholls, 2017). Acknowledging these challenges, the surveys were made available via online South African Bitcoin forums and Bitcoin communities on social media websites where individuals could voluntarily choose to participate or not. The forum administrators were contacted for permission to administer the questionnaire after ethical clearance was granted. It is important to note that these forums and communities consist of individuals who own or have owned Bitcoin before as well as potential users who have never owned Bitcoin but are interested in trading in or owning Bitcoin. These platforms were considered the most appropriate as the potential respondents would have, at the very least, a basic understanding of Bitcoin and its various uses. Links to the questionnaires were posted by the researcher and the administrators of the forums encouraged members to respond.

Data Collection: Data for this study was collected through two structured questionnaires, one for users of Bitcoin and one for non-users. Regarding the construction of the questionnaire, the questions used to observe and test the constructs of each investigated variable were designed from relevant previous studies on end-user adoption of Bitcoin and technology in general including online banking and electronic filing of tax returns. These questions were then reconstructed to suit the objectives of this study and test the hypotheses constructed. The first part of the questionnaire required the respondent to enter demographic data including gender, age and education profile. Respondents were also required to indicate if they are South African residents as this study is limited to users and non-users from South Africa. Part 2 of the questionnaire tests each construct from the research model. A 5 point Likert-type scale was utilised with 1 = "strongly disagree" and 5 = "strongly agree". Part 1 and Part 2 of the questionnaires were identical for users and non-users. Users were asked one additional question relating to how they currently utilise Bitcoin. The data collected was then coded and analysed using SPSS for Windows.

4. Analyses of Results

Demographic characteristics of the respondents appear in table 1. This analysis revealed that the majority of Bitcoin users are male, representing 78% of the total sample. In addition to this, users of Bitcoin are generally younger than non-users with 86% of the respondents aged 40 and below as opposed to only 52% of the sample of non-users. These findings are consistent with the studies by Novendra & Gunawan (2017), Schuh & Shy (2015) and Bohr and Bashir (2014) who concluded that it is expected that the use of Bitcoin will be more significant for males, particularly younger males. The education profiles of both groups were fairly similar thereby suggesting that the decision to adopt Bitcoin is not dependent on the education profile of the individuals in South Africa.

Table 1: Sample Demographics and Education Profile

	Count	Percentage	Count	Percentage
Gender				
Male	95	78%	75	63%
Female	27	22%	44	37%

Age (years)				
18-25	16	13,1%	15	12,6%
26-40	70	57,4%	47	39,5%
41-50	21	17,2%	28	23,5%
>50	15	12,3%	29	24,4%
Highest Education				
Primary	-	-	1	0,8%
Secondary	9	7,4%	13	10,9%
Tertiary	113	92,6%	105	88,2%

Source: Authors analysis

The first test carried out on the data was the reliability test on the research instruments using Cornbrash's alpha which is a measure of internal consistency. A reliability coefficient of 0.70 and above indicates inter-item consistency. The Cornbrash alpha of the questionnaire for users was 0.869 and for non-users was 0.734 suggesting that the items have relatively high internal consistency. Frequency tests were then conducted on each group, the results of which are illustrated in tables 2 and 3.

Table 2: Frequency Tests for Bitcoin Users

	Mean	Std. Dev.	Range
PU1	4,25	,858	4,00
PU2	3,23	,739	4,00
PU3	3,56	,842	4,00
PEOU1	4,14	,878	4,00
PEOU2	4,49	,730	3,00
PEOU3	4,01	,890	3,00
SI1	3,59	,905	4,00
SI2	3,71	,698	3,00
SI3	2,82	,976	4,00
T1	3,93	,757	3,00
T2	3,96	,726	4,00
FC1	3,95	,527	3,00
FC2	4,00	,692	4,00
FC3	4,31	,813	3,00
FC4	4,18	,890	3,00
FC5	3,84	,589	3,00
BI	4,51	,815	4,00

Source: Authors analysis

Table 3: Frequency Tests for Non-Users

	Mean	Std. Dev.	Range
PU1	3,94	1,048	4,00
PU2	2,23	,899	4,00
PU3	2,35	,888	4,00
PEOU1	2,92	,749	4,00
PEOU2	2,78	,678	3,00
PEOU3	2,68	,801	4,00
SI1	2,12	1,062	3,00
SI2	2,62	,982	4,00
SI3	2,48	,822	4,00
T1	1,78	,912	3,00
T2	1,87	,987	4,00
FC1	3,10	,710	4,00
FC2	2,30	1,093	4,00

FC3	3,12	,916	3,00
FC4	2,56	,829	3,00
FC5	3,36	,711	3,00
BI	1,98	,911	3,00

Source: Authors analysis

Table 4: Pearson's Correlation for Users and Non-Users of Bitcoin

		Behavioural Intention for Users of Bitcoin	Behavioural Intention for Non- users of Bitcoin
PU1	Pearson Correlation	.708**	-.338**
	p-value	,000	,000
PU2	Pearson Correlation	.288**	.243**
	p-value	,001	,008
PU3	Pearson Correlation	.413**	.332**
	p-value	,000	,000
PEOU1	Pearson Correlation	.389**	,122
	p-value	,000	,186
PEOU2	Pearson Correlation	.458**	,035
	p-value	,000	,704
PEOU3	Pearson Correlation	.409**	,167
	p-value	,000	,070
SI1	Pearson Correlation	.317**	.449**
	p-value	,000	,000
SI2	Pearson Correlation	.233**	.551**
	p-value	,010	,000
SI3	Pearson Correlation	,009	.294**
	p-value	,924	,001
T1	Pearson Correlation	.317**	.536**
	p-value	,000	,000
T2	Pearson Correlation	.233**	.468**
	p-value	,010	,000
FC1	Pearson Correlation	.348**	,173
	p-value	,000	,060
FC2	Pearson Correlation	.307**	.447**
	p-value	,001	,000
FC3	Pearson Correlation	.503**	,033
	p-value	,000	,722
FC4	Pearson Correlation	.496**	,102
	p-value	,000	,268
FC5	Pearson Correlation	.306**	-,030
	p-value	,001	,750

** Correlation is significant at the 0.01 level
Source: Authors analysis

Thereafter, Pearson's correlations were conducted on the data to determine the strength of the correlation between PU, PEOU, SI, Trust and FC on BI. A Pearson correlation returns a number between -1 and 1 that indicates the extent to which two variables are linearly related. If this correlation coefficient returns a value of 1, this indicates total positive correlation, 0 is no correlation, and −1 indicates a negative correlation. The Pearson correlation results appear in table 4. In order to verify the Pearson's correlation, a regression analysis was performed on the data, the results of which are illustrated in table 5 and table 6.

Analysis of Users of Bitcoin: The results of the Pearson's correlation in Table 4 illustrate that there is a significant correlation between the constructs and behavioural intention to use Bitcoin. The regression analysis results on table 5 support this with all constructs having a significant positive relationship with behavioural intention to use Bitcoin thus confirming each of the hypotheses examined. The questionnaires were available for respondents from February 2018 to April 2018 and the survey was completed by 122 users of Bitcoin and 119 non-users. Other studies examining Bitcoin adoption and usage have used relatively small samples. Silinskyte (2014) had a total of 111 respondents in his study on Bitcoin usage in Europe while Gunawan and Novendren (2017) managed to sample a total of 49 respondents in their study on Bitcoin in Indonesia. Based on this, the researchers considered the number of responses received appropriate considering the nature of the topic being researched and its aforementioned challenges. The results of the analysis revealed that Bitcoin users have a strong intention to continue using the crypto currency. A mean of 4.51 was returned for behavioural intention (BI), as illustrated in table 2, indicating that current users of Bitcoin intend to continue using Bitcoin. Thereafter, the T-test was used to compare the results of each construct between the users and non-users of Bitcoin. Probability values (p) of <.0001 indicates that both groups of respondents differ significantly on a specific construct.

The results from the T-test returned probability values of <.0001 for all constructs examined indicating that the two groups differ significantly in their opinions regarding Bitcoin adoption. The analysis revealed that 66% of the respondents indicated that their main use of Bitcoin is to use it as an investment in the crypto asset class while the remaining 34% use Bitcoin as a speculative instrument as illustrated in figure 2. No respondent indicated that they use Bitcoin as a payment method even though it was initially developed and designed to be used as a payment instrument that would attract little or no transaction costs (Schuh & Shy, 2015). It can thus be concluded that South African end-users currently do not view decentralisation, the core principle of blockchain technology, as the primary reason for adoption. The results indicate that currently, financial gains and profit-making are the main reasons South African's utilise Bitcoin. Perceived usefulness was a strong determinant of behavioural intention to use Bitcoin. This finding is consistent with the studies by (Silinskyte, 2014) and (Gunawan & Novendra, 2017). The main reason that end-users adopt Bitcoin is due to the fact that they find it a useful and profitable investment and plan to continue investing in the crypto asset class. With regard to perceived ease of use, users of Bitcoin indicated that they have no difficulty in transacting with Bitcoin and believe that they are skilful in using, purchasing and selling Bitcoin. While social influence is a significant determinant of BI, compared to PU and PEOU, the regression analysis indicated that SI is the smallest predictor (5, 5%) of behavioural intention.

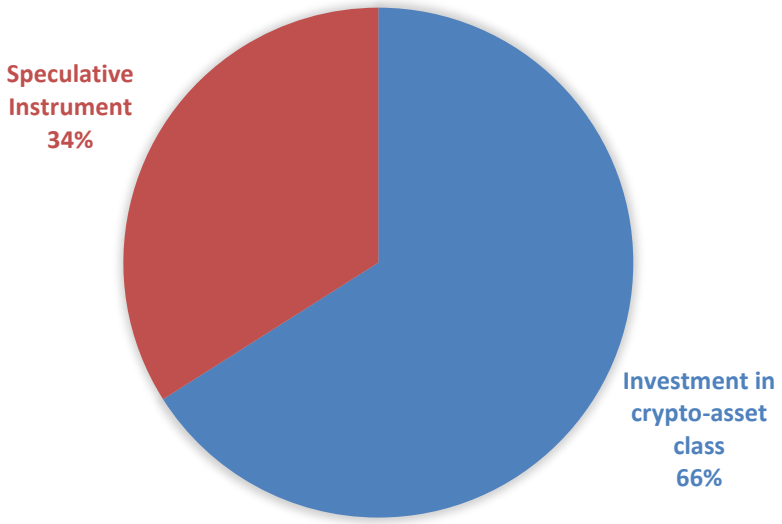
Users of Bitcoin trust the Bitcoin network and are confident that the necessary safeguards have been implemented to protect the Bitcoins in circulation. 75 percent of the respondents here indicated that whilst they trust the Bitcoin network, they are afraid of the potential hackers and cyber breaches that could destabilise the integrity of the Bitcoin network which has proved to reduce the value of Bitcoin. Finally, facilitating conditions has a significant effect on BI of using Bitcoin. The results indicate that Bitcoin is compatible with the technology the respondents use in their day to day activities and users are confident that they will be able to get assistance with any Bitcoin-related problem or issue that may arise. This assistance may be in the form of Bitcoin online forums and communities. The findings are consistent with those of Gunawan & Novendra (2017) and Silinskyte (2014) who report that there is a positive relation between FC and use of Bitcoin. Despite the rising transactions fees associated with Bitcoin, 85% of the respondents indicated that these costs do not inhibit their use of the crypto-currency. This indicates that users are happy with the value of their investment and returns from Bitcoin and the rising costs associated with Bitcoin are not significant enough to warrant outright non-use of Bitcoin.

Table 5: Results of Regression Analysis for Users of Bitcoin

Regression Analysis for Users				Coefficients
Construct	R Square	Adjusted R Square	Std. Error of the Estimate	Standardised Coefficients Beta
PU	,370	,365	,64972	.609
PEOU	,241	,235	,71337	.491
SI	,062	,055	,79288	.250
Trust	,282	,276	,69375	.531
FC	,318	,312	,67642	.564

(Source: Authors analysis)

Figure 2: Reasons for Adopting Bitcoin by Users



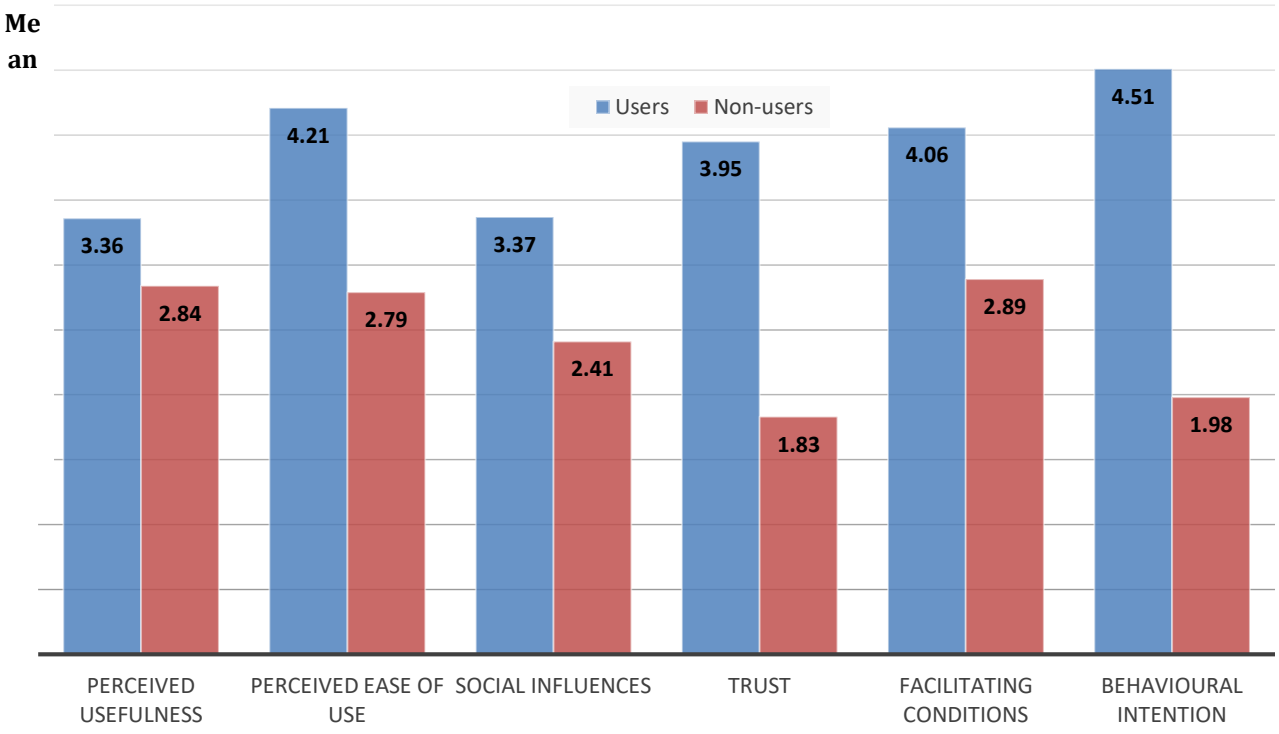
(Source: Authors analysis)

Table 6: Results of Regression Analysis for Non-Users of Bitcoin

Regression Analysis for Non-Users				Coefficients
Model	R Square	Adjusted R Square	Std. Error of the Estimate	Standardised Coefficients Beta
PU	,013	,005	,90894	.115
PEOU	,020	,012	,90571	.143
SI	,292	,286	,76992	.540
Trust	,269	,263	,78224	.519
FC	,088	,080	,87403	.296

(Source: Authors analysis)

Figure 3: Analysis of Constructs - Users VS Non-Users



T-Value:	**11.67**	**17.04**	**10.76**	**21.07**	**18.37**	**22.75**
Pr:	**<.0001**	**<.0001**	**<.0001**	**<.0001**	**<.0001**	**<.0001**

Source: Authors analysis

Analysis of Non-Users of Bitcoin: The results of the analysis revealed that non-users do not intend to utilise the crypto currency in the next 12 months. This is evidenced by a mean of 1.98 being returned for behavioural intention, as illustrated in table 3. The main reason these respondents do not use or plan on using Bitcoin is due to lack of trust around Bitcoin and its various intermediaries in the ecosystem. The results indicate that these individuals do not believe that the necessary security measures have been put into place to protect the integrity of the Bitcoin in circulation and perceive the risk of using or owning Bitcoin as significant. This finding correlates with other studies on Bitcoin adoption by Abramova & Bohme (2016), Folkinshteyn & Lennon (2017) and Presthus & O'Malley (2017). Social influences have a material effect on non-user's future intentions with regard to Bitcoin usage. Individuals with family, friends and influences who encourage the use of Bitcoin or investment in Bitcoin are more likely to utilise the crypto currency than those who do not. The results for this group revealed that their respective influences did not encourage the use of Bitcoin, thereby directly influencing their decision to avoid the crypto currency.

The respondents indicated that they perceive little or no usefulness for Bitcoin. This indicates that non-users agree that Bitcoin will not be useful to them as a payment method, investment or speculative instrument. This finding is consistent with the conclusions by Presthus & O'Malley (2017) where non-users questioned the benefits of using Bitcoin. Likewise, these respondents do not believe that transacting with the crypto currency will be easy for them. Lastly, the lack of facilitating conditions proved to have a negative impact on BI to use Bitcoin with 67% of the respondents indicating that the resources required using or owning Bitcoin are not available to them. Only 12% of these respondents indicated that they believe they would be able to get assistance with Bitcoin-related problems. Family, friends and significant others do not believe that these individuals should utilise Bitcoin at this stage. Finally, non-users do not perceive any benefit from utilising

Bitcoin and do not intend to purchase or invest in the crypto currency. Whilst this study identified key determinants of Bitcoin usage, the following limitations are applicable.

5. Conclusion, Limitations and Future Research

This exploratory study was conducted to identify the determinants of Bitcoin adoption amongst end-user individuals in South Africa as well as to determine how Bitcoin is currently used by South Africans. For current users of Bitcoin, the results of the study revealed that all 5 constructs tested have a significant effect on behavioural intention to use Bitcoin. The current users view perceived usefulness as the most significant factor influencing their decision to use Bitcoin which correlates with findings by Abramova & Bohme (2016) and Novendra & Gunawan (2017). These users trust the Bitcoin network and its intermediaries but indicated that they do have concerns about potential cyber security breaches. The users indicated that it was easy for them to master transacting with Bitcoin which influences its continuing usage. Social influences, while influencing behavioural intention, was the least significant influencing factor. Perhaps this is due to Bitcoin only increasing in popularity with individuals and media over the past year in South Africa. Social influences could become an important factor in years to come. With regard to the current use of Bitcoin in South Africa, 66% of the respondents indicated that they are currently using the crypto currency as an investment in the crypto asset class while 34% reported that they are utilising Bitcoin as a speculative instrument. Currently, the primary reason that South African's currently utilise Bitcoin is for financial gain rather than as a digital currency to be used as a means of payment. Amongst non-users, lack of trust in the Bitcoin network and social influences were the most significant determinants thereby negatively impacting their decision to purchase, hold or use Bitcoin. The negative publicity about security breaches of various exchanges internationally as well as scams where South African's have fallen victim could be part of the reason these respondents do not trust the system or its various intermediaries.

Firstly, the findings in this study depend on the honesty of the respondents. Survey research is susceptible to participant bias, and it is known that individuals would agree more on socially desirable answers and disagree more towards socially undesirable ones. Secondly, as survey research was used to collect the data, the views of the participants will be those at the specific point in time of conducting the survey. The views of the greater population may well differ when measured over a longer time period and thus a longitudinal study should be conducted to determine if views change. This is particularly relevant for Bitcoin as the introduction of legislation and regulation regarding the trading or use of Bitcoin could change views over a period of time. Lastly, as the scope of the study is confined to end-users in South Africa, the findings cannot be generalised to other countries around the world. Continued research is needed in the area of crypto currency in South Africa. Some avenues that could be pursued include: investigating the potential effect of hedonic benefits associated with Bitcoin adoption; investigating obstacles faced by potential users in purchasing and using Bitcoin; conducting further research on individual's perceptions on the use of Bitcoin as a payment method in South Africa; investigating how Bitcoin profits are taxed by the tax authorities in other countries around the world and what mechanisms these authorities are utilising to identify such profits. It is hoped that this study provides insight into the factors influencing Bitcoin adoption in South Africa and serves as a catalyst for future research into crypto currency, adoption in South Africa.

References

Abramova, S. & Bohme, R. (2016). Perceived Benefit and Risk as Multidimensional Determinants of Bitcoin Use: A quantitative exploratory study. Thirty-Seventh International Conference on Information Systems, (pp. 1-20).

Bamert, T., Decker, C., Elsen, L., Wattenhofer, R. & Welten, S. (2013). Have a Snack, Pay with Bitcoins. 13th IEEE International Conference on Peer-to-Peer Computing, (pp. 1-5).

Bohr, J. & Bashir, M. (2014). Who Uses Bitcoin? An exploration of the Bitcoin community. 12th Annual Conference on Privacy, Security and Trust (PST), (pp. 94-101).

Chau, P. Y. & Hu, P. J. (2001). Information technology acceptance by individual professionals: a model comparison approach. *Decision Sciences,* 32(4), 699-719.

Cheng, T. C., Lam, D. Y. & Yeung, A. C. (2006). Adoption of internet banking: An empirical study in Hong Kong. *Decision Support Systems,* 42(3), 1558-1572.

Connolly, A. & Kick, A. (2015). What Differentiates Early Organization Adopters of Bitcoin From Non-Adopters? Twenty-first Americas Conference on Information Systems, (pp. 1-6).

Davis, F. D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS Quarterly,* 13(3), 319-340.

Edmunds, J. (2017). How South Africans use Bitcoin.

Folkinshteyn, D. & Lennon, M. M. (2017). Braving Bitcoin: A technology acceptance model (Tam) analysis. *Journal of Information Technology Case and Application Research,* 18(4), 220-249.

Forza, C. (2002). Survey research in operations management: a process-based perspective. *International Journal of Operations & Production Management,* 22(2), 152-194.

Fu, J. R., Farn, C. K. & Chao, W. P. (2006). Acceptance of electronic tax filing: a study of taxpayer intentions. *Information & Management,* 43(1), 109-126.

Gefen, D., Karahanna, E. & Straub, D. W. (2003). Trust and TAM in online shopping: An integrated model. *MIS Quarterly,* 27(1), 51-90.

Gunawan, F. E. & Novendra, R. (2017). An analysis of Bitcoin Acceptance in Indonesia. *ComTech,* 8(4), 241-247.

Henry, C. S., Huynh, K. P. & Nicholls, G. (2017). Bitcoin awareness and usage in Canada. Staff Analytical Note, Bank of Canada.

Hung, S. Y., Chang, C. M. & Yu, T. J. (2006). Determinants of user acceptance of the e-government services: the case of online tax filing and payment system. *Government Information Quarterly,* 23(1), 97-122.

Kelso, C. (2017). South Africa's Bidorbuy Sees Sixfold Increase with Bitcoin.

Kumar, R. (2013). Bitcoin explained in layman's terms.

Leedy, P. D. & Ormrod, J. E. (2010). Practical Research Planning and Design. (9, Ed.) Upper Saddle River, New Jersey: Pearson Education.

Li, X., Jiang, P., Chen, T., Luo, X. & Wen, Q. (2017). A survey on the security of blockchain systems. *Future Generation Computer Systems,* 73(1), 1-13.

Liao, S., Shao, Y. P., Wang, H. & Chen, A. (1999). The adoption of virtual banking: an empirical study. *International Journal of Information Management,* 19(1), 63–74.

Madeira, A. (2017). How does a Bitcoin ATM work or How to use a Bitcoin ATM.

McKane, J. (2018). South Africa's Cryptocurrency industy is booming.

MyBroadband. (2017). How many customers Luno has on its exchange.

Naidoo, P. (2017). South African's trading big volumes in Bitcoin.

Nakamoto, S. (2008). Bitcoin: A peer-to-peer electronic cash system. White Paper, 1-9.

Ngubeni, T. (2014). Takealot, Payfast join Bitcoin bandwagon.

Novendra, R. & Gunawan, F. E. (2017). Analysis Of Technology Acceptance And Customer Trust In Bitcoin In Indonesia Using UTAUT Framework. Transactions on Internet and Information Systems, 1-18.

Pauw, C. (2017). Bitcoin futures, Explained.

Presthus, W. & O'Malley, N. O. (2017). Motivations and barriers for End-User adoption of Bitcoin as Digital Currency. *Procedia Computer Science,* 121(1), 89-97.

Ram, A., Maroun, W. & Garnett, R. (2016). Accounting for the Bitcoin: accountability, neoliberalism and a correspondence analysis. *Meditari Accountancy Research,* 24(1), 2-35.

Raviv, D. (2016). Is Bitcoin legal in South Africa?

Reid , F. & Harrigan, M. (2013). An Analysis of Anonymity in the Bitcoin System. Security and Privacy in Social Networks, 197-223.

Rice, D. T. (2013). The Past and Future of Bitcoins in Worldwide Commerce. Business Law Today , 1-4.

Sas, C. & Khairuddin, I. E. (2015). Exploring Trust in Bitcoin Technology: A Framework for HCI Research. OzCHI '15 Proceedings of the Annual Meeting of the Australian Special Interest Group for Computer Human Interaction, (pp. 338-342).

Schuh, S. & Shy, O. (2015). U.S. consumers' adoption and use of Bitcoin and other virtual currencies. Working Paper, 1-48.

Sheppard, B. H., Hartwick, J. & Warshaw, P. R. (1988). The Theory of Reasoned Action: A Meta-analysis of Past Research with Recommendations for Modifications and Future Research. *Journal of Consumer Research,* 15(3), 325-343.

Silinskyte, J. (2014). Understanding Bitcoin adoption: Unified Theory of Acceptance and Use of Technology (UTAUT) application. . Unpublished master's dissertation. Netherlands: University Leiden ICT in Business.

Slabbert, A. (2017). Pay your traffic fines in bitcoin.

Sontakke, K. A. & Ghaisas, A. (2017). Cryptocurrencies: A developing Asset class. *International Journal of Business Insights & Transformation,* 10(2), 10-17.

Steyn, G. (2018). WATCH: SA's first business school now accepts bitcoin payments.

Szajna, B. (1996). Empirical evaluation of the revised technology acceptance model. *Management Science,* 42(1), 85-92.

Trautman, L. J. (2016). Is Disruptive Blockchain Technology the Future of Financial Services? The Consumer Finance Law Quarterly Report, pp. 232-242.

Tschorsch, F. & Scheuermann, B. (2016). Bitcoin and Beyond: A Technical Survey on Decentralized Digital Currencies. *IEEE Communications Surveys & Tutorials,* 18(3), 1-37.

Venkatesh, V. & Davis, F. (2000). A theoretical extension of the technology acceptance model four longitudinal field studies. *Management Science,* 46(2), 186-204.

Venkatesh, V. & Ramesh, V. (2006). Web and wireless site usability: Understanding differences and modelling use. *MIS Quarterly,* 30(1), 181-206.

Venkatesh, V., Morris, M. G., Davis, G. B. & Davis , F. (2003). User acceptance of information technology: toward a unified view. *MIS Quarterly,* 27(3), 425-478.

Whigham, N. (2017). The fruitless search for Satoshi Nakamoto.

Williams, S. (2017). 6 Countries where bitcoin is banned.

Young, J. (2017). Japan Becomes Largest Bitcoin Market as Traders Leave China.

Zhao, W. (2017). Bitcoin Price Drops Below $15k, Down 25% from All-Time High.

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The Impact of Financial Sector Development on Foreign Direct Investment: An Empirical Study on Minimum Threshold Levels

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Abstract: Using panel data of 21 emerging economies, the paper investigates the financial sector development threshold levels that would influence foreign direct investment (FDI) inflows. The threshold levels we identified are 41.27% of stock market capitalization for stock market turnover, 53.55% of gross domestic product (GDP) for stock market value traded, 121.53% of GDP for stock market capitalization, 114.43% of GDP for domestic credit to private sector by banks, 144.06% of GDP for domestic credit provided by financial sector, 0.22% of GDP for outstanding domestic private debt securities and 41.26% of GDP for outstanding domestic public debt securities. Our results show that higher stock market and banking sector development above the threshold level positively and significantly influence FDI inflows whilst the influence of lower stock market and banking sector development on FDI inflows was weak and not significant. Levels of private bond market development equal to or greater than the threshold level are found to have a positive but non-significant impact on FDI inflows whilst private bond market development levels less than the threshold have a weaker positive and non-significant influence on FDI inflows. On the other hand, public bond market development levels equal to or greater than the threshold level negatively influenced FDI inflows whilst levels of public bond market development less than the threshold positively but non-significantly attracted FDI inflows into emerging markets.

Keywords: *Foreign Direct Investment; Financial Sector Development; Endogeneity; Threshold; Emerging Markets*

1. Introduction

Empirical literature recently observed that FDI influences economic growth on condition that absorption capacities are not just present in the host country but have reached a minimum level needed to make use of the technology, knowledge and other skills associated with FDI (Vita and Kyaw. 2009). According to Asong (2014), financial sector development is among the absorption capacities that must be present in the host country to ensure significant FDI inflows. Focusing on Sub-Saharan African countries, Sghaier and Abida (2013) suggested that these countries could only benefit from technological diffusion that comes with FDI if their financial systems reach a certain minimum level of development. Choong (2012:828) acknowledged that financial sector development must reach a certain minimum threshold point before FDI inflows positively and significantly influence economic growth in the host countries. In a panel study of BRICS (Brazil, Russia, India, China and South Africa) countries, Kaur et al. (2013) reported that developed financial markets enable host countries to benefit from FDI through better provision of financial support in terms of quicker transactions, provision of loans, good foreign currency services and optimal allocation of capital to more deserving projects.

Furthermore, Balasubramanyam et al (1996:96) showed that well developed financial markets guarantee that the environment in which FDI operates is competitive, free from market distortions and promotes knowledge transfer among firms. Supporting this view are Huang and Xu (1999) who argue that financial institutions influence the FDI by increasing the speed of technological innovation that arises from different channels of FDI technology spill-overs. In our study we hypothesize that there is a certain threshold level of financial sector development that influences significant inflows of FDI. Given that UNCTAD (2012) reported that FDI flow over the years has proven to be a major source of economic growth and development especially for emerging markets, the research problem of our study centres on the empirical question: What minimum threshold levels must financial sector development reach to trigger FDI inflows in emerging markets? This empirical question is far from being conclusively addressed in emerging markets and other countries in the world.

In the literature this question has been investigated in an inconclusive manner (see for instance, Dutta and Roy, 2011 who focused on countries from Central Asia, Europe, South Asia, East Asia and Pacific, Middle East, North Africa, Sub-Saharan Africa, Latin America and the Caribbean; Azman-Saini et al. 2010 who focused on countries drawn from different economic sub-groups and income levels; Omran and Bolbol, 2003 who focused on Arabic countries; and Hermes and Lensink, 2003 who focused on less developing countries). We observe that these prior studies have a number of methodological weaknesses. Cross-country threshold regression models they employ use ordinary least squares (OLS) that do not address the endogeneity problem (FDI being endogenous to itself via the lagged value). They also used the standard within transformation approach by Hansen (1999) to eliminate the individual country-specific fixed effects which are incapable of effectively dealing with a serial correlation of transformed error terms. In these prior studies, the fact that current FDI is affected by the previous FDI (dynamic nature of FDI) was completely ignored, and the FDI proxy used was not one that indicated foreign investors' change in position in the host country.

Only banking sector development proxies are used whilst stock and bond market proxies are neglected, which is a narrow representation of the financial markets. Moreover, no study has been done on emerging markets as a bloc with regards to the subject matter. Our study attempts to address these shortcomings by using a modified Kremer et al. (2013)'s dynamic panel threshold regression model. In summary, the major objective of this paper is to investigate the minimum threshold levels that financial development must reach in emerging markets in order for significant FDI inflow to take place. The study is expected to help emerging markets to develop sound financial development policies that enhance the inflow of significant FDI into their economies. The rest of the paper is structured as follows: Section 2 reviews the relevant literature. Section 3 describes the methodology employed in the study. Section 4 presents and discusses the results of the study. Section 5 concludes.

2. Review of Relevant Literature

Consistent with Ezeoha and Cattaneo (2012), the impact of financial sector development on FDI is summarised into the allocative channel, economic efficiency and the liquidity easing theoretical rationales. Proponents of the allocative channel rationale including Kaur et al. (2013), among others, argue that well developed financial markets are better able to increase foreign capital productivity through allocating financial resources to projects with a high rate of return. The economic efficiency rationale proposes that well developed financial markets have got the better capacity to ease information flow and reducing transaction costs thereby positively influencing FDI (Claessen and Laeven, 2003; Bartels et al., 2009; Ezeoha and Cattaneo, 2012). The liquidity easing rationale argues that well developed financial markets boost liquidity, allow faster trading of financial instruments and settlement by multinational enterprises and thereby increasing the activities of foreign firms in the host country (Levine, 1997a). Empirical studies which focused on threshold levels of financial sector development that significantly influence FDI inflows are extremely very scarce. Using cross-country regression analysis, Omran and Bolbol (2003) investigated the minimum threshold levels of banking sector development indicators that significantly influence FDI inflows in Arab countries. Their study used domestic credit from commercial banks to the private sector as a ratio of GDP and commercial banks assets as a ratio of commercial banks and central bank assets as proxies of banking sector development.

The minimum threshold level of commercial banks assets as a ratio of commercial banks and central bank assets that trigger FDI inflows was found to be 47%. The interpretation is that all countries whose minimum threshold level was below 47% of commercial banks and central bank assets such as Libya, Saudi Arabia, Sudan and Yemen were not in a position to have their banking sector development significantly influence FDI inflows. On the other hand, the banking sector in Lebanon, Tunisia and United Arab Emirates (UAE) were able to attract significant FDI because these countries' banking sector development levels exceeded the threshold level of 47% of commercial banks and central bank assets (Omran and Bolbol, 2003: 241). Furthermore, the minimum threshold level of domestic credit from commercial banks to the private sector as a ratio of GDP (domestic credit) was found to be 13.8%. Countries such as Jordan, Lebanon and Tunisia whose domestic credit surpassed 13.8% of GDP were able to significantly attract FDI inflows whilst Sudan, Syria and Yemen failed to attract significant FDI inflow because their domestic credit levels were below the minimum

threshold target of 13.8% of GDP. Azman-Saini et al. (2010) studied the role of financial markets on FDI using a threshold regression model in 91 countries with cross country annual data from 1975 to 2005.
Their study used only banking sector development indicators as proxies for financial markets development, namely, credit provided by financial institutions to the private sector to GDP ratio, credit by deposit money banks to the private sector to GDP ratio (bank credit), ratio of commercial bank assets to commercial banks and central bank assets and liquid liabilities (ratio of liquid liabilities of the financial system to GDP) of the banking sector, whilst FDI net inflows (% of GDP) was used to measure FDI. Their results showed that FDI inflow was significant only when credit provided by financial institutions to the private sector to GDP ratio exceeded a threshold level of 49.7%, 43.1% of GDP for bank credit, 89.1% of commercial banks and central bank assets and 68.8% of GDP for liquid liabilities. Using panel regression analysis with data involving 97 countries from Central Asia, Europe, South Asia, East Asia and Pacific, Middle East, North Africa, Sub-Saharan Africa, Latin America and the Caribbean, Dutta and Roy (2011) investigated the minimum threshold level of financial development that allows the host countries to attract significant FDI inflows. FDI net inflow (% of GDP) and the ratio of private credit by deposit money banks to GDP were used as proxies for FDI and financial development respectively. They found out that the relationship between banking sector development and FDI inflows is a non-linear one and that FDI inflows were positively and significantly influenced by banking sector development only up to a maximum level of private credit by deposit money banks to GDP ratio of 130%. Beyond a threshold of 130% of GDP, private credit by deposit money banks to GDP ratio had a negative impact on FDI inflows in the host countries (Dutta and Roy, 2011:310).

The finding is consistent with the observation by Hailu (2010) who argued that highly developed financial markets could possibly crowd out FDI. In another study, Hermes and Lensink (2003) investigated the minimum threshold levels of financial development above which developing countries begin to significantly attract FDI inflows during the period between 1970 and 1995. Their study used credit to the private sector as a ratio of GDP, a log of the private sector bank loans and the log of investment share in GDP as proxies of financial development whilst the log of FDI to GDP ratio was used as a measure of FDI. They found that the minimum threshold level of credit to the private sector as a ratio of GDP was 12%. This means that developing countries whose credit to the private sector as a ratio of GDP was below 12% failed to significantly attract FDI inflows and vice versa for developing countries whose credit to the private sector as a ratio of GDP was above 12%. As earlier observed, prior studies on the relationship between minimum threshold levels of financial sector development and FDI inflows have similar shortcomings. Methodologically, they did not address the endogeneity problem embedded in such FDI-financial sector development relationships. The exclusion of other forms of financial sector development such as the bond and stock markets means that the results are not broad enough to represent the impact of minimum threshold levels of the whole financial sector on FDI inflows. This paper endeavours to address this research gap. In addition to financial sector development there are many other variables that influence FDI inflows. According to Dunning (1980:13), economic growth in the host country is a location advantage of FDI in line with the eclectic paradigm hypothesis.

On the other hand, the market size hypothesis of Jorgenson (1963) argues that FDI is attracted into the host country by the level of GDP. Nnadi and Soobaroyen (2015) observe that higher inflation rate could chase away prospective and already existing foreign investors. Inflation rate increase in host country reduces FDI as it erodes the value of the profits made by foreign firms (Sayek, 2009: 423). The currency areas hypothesis says that weak currencies in the host country attract FDI whilst strong currencies not only deter FDI inflows but promotes FDI outflows (Aliber, 1970). Romer (1986) and Lucas (1988) observe that both domestic and foreign savings lead to long-term economic growth. Trade openness is a political location advantage of FDI that arises from favourable government policies (Denisia, 2010: 108). 0Dunning (1977) noted that human capital development is one of the most important locational advantages that positively affect FDI flows. According to Craigwell (2012), high human capital development helps domestic companies to easily and quickly take advantage of new technology thereby increasing the FDI linked technology spill-overs. Availability of good institutional infrastructure helps the host countries to benefit from technological spill-overs of FDI (Wang and Xie, 2009). Craigwell (2012) also observes that in addition to providing a support framework for new technology, sufficient and high quality of infrastructure improves and enhances FDI-domestic firms' linkages. Thus consistent with the literature, domestic savings, trade openness, human capital development and infrastructural development have a positive effect on FDI. Explanatory variables are as

follows. Stock market capitalization ratio, stock market turnover ratio and stock market value traded ratio are used to capture stock market size, liquidity and efficiency of the stock market.

3. Research Methodology

Sources of Data: Data for the study is extracted from the World Development Indicators, International Financial Statistics, International Monetary Fund, African Development Indicators, Global Financial Indicators, United Nations Conference on Trade and Development and United Nations Development Programme various reports. Out of the thirty-one emerging markets listed by IMF (2015), we choose twenty-one of them whose data for all variables could be obtained for data consistency purposes (See Appendices 1 and 2 listing countries and variables and acronyms). The study spans from 1994 to 2014 because some of the previous communist countries studied had no stock market prior to 1994. Our dependent variable is net FDI inflows as a ratio of GDP as a measure for FDI because it best measures foreign investors' change in position in the host country (Biglaiser and DeRouen. 2006:59). The domestic credit to private sector ratio and the domestic credit provided by financial sector ratio are used as proxies for banking sector development, whilst outstanding domestic private debt securities and outstanding domestic public debt securities ratios are used as measures of bond sector development. The choice of banking and bond sector development variables is influenced mainly by the availability of data. The control variables include economic growth (GDPPC), exchange rates (EXCHANGE), trade openness (TRADE), infrastructure development (INFR), inflation rate (INFL), human capital development (HCD) and gross savings (GS) consistent with literature (Soumare and Tchana, 2015; Walsh and Yu, 2010; among others).

Estimation Model: We use a modified Kremer et al.'s (2013) dynamic panel threshold regression model. Our study's major focus and theoretical perspective are that there is a minimum threshold level of financial sector development that is conducive to attracting more FDI. Hence, following Kremer et al. (2013) approach, our modified structural equations in respect to different financial development indicators and explanatory variables are as follows:

$$FDI_{it}=\mu_i+\beta_1 FDI_{it-1}+\beta_2 \text{Stock}_{it}I(\text{Stock}_{it}\geq\gamma)+\delta_i I(\text{Stock}_{it}\geq\gamma)+\beta_3 \text{Stock}_{it}I(\text{Stock}_{it}<\gamma)+\varphi z_{it}+\varepsilon it \quad [1]$$

$$FDI_{it}=\mu_i+\beta_1 FDI_{it-1}+\beta_2 \text{Bank}_{it}I(\text{Bank}_{it}\geq\gamma)+\delta_i I(\text{Bank}_{it}\geq\gamma)+\beta_3 \text{Bank}_{it}I(\text{Bank}_{it}<\gamma)+\varphi z_{it}+\varepsilon it \quad [2]$$

$$FDI_{it}=\mu_i+\beta_1 FDI_{it-1}+\beta_2 \text{Bond}_{it}I(\text{Bond}_{it}\geq\gamma)+\delta_i I(\text{Bond}_{it}\geq\gamma)+\beta_3 \text{Bond}_{it}I(\text{Bond}_{it}<\gamma)+\varphi z_{it}+\varepsilon it \quad [3]$$

FDI_{it} is the ratio of net FDI inflow over GDP for country i at time t, φz_{it} stands for control variables, μ_i is the specific country fixed effect; γ represents the threshold level, β_1, β_2 and β_3 are the slope coefficients. δ_i stands for the regime intercepts which address the bias caused by the correlation between an explanatory variable with the dependent variable (Bick, 2010:127). Stock_{it} represents stock market development for country i at time t. Bank_{it} stands for banking sector development for country i at time t, whilst Bond_{it} represents bond market development for country i at time t. I (.) is the indicator function showing the regime defined by the threshold variable (Stock, Bank or Bond). The error term (εit) is independently and identically distributed with constant variance and mean of zero. z_{it} represents a vector of the independent set of explanatory variables which include both endogenous and exogenous variables. z_{it} is further partitioned into two, namely $z1_{it}$ which contains exogenous variables which are not correlated with the error term (εit) and $z2_{it}$ which include the endogenous variables which are correlated with εit. For our study, $z1_{it}$constitutes all the control variables (GDPPC, INFL, EXCHANGE, GS, TRADE, HCD and INFR) and the threshold variable (Stock, Bank or Bond) $z2_{it}$ is the lag of the dependent variable (FDI_{it-1}) which is the only endogenous variable. We employ GMM estimators to address the endogeneity problem.

Whilst using all the available lags of the dependent variable as instruments (p=t) increases the level of efficiency in the model, our study uses only one lag of the dependent variable as an instrument (p=1) to avoid an over-fit of instrumental variables that might produce coefficient estimates which are biased (Roodman, 2009). Following Kremer et al. (2013:864), eliminating the individual country-specific fixed effects (μ_i) is the first step in the estimation of the threshold levels. Hansen (1999) uses the standard within transformation approach to eliminate the individual country-specific fixed effects whose weaknesses are: (1) it leads to inaccurate estimates because the lagged dependent variable remains correlated with the error term; and (2) the first differencing applied to remove the country-specific fixed effects results in negative serial correlation in the error term. Our study uses the forward orthogonal deviations transformation which subtracts the average of each variable's future observations, thereby avoiding the serial correlation of the transformed error terms. The approach consequently enables a cross-sectional model by Caner and Hansen (2004) to be applied to a dynamic panel threshold model set up. It also guarantees that the explanatory variables are uncorrelated with the error term, thereby helping in addressing the endogeneity problem (Matemilola et al., 2016:441).

There are six steps involved in the estimation of threshold levels. The first stage involves the elimination of individual country-specific fixed effects (μ_i) using the forward orthogonal deviations transformation approach, whose superiority has been explained in the preceding paragraph. Secondly, a reduced form regression equation for the endogenous variable ($z2_{it}$) as a function of the instruments (x_{it}) is estimated, following Caner and Hansen (2004). Thirdly, the endogenous variables ($z2_{it}$) are replaced in the structural equations by their predicted endogenous values ($\hat{z}2_{it}$), consistent with the Kremer et al. (2013:865) approach. Fourthly, the structural equations are then estimated using ordinary least squares for a fixed threshold γ where the endogenous variables ($z2_{it}S$) are then replaced by their predicted values from the third step of the estimation process. The sum of squared residuals represented by $S(\gamma)$ results from the fourth stage. The fourth stage is repeated for a strict subset of the threshold variable (Stock, Bank or Bond). The fifth stage involves the estimator of the threshold value $S(\gamma)$ denoted by ($\hat{\gamma}$) being chosen as the one with the smallest sum of the squared residuals $S(\gamma)$. Once the threshold value γ has been estimated, the sixth and final stage involves the precise slope coefficients being estimated using the generalised method of moment (GMM) approach.

4. Results and Discussion

Descriptive Statistics: Table 1 below shows mean values of variables by country, where TURN stands for stock market turnover ratio, VTRD represents stock market value traded ratio, MCAP is stock market capitalisation, DCRED stands for domestic credit to private sector ratio, DCFS is domestic credit provided by financial sector ratio, DPRDS stands for outstanding domestic private debt securities and DPBDS represents outstanding domestic public debt securities ratio.

Table 1: Mean of Key variables by Country (1994 to 2014)

	FDI	TURN	VTRD	MCAP	DCRED	DCFS	DPRDS	DPBDS
Argentina	2.34	34.86	5.43	15.40	15.48	31.94	4.43	13.43
Brazil	2.72	55.78	23.93	44.03	42.87	79.68	16.87	44.85
China	3.85	160.86	60.71	39.42	113.19	128.30	16.68	11.05
Colombia	3.33	11.23	4.50	32.33	35.43	49.55	0.47	18.07
Czech Republic	4.76	48.06	10.32	19.00	45.51	56.39	7.93	20.55
Greece	0.74	54.12	24.73	44.97	74.46	105.48	11.81	58.86
Hong Kong	20.63	54.01	342.78	628.51	163.10	157.91	15.30	16.10
Indonesia	1.62	37.66	11.02	32.29	33.36	47.85	3.65	11.64
India	1.29	102.44	42.71	56.20	36.80	59.03	1.94	10.35
Mexico	2.61	29.46	8.33	28.98	21.21	37.24	10.92	15.35
Malaysia	3.65	29.02	41.63	154.99	121.35	132.99	45.66	35.71
Peru	4.32	14.59	3.83	34.82	24.13	19.93	10.84	3.11

Philippines	1.56	22.77	12.88	57.38	35.39	54.77	1.20	30.93
Poland	3.32	47.69	8.99	23.15	31.85	46.48	0.95	19.24
Portugal	3.35	59.41	22.06	34.95	135.61	143.14	36.43	37.59
Republic of Korea	0.89	179.16	100.92	60.94	104.66	114.80	54.89	22.65
Russia	2.05	37.92	22.22	40.34	28.23	31.89	3.08	4.42
Thailand	3.01	72.36	43.90	61.39	119.93	137.49	22.88	16.78
Turkey	1.32	148.30	37.49	27.07	31.04	50.42	0.38	24.19
Singapore	16.00	54.39	101.59	194.42	100.87	79.13	14.23	30.19
South Africa	1.54	23.93	47.67	197.16	133.48	164.40	15.71	34.33
Overall Mean	4.04	60.86	46.55	87.04	68.95	82.32	14.11	22.83

Overall, the mean values show an uneven pattern of FDI inflows and financial sector development among emerging markets. The Czech Republic, Hong Kong, Peru and Singapore attract high FDI inflows than their peers while Greece and the Republic of Korea attract the least. With regard to financial sector development, there is a mixed pattern depending on which indicator is being measured. However, in terms of the size of stock markets, Hong Kong, Malaysia, Singapore and South Africa fare much better than their peers.

Econometric Results: Table 2 shows threshold levels and regression results of the nexus between financial sector development and FDI. The lag of FDI positively and significantly influenced FDI inflows in emerging markets, consistent with Walsh and Yu (2010) who observed that existing FDI stock influences future FDI through allowing new foreign investors to easily enjoy positive spill-over benefits generated by the already established foreign investors in the host country. The threshold levels in Table 2 are significant. A positive but insignificant impact of TURN on FDI inflows at levels above or equal to the threshold of 41.27% of MCAP is observed. TURN levels that are less than a threshold value more positively and significantly influenced FDI inflows. These results deviate from the conventional literature on the relationship between financial sector development and FDI inflows. However, they resonate with Havranek and Irsova (2011) who reported that foreign investors can bring along significant FDI inflows despite the prevalence of lower financial sector development (FSD) in the host country as long as they have a small technological edge over local firms and are open to trade with other countries. The size of the coefficients shows that VTRD at levels above or equal to the threshold of 53.55% of GDP more positively and significantly influenced FDI inflows in comparison to the impact of VTRD levels that are less than a threshold on FDI inflows.

The results are consistent with a study by Levine (1997b) which observed that FDI projects are only viable under conditions of high stock market liquidity as this enables the less costly and easy raising of additional capital by foreign investors in the host country. Whilst MCAP at levels less than the threshold value of 121.53% of GDP had a significant positive impact on FDI inflows. Levels of MCAP greater or equal the threshold level had a more positive and more significant influence on FDI inflows. The results support the allocative channel theoretical rationale which stipulates that higher developed financial markets are better able to increase productivity of foreign capital through being better able to allocate financial resources to projects with high rate of return (Claessens and Laeven, 2003). Although DCRED levels less than the threshold level of 114.43% of GDP had a positive and significant influence on FDI inflows, the levels of DCRED equal to or above a threshold level had a more positive and more significant impact on FDI inflows. The results support the economic efficiency rationale which according to Bartels et al. (2009) says that developed financial markets are better able to provide timely, efficient and cost-cutting information to potential foreign investors thereby contributing to a decline in the level of asymmetric information that normally curtails international capital mobility.

Table 2: Dynamic Panel Threshold Regression Model Results

	Model 1: FDI= f(TURN, INITIAL, CONTROLS)			**Model 2: FDI= f(VTRD, INITIAL, CONTROLS)**		
Thresh. Est.	**41.27%. C.I. [7.77%-126.47%]**			**53.55%. C.I. [7.77%-90.02%]**		
	Coefficient	**Std. error**	**T Statistic**	**Coefficient**	**Std. error**	**T Statistic**
β_1 -Initial	0.1823*	0.0985	1.8508	0.2685***	0.0867	3.0969
β_2	0.2136**	0.1021	2.0921	0.6502***	0.1023	6.3558

β_3	0.2058*	0.1154	1.7834	0.1827***	0.0522	3.5000
δ_i	1.2152*	0.6419	1.8931	1.3493***	0.4531	2.9779
GDPPC	0.2566**	0.1155	2.2216	0.1775	0.1127	1.5750
INFL	-0.0092	0.0430	-0.2140	0.0071	0.0431	0.1647
EXCHANGE	0.1722**	0.0823	2.0923	0.1603**	0.0790	2.0291
GS	0.0898	0.2826	0.3178	0.0467	0.2909	0.1605
TRADE	0.3600	0.2335	1.5418	0.1278	0.2219	0.5759
HCD	0.1142	0.5613	0.2035	-0.2234	0.5622	-0.3974
INFR	-0.2996	0.2367	-1.2657	-0.3409	0.2345	-1.4537
	Model 3:FDI= f(MCAP, INITIAL, CONTROLS)			Model 4:FDI= f(DCRED, INITIAL, CONTROLS)		
Thresh. Est.	121.53%. C.I.[68.03%-160.77%]			114.43%. C.I.[29.96%-138.38%]		
	Coefficient	Std. error	T Statistic	Coefficient	Std. error	T Statistic
β_1 -Initial	0.4063***	0.0820	4.9549	0.3182***	0.0851	3.7391
β_2	1.0578***	0.1611	6.5661	1.9994***	0.5467	3.6572
β_3	0.1459**	0.0711	2.0520	0.2761**	0.1395	1.9792
δ_i	1.3482***	0.4394	3.0683	1.0934**	0.4391	2.4901
GDPPC	0.0758	0.1085	0.6986	0.0608	0.1409	0.4315
INFL	-0.0049	0.0450	-0.1089	-0.0237	0.0442	-0.5362
EXCHANGE	0.0953	0.0779	1.2234	0.1065	0.0787	1.3532
GS	0.1340	0.3008	0.4455	0.3293	0.2849	1.1558
TRADE	-0.1095	0.2346	-0.4668	0.0200	0.2221	0.0901
HCD	-0.1269	0.5942	-0.2136	0.2423	0.5724	0.4233
INFR	-0.1031	0.2126	-0.4849	-0.0894	0.2477	-0.3609

Table 2 continued

	Model 5:FDI= f(DCFS, INITIAL, CONTROLS)			Model 6:FDI= f(DPRDS, INITIAL, CONTROLS)		
Thresh. Est.	144.06%. C.I.[126.47%-151.41]			0.22%. C.I.[0.21%-35.87%]		
	Coefficient	Std. error	T Statistic	Coefficient	Std. error	T Statistic
β_1 -Initial	0.4285***	0.0811	5.2836	0.2613***	0.0855	3.0561
β_2	3.9125***	0.8579	4.5606	0.2261	0.8734	0.2589
β_3	-0.0041	0.1494	-0.0274	0.0115	0.0723	0.1591
δ_i	1.7358*	1.0035	1.7297	0.0213	0.1256	0.1696
GDPPC	0.1107	0.1249	0.8863	0.3156***	0.1164	2.7113
INFL	-0.0348	0.0442	-0.7873	-0.0253	0.0426	-0.5939
EXCHANGE	0.0762	0.0821	0.9281	0.1287	0.0800	1.6088
GS	0.3808	0.3153	1.2077	0.1642	0.2617	0.6274
TRADE	0.0056	0.2300	0.0243	0.2864	0.2259	1.2678
HCD	0.2679	0.5792	0.4625	0.0843	0.5673	0.1486
INFR	-0.1073	0.2358	-0.4551	-0.4502	0.2398	-1.8774
	Model 7:FDI= f(DPBDS, INITIAL, CONTROLS)					
Thresh. Est.	41.26%. C.I.[2.61%-41.26%]					
	Coefficient	Std. error	T Statistic			
β_1 -Initial	0.3300***	0.0820	4.0244			
β_2	-1.7457	1.2461	-1.4009			
β_3	0.0014	0.0503	0.0278			
δ_i	-1.2352	1.2189	-1.0134			

GDPPC	0.2613**	0.1137	2.2982
INFL	-0.0277	0.0424	-0.6533
EXCHANGE	0.1613**	0.0768	2.1003
GS	0.3484	0.2709	1.2861
TRADE	0.2707	0.2403	1.1265
HCD	-0.2891	0.5650	-0.5117
INFR	-0.5189	0.2442	-2.1249

*/**/*** indicate 10%/5%/1% respectively

DCFS at levels below a threshold of 144.06% of GDP negatively influenced FDI inflow whereas DCFS equal to or greater than a threshold level had a strong positive and significant impact on FDI inflows. The findings agree with Agbloyor et al. (2014) who showed that less developed financial markets are unable to efficiently allocate foreign capital towards the productive economic sectors thereby exposing the host country to financial and exchange rate crises which lead not only to the outflow of foreign capital but also stifle economic growth. DPRDS at levels below the threshold of 0.22% of GDP has a weak positive but non-significant impact on FDI inflows whilst DPRDS at levels that are equal or above a threshold has a stronger positive but insignificant impact on FDI inflows. Levels of DPBDS below a threshold of 41.26% of GDP positively influenced FDI inflows whilst DPBDS at levels above the threshold negatively influenced FDI inflows, a finding which contradicts most conventional literature on the subject matter. The theoretical explanation could be that foreign investors might prefer portfolio investment in a more developed and functioning financial system which could lead to portfolio investments crowding out FDI (Hailu, 2010:109).

The results resemble those of Tan & Ismail (2015) who observed that high government debt crowds out investment (foreign and domestic) and consequently lowers economic growth. None of the threshold slope coefficients of bond sector development is significant. This could be driven by the low level of development of the bond markets which cannot attract, absorb and efficiently allocate foreign capital. As control variables, GDPPC, EXCHANGE, TRADE and GS positively influenced FDI whilst INFL negatively affected FDI in the majority of cases in line with theoretical expectations. INFR (proxied by electric power consumption) negatively affected FDI in contrast with the eclectic paradigm hypothesis but consistent with the observation by Lopez-Carlos and Schwab (2007). The latter argued that countries with high energy consumption have adequate foreign currency reserves to sponsor their own homegrown economic growth initiatives without help from MNEs. HCD positively influenced FDI in model 1, 4, 5 and 6, in support of Mastromarco and Ghosh (2009) who argued that HCD guaranteed the efficiency of FDI in developing countries. It negatively influenced FDI in model 2, 3 and 7, consistent with Kang and Lee (2007) who noted that high cost of labour which is associated with high levels of HCD negatively affects FDI through increasing the cost of doing business on the part of foreign investors.

General Discussion: Omran and Bolbol (2003) observed that countries whose (1) domestic credit and commercial banks assets as a ratio of commercial banks and central bank assets and (2) domestic credit from commercial banks to the private sector as a ratio of GDP were below a threshold of 47% and 3.8% respectively failed to enjoy significant FDI. Furthermore, Hermes and Lensink (2003) reported that developing countries whose credit to the private sector (% of GDP) was below a threshold of 12% failed to attract significant FDI inflows. Azman-Saini et al. (2010) show that significant FDI inflow only was realised in the host countries when private sector credit ratio exceeded a threshold level of 49.7% of GDP, 43.1% of GDP for bank credit, 89.1% of commercial banks and central bank assets for domestic credit and commercial bank assets ratio and 68.8% of GDP for liquid liabilities ratio. Our results differ from the above findings in two ways. Firstly, our minimum threshold levels for banking sector development variables are much higher, 114.43% of GDP for DCRED and 144.06% of GDP for DCFS. Secondly, our study shows that countries whose levels of DCRED were below the threshold positively and significantly influenced FDI inflows whilst emerging countries whose DCRED were equal to and above the threshold more positively and more significantly received FDI inflows. In contrast, the above similar empirical studies noted that countries characterised by banking sector development below the threshold level did not benefit from FDI at all.

Dutta and Roy (2011) reported that banking sector development positively influenced FDI inflows only up to maximum level of private credit by deposit money banks to GDP ratio of 130%, beyond which FDI outflow is

triggered. On the contrary, our results show that a country whose DCRED is above a threshold level of 114.43% of GDP managed to significantly attract FDI inflows. Our study expanded the discussion by also focusing on threshold levels of stock market and bond sector development variables required to influence FDI inflows in emerging markets unlike the prior similar empirical studies which neglected both stock and bond markets. The results of our study are more robust than those of the prior similar studies because we eliminated individual country specific effects using a superior approach known as forward orthogonal deviations transformation. Moreover, we investigated financial sector development minimum threshold levels on FDI inflows using a dynamic panel threshold regression model that addressed endogeneity problems.

5. Concluding Remarks

Our study concludes that higher banking sector and stock market development is important in attracting significant FDI inflows in the emerging markets. Higher levels of private bond sector development equal to or above the threshold have a positive but insignificant impact on FDI inflows, whilst lower private bond sector development below the threshold has a weaker positive and non-significant influence on FDI inflows in line with theoretical predictions. Higher levels of public bond sector development equal to or above the threshold negatively influenced FDI inflows in emerging markets, whilst public bond sector development levels below the threshold positively but non-significantly influenced FDI inflows in contrast with theoretical predictions. Emerging markets are therefore urged to implement policies that entrench the development of the banking sector, stock market and private bond market in order to sustain the inflow of significant FDI. The study also encourages the emerging markets to implement a policy that ensures that public bond market development is kept at reasonably low levels in order to avoid crowding out FDI. We assumed that there is only one minimum threshold level of financial sector development that has to be reached before emerging markets significantly influence FDI inflows, which might not be realistic for such non-linear relationships. We therefore recommend that future studies must investigate the existence of multiple thresholds of financial sector development that influence FDI inflows.

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References

Agbloyor, E. K., Abor, J. Y., Adjasi, C. K. D. & Yawson, A. (2014). Private capital flows and economic growth in Africa: The role of domestic financial markets. *Journal of International Financial Markets, Institutions & Money*, 30, 137-152.

Aliber, R. Z. (1970). A theory of direct foreign investment. The International Corporation, Cambridge, 17-34.

Asong, S. A. (2014). Linkages between investment flows and financial development. *African Journal of Economic and Management Studies,* 5(3), 269-299.

Azman-Saini, W. N. W., Law, S. H. & Ahmad, A. H. (2010). FDI and economic growth: New evidence on the role of financial markets. *Economic Letters,* 107(2), 211-213.

Balasubramanyam, V. N., Salisu, M. & Sapsford, D. (1996). Foreign direct investment and growth in EP and IS countries. *The Economic Journal*, 106(1), 92-105.

Bartels, F. L., Alladina, S. N. & Lederer, S. (2009). Foreign direct investment in Sub-Saharan Africa: Motivating factors and policy issues. *Journal of African Business,* 10(2), 141-162.

Bick, A. (2010). Threshold effects of inflation on economic growth in developing countries. *Economic Letters,* 108(2), 126-129.

Biglaiser, G. & DeRouen, K. (2006). Economic reforms and inflows of foreign direct investment in Latin America. *Latin American Research Review*, 41(1), 51-75.

Caner, M. & Hansen, B. E. (2004). Instrumental variable estimation of a threshold model. *Economic Theory,* 20 (5), 813-843.

Choong, C. K. (2012). Does domestic financial development enhance the linkages between foreign direct investment and economic growth? *Empirical Economics*, 42(3), 819-834.

Claessens, S. & Laeven, L. (2003). Financial development, property rights and growth. *The Journal of Finance*, 8(6), 2401-2435.

Craigwell, M. F. A. W. R. (2012). Economic growth, foreign direct investment and corruption in developed and developing countries. *Journal of Economic Studies*, 39(6), 639-652.

Denisia, V. (2010). Foreign direct investment theories: An overview of the main FDI theories. *European Journal of Interdisciplinary Studies,* 2(2), 104-110.

Dunning, J. H. (1977). Trade location of economic activity and the MNE: A search of an eclectic approach, in B. Ohlin, P.O. Hesselborn and P.J. Wijkman, The international allocation of economic activity. Macmillan, London.

Dunning, J. H. (1980). Toward an eclectic theory of international production: Some empirical tests. *Journal of International Business Studies,* 11(1), 9-31.

Dutta, N. & Roy, S. (2011). Foreign direct investment, financial development and political risks. *The Journal of Developing Areas,* 44(2), 303-327.

Ezeoha, A. E. & Cattaneo, N. (2012). FDI flows to Sub-Saharan Africa: The impact of finance, institution and natural resource endowment. *Comparative Economic Studies*, 54(3), 597-632.

Hailu, Z. A. (2010). Demand side factors affecting the inflow of foreign direct investment to African countries: Does capital market matter? *International Journal of Business and Management*, 5(5), 103-112.

Hansen, B. E. (1999). Threshold effects in non-dynamic panels: Estimation, testing and inference. *Journal of Econometrics,* 93(2), 345-368.

Havranek, T. & Irsova, Z. (2011). Estimating vertical spill overs from FDI: Why results vary and what the true effect is. *Journal of International Economics,* 85(2), 234-244.

Hermes, N. & Lensink, R. (2003). Foreign direct investment, financial development and economic growth. *Journal of Development Studies,* 40(1), 142-163.

Huang, H. & Xu, C. (1999). Institutions, innovations and growth. *American Economic Review*, 89(2), 438-443.

IMF. (2015). World Economic Outlook: Adjusting to Lower Commodity Prices. Washington (October).

Jorgenson, D. W. (1963). Capital theory and investment behaviour. *The American Economic Review*, 53(2), 247-259.

Kang, S. J. & Lee, H. S. (2007). The determinants of location choice of South Korean FDI in China. *Japan and the World Economy,* 19(4), 441-460.

Kaur, M., Yadav, S. S. & Gautam, V. (2013). Financial system development and foreign direct investment: A panel study for BRICS countries. *Global Business Review*, 14(4), 729-742.

Kremer, S., Bick, A. & Nautz, D. (2013). Inflation and growth: New evidence from a dynamic pane Threshold analysis. *Empirical Economics*, 44(2), 861-878.

Levine, R. (1997a). Financial development and economic growth: Views and Agenda. *Journal of Economic Literature*, 35(2), 688-726.

Levine, R. (1997b). Stock markets, economic development and capital control liberalisation. *Perspectives,* 3(5), 1-7.

Lopez-Carlos, A. & Schwab, K. (2007). The Arab World Competitiveness Report 2007, World Economic Forum, Palgrave MacMillan, London.

Lucas, R. (1988). On the mechanics of economic development. *Journal of Monetary Economics,* 22(1), 3-42.

Mastromarco, C. & Ghosh, S. (2009). Foreign capital, human capital and efficiency: A stochastic frontier analysis for developing countries, *World Development,* 37(2), 489-502.

Matemilola, B. T., Bany-Ariffin, A. N., Azman-Saini, W. N. W. & Nassir, A. M. (2016). Non-linearity in debt and return relationship: Evidence from dynamic panel threshold method, *Journal of Applied Sciences,* 16(9), 438-444.

Nnandi, M. & Soobaroyen, T. (2015). International financial reporting standards and foreign direct investment: *The case of Africa. Advances in accounting,* 31(2), 228-238.

Omran, M. & Bolbol, A. (2003). Foreign direct investment, financial development and economic growth: Evidence from the Arab countries. *Review of Middle East Economics and Finance*, 1(3), 231-249.

Romer, P. (1986). Increasing returns and long run economic growth. *Journal of Political Economy*, 94(5), 1002-1037.

Roodman, D. A. (2009). Note on the theme of too many instruments. *Oxford Bulletin of Economics and Statistics,* 71 (1), 135-158.

Sayek, S. (2009). Foreign direct investment inflation. *Southern Economic Journal*, 76(2), 419-443.

Sghaier, I. M. & Abida, Z. (2013). Foreign direct investment, financial development and economic growth: Empirical evidence from North African countries. *Journal International and Global Economic Studies*, 6(1), 1-13.

Soumare, I. & Tchana, F. T. (2015). Causality between FDI and financial market development: Evidence from emerging markets. *The World Bank Economic Review*, 29 (Supplement 1), 1-12.

Tan, A. & Ismail, N. W. (2015). Foreign direct investment, sovereign debt and growth: Evidence for the Euro Area, *American Journal of Trade and Policy,* 2 (1), 51-58.

UNCTAD. (2012). WorldInvestmentReport2012. New York: United Nations

Vita, G. & Kyaw, K. (2009). Growth effects of FDI and portfolio investment flows to developing countries: A disaggregated analysis by income levels, *Applied economics letters*, 16(3), 277-283.

Walsh, J. P. & Yu, J. (2010). Determinants of FDI: *A sectoral and institutional approach*, 187, 1-27.

Wang, H. & Xie, X. (2009). On effects of foreign direct investment on economic growth. *International business research journal,* 2(4), 100-108.

List of Appendices

Appendix A: List of Emerging Markets Studied

Table 3: List of emerging markets studied per region

Europe	Latin America	Asia	Africa
Czech Republic	Argentina	China	South Africa
Greece	Brazil	Hong Kong	
Poland	Colombia	Indonesia	
Portugal	Mexico	India	
Russia	Peru	Malaysia	
Turkey		Philippines	
		Republic of Korea	
		Thailand	
		Singapore	

Source: Author's compilation based on IMF (2015) Indices

Appendix B: Variables and Acronyms

Table 4: Variables, proxies and acronyms

Variable	Proxy	Acronym of the proxy
Banking sector development	Domestic credit to private sector by banks (% of GDP)	DCRED
	Domestic credit provided by financial sector (% of GDP)	DCFS
Stock market development	Stock market turnover (%)	TURN
	Stock market traded value (% of GDP)	VTRD
	Stock market capitalization (% of GDP)	MCAP
Bond market development	Outstanding domestic private debt securities (% of GDP)	DPRDS
	Outstanding domestic public debt securities (% of GDP)	DPBDS
Foreign direct investment	Net Foreign Direct Investment (% of GDP)	FDI
Economic growth	Gross domestic product per capita	GDPPC
Inflation	Inflation consumer prices (annual %)	INFL
Foreign exchange rate	Local currency/United States Dollar	EXCHANGE
Gross savings	Gross domestic savings (% of GDP)	GS
Trade openness	Total imports + exports (% of GDP)	TRADE
Human capital development	Human capital development index	HCD
Infrastructural development	Electric power consumption (kWh per capita)	INFR

Source: Author's compilation

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Local Economic Development: A Test for Relevance in South Africa

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Abstract: The contemporary discourse on local economic development (LED) has gained widespread popularity in the political, intellectual, and public social arenas of development issues. It has become a "new," glittering philosophy for development. Through the persuasive use of romanticism, LED has managed to achieve moral high ground in development, although it has since been confronted by unresolved theoretical and ideological tensions. The challenges facing LED are (1) the meaning of "local" in LED in a "globalized" world (2) the meaning of "development" in LED in a democratic, multicultural and racialized class society like South Africa, and (3) the explanation and moral justification as to what this "development" is, or whom it should be aimed at, in a society with such a grotesquely racialized "past". By drawing on the findings from a recent study of LED within the Ekurhuleni Aerotropolis project, in South Africa, we provide a critique of LED. We highlight its illusive philosophical foundations and their underlying mischief in South Africa. We argue that unless the said tensions are resolved, LED discourse will remain a rhetorical ploy for legitimating underdevelopment for blacks, and a methodical device to entrench the racialized socio-economic evils of apartheid in South Africa.

Keywords: *Local economic development, development, race, inequality, South Africa.*

1. Introduction

The idea of local economic development (LED) is generally reified across both the political and intellectual community to be the panacea for contemporary development challenges in South Africa. Very seldom will any political and intellectual discussion about development or poverty alleviation fail to reference LED as a solution, yet LED is embroiled in unresolved theoretical and ideological tensions and contradictions that nullify its every essence. The question is therefore why, or rather, how does the mainstream LED narrative manage to survive the critique from its exteriority, which suggests it is part of the civilising mission and which rejects it ipso facto? And how does LED manage to overcome fiercely competing ideological tensions and contradictions within itself for example, critics of the exteriority of mainstream LED thinking, following post-development critiques, suggest that the LED discourse is entrapped within the western-centric conception of "development" (Pieterse, 2000). This criticism is echoed by scholars using traditions such as dependency, Marxism and de-coloniality (Amin 1974, 1997, 2011; Dussel, 1998; Grosfoguel, 2011). These scholars elevate their analysis to world systems and argue against the parasitic global political-economic relations which favor the wealthy European nations. They also argue against the Euro-American-centric epistemic foundation of the development enterprise and reject it for its complicity with neo-colonialism and colonialists (Amin 1974, 1997, 2011; Bergesen and Wallerstein, 1983; Dussel, 1998, 2002; Escobar, 2004; Grosfoguel, 2011; Hopkins and Wallerstein, 1980). The intention of this essay is not to concern itself so much with the critiques against LED arising from its exteriority as listed above, as we deal with this elsewhere. Instead, the objective of this essay is to theoretically test the fitness of purpose of LED theory and practice in resolving development challenges.

That is, to critically examine the efficacy of what LED theory and practice claim it is capable of doing, and/or is currently doing in order to overturn the development challenges of poverty and inequality in South Africa. This exercise will be particularly important because it will illuminate, and seek to engender some of the fundamental historical problems of development, such as the problem of race, which remains kept outside, and unaccounted for in mainstream LED thinking and practice in South Africa. Furthermore, the essay will explore newer ideological possibilities that will need mainstreaming into LED in order to achieve a transformative LED regime appropriate to the development challenges in South Africa. It is our view therefore that failure to achieve a transformative LED regime able to address the race problem in South Africa, will only entrench the racialized socio-economic evils of apartheid. This essay is a theoretical study that is both descriptive and explorative. Documentary sources such as government documents, journal articles, and books were utilised as primary data, for both data collection and analysis. In the first section of

the essay, we reflect briefly on the hegemonic conceptions of what LED is, or, is about. Such an exercise establishes a clearer conceptual frame of the dominant conception/s or ideas about LED. In doing this, we uncover the ideological frame from which South Africa's LED theory and practice were to be conceived after 1994.

Building upon the said catalogue of conceptual frames, we progress to demonstrate the centrality of LED thinking in the psyche of mainstream development discourse in South Africa, including how it is understood and practised. Here, we also demonstrate how LED's internal ideological tensions and contradictions are inherited from the economic ideological tensions of the late 1990s, including the Reconstruction and Development Programme (RDP), and the Growth, Employment and Redistribution (GEAR) programme, and other articulations. The second part of the essay provides some critical reflections. These reflections are based on the critical analysis of mainstream LED thinking and practice in South Africa, and its dynamic complexities related to the problem/s of development on the ground. This section is then followed by concluding remarks.

2. Defining Local Economic Development

Lodged within LED discourse itself, are internal ideological and methodological tensions. According to LED academic literature, these tensions are mainly the tussle between the pro-poor and pro-market approaches (Bond, 2003; Nel and Binns, 2003; Nel and Rogerson, 2016) more particularly in the context of South Africa. It is against this background of the said unresolved ideological tension, including contestations within LED discourse, that Nel and Rogerson (2016) have opined that LED has become victim to a lack of consensus about its own meaning. For example, The World Bank (2016) defines LED as follows: "The purpose of local economic development is to build up the economic capacity of a local area to improve its economic future and the quality of life for all. It is a process by which the public, business and non-governmental sector partners work collectively to create better conditions for economic growth and employment generation". For the Local Government Turnaround Strategy (RSA, 2009), LED refers to the approach a municipality and region may take to encourage investment by big business, small local business development, tourist industries or large sector economic management in mining, manufacturing or farming. Blackely and Leigh (2010) advance that LED strives for the preservation of an increase in the standard of living through human physical development based on the principles of equity.

For Rodriguez-Pose and Tijmstra (2005, 3), LED only refers to "those development strategies that are territorially-based, locally owned and managed, and which are aimed at increasing employment and economic growth". According to Bartik (cited in Rogerson 2009, 2003), LED represents "…local economy's capacity to create wealth for residents". Helmsing and Egziabher (2005, 1) think of LED as a partnership between local government, NGOs, community-based groups and the private sector, that manages existing resources to create jobs and stimulate the economy of a well-defined territory. It is clear from these definitions that while there are some ideological similarities in various LED conceptions, there are elements within these definitions that are also conceptually antithetical to one another. For example, contestations over whether LED is a poverty relief or an enterprise/business development initiative, or even a spatial or industry/sector-based phenomenon, always crop up. Notwithstanding, Mqedlana (2014), attempting to make sense of these varied definitions, found LED to have been understood at least in four different ways, namely as a process; an economic development intervention; a locality and geographically-based development intervention; or a collaboration of key stakeholders. However, as much as Mqedlana's (2014) observation is useful, his categories are imbued with intrinsic ideological tensions owed to LED's fuzzy frame. For example, if LED is a geographical and a spatially-based development intervention, then what are spatial parameters of inclusion and exclusion in a globalised world?

Furthermore, focusing on South Africa, what would be the most plausible spatial demarcations of inclusion and exclusion in such a racially designed country? In addition, such ideological tensions make themselves known at the level of methodology. That is, the tension about which of the two methods –the pro-poor or pro-market, is the best suited and most efficient to achieve development? However, what is more important to mention at this stage is that in South Africa, LED is understood and practised through a myriad of untidy processes of various forms across all municipalities. Often, these forms not only produce clashes between the

pro-poor and pro-growth models, but sometimes also contradictions in their outcomes, and between policy and practice. For example, Mayekiso, Miller, and Swilling (2000) note the corporate bias of LED practice in South Africa in general, with Rogerson (2005) pointing out that pro-poor LED models are more deeply entrenched in policy than in practice. Ekurhuleni, more than other metropolitan municipalities, is said to represent the most advanced pro-poor LED agenda from a policy perspective under the theme of a "people-centred economy" (Rogerson, 2005). We reflect on these issues in some detail later on in the essay. Notwithstanding these ideological tensions and contestations stemming from the conceptual fuzziness of LED, it remains government's apex panacea for development challenges in South Africa.

The centrality of LED discourse in the psyche of the South African government and the belief in its potential to tackle poverty challenges are beyond question. This commitment is particularly evidenced by the entrenchment of LED by government, through several pieces of legislation, such as Sections 151 and 152 of the Constitution of the Republic of South Africa (RSA, 1996), as well as the Municipal Structures Acts, 117 of 1998 (RSA, 1998a), and the White Paper on Local Government (RSA, 1998b). To bolster LED, the White Paper on Local Government (RSA, 1998b), dictates the moral code of developmental local government to LED discourse in South Africa (Nel and Rogerson, 2016). The latter code is defined as the local government committed to working with citizens and groups within the "community" to find sustainable ways to meet their social, economic and material needs, and to improve their quality of life. We also observe how in furtherance of LED thinking government introduced several programmes and guidelines specifically aimed at advancing LED practice, such as the National Spatial Development Perspective (NSDP). The NSDP states that its principles and methodology should inform the development plans, policies and programmes of all spheres and agencies of government as a matter of policy (The Presidency, 2006, cited in Rogerson, 2008 and Oranje et al., 2009).

Mohammed (2006 cited in Rogerson, 2008) states that the NSDP insists on government spending on fixed investment that must be concentrated in areas/localities with economic growth potential. Government's commitment to LED is clearly reflected in the Integrated Development Plan (IDP). This plan in accordance with Section 34 of the Municipal System Act 2000 (RSA, 2000), requires of all municipalities to conduct annual reviews and amend their IDPs to suit changing demands. Most importantly, it forces them to engage with LED policy (Gunter, 2005). This was further entrenched in the 2006-2011 and revised 2012-2016 National LED framework, and more recently, in the National Development Plan (NDP). This provides proof of steadfast support for LED through legislation, guidelines and political support, thereby solidifying LED as a serious pillar in South Africa's development discourse. However, it must be noted that the foregoing efforts to bolster LED must be read against the backdrop of neoliberalist, depoliticised development – the anti-politics machine, to borrow from Ferguson (1990), and its "moral" justifications for creating a "free" and "fair" enterprise for "all" in an otherwise very unequal and unfair South Africa. We now turn to reflect on the theoretical and philosophical understanding and practice of LED in South Africa.

3. LED in South Africa: The Philosophy

It is our view that, given the nature of the politics of concessions championed by the African National Congress (ANC) leading up to the democratisation of South Africa, the hegemonic Euro-American-centric ideological order/s and practices were followed. This is poignantly demonstrated in former President Thabo Mbeki's declaration that "Just call me a Thatcherite," (Poplak, 2015) after he had committed South Africa's macroeconomic strategy to the neoliberal economic order of the West. Mbeki's government shifted South Africa away from the RDP paradigm that was popular across communities. RDP was the mobilisation trope securing the ANC victory in the 1994 elections. He steered the macroeconomic policy in favour of GEAR, an unpopular move that almost leads to a split in the Tripartite Alliance in 2002 (Matjila, 2010; Pillay, 2006; Van Rooyen, 2012). It is our claim that the RDP was ideologically antithetical to the neoliberal economic policies of the West, and that it resonated greatly with the socialist principles in the ideology of the Freedom Charter. The RDP animated the sustainable livelihoods framework, which understands development to be a community participatory process that builds from below, and which privileges support for human capabilities above corporate enterprises (Hindson and Vicente-Hindson, 2005).

GEAR was more consistent with Thatcherite, neoliberal, economic growth-obsession that favours austerity and deregulation. For Van Rooyen (2012), this policy shift would be a turning point in the development policy framework and the development discourse in post-apartheid South Africa. In terms of performance, Van Rooyen (2012) states that GEAR failed to achieve its objectives, except for reducing the budget deficit and regulating inflation. She insists that instead of the projected 6%, the GDP growth rate was 2.9% per annum between 1994 and 2004. She adds that unemployment increased to 45%, while private sector investment fell from 25% of the GDP in the early 1980s, to 16% in 2004. Moreover, poverty deepened, inequality widened and the number of people living on less than a dollar a day doubled. The period 2006 to 2011 yielded some improvements with regard to reducing poverty and hunger (Mbatha, 2014; Paton, 2014), but what thwarts GEAR's trickle-down theory is the fact that much of this economic growth was jobless. For Mbatha (2014), the relative success during the 2006-2011 periods in reducing poverty and hunger was due to the social income grants, which, by 2012, was already a source of livelihood for 16.6 million poor people in South Africa.

However, Mbatha (2014) also warns that, notwithstanding the improved poverty and hunger statistics, the gap between the poor and the rich has not improved. The ideological struggle around LED, namely the popular people-centred and redistributive development practice espoused by the RDP, on the one hand and the technocratic, growth-led approach of GEAR, on the other hand undergirds the contemporary idea and model of LED. We must note that the power balance, at least in practice, currently favours the pro-growth form. That is a development shrewdly dependent on the neoliberal logic of the "free" enterprise and economic growth, and the trickle-down hypothesis. This flies in the face of racialized inequalities and poverty generated systematically over centuries through colonialism, apartheid and racial capitalism against the black majority – a reality that continues well into present-day South Africa (Biko, 1978; Magubane, 1972; Terblanche, 2002). These racialized inequalities continue to favour whites and the emergent "black middle class" who gain more from the "free" enterprise and current economic growth regime of LED. We now turn to reflect on the fitness of purpose of LED in the context of the ensuing racialized problem of poverty and inequality in South Africa.

LED and the Test for Fitness in South Africa: It is worth noting that as much as LED came about in the global north and global south for slightly different reasons (Nel, 2001) its practice in both regions is also different (Pike, Rodriguez-Pose and Tomaney, 2016). In the global north, LED is focused on heavy investment, big business support and large projects (Nel, 2001; Nel and Rogerson, 2016). In the global south, however, the practice is predominantly dependent on the informal survivalist type, small-scale and community-based initiatives that have very little interest in participating in the global economy (Nel, 2001). Interestingly, in South Africa we observe LED practices where, to varying degrees, the informal sector, small-micro and medium-sized enterprises, and big business all at the same time champion it (Bond, 2003; Mbeba, 2014; Patterson, 2008). For example, the Dupe Trade Port project around the King Shaka airport in the eThekwini Municipality, and the recently launched Aerotropolis project in the Ekurhuleni Metropolitan Municipality are examples of mega LED projects in urban municipalities (City of Ekurhuleni Report, 2013; Gauteng Provincial Government and Ekurhuleni Metro Municipality, 2013; Houghton, 2016). Furthermore, existing particularly within rural areas of South Africa (former Bantustans), we have LED projects that do not go beyond the micro-scale of localized skills development, job creation and business support programs (Houghton, 2016).

While these LED forms are said to reflect the "natural" imbalances of the economic potential of the rural and urban areas, we are of the view that these LED forms are underscored chiefly by race, rather than the rural-urban divide. This is particularly evident in the conspicuous racialized distribution of LED forms, with the informal and survivalist type business entities being more prolific in black areas and more formal business enterprises being overly represented in white areas. This even both black and former white areas fall under the same municipal administration in both rural and urban areas. In this regard White (2002) aptly suggests that development is a racial project. Moreover, black hardship, exclusion and underdevelopment transcend rural and urban divides. Given South Africa's history of apartheid and racial capitalism, the LED practices in rural areas and townships vis-à-vis white areas thrive in spaces once designed to produce racial inequalities. The creation of Bantustans (for blacks), townships and white suburbs by the apartheid government's separate development doctrine, racially fragmented people into spatial enclaves of unequal distribution of wealth, opportunity, infrastructural support and development. It is under such a radicalised spatial design that we remember Fanon's Wretched of the Earth, where he speaks of the zone-of-being and the zone-of-nonbeing.

> "The zone where the natives live is not complementary to the zone inhabited by [the] white settler. The two zones are opposed, but not in service of a higher unity....they both follow the principle or reciprocal exclusivity. The settlers' town is [a] strongly-built town, all made of stone and steel. It is [a] brightly-lit town, all covered with asphalt. The town belonging to the colonised people... the native town. The reservation is a place of ill-fame. It is a world without spaciousness; men live there on top of each other, and their huts are built one on top of each other. The native town is a hungry town, starved of bread, of meat, of shoes, of coal, of lights" (Fanon 1961, 38-39).

Much of the colonial racial spatial design Fanon spoke of remains largely unchanged in South Africa. Mbeki's (1998) two nation state address in the National Assembly also confirms this point and suggests that the end of apartheid and the transition to democratic rule did not come with much socioeconomic transformation for the majority of black people. The rural areas or rural municipalities - former Bantustans – continue to be largely black and are still grossly underdeveloped and struggling with poverty twenty plus years after the new "democratic" dispensation. It is in rural municipalities and in small towns of South Africa in particular, where LED is understood more like a local government-led intervention in which poverty relief projects are prioritised (Nel and Rogerson, 2016). It is also rural municipalities in particular that experience the worst forms of disruption of community livelihoods and exploitation through LED, especially under the guise of tourism-led LED (Plaatjie, 2014). As we have commented elsewhere, it is our view that even when there could be potential for rural municipalities to benefit from tourism or tourism-led LED such potential gains to come at exceptionally high costs, and are often counterproductive to the thriving of the affected communities. We have noted elsewhere how in the name of tourism-led LED, poor rural communities such as the Khomanani San in the South African part of the Kgalagadi Transfrontier Park have been forcibly displaced from their land, their sources of food security and their places of worship. In short, their livelihoods have been interrupted to accommodate the tourism industry (Plaatjie, 2014). What is certainly interesting to note though, is how the legacy of apartheid still plays out through LED, or how LED animates apartheid. For example, the informal and semi-formal, and survivalist type enterprises in townships, because of their informality, do not enjoy much official government support.

However, the formal industry and business enterprises and SMME in formerly white areas and cities, enjoy greater official government support, and leverage more from better infrastructure in those areas. These racialized spatial inequalities and their skewed potential and capacities to respond to opportunities and vulnerabilities (Marais, 2016; Pike, et al., 2016) confront LED practice in South Africa, but remain unaddressed. As White (2002) would suggest, LED discourse has successfully hidden the racial character of the problem of development behind disembodied categories such as the "poor" or "communities" or even behind neutral concepts such LED itself. This serves to avoid confronting the source of the problem of race in development. The overemphasis of philosophies of the "free" market and a "class" struggle is further obfuscation of race as the central problem in development and LED discourse. It comes as no surprise that rural municipalities and township communities in urban municipalities in particular (all of which are black), do not gain much from major state-led LED projects. Instead, they are excluded from participating in these projects, as our study found to have been the case with the Ekurhuleni Aerotropolis Project.

Confirming our observation about the general exclusion and neglect of the township poor in mega LED initiatives, Ndabeni, Rogerson and Booysens (2016) state that research on innovative local economic development (ILED), focuses on the formal sectors, thereby rendering townships' informal sector and rural areas and communities' peripheral in studies of South Africa's innovative capacity. It is in this respect that Lorentzen (2011 in Ndabeni et al., 2016) observes that the poor black majority hardly features in innovation debates in post-apartheid South Africa. Furthermore, in a study of LED initiatives in six secondary cities of South Africa, Marais (2016) finds that even when there is evidence of the private sector in these cities playing a regional role through job creation via the expansion of the retail sector to the rural hinterlands, government is still reluctant to build on those initiatives. Marais (2016) states that none of the cities in the study considered maintenance of access routes important and that this in turn stifles the economic activity that could potentially reach the rural hinterland. Notwithstanding the said stark historical challenge of racialized poverty and inequality that is widely spread across all spheres of life in South Africa, the question of race remains curiously absent in mainstream LED thinking in South Africa.

This absence remains to this day, and it is still unaccounted for, both politically and intellectually, except through populist political rhetoric and platitudes. Race mainstreaming, especially in LED, remains a bogey analytic category across government and the intellectual community, and more so in the development enterprise in general (Kalpana 2017; Kothari, 2006a; 2006b; White, 2002). That LED thinking and practice in a country with such a grotesquely racialist past shies away from confronting this singular, foundational, historical challenge of development, is a curious contradiction in the purpose of LED. It is our opinion that the negation of the racial question in LED discourse, particularly in South Africa, is either a result of the worst form of misdiagnosis of the problem, or, is a product of bad-faith and sinister motives. Such negation is a race-neutral/neutralising obfuscation of the central problem of race in the distribution of poverty and inequality. In simple terms, we argue that LED thinking, by eliding and disavowing the foundational problem of race in development, detracts from addressing the true problem of development in South Africa. This is the failure or the dishonesty of LED discourse in South Africa, namely to be unresponsive to the questions of who and the where of LED. It is a failure to decisively identify who ought to be the beneficiaries of LED support programs in a racially unequal South Africa.

Moreover, the failure to decisively identify the spatial locations targeted for LED support means that its resultant planning will not give dedicated support to particular beneficiaries to thrive in their respective, spatial locations and in their choice of development enterprises. It is our view that by attending to these issues, LED thinking will have gone beyond the disembodied categories and will be able to begin confronting the problems of development in South Africa head-on. Precisely because LED discourse does not confront race in development or act on it decisively, it has weak theoretical and methodical clout, poor legitimacy and suspects ethical grounding. We further hold that the absence of any concerted effort to systematically confront the race problem in development will continually exacerbate racial inequalities. The most privileged spaces of the urban centres, which are often occupied by whites, would be the biggest beneficiaries of LED opportunities and thus, exacerbate both race and "class" inequalities to unprecedented heights, as is already the case (Pike et al., 2016).

It comes as no surprise that the poverty trend survey in South Africa showed that black African households account for the vast majority of poor households, at 93.2% in 2006, with a slight increase to 93.7% in 2009 and 93,9% in 2011 (Statistics South Africa, 2014). There are many intersecting factors undergirding racial inequalities and poverty in South Africa, but we contend that a typical catalyst for exacerbating these inequalities is the NSDP. This is because the NSDP declares that government spending on fixed investment should be concentrated in areas with economic growth potential. This further suggests that rural municipalities and townships in particular, more so rural municipalities, because of their poor infrastructure and sluggish economic activity, stand no chance in receiving any major infrastructure investment support from national government to unlock their economies. Marais (2016), commenting on LED strategies in secondary cities, affirms our observation and opines that South African secondary cities stand no chance to emerge as the winners when competing with metropolitan areas. We also note that LED planning in South Africa is increasingly gravitating towards regional or region-wide planning, with the Gauteng City Region (GCR) being a typical local example of an international trend. We believe the Regional Local Economic Development (R-LED) phenomenon is a step in the right direction.

This is particularly so, given the potential economic spinoffs of region-wide LED projects such as export processing zones, free ports and science and technology parks in urban areas spreading or spilling over into their hinterlands (Pike et al., 2016; Mansson, 2014). However, it is our view, notwithstanding the good intentions of regionalist planning, that R-LED in South Africa will suffer the fate of LED, unless it applies itself systematically through the prism of race, and dedicates itself to reverse the problem of racialized poverty and inequality. It is against this background of the neglected race question in development that we argue that the current regime of a LED thinking and practice in South Africa is emphatically incapable of providing lasting solutions to the country's prevailing challenge of development. It is on this score, that we also hold that meaningful LED discourse for South Africa is one that would face up to its historical challenges in the present situation. We argue that a more progressive and transformative LED in South Africa will demand a radically different approach that will also require race mainstreaming in LED discourse. And amongst the first things that this race-conscious LED paradigm should concern itself with, is for whose benefit and where these efforts must be focussed (Pike et al., 2016).

4. Conclusion

Despite the centrality of LED in mainstream development thinking across the political and intellectual community in South Africa, this discourse has serious ideological and moral challenges. As we have already made clear, these challenges manifest more visibly, racially, with blacks being the poorest, regardless of where they find themselves, whether in the rural or urban areas, and whites enjoying the privileged side of the racial divide. Therefore, we believe that by virtue of the historical racialized character of development in South Africa, which continues to this day, mainstreaming of race in LED and in development discourse in general is of paramount necessity in South Africa, in particular. It is against this pressing challenge of the neglected race question in LED and development that we believe the current race-neutral regime of LED discourse is agonisingly unresponsive to the racial temperature of the development problem in South Africa. It is our view that the continued failure by LED and development to attend to the foregoing concern of the race problem in development is a gross dereliction of purpose for transformative development. More so, it is an exercise in bad faith, which only serves to entrench racialized poverty, inequality and underdevelopment. This renders LED unfit for purpose to deal with the development challenges of South Africa. Spatial Keynesianism or racial-spatial Keynesianism is proposed as frames of reference to prioritize preferential infrastructural support for black townships and rural areas as a matter of policy in order to unlock their potential as effective players in mainstream economic activities in South Africa.

References

Abrahamsen, R. (2000). Disciplining democracy: Development discourse and good governance in Africa. London: Zed Books.

Amin, S. (1974). Accumulation on a world scale: A critique of the theory of underdevelopment. Sussex: Harvester Press.

Amin, S. (1997). Capitalism in the age of globalisation: The management of contemporary society. London and New Jersey: Zed Books.

Amin, S. (2011). Ending the crisis of capitalism or ending capitalism? Daka: Pambazuka Press.

Bartik, T. J. (2003). Local economic development policy, In C. M. Rogerson, Strategic review of local economic development in South Africa. Draft final report submitted to Minister Sicelo Shiceka (dplg). Pretoria: German Agency for Development Cooperation (GTZ).

Bergesen, A. & Wallerstein, I. (1983). Crisis in the world-system. London: Sage.

Biko, S. (1978). I write what I like: Selected Writings. Chicago: University of Chicago Press.

Blackely, E. J. & Leigh, N. G. (2010). Planning local economic development: Theory and practice. (4th ed). Thousand Oaks, CA: Sage.

Bond, P. (2003). Debates in local economic development policy and practice. *Urban Forum*, 14 (2), 147-164.

City of Ekurhuleni. (2013). Special Aerotropolis Publication: essential special publication. Johannesburg: EMM.

Department of Provincial and Local Government (DPLG). (2006). National framework for local economic development in South Africa (2006-2011). Cape Town: RSA.

Dussel, E. (1985). Philosophy of liberation. New York: Orbis Books.

Dussel, E. (1998). Beyond Eurocentrism: The world-system and the limits of modernity, in. In F. J. Miyoshi, (ed), The culture of globalization. Durham, NC: Duke University Press, 3-31.

Dussel, E. (2002). World system and "trans"-modernity. *Nepantla: Views from South*, 3(2), 221-244.

Escobar, A. (2004). Beyond the Third World: Imperial globality, global coloniality, and anti-globalization social movements. *Third World Quarterly,* 25, 207-230.

Fanon, F. (1961). The wretched of the earth. New York: Groove Press.

Ferguson, J. (1990). The anti-politics machine: "Development," politicization, and bureaucratic power in Lesotho. Cambridge: Cambridge University Press.

Gauteng Provincial Government and Ekurhuleni Metro Municipality. (2013). Airport cities – World conference and exhibition: Ekurhuleni Aerotropolis Master Plan. Johannesburg; EMM.

Grosfoguel, R. (2011). Decolonizing post-colonial studies and paradigms of political economy: Transmodernity, decolonial thinking, and global coloniality. *Journal of Peripheral Cultural Production of the Luso-Hispanic World,* 1, 1-38.

Gunter, A. (2005). Integrated development plans and local economic development. *Africa Insight,* 35(4), 32-38.

Helmsing, A. H. J. (2001). Local economic development in Africa: New generations of actors, policies and instruments. Working paper No. 12. Regional and Local Development Studies. Addis Ababa: Addis Ababa University.

Helmsing, A. H. J. & Egziabher, T. G. (2005). Local economic development in Africa: Introducing the issues, In Egziabher, T. G. & A. H. J. Helmsing, AHJ. Local economic development in Africa: Enterprises, communities and local development. Maastricht: Shaker Publishing.

Hindson, D. & Vicente-Hindson, V. (2005). Whither LED in South Africa? A commentary on the policy guidelines for implementing local economic development in South Africa. Conference paper prepared for the Eastern Cape Socio-Economic Consultative Council (ECSECC), July 2005. Eastern Cape: South Africa.

Hopkins, T. K. & Wallerstein, I. (1980). Processes of the world-system. London: Sage.

Houghton, J. (2016). Regional and local economic development themes in contemporary South African cities. *Local Economy,* 31(1-2), 42-56.

Kalpana, W. (2017). Re-centring 'race' in development: Population policies and global capital accumulation in the era of the SDGs. *Globalization,* 14(3), 432-449.

Kothari, U. (2006a). An agenda for thinking about 'race' in development. *Progress in Development,* 6(1), 9-23.

Kothari, U. (2006b). Critiquing 'race' and racism in development discourse and practice. *Progress in Development Studies,* 6(1), 1-7.

Lorentzen, J. (2011). Food on the table and disease at the door: Insights for measuring innovation, In L. L. Ndabeni, C. M. Rogerson. & M, Booyens. Innovation and Local Economic Development Policy in the Global South: New South African perspectives. *Local Economy,* 31(1-2), 299-311.

Mohammed, H. (2006). District and metro IDPs: a framework for contextualising and applying the NSDP, In C. M. Rogerson, Consolidating Local Economic Development in Post-Apartheid South Africa. *Urban Forum,* 19(3), 307-328.

Magubane, B. (1972). The South African problem as a view of imperialism, *Journals of Black Studies*, 3(1), 75-93.

Marais, L. (2016). Local economic development beyond the centre: Reflections on South Africa's secondary cities. *Local Economy,* 31(1), 68-82.

Matjila, T. (2010). Tripartite alliance is dead. News 24, 23 August 2010.

Mbatha, A. (2014). SA poverty rate drops as government expands welfare programmes. Mail and Guardian, 3 April 2014.

Mbeba, R. D. (2014). Local economic development and urban poverty alleviation: The case of Buffalo City Metropolitan Municipality. *Mediterranean Journal of Social Sciences,* 5(20), 347-357.

Mayekiso. M., Miller, D. & Swilling, M. (2000). A strategy for the development of urban underdevelopment, In P. Bond, Cities of gold, townships of coal: Essays on South Africa's new urban crisis, Trenton: Africa World Press, 331-341.

Mbeki, T. (1998). Address at the opening of the debate on 'reconciliation and nation building' in the National Assembly in May.

Monsson, C. K. (2014). Development without a metropolis: Inspiration for non-metropolitan support practice from Denmark. *Local Economy,* 29(4-5), 295-308.

Mqedlana, L. V. (2014). Contestation on the meanings of and their effect on interpretation of the notion of local economic development. MA Dissertation, University of the Witwatersrand, RSA.

Ndabeni, L. L., Rogerson, C. M. & Booyens, M. (2016). Innovation and Local Economic Development Policy in the Global South: New South African perspectives. *Local Economy,* 31(1-2), 299-311.

Nel, E. (2001). Local economic development: A review and assessment of its current status in South Africa. *Urban Studies,* 38(1), 1003-102.

Nel, E. & Binns, T. (2003). Putting 'development local government' into practice: The experience of South Africa's towns and cities. *Urban Forum,* 14(2-3), 165-183.

Nel, E. & Rogerson, C. M. (2016). The contested trajectory of applied local economic development in South Africa. *Local Economy,* 31(1-2), 109-123.

Oranje, M., Van Huyssteen, E. & Meiklejohn, C. (2009). National Spatial Development Perspective (NSDP) and assumptions on small-town economic investment by government. Johannesburg: Academy of Science of South Africa.

Paton, C. (2014). Stats SA reports big drop in grinding poverty, Business Day, 4 April 2014.
Patterson, C. (2008). Country report: Local economic development in South Africa. Pretoria: German Agency for Development Cooperation (GTZ).
Pillay, D. (2006). COSATU, alliances and working-class politics, In S. Buhlungu, (ed.) Trade unions and democracy: Cosatu workers' political attitudes in South Africa. Pretoria: HSRC Press.
Pike, A., Rodriguez-Pose, R. & Tomaney, J. (2016). Shifting horizons in local and regional development. *Regional Studies*, 1-13.
Plaatjie, S. R. (2013). Beyond western-centric and Eurocentric development: A case for decolonizing development. *Africanus,* 43(2), 118-130.
Plaatjie, S. R. (2014). Local economic development: A conceptual re-articulation. *Journal of Economics and Behavioural Studies,* 6(8), 616-624.
Pieterse, J. N. (2000). After post-development. *Third World Quarterly,* 21(2), 175-191.
Poplak, R. (2015). The long walk to the short walk: How the anti-corruption march is all about redemption.
Republic of South Africa. (1994). White Paper on Reconstruction and Development. Cape Town: RSA.
Republic of South Africa. (1996). The Constitution of the Republic of South Africa. Pretoria: Government Printers.
Republic of South Africa. (1998a). The Municipal Structures Act 117. Cape Town: RSA.
Republic of South Africa. (1998b). The White Paper on Local Development. Pretoria: Government Printers.
Republic of South Africa. (2000). The Municipal Systems Act 32. Cape Town: RSA
Republic of South Africa. (2009). Local government turnaround strategy: Working together, turning the tide in local government. Cape Town: RSA.
Rodriguez-Pose, A. & Tijmstra, S. (2005). Sensitizing package on local economic development. Department of Geography and Environment. London: London School of Economics.
Rogerson, C. M. (2005). Local development planning in Ekurhuleni: emerging policy and strategy in South Africa's newest metropolitan area. *Africa Insight,* 34, 72-79.
Rogerson, C. M. (2008). Consolidating local economic development in post-apartheid South Africa, *Urban Forum*, 19(3), 307-328.
Statistics South Africa. (2014). Poverty trends in South Africa: An examination of absolute poverty between 2006 and 2011. Report no. 03-10-06. Pretoria: StatsSA.
Tabane, T. (2006). Reaping the whirlwind. Mail and Guardian online, 17 February 2006.
Tau, P. (2015). Police monitor Vuwani in Limpopo after municipal border protest turn violent. News 24, 31 August 2015.
Terblanche, S. (2002). A history of inequality in South Africa, 1652-2002. Durban: University of KwaZulu-Natal Press.
Van Rooyen, C. (2012). Articulated transformations and accumulation by dispossession: Rand Water in South Africa. PhD Thesis, University of London, UK.
White, S. (2002). Thinking race, thinking development. *Third World Quarterly,* 23(3), 407-419.
Wray, C. (2015). An open data revolution for the Gauteng City Region? UrbanAfrica.net (African Center for Cities, Cape Town).
World Bank. (2016). Defining LED.

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External Factors Influencing the Cognitive Response of Impulse Buying Behaviour amongst Generation Y Students

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Abstract: Impulse buying behaviour has been recognised as a key research concern amongst academic researches and marketers. At one time or another a large amount of consumers purchases on impulse. Evidence from the literature indicates that external factors, such as in-store atmosphere, in-store browsing, in-store layout, salespersons, promotions and reference groups are important antecedents of impulse purchases. The cognitive response to act on impulse purchase is triggered by external factors to buy on impulse. This paper reports on a study undertaken to determine the external factors influencing the cognitive response of impulse buying behaviour amongst Generation Y students. Generation Y are labelled as individuals born between 1986 and 2005. The study employed a quantitative method, whereby a structured, self-administered questionnaire was used to collect data from a non-probability convenience sample of 349 students (aged 18 to 24 years), across two South African public higher education institutions' campuses located in the Gauteng province. The collected data was examined using descriptive statistics, confirmatory factor analysis, reliability, correlation analysis and regression analysis. The coefficient of multiple determination (R2) was 0.070 that implies that in-store atmosphere, in-store browsing and promotions can predict seven percent of the variance in Generation Y students' cognitive response to buy on impulse, which proposes that other variables influence Generation Y students' cognitive response to buy on impulse.

Keywords: *Impulse buying, cognitive response, external factors, consumer behaviour, Generation Y*

1. Introduction

Impulse buying is a powerful marketing tool to increase retail sales, as it aids to a vast number of products sold in the retail environment (Das & Das, 2015). In certain product categories, impulse buying accounts for almost 80 percent of purchases (dot Activ, 2016). Impulse products are characterised as products that are priced at a low-cost, are purchased frequently and which require minimum planning from consumers (Rook & Hoch, 1985). Typically, impulse products include products such as food, clothing, shoes, books, beauty products, accessories and stationary (Hall, 2018; Garcia, 2018). Notably, evidence from the literature suggests that, 88 percent of impulse purchases are made due to items being offered on sale or promotion and impulse buys increase by 23 percent when the shopping trip itself is unplanned (Beta Bait, 2013). In 2013, on average, R13.5 billion a month was spent on impulse items by South African consumers (Times Live, 2014). Consumer behaviour is the actions consumers expose while investigating, purchasing, consuming, evaluating and disposing of products and services that are required to achieve the consumer's needs (Schiffman et al., 2010). Focusing on buying behaviour, different types of buying decision behaviour include habitual buying behaviour, variety-seeking buying behaviour, dissonance-reducing behaviour, complex buying behaviour and impulse buying (Mäkinen, 2015).

Impulse buying is an unexpected decision to purchase a product, which is made just before the end of the shopping trip (Taushif & Gupta, 2013). According to Mathai and Haridas (2014), impulse buying behaviour is illogical as well as a lack of understanding and thinking. As a result, consumers who buy on impulse regret the purchase that has been made (Hausman, 2000). Impulse buying behaviour relates to a consumers affective and cognitive response to purchasing on impulse (Dawson & Kim, 2009). The affective response relates to the consumer's positive buying emotions, mood management and uncontrollable desire to purchase (Sharma, 2012). Karbasivar and Yarahmadi (2011) stated that cognitive response is an internal factor that consumers can control. For the purpose of this study, reported on in this paper, the focus is on consumer's cognitive response. Various external factors may trigger impulse buys in consumers (Kalla & Arora, 2011; Muruganantham & Bhakat, 2013; Vishnu & Raheem, 2013) and are therefore essential to marketers and retailers to take cognisance of (Dawson & Kim, 2009).

Objectives of this Study: The primary objective of this study was to determine the External Factors Influencing the Cognitive Response of Impulse Buying Behaviour of South African Generation Y Students in order to guide the formation of marketing strategies for targeting this market effectively. In accordance with the primary objective, determining whether the external factors of in-store atmosphere, in-store browsing, in-store layout, salespersons, promotions and reference groups' influence Generation Y students' cognitive response to buy on impulse was formulated as an empirical objective for this study.

Importance of this Study: Due to the growing nature of impulse buying, it is important for retailers and marketers to understand which external factors influence generation Y students' cognitive response in South Africa. Retailers and marketers can use the information from the study and implement the necessary strategies in the store to increase impulse buying, which ultimately increases revenue. This study will help retailers and store owners to gain a competitive advantage by implementing the strategies to attract consumers. This study contributes to the world of marketing as it was the first of its kind in South Africa and therefore can answer some questions retailers, marketers and store owners would like to know. Furthermore, findings from this study can contribute to academic research on consumer shopping behaviour amongst Generation Y students.

2. Literature Review

Impulse Buying Behaviour: Impulse buying in its simplest form can be explained as a purchase that is not planned. Impulse buying is experienced when consumers accumulate emotions over an item, which then leads to the item being purchased without much thought (Gamage et al., 2008). Cant et al. (2009) opine that a planned action takes place in the consumer decision-making process, whereas an unplanned action takes place in the impulsive decision-making process. Furthermore, once a decision has been made an action follows and to a consumer it appears that the planning did not follow the action. Similarly, Strydom et al. (2000) stated that impulse buying could not be regarded as an unplanned approach when shopping but rather an action made at that exact point of purchase. A consumer who is aware of a need that is not satisfied will engage in impulse buying but may not realise it at the point of purchase. The most influential part of impulse buying is a consumer's internal differences concerning an impulsive act (Chen, 2008). Impulse buying behaviour can be influenced by personality related factors of the consumer rather than the shopping environment. Therefore, marketers and retailers can utilise the characteristics of consumers to a minor extent, however, marketers and retailers cannot control consumers completely (Žnideršić et al., 2014). Patil and Agadi (2016) concur by stating that consumer's internal traits motivate the consumer to engage in impulse buying behaviour. The concept referred to as the buying impulsiveness trait is described as a tendency the consumer experiences when impulse shopping (Rook & Fisher, 1995). Although consumer's personality traits (cognitive response) and the consumer's emotional state (affective response) are important, a number of external factors are implemented to trigger the consumer to purchase on impulse (Kannan & Vinayagamoorthy, 2014).

Cognitive Response: Dincer (2010) defined the cognitive response as lack of planning when a decision to purchase is made Consumer's mental structures and processes involved in reflecting and interpreting is referred to as the cognitive response (Sharma, 2012). In addition, when a consumer has experienced a product, a combination of the consumer's knowledge, cognition and perceptions developed to assist in the purchase. A number of external factors influence the cognitive response of consumers.

External Factors: From the literature, in-store atmosphere (Vishnu & Raheem, 2013; Hussain & Ali, 2015; Nishanov & Ahunjonov, 2016, Akram et al., 2016), in-store browsing (Vänniä, 2013; Kim, 2003; Sangalang et al., 2017), in-store layout (Shivangunde et al., 2012; Bitner, 1992; Ohta and Higuchi, 2013; Levy & Weitz, 2011), salespersons (Evans et al., 2008; Shojaei et al., 2014; Ahuja, 2015), sales promotion ((Jamal & Lodhi, 2015; Lin, 2013) and reference groups (Mothapo, 2013; Kumar, 2007; Tinne, 2011; Gandhi et al., 2014) where identified as essential external factors influencing consumers cognitive response to purchasing on impulse. Dynamics within the stores presentation (for example, noise, the backdrop, fittings, odour, the level of atmosphere and lights) is referred to as in-store atmosphere. These dynamics within the store influence the response of consumers for in-store and future store decisions (Vishnu & Raheem, 2013). Music is an important variable which induces the consumer's mood, takes place at a subliminal level and creates a

positive impact on impulse buying (Akram et al., 2016). According to the findings of Mattila and Wirtz (2001), good background music entices consumers to stay in the store longer to browse. Consumer's awareness is activated when there is a good melody playing in the background; this in essence increases impulse buying. Another factor that influences consumer's purchasing intention is store scent (Hussain & Ali, 2015). The consumer increases impulse purchases when there is a pleasant aroma in the store as consumers will spend more time observing the products (Nishanov & Ahunjonov, 2016).

In line with the findings discussed, the in-store atmosphere has a positive influence on Generation Y students' cognitive response to impulse buying. An important element of impulse buying behaviour is how consumers engage in in-store browsing, this entails when the consumers scan through items in the shop to be entertained and gain knowledge but with no intention to purchase an item. Consumers, who browse more in stores than those who do not, will purchase more on impulse; this is due to consumers being exposed to stimuli within the store (Vänniä, 2013). As a result, the consumers urge to buy on impulse increases (Kim, 2003). However, a study conducted by Sangalang et al. (2017) revealed that in-store browsing does not influence a consumer to buy impulsively. Well-designed sections and aisles within the store expose consumers to what the store has to offer within a given space, this is referred to as store layout (Shivangunde et al., 2012). Good store layout assists consumers to find the product quickly (Bitner, 1992). Creating convenience for consumers by means of a well-structured and organised store layout will improve the shopping process and impulse purchases (Ohta & Higuchi, 2013). However, everyday products such as milk and bread are placed towards the back of the store; this encourages consumers to browse the store longer, which increases the possibilities of impulse buying (Levy & Weitz, 2011). In line with this discussion, the in-store layout is expected to positively influence Generation Y students' cognitive response to buy on impulse. A person who assists consumers to purchase items within the store is referred to as a salesperson (Cambridge University Press, 2016).

Helpful and friendly staff within the store encourages consumers to enjoy the shopping experience more. Salespeople can positively influence the shopping experience when good service is provided. However, an eager salesperson can scare away the consumers (Evans et al., 2008). The goal of the interaction between the consumer and salesperson is to convince the consumer that the purchase is the right decision (Shojaei et al., 2014). According to studies conducted the absence of a salesperson while shopping online decreases impulse buying. Thus, the salespersons' behaviour, selling techniques and presence does encourage the consumer to purchase on impulse (Ahuja, 2015). Sales promotion is utilised as a marketing tool to entice a consumer to purchase a product (Tutor2u, 2015). Impulse purchases are encouraged when items are at a promotional price or on discount. According to marketers, consumers worry about the future. Consumers purchase the product straightaway as consumers fear limited money available in the future; product availability or the promotion will not be available in the near future. Consumers are manipulated by deals such as scratch and win, stop and shop, buy two get one free, referral gifts, lucky draws and coupons. According to Jamal and Lodhi (2015) impulse purchases are realised when consumers buy more than needed. Based on published research sales promotions is expressed to have a positive influence on Generation Y students' cognitive response to impulse buying, reference groups are referred to as several different groups, for example. celebrities, religious groups, family and friends (Mothapo, 2013). Reference groups entail attitudes, knowledge, behaviour and values over different aspects (including buying behaviour) (Kumar, 2007). In the presence of others, buying on impulse is increased (Tinne, 2011). However, a study conducted by Gandhi et al. (2014) revealed that reference groups do not influence a consumer to buy impulsively.

Generation Y: Generation Y is regarded as individuals born between 1986 and 2005 (Markert, 2004). According to Acar (2014), Generation Y is also referred to as millennials or echo boomers. Generation Y members account for 40 percent of the population in South Africa (55 908 000 individuals in 2016), which makes Generation Y members an important segment to market (Statistics South Africa, 2016). Due to the population size and spending power of Generation Y individuals, markets, retailers and researchers should pay close attention to this generation (Branchik, 2010; Yigit & Aksay, 2015; Khan et al., 2016). Generation Y individuals experiment and adapt to new products in the market (Viswanathan & Jain, 2013), therefore, this makes Generation Y individuals have high brand awareness, but are not brand loyal to the product (Noble et al., 2009) which creates a gap for buying on impulse. According to Kilber et al. (2014), the Generation Y student cohort are members aged 18 to 24 years old.

Statistics show that a student spends on average around R3 510 per month, which amounts to R42 120 per annum (Sowetan Live, 2014). In 2016, the population size for South African students were around 1 million (Africa Check, 2016), with the potential to spend R39.5 billion per year, which makes Generation Y students an attractive market to target. Marketers and retailers need to understand and implement external factors to influence the cognitive response of impulse buying behaviour, as this will lead to Generation Y students buying more on impulse (Khan et al., 2016). The impulsive purchase could increase due to an older generation having a higher income then Generation Y students. According to previous research, credit cards were considered to play a role in impulse buying behaviour; however, this study did not determine the effect credit cards have on impulse buying behaviour.

3. Methodology

Research Design and Approach: This study followed a descriptive research design using a single cross-sectional approach.

Sampling Method and Data Collection: The target population for this study entailed full-time Generation Y students aged 18 to 24 years who were registered at South African public HEIs in the Gauteng province during 2016. This study's sampling frame consisted of 26 registered South Africa public HEIs (Universities South Africa, 2016). A non-probability judgement sample of two HEI campuses (a University of Technology and a Traditional University) were chosen from this sampling frame. A drop-off approach was followed whereby 400 questionnaires were hand-delivered to the participating academic staff members of the two HEIs were circulated to the students for voluntary completion.

Research Instrument: For the purpose of this study, a standardised self-administered questionnaire was utilised to gather the required data. This survey questionnaire comprised two sections. The first section requested the sample participants' demographic data and the second section contained scales from published studies measuring the influence of external factors on the cognitive response of impulse buying behaviour. The Verplanken and Herabadi (2001) scale was adopted to measure the respondent's cognitive response to impulse buying behaviour comprising 10 items. The Cho et al. (2014) scale was adopted to measure the external factors influencing the cognitive response of impulse buying behaviour, comprising 23 items. A six-point Likert scale was utilised to measure the sample's responses.

Ethical Considerations: Prior to distributing the questionnaires, it was submitted for approval and ethical clearance to the Ethics Committee of the Faculty of Economic Sciences and Information Technology at the North-West University (Vaal Triangle campus). The questionnaire was deemed low risk and ethical clearance was granted (Ethical Clearance Number: ECONIT-2016-020).

Data Analysis: The IBM Statistical Package for Social Sciences (SPSS), Version 23.0 for Windows was utilised to analyse the captured data. The statistical analysis included principal component analysis, internal-consistency reliability, Pearson's Product-Moment correlation analysis and bivariate regression analysis.

4. Results and Discussion

The amount of 400 questionnaires were administered and 392 completed questionnaires were returned, which translates into a 98 percent response rate. Questionnaires were rejected if the students were younger than 18 or older than 24, if the student was a non-South African and if there was more than 10 percent missing values on the questionnaire. Therefore, this left 349 questionnaires, translating in an actual response rate of 87 percent. The University of Technology returned 160 questionnaires and the Traditional University returned 189 questionnaires. Table 1 indicates the sample description utilised in this study.

Table 1: Sample Description

	Percent (%)		Percent (%)		Percent (%)
Age		**Language**		**Province**	
18	3.2	Afrikaans	11.2	Eastern Cape	2.3
19	16.0	English	7.4	Free State	14.3
20	24.0	IsiNdebele	0.9	Gauteng	56.7
21	26.4	IsiXhosa	5.7	KwaZulu-Natal	2.9
22	16.6	IsiZulu	14.3	Limpopo	11.5
23	10.0	Sepedi	7.2	Mpumalanga	3.7
24	4.6	SeSotho	27.8	Northern Cape	0.3
Gender		Setswana	13.0	North-West	7.4
Female	57.6	SiSwati	2.0	Western Cape	0.3
Male	42.1	Tshivenda	5.0		
Ethnic Group		Xitsonga	4.0		
African	83.5				
Coloured	2.0				
Indian/Asian	0.3				
White	14.3				

Principle component analysis, using direct Oblimin rotation was performed on the scaled items to check the factor structure of the constructs used in the study. The factorability of the data was assessed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Bartlett Test of Sphericity, where a KMO value exceeding 0.6 and a significant Bartlett's Test of Sphericity value are recommended (Pallant, 2010; Field, 2009). The results of these two tests yielded a KMO value of 0.839 and a significant Bartlett's test of sphericity (chi-square = 3617.113dfs, $p \leq 0.01$), indicated the sampling adequacy and factorability of the data. The eigenvalues were used in determining the factors that influence the cognitive response of impulse buying behaviour. Factors with an eigenvalue of less than 1.0 were not considered (Malhotra, 2010). Hence, six factors were extracted that explained 56 percent of the variance. One factor, pertaining to in-store layout, did not emerge with an eigenvalue greater than 1.0 and therefore, was not considered. In Table 2, the varimax-rotated factors, eigenvalues and variance extracted for the extracted factors are presented.

Table 2: Rotated Factors, Eigenvalues and Percentage Variance Extracted

Items	**Factors**					
	1	2	3	4	5	6
R1		.711				
R2		.613				
3				**.425**		
R4		.683				
R5		.766				
6				**.523**		
R7		.603				
R8		.775				
9				**.771**		
10				**.642**		
11					.372	
12					.826	
13					.869	
14					**.458**	
15						.793
16						.807

17			.745			
18			.885			
19			.796			
20			.743			
21	.686					
22	.801					
23	.741					
24	.736					
25	.667					
26	.704					
27			**.257**			
28				.398		
29				.391		
Eigenvalue	6.235	3.656	2.282	1.512	1.346	1.185
Percentage variance	21.499	12.605	7.867	5.215	4.640	4.087

Although values indicated in bold did not load as expected, there was no sufficient evidence to disregard Verplanken and Herabadi (2001) and Cho et al. (2014) factor models. The mean values and standard deviations for each factor were calculated. In order to assess the internal consistency reliability of the constructs were computed. This was followed by constructing a correlation matrix of Pearson's Product Moment correlation coefficients. The descriptive statistics, reliability and correlation coefficients are presented in Table 3.

Table 3: Descriptive Statistics, Reliability Measures, and Correlation Coefficients

Constructs	Means	Std Dev	Cronbach Alpha	F2	F3	F4	F5	F6
Cognitive response	3.09	1.41	.795					
In-store atmosphere	4.32	1.22	.741	1				
In-store browsing	4.15	1.40	.772	.165**	1			
Salespersons	4.44	1.18	.824	.132**	.203**	1		
Promotions	4.51	1.21	.841	.307**	.267**	.246**	1	
Reference groups	4.00	1.39	.578	.234**	.243**	.283**	.245**	1

** Correlation is significant at the 0.01 level (2-tailed)

As indicated in Table 3, the mean values for each of the constructs were above 3, which given the six-point Likert scale utilised, indicates that Generation Y students feel that good service, helpful salespersons, the more time spent in the store, having companionship during the shopping trip and the ambience of the store encourages an impulse purchase. Iacobucci and Churchill (2010) stated that the Cronbach coefficient alpha is the most commonly utilised statistic to measure internal consistency. A coefficient will vary from zero to one, but value of less than 0.6 suggests weak internal consistency reliability (Malhotra, 2010). Majority of the constructs feel above the 0.6 threshold; however, reference groups was slightly below the recommended level of 0.60. According to Pallant (2010), it is recommended to report on the average inter-item correlation value if a scale has less than 10 items. An average inter-item correlation for reference groups was 0.315, which fell within the range of 0.15 and 0.50 and therefore accepted (Clark & Watson, 1995). When performing any type of multivariate statistical method, it is important to evaluate if there is any evidence of multicollinearity between the predictor variables.

Therefore, in order to assess the relationships between the factors a correlation analysis was conducted in order to check for multicollinearity. As shown in Table 3, none of the correlation coefficients between the predictor variables surpassed the recommended cut-off point of 0.80 (Field, 2009). In addition, the collinearity diagnostics revealed that the tolerance values ranged between 0.642 and 0.811, which is above

the 0.10 cut-off level. Moreover, the variance inflation factor (VIF) ranged between 1.233 and 1.557, which was below the cut-off level of 10 (Pallant, 2010). As such, there is no suggestion of any apparent evidence of multicollinearity between the predictors and therefore regression analysis was conducted. A bivariate regression analysis was conducted to determine the influence of external factors on the cognitive response of Generation Y students. Table 4 reports the regression analysis conducted to ascertain whether the external factors, namely: in-store atmosphere, in-store browsing, salespersons, promotions and reference groups' influence Generation Y students' cognitive response to buy on impulse.

Table 4: Influence of External Factors on Cognitive Response

	Standardised Beta	R^2	t-value	Significance level
Dependent variable: Cognitive response		0.070		
Independent variable:				
In-store atmosphere	.121		2.165	.031*
In-store browsing	-.231		-4.283	.000*
Salespersons	.021		.379	.705
Promotions	.145		2.582	.010*
Reference groups	-.101		-1.844	.066
* Significant at p<0.05				

As shown in Table 4, in-store browsing and reference groups negatively affected the cognitive response however; most of the external variables had a positive influence on the cognitive response dimension of impulse purchasing Subject to in-store browsing, this negative influence is also significant. This implies that the Generation Y cohort members will not purchase impulsive goods when the time is spent browsing the items on display in a retail store. As shown in Table 4, in-store atmosphere (β=0.121, p=0.031<0.05) and promotions (β=0.145, p=0.010<0.05) had a statistically positive influence towards Generation Y students' cognitive response to buying on impulse while, salespersons (β=0.021, p=0.705>0.05) did not have a statistically positive influence. The coefficient of multiple determination (R2) was 0.070 that implies that in-store atmosphere; in-store browsing and promotions can predict seven percent of the variance in Generation Y students' cognitive response to buy on impulse, which proposes that other variables can influence Generation Y students' cognitive response to buy on impulse.

Discussion: The purpose of this study was to determine the external factors influencing the cognitive response of impulse buying behaviour amongst Generation Y students**.** As elucidated earlier in-store atmosphere, in-store browsing and promotions were found to be significant; however, seven percent was too low to conclude that these were the only factors to have had an impact on Generation Y students' cognitive response of impulse buying behaviour. According to previous research, reference groups do not affect the cognitive response (Gandhi et al. 2014). Moreover, Gandhi et al. (2014) are of the opinion that a reference group does not encourage the consumer to engage in an impulsive purchase, as reference groups are only needed when the consumer is specifically looking for something, or advise on a certain item. Therefore, consumers already have a plan of action and not a mindset for unplanned purchases. When consumers find the store to have good music and a pleasant smell, they tend to be more impulsive (Eroglu & Machleit, 1993; Mattila & Wiltz, 2001; Hussain & Ali, 2015; Nishanov & Ahunjonav, 2016). Consumers who spend more time browsing in the store or retail outlet are exposed to more incentives offered in the store and therefore, will purchase more on impulse (Vänniä, 2013).

5. Conclusion and Recommendations

The importance of research on impulse buying has increased and marketing practitioners are keen in understanding the drivers of impulse purchases particularly the Generation Y cohort. Utilising the consumer's cognitive response will help researchers and marketers understand consumer's characteristics as this will ultimately guide consumers into buying on impulse. A number of external factors trigger a consumer's cognitive response; as external factors are outside the consumer's control. In an attempt to fill a gap in research in the South African context, this study has determined that although in-store atmosphere, in-store browsing and promotions were significant, these factors are not sufficient to be determinants of Generation Y

students' cognitive response of impulse buying behaviour. The results also revealed that salesperson and reference groups were found to have no significant influence on Generation Y students' cognitive response to impulse buying behaviour. Abbas and Bashir (2015) state that cognitive response does not have much influence to buy impulsively. Furthermore, consumers are more influenced by emotions to buy on impulse, known as affective response, whereas the cognitive response deals with cognitive deliberation, unplanned buying and disregard for the future. Dincer (2010) explained that demographics used in one's study can also influence the results of impulse buying behaviour and therefore the results cannot be relied on the demographics alone. Due to this study using Generation Y students, businesses and marketers cannot rely on in-store atmosphere, in-store browsing and promotions to be the only factors to influence the cognitive response of impulse buying amongst this generation.

Like all academic studies, limitations were found in this study, which could suggest new opportunities for future research. Research conducted in this study employed a quantitative approach. Utilising the survey method to identify exactly what external factors influence the cognitive response of impulse buying behaviour is difficult. Different factors could have been analysed directly if Generation Y students were mindful to the responses experienced in the environment of a shop. Therefore, qualitative (for example, observation method) and quantitative research combined is suggested. This study focused only on two HEIs in one province. Therefore, a similar study could be conducted by including other HEIs in other provinces. This will lead to accurate results and comparisons can be made throughout South Africa's HEIs. Another limitation to this study was utilising only Generation Y students, aged 18 to 24 years. A similar study could target an older generation (30-50). This provides an opportunity to determine whether credit cards could be a factor influencing the cognitive response of impulse buying behaviour amongst Generation Y students.

References

Abbas, A. & Bashir, B. (2015). Impact of the cognitive and affective process of decision making on impulse purchase. *Institute of Business and Management*, 27(1), 467-473.

Acar, A. B. (2014). Do intrinsic and extrinsic motivation factors different for Generation X and Generation Y. *International Journal of Business and Social Science*, 5(5), 12-20.

Africa Check. (2016). Student population in South Africa. https://africacheck.org/factsheets/factsheet-many-south-african-students-graduate/ Date of Access: 7 June 2018.

Ahuja, D. (2015). Making the pulse impulsive: a study of factors resulting impulse buying. *International Association of Scientific Innovation and Research (IASIR)*, 13(1), 50-52.

Akram, U., Hui, P., Khan, M., Hashim, M. & Rasheed, S. (2016). Impact of store atmosphere on impulse buying behaviour: moderating effect of demographic variables. *International Journal of u- and e-service, service and technology*, 9(3), 43-60.

Beta Bait. (2013). Impulse buying shopping fact sheet. http://betabait.com/the-impulse-shopping-fact-sheet/ Date of access: 8 February 2016.

Bitner, M. J. (1992). The impact of physical surroundings on customers and employees. *The Journal of Marketing*, 56(2), 57-71.

Branchik, B. J. (2010). Silver dollars: the development of the US elderly market segment. *Journal of Historic Research in Marketing*, 2(2), 174-189.

Cambridge University Press. (2016). Salesperson definition.

Cant, M. C., Strydom, J. W., Jooste, C. J. & du Plessis, P. J. (2009). Marketing management. 5th ed. Cape Town, SA: Juta and company Ltd.

Chen, T. (2008). Impulse purchase varied by products and marketing channels. *Journal of International Management Studies*, 1, 154-161.

Cho, J., Ching, G. S. & Luong, T. (2014). Impulse buying behaviour of Vietnamese consumers in supermarket setting. *International Journal of Research Studies in Management,* 3(2), 33-50.

Clark, L. A. & Watson, D. (1995). Constructing validity: basic issues in objective scale development. *Psychological assessment*, 7(3), 309-319.

Das, S. P. & Das, S. S. (2015). Impact of visual merchandising on consumers' impulse buying behaviour. *The International Journal of Business and Management*, 3(12), 188-201.

Dawson, S. & Kim, M. (2009). External and internal trigger cues of impulse buying online. Direct Marketing: *An International Journal*, 3(1), 20-34.

Dincer, C. (2010). The influence of affect and cognition on impulse buying behaviour. *Social Responsibility Journal*, 1, 153-158.

Dot Active. (2016). Impulse buying strategies. https://www.dotactiv.com/blog/merchandising-strategies-impulse-buying Date of Access: 27 July 2018.

Eroglu, S. A. & Machleit, K. A. (1993). Atmospheric factors in the retail environment: sights, sound and smells. *Advances in Consumer Research*, 20, 34.

Evans, M., Jamal, A. & Foxall, G. (2008). Consumer Behaviour. John Wiley and Sons Ltd, Liber.

Field, A. (2009). Discovering statistics using SPSS. 3rd ed. London: Sage Publications Ltd.

Gamage, D. N. W., Wickramasingha, Y. M. & Henegedara, G. M. (2008). Factors influencing impulse buying behaviour of rural people. *Research and Training Institute*, 1, 1-2.

Gandhi, A., Vajpayee, A. & Gautam, D. (2014). A study of impulse buying behaviour and factors influencing it with reference to beverage products in retail stores. *Journal of Symobios is Institute of Business Administration*, 8, 1-17.

Garcia. (2018). Food tips list of impulse purchases.https://retail.emarketer.com/article/food-tops-list-of-impulse-purchases/5a946479ebd4000744ae413d Date of Access: 21 July 2018.

Hall, A. (2018). Brits' top impulse buys revealed as study shows we spend £144 000 in our lives on unplanned purchases. https://www.mirror.co.uk/money/personal-finance/brits-top-impulse-buys-revealed-11856701 Date of Access: 21 July 2018.

Hausman, A. (2000). A multi-method investigation of consumer motivations in impulse buying behaviour. *Journal of Consumer Marketing*, 17(5), 403-426.

Hussain, R. & Ali, M. (2015). Effect of store atmosphere on consumer purchase intention. *International Journal of Marketing Studies*, 7(2), 35-43.

Iacobucci, D. & Churchill, G. (2010). Marketing Research: Methodological Foundations. 10th ed. South-Western Cengage Learning.

Jamal, M. & Lodhi, S. (2015). Consumer shopping behaviour in relation to factors influencing impulse buying: a case of superstores in Karachi, Pakistan. *European Journal of Business and Management*, 7(31), 30-46.

Kalla, S. M. & Arora, A. P. (2011). Impulse buying: a literature review. *Global Business Review,* 12(1), 145-157.

Kannan, P. & Vinayagamoorthy, A. (2014). A study on influencing impulse buying behaviour. *International Journal of Management and Social Science research review,* 1(1), 19-27.

Karbasivar, A. & Yarahmadi, H. (2011). Evaluating effective factors on consumer impulse buying behaviour. *Asian Journal of Business Management Studies*, 2(4), 174-181.

Khan, N., Hui, L. H., Chen, T. B. & Hoe, H. Y. (2016). Impulse buying behaviour of Generation Y in fashion retail. *International Journal of Business and Management*, 11(1), 144-151.

Kilber, J., Barclay, A. & Ohmer, D. (2014). Seven tips for managing Generation Y. *Journal of Management Policy and Practice*, 15(4), 80-91.

Kim, J. (2003). College students apparel impulse buying behaviours in relation to visual merchandising. Athens, Georgia: University of Georgia. (Thesis-Masters of Science).

Kumar, S. R. (2007). Marketing and branding. Bangalore, India: Pearson Education.

Levy, M. & Wietz, B. A. (2011). Retailing management. 8th ed. Wisconsin, Madison: McGraw-Hill/Irwin.

Lin, E. (2013). External and internal factors of impulse buying behaviour in reference to gender. University Malaysia Sabah. (Masters-Thesis),

Mäkinen, T. (2015). Customers buying behaviour. Jamk University of Applied Sciences. (Thesis-PhD).

Malhotra, N. K. (2010). Marketing research: an applied orientation. 6th ed. Upper Saddle River, NJ: Pearson Education.

Markert, J. (2004). Demographics of age: generational and cohort confusion. *Journal of current issues and research in advertising*, 26(2), 11-25.

Mathai, S. T. & Haridas, R. (2014). Personality – its impact on impulse buying behaviour among the retailer customers in Kochin city. *IOSR Journal of Business and Management*, 16(4), 48-55.

Mattila, A. S. & Wirtz, F. (2001). Congruency of scent and music as a driver of instore evaluations and behaviour. *Journal of retailing*, 77(2), 273-289.

Mothapo, M. N. (2013). Importance of clothing brands on the purchasing decisions of Generation Y in the Vaal Triangle area. Vanderbijlpark: North West University. (Dissertation-Masters).

Muruganantham, G. & Bhakat, R. S. (2013). A review of impulse buying behaviour. *International Journal of Marketing Studies*, 5(3), 149-160.

Nishanov, B. & Ahunjonov, U. (2016). The influence of store characteristics on consumer's impulse buying behaviour. *Journal of International Business Research and Marketing*, 1(3), 20-26.

Noble, S. M., Haytko, D. L. & Phillips, J. (2009). What drives college age Generation Y consumers. *Journal of Business Research*, 62, 617-628.

Ohta, M. & Higuchi, Y. (2013). Study on the design of supermarket store layouts: the principle of "sales magnet". *International Journal of Social, Behavioural, Educational, Business and Industrial Engineering*, 7(1), 209-212.

Pallant, J. (2010). SPSS survival manual. 4th ed. London: Open University Press.

Patil, P. & Agadi, R. (2016). Impact of visual merchandising on young customers‟ apparel impulse buying behaviour. *International Journal of Advancement in Engineering, Technology, Management & Applied Science,* 3(1), 187-199.

Rook, D. W. & Hoch, S. J. (1985). Consumer impulses. *Advances in Consumer Research,* 12, 23-27.

Rook, D. W. & Fisher, R. J. (1995). Normative influences in impulsive buying behaviour. *Journal of Consumer Research*, 22, 305-313.

Sangalang, R. A., Siochi, J. & Plaza, M. (2017). Factors Influencing Consumers' Impulse Buying Behavior in the Fifth District of Cavite. Paper presented at the DLSU Research Congress 2017, De La Salle University, Manila, Philippines, 20-22 June. http://www.dlsu.edu.ph/conferences/dlsu-research-congress-proceedings/2017/EBM/EBM-I-005.pdf.

Schiffman, L. G., Kanuk, L. L. & Wisenbilt, J. (2010). Consumer behaviour. 10th ed. Upper Saddle River, NJ: Pearson Prentice Hall.

Sharma, K. (2012). Impact of affective and cognitive processes on impulse buying of consumers. Rajkot: Saurashtra University. (Thesis-PhD).

Shivangunde, R. B., Shukla, R. K. & Mehrotra, V. S. (2012). Organised retailing: retail store layout and design. Bopal: PSS Central Institution of Vocational Education.

Shojaei, M. R., Shahlaei, A., Torabi, S. & Ghaedi, M. R. (2014). Investigating the effective factors on impulse buying. *European Journal of Business and Management,* 6(11), 62-64.

Sowetan Live. (2014). 10 things you didn't know about student spending. http://www.sowetanlive.co.za/news/business-news/2013/07/09/top-things-you-didn-tknow-about-student-spending Date of access: 16 October 2016.

Statistics South Africa. (2016). Mid year population estimates 2016 South Africa. http://www.statssa.gov.za/publications/P0302/P03022016.pdf Date of access: 16 October 2016.

Strydom, J. W., Cant, M. C. & Jooste, C. J. (2000). Marketing management. 4th ed. Cape Town, SA: Juta.

Taushif, M. R. & Gupta, M. (2013). A study of factors affecting impulse buying behaviour of consumers at malls (Dehli). *International Journal of Research and Development – A Managerial Review*, 2(2), 46-50.

Times Live (2014). Impulse buying statistics in rands. http://www.timeslive.co.za /thetimes/2014/05/27/impulse-buying-has-malls-smiling Date of access: 7 March 2016.

Tinne, W. S. (2011). Factors affecting impulse buying behaviour of consumers at Superstores in Bangladesh. *ASA University Review*, 5(1), 209-220.

Tutor2u. (2015). Sales promotion definition. http://www.ttor2u.net/business/reference/sales-promotion Date of Access: 22 August 2016.

Universities South Africa. (2016). Universities of South Africa. http://www.universitiessa.ac.za/public-universities-south-africa. Date of access: 30 March 2016.

Vänniä, E. (2013). Impulse buying behaviour of young males in an airport environment. International Business. (Thesis-Masters).

Verplanken, B. & Herabadi, A. G. (2001). Individuals differences in impulse buying tendency: feeling and no thinking. *European Journal of scientific Research*, 15, 7183.

Vishnu, P. & Raheem, A. R. (2013). Factors influencing impulse buying behaviour. *European Journal of Scientific Research*, 100(3), 67-79.

Viswanathan, V. & Jain, V. (2013). A dual-system approach to understanding "Generation Y" decision making. *Journal of Consumer Marketing*, 30(6), 484-492.

Yigit, S. & Aksay, K. (2015). A comparison between Generation X and Generation Y in terms of individual innovativeness behaviour: the case of Turkish health professionals. *International Journal of Business Administration*, 6(2), 106-117.

Žnideršić, R. K., Grubor, A. & Marić, D. (2014). Impulsive consumer behaviour. *International Journal of Multidisciplinary in Business and Science*, 2(2), 81-89.

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Assessing the Dynamic Economic Impact of Tourism in a Developing Region in South Africa

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Abstract: According to the National Development Plan (NDP), the three main developmental problems South Africa is facing include: high levels of unemployment, poverty and inequality. Tourism, as an economic sector, has been cited as a possible solution to create much-needed employment and income which could lead to reduced poverty and improved inequality. Tourism could be used in developing regions as a driver of economic growth. The objective of this study is to determine the dynamic impact of the tourism sector on economic growth in a developing region in South Africa, namely the Vaal-Triangle region. The research methodology followed a quantitative design, using a pooled panel approach including the two municipal areas of Metsimaholo and Emfuleni which comprises the Vaal region. Annual data from 2001 to 2017 were used to analyse the impact of growth in tourism on economic growth. Economic growth was set as the dependent variable and tourism measurements such as tourism spending and trips as the independent variables. Results from the analysis confirm the original hypothesis that tourism growth has a significant impact on economic growth. The sector therefore, has the potential to create employment opportunities and alleviate poverty in a developing region if promoted and supported to its full potential.

Keywords: *Economic development, economic impact, South Africa, tourism, Vaal-Triangle region.*

1. Introduction

While some countries are succeeding in decreasing unemployment and poverty, there is still more than 65 percent of the world's population living on less than $2 per day, per person (Todaro & Smith, 2015). This includes South Africa where high unemployment and poverty levels are obstacles in reaching sustainable economic growth. The poor often find themselves restricted with limited choices and not able to get out of the poverty trap due to a lack of skills, knowledge and opportunities (Ashley, De Brine & Wilde, 2007). With this being said, tourism development is regarded as one approach that has the potential to aid marginalised communities and people in overcoming this stagnation (Butler & Rogerson, 2016). The tourism sector is one of the world's largest industries and one of the fastest growing economic sectors (Seghir, Mostéfa, Abbes & Zakarya, 2015). Tourism has become one of the major players in international commerce and at the same time it acts as one of the main sources of income for many developing countries, such as South Africa (UNWTO, 2016). According to Meyer and Meyer (2015) tourism, as an alternative to traditional economic sectors such as manufacturing and construction and it can act as a tool to alleviate poverty and promote economic development especially in developing countries.

Harrill (2004) defines tourism as all forms of travel, which unlike other industries, infuses communities through its influence on the community environment, employment, land use and social structures. Samini, Sadeghi and Sadeghi (2011) state that tourism acts as a driving engine for economic growth and economic activity. Furthermore, tourism creates employment opportunities, therefore increasing income and government tax revenues, increases an area's export, which in turn increase gross domestic product (GDP) and therefore economic growth (Samani et al., 2011; Zuo & Huang, 2017). As a result, this growth leads to an increase in the economic diversification of a region and creates a competitive edge for regions (Meyer & Meyer, 2015). Diversification of local economies is important especially for local regions that are only depended on one or two economic sectors as these regions are highly vulnerable to economic shocks and business cycle fluctuations (Pedrana, 2013). In such cases, the diversification of a local economy minimises the vulnerability of that particular area to economic disturbances.

Despite this, tourism is frequently overlooked as one of the most important economic sectors (Richardson, 2010). Many governments do not perceive tourism as an important and significant sector to contribute towards economic growth and development, which often results in a lack of empirical research to advise policymakers (Croes & Vanegas, 2008). As Phiri (2016) points out, there is limited academic research on the

industry's precise impact on economic growth and development in countries, especially in developing nations such as South Africa. Even less research is available on how tourism influences economic growth on a regional and local level. In the South African scenario, it is important to gain a deeper understanding of the impact of tourism on the economic growth of communities. This necessitates the need to analyse and measure how many, if any, marginalised communities are in actual fact benefited by the development of tourism and how inclusive tourism growth really is (Hanekom, 2015). Hence, the focus of this study is the Vaal region in South Africa, which consists of the local municipal areas of Metsimaholo and Emfuleni and for the rest of the study, the region is referred to as the Vaal region. The aforementioned prompted this study in an effort to contribute to the lack of literature surrounding tourism and its dynamic impact on local economies.

2. Literature Review

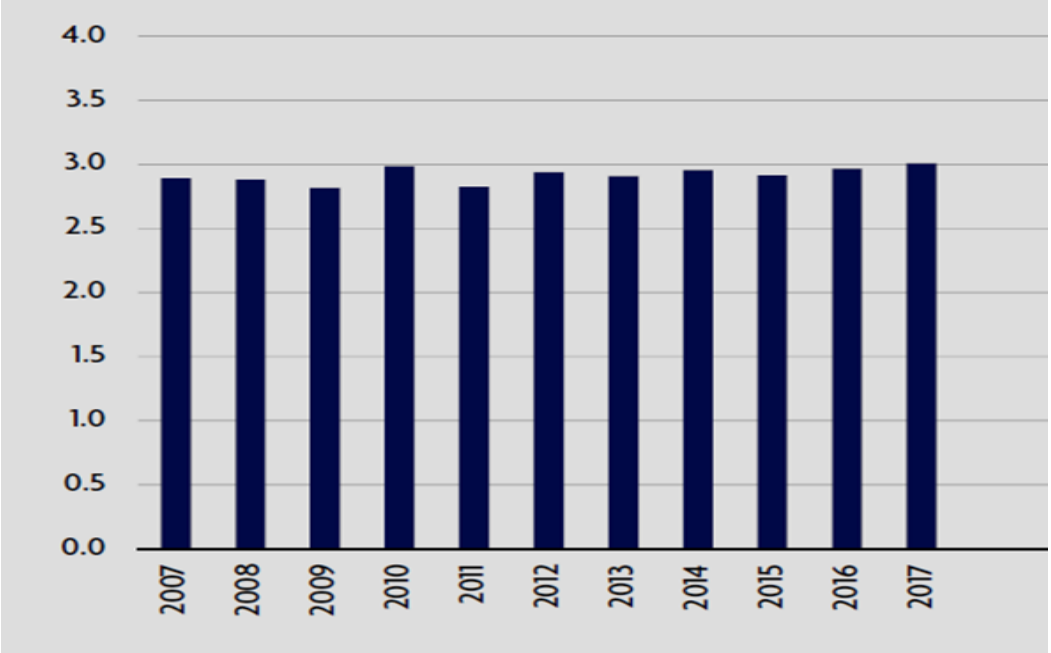
Poverty has its worst exposure in developing countries, where these countries form part of the frailest segment of the international community (Croes & Vanegas, 2008). In order to combat unemployment, inequality and poverty, rapid inclusive growth should be sought after (Giampiccoli & Saayman, 2016). As Giampiccoli and Saayman (2016) surmise, inclusive growth can be explained as a phenomenon where the benefits of economic growth are shared equitably in order to increase opportunities, capabilities and incomes of households in the country. Tourism utilised as a key socio-economic driver, has the ability to promote investment in local firms, create work opportunities, increase export revenues and aid in infrastructure development, thus ultimately contributing to the economic growth of a region (Pedrana, 2013). Economic growth can be seen as an increase in a country or region's aggregate production (GDP) or the measurable output per capita (the average GDP per person) (Fourie & Burger, 2011; Van den Berg, 2012). Over the past few decades and on an international level, the tourism industry has been progressively expanding, increasing the sector's share in the economies of both developing and developed countries (Seghir et al., 2015). Tourism can be defined as the movement of people from one place to another, for more than one night due to various reasons, such as medical, cultural, recreational and business engagements (Pedrana, 2013).

As Butler and Rogerson (2016) assert, tourism has the potential to empower young people and women as well as marginalised populations. Tourism allows for job opportunities for all people regardless of their level of education, age, gender and race. This is because the industry plays a particularly important role in areas that struggle with low levels of per capita GDP, high unemployment rates and competition from cheap imports, since it also allows for skills development and employment opportunities (Samini et al., 2011). Emphasise should be placed on the importance tourism has as a multiplier effect, due to the direct and indirect economic benefits that it creates to a local community (Meyer & Meyer, 2015). The multiplier effect can be explained as an initial capital investment, leading to various direct and indirect economic opportunities. Despite this, local governments often fail to prioritise tourism and realise its potential contributions to Local Economic Development (LED) (Croes & Vanegas, 2008). LED is a pro-active process in which local people from all sectors of the community work together to stimulate local commercial activity, which results in a sustainable, growing local economy (Trousdale, 2005). As a result of the aforementioned, policy decisions are usually aimed at achieving unrealistic goals that are not within the community's skills framework. Hence, the community should be incorporated into the development processes to ensure that the benefits arising from tourism development are spread equally throughout the local economy.

In addition, it often happens that stakeholders from developed countries dictate those from developing nations in the best ways of improving tourism development (McLachlan & Binns, 2014). This usually results in high levels of leakages within the tourism industry, high levels of foreign ownership, high inequality, loss of resources, cultural loss as well as spatial unevenness (McLachlan & Binns, 2014). High levels of leakages refer to when the benefits resulting from the tourism industry are not spread through to the local economy, rather to an external and sometimes international beneficiary. With this being said, tourism needs to be recognised as important because it will give people without high skills levels and knowledge a chance to earn a salary, improve their skill set and their overall standard of living, which ultimately could contribute to economic growth and development (Lanza & Pigliaru, 2000). When analysing the Sub-Saharan African region, South Africa has the most developed tourism market (JLL, 2012). This is due to the country having vast regions of

natural beauty, coastlines, safari parks, developed cities and relatively well-developed infrastructure, and a fairly stable economy, which offers a strong proposition to tourists (BMI, 2016). The recent political instability may in future have a negative impact on tourism and needs to be managed. Furthermore, the country is seen as Africa's economic powerhouse which attracts people (BMI, 2016).

Figure 1: Tourism's Direct Contribution in Percentage to the Economy (GDP) of South Africa for the Past 10 Years



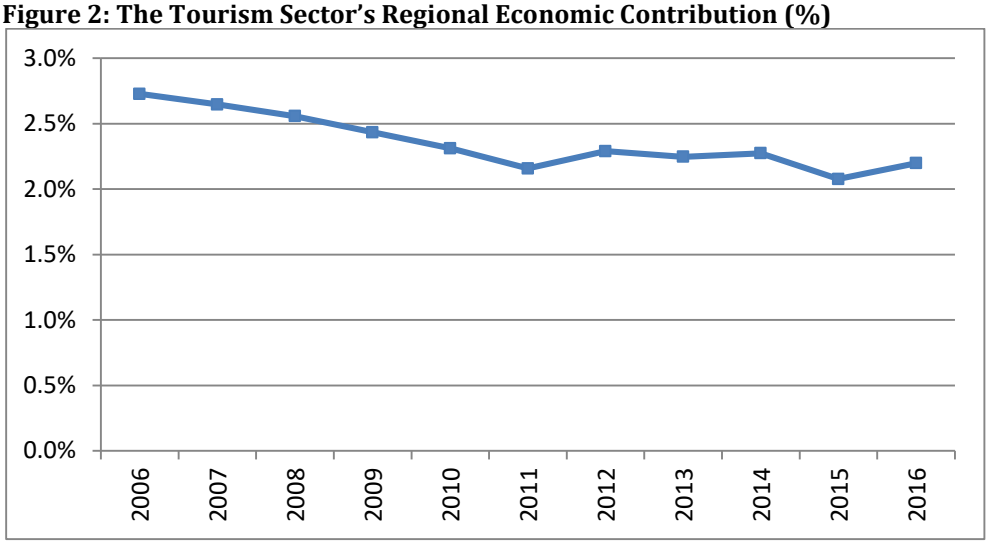
Source: WTTC (2017a)

In 2016 the sector directly contributed 3 percent to South Africa's GDP and it is expected to increase with 2.7 percent in 2017. In addition, the total contribution of the travel and tourism industry (which includes the direct and indirect effects of tourism) to GDP in South Africa was 9.3 percent in 2016 (WTTC, 2017a). The direct contribution of tourism to the country's economy (GDP) includes the growth from industries in the tourism sector such as travel agents, hotels, restaurants, travel agencies and other leisure agencies that are directly supported by tourists (WTTC, 2017a). As can be seen from Figure 1, the industry saw a peak during 2010, which may be as a result of the Soccer World Cup. This emphasises the importance of hosting large international gatherings such as sports and cultural events. In contrast to 2010, the industry had a lower growth rate in 2015 when compared to 2014. According to the new regulations those wishing to travel to South Africa had to apply for their visas, in person, at a South African embassy where all of their biometric information had to be recorded (SAinfo, 2015). Furthermore, all children under the age of 18, who are travelling in or out of South Africa had to have an unabridged birth certificate at entry ports that had to include the full details of both their parents as well as in the case of travelling with only one parent they must be accompanied by a consent letter from the parent not travelling with them (SAinfo, 2015). The aforementioned resulted in a significant decrease in inbound arrivals. The growth rate of inbound arrivals in 2015 was a mere 1, 8 percent when compared to a growth rate of almost 6 percent in 2014 (BMI, 2016).

The South African government realised the damage brought on by the new visa regulations and have since relaxed visa requirements and the period of 2016 has seen an increase in visitor numbers. With this being said, the tourism industry in general and in particular South Africa is still not without its challenges. If the correct policies and effective management strategies are not in place it may lead to the deterioration of the environment, pollution and a loss of biodiversity (Creaco & Querini, 2003). Another area of concern is the possibility that with the arrival of new cultures and their ways, the social and cultural context of the community may be affected and certain unique cultural features may be lost (Pedrana, 2013). According to George (2015) tourism in South Africa is seen as one of the key drivers of LED, however, the sector still

remains under-acknowledged for its potential contribution to economic growth and development on a national and regional scale (Butler & Rogerson, 2016). Regarding the study area, the Vaal region has a total population of over 900 000 people according to the 2017 statistics, which constitutes over 6 percent of the Gauteng province's total population (Global Insight, 2017). Figure 2 illustrates the tourism industry's contribution to the economy of the Vaal-Triangle (GDP) over the past decade. Although its contribution has declined since 2006, it has been increasing since 2015, to an average of 2.2 percent.

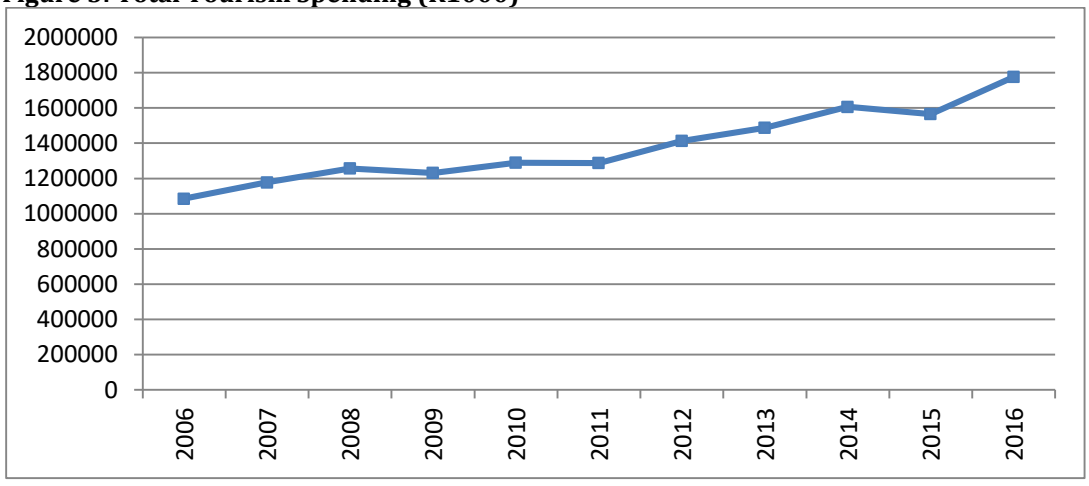
Figure 2: The Tourism Sector's Regional Economic Contribution (%)



Source: Global Insight (2017)

Within the Emfuleni municipal area, the contribution was the largest at 2.6 percent in 2016. This may be as a result of tight visa regulations implemented during that period. Tourism spending in the region has also seen an increase, as is illustrated in Figure 3. Total tourism spending in the Vaal-Triangle has increased substantially in 2016, as is evident from Figure 3. This rise has a significant positive effect on the regions GDP. Another positive is the increase in total tourism trips to the area, which amounted to over 400 000 trips in 2016 (Insight, 2017). Of this, the largest group of trips were for holiday/recreational reasons. These figures indicate that tourism in the Vaal-Triangle has the potential to develop and could indeed act as a new way of routing the local economy.

Figure 3: Total Tourism Spending (R1000)



Source: Global Insight (2017)

It should be noted however, that when incorrectly managed, the tourism industry may bring with it a number of negative influences. These negative impacts, however, can be minimised and avoided if the correct policies and management practices are in place, where the community is involved and there is a strong co-operation between the private and public sector. This will ensure that the tourism industry plays a central role in protecting and advancing the social and cultural integrity of a community, while promoting the benefits of tourism and at the same time addressing and minimising the potential negative effects (WTTC, 2017b).

3. Methodology

The focus area, as mentioned earlier, is the Vaal-Triangle region situated in South Africa. This area was chosen due to the following reasons. Firstly, it is situated on the periphery of the Johannesburg economic region, secondly, it is rich in cultural and historical places and events. Thirdly, the area is situated next to a major water body namely the Vaal River contributing to its touristic potential and lastly the area shows potential for tourism development, especially when looking at its characteristics. The Vaal-Triangle region consists of the Emfuleni Local Municipal area (Gauteng Province) and the Metsimaholo Local Municipal area (Free State Province). It is located approximately 120 km from Pretoria and 80 km from Johannesburg (Local Government Handbook, 2016) and both municipalities are situated on the banks of the Vaal River. Consequently, the region has several opportunities for economic and tourism development. The Vaal-Triangle region has well-developed entertainment venues, sports facilities, shopping centres, hotels, guesthouses and restaurants (Meyer, 2015). The area enjoys an admirable climate and it has an abundance of fauna and flora. The Vaal-Triangle has the relatively good infrastructure and can benefit from being so closely located to Johannesburg, the economic hub of Africa (Meyer, 2015). Based on the aforementioned information, the main objective of this research study is to assess the dynamic economic impact of tourism in the Vaal-Triangle region of South Africa, with the use of a time series approach.

In an effort to analyse the impact of growth in tourism on that of economic growth, the research design consisted of a quantitative method with the use of secondary data from Global Insight. Annual data from 2001 to 2017 were used and analysed by using a pooled panel approach pooling the two municipal areas of Metsimaholo and Emfuleni which forms the Vaal-Triangle region. The variables used in the analysis consisted of economic growth (GDP), tourism spending, total tourism trips and the hospitality sector (restaurants and hotels). The data was analysed with the use of E-views software. Data from the Vaal-Triangle region were used in a panel data set, where a multiple regression was utilised. Multiple regression is a regression where multiple variables (influences) affect the dependent variable, thus instead of having only one independent variable, there are now several (Gujarati & Porter, 2010). The variables were set as follow:

Dependent variable (Y) = Economic growth (GDP)
Independent variables (X) =Tourism spending (TTS)
= Total tourism trips (TTT)
= Hospitality sector (restaurants and hotels) (HOTRES)

Pedroni (2004) formulated the following equation for panel data, which was utilised for this study:

$$Y_{it} = a_i + \delta_i t + \beta_i X_{it} + e_{it} \quad (1)$$

Where:
Y_{it}= Dependent variable
a_i= Intercept term
δ_i= Parameter that together with a_i allows the individual linear trends and individual effects to be observed respectively (Seghir et al., 2015).
β = k×1 vector of parameters that were estimated based on the explanatory variables.
X_{it}= 1 × k vector of observations of the explanatory variables, t = 1, T; i = 1.
In an effort to reduce the scale of the data all of the variables in the regression were converted into logarithms.

4. Results and Discussion

The following section explains the results obtained from the quantitative analysis. Table 1 illustrates the results obtained from the unit root testing. The tests used for the purpose of this study included theLevin, Lin and Chu (LLC), Im, Pesaran and Shin (IPS), Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests. The purpose of unit root tests is to, overtime; bring the series variance, mean and auto-covariance to a steady state (Habanabakize, 2016). In addition, the unit root test should be the first step taken before conducting the co-integration estimations, as the use of non-stationary variables may produce spurious results (Ogbokor, 2015). In addition, other supporting results have been found by Antonakakis, Dragouni and Filis (2015) in the case of Italy and the Netherlands. As such, this evidence suggests that there is indeed causality running from tourism development to economic growth in the Vaal-Triangle region. This result however, contradicts those of Eugenio-Martin, Morales and Scarpa (2004) who found no causality between tourism and economic growth as well as Balcilar, van Eyden and Inglesi-Lotz (2014), who found no causality between tourism and economic growth in the case of South Africa.

Table 1: Panel Unit Root Tests

Variables	Tests	P-Value	Level
GDP	LLC	0.0005**	I(1)
	IPS	0.0494**	I(1)
	ADF	0.0465**	I(1)
	PP	0.0001**	I(1)
TTT	LLC	0.0014**	I(1)
	IPS	0.0065**	I(1)
	ADF	0.0094**	I(1)
	PP	0.0025**	I(1)
TTS	LLC	0.9003	I(1)
	IPS	0.0308**	I(1)
	ADF	0.0310**	I(1)
	PP	0.0001**	I(1)
HOTRES	LLC	0.0034**	I(1)
	IPS	0.0024**	I(1)
	ADF	0.0047**	I(1)
	PP	0.0020**	I(1)

** indicates variables are statistically significant at 5%

As can be seen in Table 1, all of the variables are stationary after 1st differenced or I(1) level and significant at a 5 percent level. The next question to be addressed is to determine the direct nexus between tourism and economic growth. For this reason, the Johansen Fisher panel co-integration test is utilised as this test is most suitable when all variables are of order I(1). The results are presented in Table 2.

Table 2: The Johansen Fisher panel co-integration test

Hypothesized No. of CE(s)	Fisher Stat. (from trace test)	Probability	Fisher Stat. (from Max-Eigen test)	Probability
None	81.41	0.0002*	38.84	0.0003*
At most 1	51.03	0.0005*	31.93	0.0006*
At most 2	23.21	0.0001*	23.21	0.0001*
At most 3	5.150	0.2722	5.150	0.2722

* indicates variables are statistically significant at 1%

In order to establish that there is indeed a long-run relationship between the variables that earlier tests suggested, the Johansen Fisher co-integration test is used. Seghir et al. (2015) define co-integration as the methodical co-movement between variables in the long-run. From analysing the results in Table 2 the tests indicate that the Trace and Max-Eigen test provides evidence of a co-integrating relationship between the variables, at a 1 percent significance level. Therefore, it could be concluded that the results obtained from the

Johansen Fisher co-integration test provide confirmation that there is a long-run equilibrium relationship between tourism and economic growth. The subsequent step is to determine the exact impact of tourism on economic growth in the Vaal-Triangle region. In order to determine the impact of tourism on economic growth and development, the Fully Modified Ordinary Least Squares (FMOLS) and the Dynamic Ordinary Least Squares (DOLS) models were applied. Table 3 presents the FMOLS and DOLS results for the determination of tourism's impact on economic growth. Here economic growth (LOG_GDP) is the dependent variable, with tourism spending (LOG_TTS), tourism trips (LOG_TTT) and the hospitality sector (LOG_HOTRES) representing the independent variables.

Table 3: FMOLS and DOLS Results

Method	Variables	Coefficient	Std. Error	t-statistic	Prob.
	TTT	0.160555	0.157648	1.018439	0.3182
FMOLS	TTS	0.103343	0.116723	0.885370	0.3844
	HOTRES	0.553375	0.218097	2.537293	0.0178*
	TTT	1.367717	0.399954	3.419684	0.0419*
DOLS	TTS	1.048875	0.572741	3.577312	0.0374*
	HOTRES	1.623288	0.941880	2.785162	0.0487*

*significant at 5%
Dependent variable: GDP
Independent variable: LOG_TTS, LOG_TTT and LOG_HOTRES

The FMOLS and especially the DOLS results indicate that there is indeed a positive, long-run relationship between tourism and economic growth. The FMOLS result suggests that a 1 percent increase in the hospitality sector will most likely lead to a 0.55 percent increase in economic growth. The DOLS result suggest that a 1 percent increase in tourism trips, tourism spending and the hospitality sector will most likely lead to a 1,37 percent, 1,05 percent and 1,62 percent increase, respectively, in economic growth. This provides evidence that tourism can improve the economic growth of a region. In addition, Po and Huang (2008) also found in an analysis of 57 countries that a 1 percent increase in tourism development could lead to an increase of 0.115 percent in economic growth. Seeing that previous tests have confirmed the existence and positive impact of tourism on economic growth, it is still necessary to determine causality between variables. Hence, the following step involves the use of the Granger Causality test. The aim of the Granger causality test is to establish whether it is the dependent variable driving the independent variable or the independent variable driving the dependent variable (Rivera, 2017). Table 4 reports on the results from the Granger causality tests.

Table 4: Granger Causality Tests

Null Hypothesis	Probability
LOG_HOTRES does not Granger Cause LOG_GDP	0.0250*
LOG_GDP does not Granger Cause LOG_HOTRES	0.4765
LOG_TTT does not Granger Cause LOG_GDP	0.5978
LOG_GDP does not Granger Cause LOG_TTT	0.0475*
LOG_TTS does not Granger Cause LOG_GDP	0.0386*
LOG_GDP does not Granger Cause LOG_TTS	0.1242

Notes: * rejection of the null hypothesis at 5% significance level
** rejection of the null hypothesis at a 10% significance level

It is evident from the results in Table 4 that causality proceeds from tourism to economic growth in the short-run. This phenomenon is supported by similar studies such as that of Balaguer and Cantavella-Jorda (2002), Dubarry (2004), Holzner (2011) and Narayan, Sharma and Bannigidadmath (2013). They found a causality running from tourism development to economic growth in their respective studies of Spain and Mauritius. In addition, similar results were found in a 134 country analysis and Pacific Island countries. Furthermore, there is causality from GDP to the total number of tourism trips, which suggest that as economic growth increases and the local government is able to invest more in the local infrastructure, tourism in the area is likely to increase as a result. Adding to the various aforementioned statistical procedures, diagnostic statistics were

also used. When referring to econometric analyses it is necessary to determine whether or not the residuals were distributed normally. In order to achieve this, the histogram of the residuals device was used. With regard to autocorrelation, both tests had AC values above 0.5, which suggested that there was no autocorrelation between the variables. The results further suggested that there were no conditional heteroscedasticity and serial correlation. Both the histogram of residuals and the Jarque-Bera statistic show that the data was normally distributed and the results gained are valid.

5. Conclusion and Recommendations

The main aim of this study was to assess the dynamic economic impact of tourism in the Vaal-Triangle region of South Africa. Research on the impact of tourism on economies has been relatively new when compared to other fields and the impact the industry has on economic growth in local regions has received restricted attention. The findings that arose from the study suggest that tourism does indeed have a positive impact on economic growth in the Vaal-Triangle region. This study provided significant results, as it adds in reducing the uncertainty surrounding tourism and its impact on local economies. It was found that the tourism industry could contribute between 1,37 to 2,62 percent to economic growth. This indicates that tourism does have the potential in decreasing unemployment and furthermore contribute to alleviating poverty and improve the standards of living for people in local regions. Local government support is essential together with establishing close net relations between the community and the private and public sectors. Establishing a governing institution could aid in developing new projects, sharing of new solutions and information, promoting sustainability and lead to improved coordination among industry leaders. Corporate social responsibility together with sustainability could form part of the newly formed legislation, whereby especially tourism operators should be required to adhere to certain predetermines for operating within the region. Furthermore, with synergy between the public and private sectors, the natural environment and its resources would be able to more effectively protected, as well as improve the region's marketing, branding and image building.

It is worth mentioning that no study is without its limitations. Firstly, the findings of this study are based on the results of testing two municipal areas and results may differ across other local regions. These aforementioned shortcomings do however pave the way for possible areas for future research as instead of only focussing on the Vaal-Triangle region, future research could include more local regions across South Africa.In conclusion, studies such as this could aid in indicating that the tourism industry does not only have the potential to promote economic growth, but create representations and meaningful attributes for a region. Especially for a developing nation such as South Africa with its rich biodiversity, historical and cultural assets, tourism could be the key factor to enrich the lives of many South Africans, irrespective of race, gender, culture, religion and age.

References

Antonakakis, N., Dragouni, M. & Filis, G. (2015). How strong is the linkage between tourism and economic growth in Europe? *Economic Modelling*, 44, 142–155.

Ashley, C., De Brine, P. & Wilde, H. (2007). The role of the tourism sector in expanding economic opportunity. Corporate Social Responsibility Initiative Report. Cambridge, MA: Harvard University.

Balaguer, J. & Cantavella-Jorda, M. (2002). Tourism as a long-run economic growth factor: The Spanish case. *Applied Economics*, 34(7), 877-884.

Balcilar, M., van Eyden, R. & Inglesi-Lotz, R. (2014). Time-varying linkages between tourism receipts and economic growth in South Africa. *Applied Economics*, 46(36), 4381-4398.

BMI (Business Monitor International). (2016). South Africa Tourism Report Q3 2016. London: BMI.

Butler, G. & Rogerson, C. M. (2016). Inclusive local tourism development in South Africa: Evidence from Dullstroom. *Local Economy*, 31(1-2), 264-281.

Creaco, S. & Querini, G. (2003). The role of tourism in sustainable economic development. *European Regional Science Association*, 1(1), 1-13.

Croes, R. & Vanegas, M. (2008). Co-integration and causality between tourism and poverty reduction. *Journal of Travel Research,* 47(1), 94-103.

Dubarry, R. (2004). Tourism and economic growth: The case of Mauritius. *Tourism Economics*, 10(4), 389-401.

Eugenio-Martin, J. L., Morales, N. M. & Scarpa, R. (2004). Tourism and economic growth in Latin American countries: A panel data approach. FEEM Working paper, 26.

Fourie, F. C. N. & Burger, P. (2011). How to think and reason in Macroeconomics. 3rd ed. Claremont: Juta & Co Ltd.

George, X. (2015). Promoting integrated tourism at local government and its implications. Paper presented at Local Government Tourism Conference, Kempton Park, 30-31.

Giampiccoli, A. & Saayman, M. (2016). Community-based tourism: From a local to a global push. *Acta Commercii*, 16(1), 1-10.

Global Insight. (2017). Data analysis. https://g-insight.org/what/#data-analysis Date of access: 25 May 2017.

Gujarati, D. N. & Porter, D. C. (2010). Essentials of econometrics. 4th ed. New York: McGraw-Hill Education.

Habanabakize, T. (2016). A cross-sector analysis of the interaction between aggregate expenditure and job creation in South Africa. Vanderbijlpark: NWU. (Thesis – M. Com).

Hanekom, D. (2015). Local government tourism conference, Kempton Park, 30-31 March.

Harrill, R. (2004). Residents' attitudes toward tourism development: A literature review with implications for tourism planning. *Journal of Planning Literature*, 18(3), 251-266.

Holzner, M. (2011). Tourism and economic development: The beach disease? *Tourism Management*, 32(4), 922-933.

JLL (Jones Lang LaSalle). (2012). Sub-Saharan Africa: A region with opportunities amid transparency challenges. London: JLL.

Lanza, A. & Pigliaru, F. (2000). Why are tourism countries small and fast growing? (*In* Fossati, A. & Panella, G., *eds*. Tourism and sustainable economic development. Dordrecht: Kluwer, 57-69).

Local Government Handbook. (2016). Sedibeng district municipality. http://localgovernment.co.za /districts/view/14/Sedibeng-District-Municipality Date of access: 29 May, 2017.

McLachlan, S. & Binns, T. (2014). Tourism, development and corporate social responsibility in Livingstone, Zambia. *Local Economy*, 29(1-2), 98-112.

Meyer, D. F. & Meyer, N. (2015). The role and impact of tourism on local economic development: A comparative study. *African Journal for Physical, Health Education, Recreation and Dance*, 21(1-1), 197-214.

Meyer, D. F. (2015). Tourism the solution to the accelerated development of the Vaal Triangle region. http://www.news.nwu.ac.za/tourism-solution-accelerated-development-vaal-triangle-region-dr-danie-meyer. Date of access: 4 April, 2017.

Narayan, P. K., Sharma, S. S. & Bannigidadmath, D. (2013). Does tourism predict macroeconomic performance in Pacific Island countries? *Economic Modelling*, 33, 780-786.

Ogbokor, C. A. (2015). Foreign trade and economic growth in Namibia: A time series analysis. Vanderbijlpark, NWU. (Thesis – PhD).

Pedrana, M. (2013). Local economic development policies and tourism: An approach to sustainability and culture. *Regional Science Inquiry Journal*, 5(1), 91-99.

Pedroni, P. (2004). Panel cointegration: asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis. *Economic Theory*, 20, 597-625.

Phiri, A. (2016). Tourism and Economic Growth in South Africa: Evidence from linear and nonlinear cointegration frameworks. *Managing Global Transitions*, 14(1), 31-53.

Po, W. C. & Huang, B. W. (2008). Tourism development and economic growth – a nonlinear approach. *Physica A*, 387(2008), 5535–5542.

Richardson, R. B. (2010). The contribution of tourism to economic growth and food security. Michigan, East Lansing: Michigan State University.

Rivera, M. A. (2017). The synergies between human development, economic growth, and tourism within a developing country: An empirical model for Ecuador. *Journal of Destination Marketing & Management*, 6(3), 221-232.

SAinfo (South Africa info). (2015). Revisions to South Africa's amended visa regulations. http://www.southafrica.info/travel/south-africa-visa-amendments-261015.htm#.WA039fVBusw Date of access: 16 Oct. 2016.

Samini, A. J., Sadeghi, S. & Sadeghi, S. (2011). Tourism and economic growth in developing countries: P-VAR approach. *Middle East Journal of Scientific Research*, 10(1), 28-32.

Seghir, G. M., Mostéfa, B., Abbes, S. M. & Zakarya, G. Y. (2015). Tourism spending- economic growth causality in 49 countries: A dynamic panel data approach. *Procedia Economics and Finance*, 23, 1613-1623.

Todaro, M. P. & Smith, S. C. (2015). Economic development. 12th ed. Edinburgh Gate: Pearson Education Ltd.

Trousdale, W. 2005. Promoting local economic development through strategic planning. *The Local Economic Development Series*, 1(1), 1-24.

UNWTO (The United Nations World Tourism Organization). (2016). Why tourism? http://www2.unwto.org/content/why-tourism Date of access: 2 Apr. 2016.

Van den Berg, H. (2012). Economic growth and development. 2nd ed. Nebraska: World Scientific Publishing Co. Pty. Ltd.

WTTC (World Travel and Tourism Council). (2017a). Travel & tourism economic impact 2017: South Africa. London: WTTC.

WTTC (World Travel and Tourism Council). (2017b). Understanding the critical issues for the future of travel and tourism, March 2017. London: WTTC.

Zuo, B. & Huang, S. (2017). Revisiting the tourism-led economic growth hypothesis: The case of China. *Journal of Travel Research*, 1-13.

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The Role of International Academic Professionals in the Development of Entrepreneurial Universities in South Africa: Government Funded Universities Perspective

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Abstract: There is a wide belief and acceptance from leading government and business experts that small enterprises and entrepreneurship are the key components to unemployment and poverty alleviation in any country. Unfortunately, high unemployment levels, low entrepreneurial activity and high small business failure rate have become the main characteristics of the South African economy. Post-school education is partially blamed for the dropping levels of entrepreneurial activities in the country. South Africa's tertiary education system continues to focus on producing job-seekers instead of job creators. This problem has forced South African Universities to explore more on their potential of becoming more entrepreneurial, but lack of academics in the field of entrepreneurship has been found to be a hindrance to success in this agenda. To avert this obstacle, it is reiterated that internationalisation is key to any university entrepreneurship strategy, and therefore universities are encouraged to internationalise through attracting international entrepreneurial staff. The purpose of this literature review paper is twofold. The first part explores the role played by international academic professionals in the establishment of entrepreneurial universities in South Africa, while the second aims at evaluating the state of entrepreneurship development in higher education and the potential of South African universities becoming more entrepreneurial. The study employs both quantitative and qualitative research techniques (mixed method). The study reveals that South African universities should internationalise if they are to succeed in the entrepreneurial strategy. In addition, it is found that foreign academics have the required skills and bring in the diverse expertise needed for the establishment of entrepreneurial universities. Moreover, the presence of international academics has enhanced entrepreneurship mindset of local staff and students. It is recommended that universities should establish entrepreneurial institutes which are affiliated to them in order to drive this initiative and that the establishment of entrepreneurial universities is the way to go in South Africa if the country is to beat poverty and unemployment.

Keywords: *Entrepreneurial University, Entrepreneurship, International academic professionals, Government funded universities*

1. Introduction

There are a wide belief and acceptance from leading government and business experts that the small enterprises and entrepreneurship is the key to unemployment and poverty reduction (Radipere, 2012). Unfortunately, high unemployment levels, low entrepreneurial activity and high small business failure rate have become the main characteristics of the South African economy (Amadi-Echendu, Phillips, Chodokufa and Visser 2016). Beijnath (2015) partially blames post-school education for the dropping levels of entrepreneurial activities in the country. Beijnath (2015), states that South Africa's tertiary education system continues to focus on producing job-seekers instead of job creators. This problem has forced South African Universities to explore more on their potential of becoming more entrepreneurial for example the University of South Africa is busy trying that (Amadi-Echendu et al., 2016). In as much as universities are willing to succeed in becoming entrepreneurial, they are faced with a lack of academics in the field of entrepreneurship, thereby hindering the entrepreneurial drive in the country (Motsoeneng 2015). There are low numbers of international academics in South African universities when compared to their counterparts elsewhere like the University of Manchester where international academic staff make up 22% (The University of Manchester 2018). According to the University of Oxford (one of the successful entrepreneurial university) staffing annual report (2017), 40.2% of their academic staff is made up of non-British academics or international academics (foreign academics) and Coventry University (2018) asserts the same notion of the need to internationalise in order to achieve the best results for the students and university as a whole. To avert this hindrance, Ramjugernath (2015) reiterates that internationalisation is the key to any university entrepreneurship strategy and therefore universities are encouraged to internationalise through attracting international and entrepreneurial staff. Eke, Okoye and Evbuomwan (2018), note that quality education is the

main remedy to combating dire poverty in developing nations as it is the only way of attaining quality human capital.

They added that developed economies such as the United States of America; Britain, Japan etc. succeeded through the employment quality human capital at both micro and macro levels in their economies. Therefore, the significance of this study is to establish the role played by foreign academic professionals in the development of Entrepreneurial Universities in South Africa and develop an entrepreneurial university establishment model that can be incorporated into South African university education. The model will assist and enhance the training of job creators (entrepreneurship education) instead of job seekers. In addition, the importance of this research is to find the best ways of promoting entrepreneurial universities, one of which being the engagement of foreign academic professional in the South African universities. The study intends to establish the best method that can be used to transfer entrepreneurial knowledge more effectively for the benefit of the broader society. In addition, the literature for this study reviewed so far highlights the need for South African universities to lead entrepreneurship education through the establishment of entrepreneurial universities.

Entrepreneurial universities can only be established and sustained if there are expert academics in the field of entrepreneurship. Since South Africa has a serious shortage of such academics, as reiterated by Motsoeneng (2015:1), it is hoped that the results of this study will contribute towards enlightening government and interested stakeholders about the role of foreign academics in the establishment and sustainability of entrepreneurial universities thereby leading them to revisit their policies on reception and treatment and employment of foreign professionals. It is to determine the extent of the role played by foreign academic professionals in the establishment of entrepreneurial universities in South Africa. This study will provide an understanding of how South African universities should improve their entrepreneurial contribution to the broader society. The study will be used as an important tool to inform policymakers with regard to the role of foreign academics incapacitating South African universities entrepreneurial abilities.

Problem Statement: South Africa is seated at the lowest level of entrepreneurship education among all African countries with only 40% of the population having a mindset that building a business is a prudent idea (Ramjugernath, 2015). The issue of lower rate in entrepreneurial education is further confirmed by an economist Duncan (2012) as quoted by (Amadi-Echendu, Phillips, Chodokufa and Visser, 2016:1) where they reiterated that Total Early Stage Entrepreneurial Activity (TEA) have notably decreased by 34% '' (from 10.6% in 2013 to 7% in 2014)''. This problem is mainly driven by the belief that entrepreneurship is not a 'decent' trade despite vast research in Africa which show that people who build successful businesses and create employment are highly regarded in society (Blecher, 2015). With the above impression in mind, it is argued that since universities are the force of social transformation should spearhead this notion of entrepreneurial education (Radipere 2012). Despite massive unemployment rate in South Africa currently sitting at 26.6% (Stats SA, 2016), South Africa's post-school education system remains largely preoccupied with producing job seeker graduates (Baijnath, 2015). Baijnath (2015) added that levels of entrepreneurial activity are dropping and the education sector is partly to blame for this. Motsoeneng (2015) mentioned that failure by universities to empower graduates with entrepreneurial education is exacerbated by the fact that lecturers themselves have never been personally exposed to entrepreneurship or established and operated their own small businesses. Therefore, with such a situation where university academics have no knowledge of entrepreneurial education means that they produce graduates with no entrepreneurial knowledge leaving the country with dire need of entrepreneurship educators.

Motsoeneng (2015) emphasised the need to establish entrepreneurship teams within higher education and training facilities in order to promote and succeed in entrepreneurship education. Having highlighted the challenges faced by South Africa above, South African universities are experiencing academic entrepreneurship shortages. This problem has led to little to the non-existence of entrepreneurial universities. Therefore, to address this challenge, South African universities are forced to focus on recruiting foreign academic professionals to try and fasten the promotion of academic entrepreneurship. This premise is highlighted by many authors such as (Jaffe, Lerner, Stern and Thursby 2007; Okoyll and Liefner 2008) (Grundling and Steynberg, 2008). In addition, to cushion the problem of entrepreneurial academic shortages, universities are forced to internationalise and engage international academics in order to push forward the

agenda of entrepreneurial education successfully. Since foreign academic professionals are part and parcel of the entrepreneurial education, their role in the establishment of entrepreneurial universities needs to be established. The limited availability of data on this aspect necessitates a research study to provide insight and improved approaches to enhancing entrepreneurial universities in South Africa.

Aims and Objectives: The overall aim of the study is to examine the role and impact of foreign academic professionals in the establishment of entrepreneurial universities in South Africa. This issue has prompted the embankment on this research to determine the extent of the role of foreign academic professionals in the development of entrepreneurial universities.

Objectives: To examine the role and impact of foreign academic professionals in the establishment of entrepreneurial universities; To identify and explain various factors affecting the establishment of entrepreneurial universities; To propose an Entrepreneurial Education Model that can be used by South African universities.

2. Literature Review

Entrepreneurship and Entrepreneurial University Definition: Rorwana and Tengeh (2015), define entrepreneurship as ''the ability and inclination to organize, develop and manage a business in an attempt to make a profit while considering the associated risks. Meyer, 2003 cited in Rorwana and Tengeh (2015) brings the academic angle by defining an academic entrepreneur as an individual who turns knowledge created by institutions of higher learning into ''innovation, forms new firms, and creates marketable products and services.'' Many authors have come up with more than one hundred definitions of the Entrepreneurship concept currently in use (Organisation for Economic Co-operation and Development (OECD) Guiding Framework for Entrepreneurial Universities 2012). An entrepreneurial university is an institution that creates an environment, within which the development of entrepreneurial mindsets and behaviours are embedded, encouraged, supported, incentivised and rewarded (Hannon 2013). Gibb (2014) defines the entrepreneurial university as ''those universities providing opportunities, practices, cultures and environments conducive to actively encouraging and embracing student and graduate entrepreneurship. They are places where entrepreneurship is part of the fabric of the institution''.

On the same vein, Guerrero and Urbano (2012) refer to an entrepreneurial university as a place where knowledge-based entrepreneurship has emerged as a driving force for economic growth, employment creation and competitiveness in global markets. Considering high unemployment rate in South Africa currently at 27.2% (Stats SA, 2018), it cannot be over-emphasised that the general perception in South Africa is that entrepreneurship and small business development are the gateways to the alleviation of high unemployment in the country (Amadi-Echendu et al., 2016). With this notion in mind, universities as representatives of social change are expected to lead the entrepreneurial education initiative (Radipere 2012). South African higher education is going through extensive restructuring in order to meet national and global knowledge as well as human capital development (Radipere, 2012). Entrepreneurship education has been inarguably accepted as the main driver in the contribution to economic development and as such, universities as agents of social and economic innovation are expected to do a lot in the success of this initiative. In other words, universities are expected to transform from traditional universities to entrepreneurial universities. Rorwana and Tengeh (2015) also argue that universities are seen as the main contributors to knowledge, innovation and technological advancements. This argument reiterates the need to establish and sustain entrepreneurial universities in South Africa.

International Entrepreneurial University Trends: Entrepreneurship is a phenomenon that has spread and is practised all over the world. In as much as entrepreneurship is needed more in the developing economies, and are still struggling to effect it to young people, developed countries have moved a great deal in effecting this phenomenon. European Commission has even gone to the extent of suggesting that entrepreneurship education is included in the curriculum from primary school (Remeikiene, Startiene and Dumciuviene 2013). Entrepreneurship education has proved to be successful in the developed world to the extent that United Kingdom (UK) has established an Entrepreneurial University Leaders Programme (EULP) which explores the

changing roles of universities and the benefits of entrepreneurship and innovation to society (Coyle, Gibb and Haskins 2013). The entrepreneurial universities involved in this programme are shown in table 1 below:

Table 1: Entrepreneurial Universities

	UNIVERSITY	INITIATIVE
1	University of Oxford	Vision and values in student enterprise Innovation with impact Interdisciplinary research and teaching on global 21st-century issues
2	Anglia Ruskin University	Encouraging staff and students to be part of diverse enterprise activities in the university in pursuit of innovation Introduction of the cross-university group to encourage diverse staff to work together applying entrepreneurial mindset that is already in existence so as to grow and develop new ventures.
3	Aberystwyth University	Internationalisation and collaboration for the diverse benefit.
4	University of Wales Newport	Support from the top for an entrepreneurial university Support for a graduate start-up business and curriculum development
5	Teesside University	''Developing enterprising staff with the capability to deliver innovation in teaching, research and business collaboration'' Develop a cross-disciplinary team project with business- collaboration.
6	University of Brighton	Knowledge exchange is determined by local need and driven by ''co-creating innovative responses with partners.''
7	University of Dundee	Cross-disciplinary Partnership
8	The University of the West of England	Strong links with business and industry
9	The University of Manchester	Partnership with national departments Harnessing resources from different stakeholders.
10	Coventry University	Development of student enterprise and entrepreneurship Support bottom-up initiatives for changes in curriculum design.
11	University of Chester	Stimulating a broad approach to stakeholder engagement in enterprise Embed enterprise in the university's teaching and learning strategy Work with different teams and stakeholders within the university interested in creativity and enterprise so that every student got a chance to exit university with a module which specifically focuses on the entrepreneurial activity.
12	University of Copenhagen	Collaborative entrepreneurship between three universities Produce innovation with societal impact Establishment of entrepreneurial programs.

Source: Adapted from (Coyle et al., 2013).

The Need for Entrepreneurial Universities: Jameson and O'Donnell (2015) state that the establishment of an entrepreneurial university represents a chance for transformation and innovation in society, with the ability to respond to the needs of stakeholders and society as a whole. They add that an entrepreneurial

university has the ability to empower staff, students, stakeholders and the whole community enabling them to effect change in their environment through university's engagement in different activities. According to Baijnath (2015), South African universities are focused on producing graduates who will seek employment instead of employment creators. The goal of the entrepreneurial university, therefore, is not only to generate technology and knowledge about businesses but lead in enforcing 'entrepreneurial thinking' as well as actions among students. Baijnath (2015) argued that entrepreneurship and innovation are key drivers in promoting growth and economic inclusion especially in developing economies like South Africa.

Historical Background of South African Education: High unemployment levels in South African are partly due to constraints inherited from the apartheid era, such as the inequities in access to quality training for certain population groups (Foko 2015). The legacy has resulted in tremendous inequalities in all aspects of education which include resources, infrastructure, teacher quality and post-school endeavours (Chisholm 2012). One of the main legacies of apartheid was poor education, unequal-schooled and poorly trained teachers. This has led to shortages of teachers in crucial subjects and teachers who are not trained to teach these subjects are teaching them thereby making it very difficult to reverse the apartheid legacies. After 1994, the government has effected many changes in education to try and accommodate everyone and reverse the legacies of apartheid but the apartheid repercussions linger on (Chisholm 2012).

Entrepreneurial Universities in South Africa: Radipere (2012) notes that entrepreneurship and small business management education has grown over the years in South African universities but the content does not seem to achieve the desired goal of producing employers, instead most of the entrepreneurship students are seeking jobs. Amadi-Echendu et al. (2016) highlighted that instead of an increase in entrepreneurship activities in the country there had been decreases. They carried out a study in which they explored the potential of the University of South Africa in becoming an entrepreneurial university. Considering the information above, it can be concluded that South Africa is still in its infancy in establishing and sustaining entrepreneurial universities, yet the country is in dire need of entrepreneurial universities to address economic challenges facing the country.

The Role of Foreign Academics in the Establishment of Entrepreneurial Universities: Looking at the educational history of southern Africa, the quality of most graduates still has a negative effect on current students. The negative effects of apartheid are felt across all sectors of the economy (Chisholm 2012), yet the country is desperately in need of entrepreneurial experts to drive and grow the economy, expected to be the driving force behind the production of entrepreneurs (Jameson and O'Donnell 2015). Garbuio; Dong; Lin; Tschang; and Lovallo (2018) reiterate and recommend that academics should 'creatively cross-fertilize ideas, practices, and knowledge', as well as seek assistance and work with experts in entrepreneurship around the world for successful achievement of entrepreneurship training among youths. Due to the legacies of apartheid in South African education, higher education has serious shortages of entrepreneurial experts who can drive entrepreneurial forward (Motsoeneng 2015). Therefore, to cushion this shortage, South Africa is forced to look beyond its borders for experts. Ramjugernath (2015) reiterated that internationalisation is key to entrepreneurship plan whereby universities have to attract foreign and entrepreneurial staff to demonstrate internationalisation teaching. On the vein, Ramjugernath (2015) added that South Africa cannot push the agenda of innovation and entrepreneurship alone without international experts. Ramjugernath (2015) emphasised the need for South Africa to use partnership and resources globally in order to drive the entrepreneurship agenda forward. The aim of the empirical study – to research the role played by foreign academic professionals in the establishment of entrepreneurial university in South Africa was encouraged by the fact that the analysed literature lacks research on comparative analysis of the role and extent of the role played by international entrepreneurial academic experts in the establishment and sustainability of entrepreneurial universities in South Africa.

3. Research Methodology

Considering the huge benefits posed by mixed methods outlined as outlined by Anguera, Camerino, Castañer, Sánchez-Algarra and Onwuegbuzie AJ (2017), this approach was employed in this study. The literature review was used as the main source of information from which data collection instrument was formulated. The questionnaire made up of 5 –point Likert scale of closed-ended and open-ended questions was formed

and was used for the collection of empirical data for this study. Summary of key questions are highlighted in Table 2 below:

Table 2: Key Question Summary

Research Area	Question
Entrepreneurial education	Every university must internationalise in order to succeed in entrepreneurial education.
Foreign academic professionals	Foreign academic professionals have the required skills for the establishment of entrepreneurial universities.
Entrepreneurial institutes	Establish an entrepreneurial institute affiliated to the established university.
Entrepreneurship expertise	Foreign academics bring diverse expertise in entrepreneurship studies.
Entrepreneurship mindset	The presence of foreign academics has enhanced entrepreneurship mindset among staff and students.
Establishment of entrepreneurial universities	Establishment of entrepreneurial universities is the way to go in South Africa.

Target Population: The study was based on universities in South Africa operating under the Department of Higher education and training (government funded). The target population for this study was therefore based on 26 universities in South Africa (Business Tech 2015). Data for the study was collected by way of self-administered questionnaires to heads of departments of the universities.

4. Preliminary Findings

This section is based on the literature review as well as preliminary findings and they indicate the following:

Findings from Secondary Data

Table 3: Secondary Data Findings

Research Area	Literature review	Noticeable current Gaps
Educational expertise and knowledge of entrepreneurial university	In as much as the universities are willing to succeed in becoming entrepreneurial, they are faced with lack of academics in the field of entrepreneurship. Failure by universities to empower graduates with entrepreneurial education is exacerbated by the fact that lecturers themselves have never been personally exposed to entrepreneurship or established and operated their own small businesses. In addition, the government through the National Planning commission has instigated ''policy and structural developments to promote entrepreneurship, build capacity and foster entrepreneurial thinking starting at the educational level.'' South Africa is seated at the lowest level of entrepreneurship education among all African countries with only 40% of the population having a mindset that building a business is a prudent idea. The issue of lower rate in entrepreneurial education is further confirmed by an economist Duncan (2012) where it is reiterated that Total Early Stage Entrepreneurial Activity (TEA) have notably decreased by 34% '' (from 10.6% in 2013 to 7% in 2014)''. (Motsoeng, 2015:1, Baijnath, 2015, Ramjugernath, 2015).	According to the findings from literature there are not much-needed skills among academics with regard to the establishment of entrepreneurial universities in South Africa. Lack of knowledge pertaining to entrepreneurial university functions.

Challenges on the establishment of entrepreneurial Universities	Many authors indicated that lack of entrepreneurial university knowledge is the major obstacle to the establishment of Entrepreneurial universities in South Africa. They added that there is a lack of entrepreneurial culture among South Africans in general. It was also revealed that South African higher education institutions are grappling to comply with the focal need of the South African economy – the enhancement of academic entrepreneurship (Nicolaides, 2011, Atkinson, 2014, Grundling and Steynberg, 2014)	Based on literature review findings, there is generally low level of entrepreneurial education and training in the country of South Africa. No effort by South African universities to develop cross-functional thinkers who are innovative and possess entrepreneurial skills. Unavailability of entrepreneurship drive by local universities through programme designs specialised post-graduate programmes in entrepreneurship. There is a need for the South African education system to transform so as to make entrepreneurship one of the most crucial subjects.
Perception of the role played by foreign academics	A number of researchers found out that the legacies of apartheid in the south African education have led to massive shortages of entrepreneurial experts who can drive entrepreneurial activities forward. Therefore, to alleviate this shortage, South Africa is forced to look beyond its borders for experts. They reiterated that internationalisation is key to entrepreneurship plan whereby universities have to attract foreign and entrepreneurial staff to demonstrate internationalisation teaching. They added that South Africa cannot push the agenda of innovation and entrepreneurship alone without international experts. They also emphasised the need for South Africa to use partnership and resources globally in order to drive the entrepreneurship agenda forward. Moreover, it was found that there is a generally negative perception towards foreign nationals in South Africa despite them possessing great entrepreneurial skills. (Motsoeneng 2015, Ramjugernath 2015, Jameson and O'Donnell 2015, Vivence and Kobus, 2010).	There is evidence that non-South African citizens possess much needed entrepreneurial skills for South African economy upliftment however, the literature reviewed indicated that there is a generally negative perception towards them and their contribution from all sectors including education. Therefore, in many cases, whatever, the contribution made by them is likely not to be taken seriously or rather been not implement at all.
Implementation of the entrepreneurship drive	A considerable amount of research previously done in other parts of the world including South Africa, revealed that higher education studies should develop entrepreneurial preparedness, thus programs designed for any faculty should be supplemented with the subjects enabling to form entrepreneurial knowledge and skills. South Africa has been found to have the lowest level of entrepreneurial education as highlighted by the Total early-stage Entrepreneurial Activity (TIA) which has decreased from 10.6% in 2013 t0 7% in 2014. Due to the successful results of entrepreneurship education in the developed	Higher education needs to redefine its role in the south African economy. Their main duty should be to instil a greater entrepreneurial mentality among students as well as orientating Universities to become entrepreneurial universities. Thus will provide the required entrepreneurial knowledge and skills.

	world United Kingdom (UK) has established an Entrepreneurial University Leaders Programme (EULP) which explores the changing roles of universities and the benefits of entrepreneurship and innovation to society. (Remeikiene, Startiene and Dumciuviene 2013, Coyle, Gibb and Haskins 2013, Amadi-Echendu et.al 2016 and Beijnath 2015).	
The concept of the entrepreneurial university	There is an agreement among researchers that entrepreneurial universities have got a high potential of cushioning economies of unemployment and poverty in today's highly turbulent and unpredictable markets. Hence, the entrepreneurial university has the ability to empower staff, students, stakeholders and a community as a whole through university's engagement in different activities (Sperrer, Miiller and Soos 2016, Jameson and O'Donnell 2015).	Based on these readings entrepreneurial universities can be important tools that can be used to tackle turbulent environments and complex challenges confronting societies and communities around the world. As a result, South Africa should also be beginning to transform its universities to be entrepreneurial universities.

Entrepreneurship Education: the Previous study by Denanyoh, Adjei and Nyemekye (2015), indicate a link between education and entrepreneurship since the education offered by a university mostly influences the career selection of students, universities can be seen as potential sources of future entrepreneurs. Today, most universities have spent significant amounts of money to design a viable entrepreneurship education for their students. In addition, the country educational system currently does not support entrepreneurial development as it focuses on training students to be employed in government agencies or multinational organizations. There are ten (10) Polytechnics in Ghana and only one of them (Kumasi Polytechnic) have established an Entrepreneurship Training Institute to train students in that area of study. Entrepreneurship academies are in non-existence in Ghana and the polytechnics which are the most practically oriented higher institution of learning in the country that can effectively combine technical and business management skills and training and turnout entrepreneurs. It is clear that the existing level of entrepreneurship education in Ghana is quite insufficient to foster entrepreneurship and there is a need to focus on entrepreneurship education. Obviously, understanding perceptions of students at higher education level is a necessary step in this process. A study by Turker and Selcuk (2009) showed that education plays a key role in the development of students' entrepreneurial intentions in Turkey. In an earlier study, Kolvereid and Moen (1997) also indicated a link between education in entrepreneurship and entrepreneurial behaviour. It is clear that an effective education on entrepreneurship can be a factor to push people towards an entrepreneurial career (Henderson and Robertson, 2000).

Perceptions on the Role Played by Foreign Academic Professionals in the Establishment of Entrepreneurial Universities: Guerrero and Urbano (2012) found that an academic entrepreneur is considered a role model who can impact positively in the entrepreneurial university community. They went on to point out that the main factors behind the entrepreneurial universities in other countries like Spain are the entrepreneurial attitudes of academics, researchers, staff and students. Therefore, a sufficient fusion of the university leadership and the positive attitudes towards entrepreneurship of the university community make significant changes possible within the university.

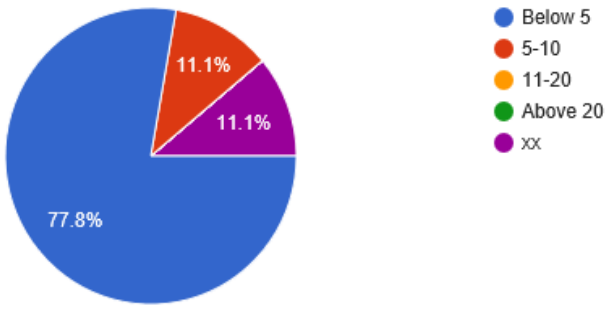
Preliminary Findings: The previous sections presented the literature review used to formulate variables tested for this study. Therefore, the findings from the pilot study conducted are presented in the following section. These findings were derived from the targeted respondents to test the proposed methodology employed in this study. These results are purely based on the pilot study findings and are presented as such.

Table 4: Preliminary Findings

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Every university must internationalise in order to succeed in entrepreneurship education.	Internationalise = 1(10.%)	Internationalise = 0	Internationalise = 2(22.%)	Internationalise = 3(33.%)	Internationalise = 4(35%)
Foreign academics have the required skills for the establishment of entrepreneurial universities.	Skills = 0	Skill = 0	Skills = 0	Skills = 1 (11%)	Skills = 9 (89%)
Establish an entrepreneurial institute affiliated to the established university.	Institute =0	Institute = 1(11%)	Institute = 1(11%)	Institute =2(22%)	Institute = 6(56%)
Foreign academics bring diverse expertise in entrepreneurship studies.	Expertise = 0	Expertise = 1(11%)	Expertise = 1(11%)	Expertise = 78%	Expertise = 0
The presence of foreign academics has enhanced entrepreneurship mind set among staff and students.	Enhanced = 0	Enhanced = 1(11%)	Enhanced = 3(33%)	Enhanced = 1(11%)	Enhanced = 5(45%)
Establishment of entrepreneurial universities is the way to go in South Africa.	Way = 0	Way = 0	Way =0	Way =3(33%)	Way = 7(67%)

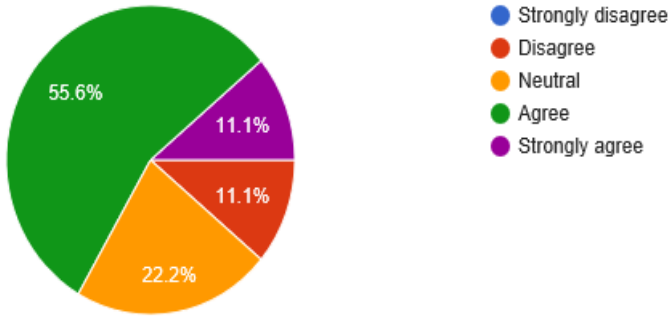
A Likert-type scale was used to address some of the variables in this study and six of these were addressed in table 4 above. Majority of the respondents are in agreement to all of the six statements which emphasise that: there is a need for all universities to internationalise; foreign academics have got the required skills; universities need to establish entrepreneurial institutes; foreign academics bring diverse expertise; the presence of foreign academics has enhanced entrepreneurship mindset and that the establishment of entrepreneurial universities is the way to go in South Africa if the country is to succeed in economic development and poverty alleviation through producing more job creators than job seekers. This notion is in agreement with (Nourizadeh, 2017)'s findings in which the study emphasises that academic entrepreneurial approach as the way to go in adapting universities to the needs and goals of nations as well as solving government, community and business problems.

Figure 1: How Many International Academics Are in Your Department/Division?



Many authors such as (Coyle et al., 2013, Ramjugernath 2015 and Motsoeng 2015) reiterated the need for universities to internationalise through the engagement of international academics if the goal of entrepreneurial university establishment is to be achieved. In figure 1 above, most of the respondents (77.8%) indicated that there are less than five (5) international academics in their departments, 11% of the respondents indicated that they had below ten (10) while 11% have no single international academic in their departments.

Figure 2: Lack of Entrepreneurial Drive



It has been found that there is a lack of entrepreneurial spirit and knowledge as well as lack of business managerial skills and inadequate education and training among some South African communities (Henning and Akoob, 2017). Sperrer, Müller, and Soos (2016) found that there is a lack of entrepreneurial drive among universities. Figure 2 share the same sentiments as it indicates that more than two thirds (66.7%) (55.6% +11.1%) of respondents agree that South African Universities widely lack the entrepreneurial drive.

Qualitative Preliminary Findings: This section presents the findings obtained from the qualitative data and are shown in the table below presents the responses.

Table 5: How is Entrepreneurship Education Accommodated in Your University?

Response 1: We have a department fully dedicated to entrepreneurial education. This department offers undergraduate up to PhD level
Response 2: It is part of the curriculum
Response 3: modules are taught
Response 4: It's not significantly highlighted
Response 5: Very poor
Response 6: not much
Response 7: As General Education Module and in the major subject BPRM
Response 8: I believe there is really a strong drive for entrepreneurship from this current VC's office

Expectations from International Academics
Response 1: I expect complex experience and knowledge
Response 2: To bring another perspective
Response 3: to change the employment status of youth
Response 4: to bring innovative ways in which the curriculum can be modified and incorporate entrepreneurship
Response 5: their skills contribution
Response 6: must participate fully
Response 7: Their diverse input in how entrepreneurship is successful in their country
Response 8: I expect African internationals to collaborate with local Africans to establish a hub where Africans can export African products that
Response 9: Are of great international standards at the same time raise our African generational wealth, by making sure we open doors for our youth.

Considering High Rate of Unemployment in the Country, Entrepreneurship is seen as an Effective Tool in Addressing Unemployment, How is Your University Working towards Embracing the Idea of Entrepreneurship Education?
Response 1: The University has a division with incubators for young entrepreneurs
Response 2: try to align industry demand with the curriculum
Response 3: the new curriculum is embracing entrepreneurship
Response 4: there has been the establishment of such offices to promote leaders and owners of business but it is still new.
Response 5: not started yet.
Response 6: not much is done
Response 7: It is a module that is compulsory for all students in the faculty and in some subjects it has to be embedded in the curriculum

What is the Problems Encountered in the Establishment of Entrepreneurial Universities in South Africa?
Response 1: Experienced staff
Response 2: Not sure
Response 3: I think universities management philosophy, standard curriculum, resources
Response 4: poor vision
Response 5: lack of drivers and expertise to establish centres to promote entrepreneurial universities
Response 6: scares resources
Response 7: staff members with a business mentality
Response 8: Lack of desire and effort from academics
Response 9: not enough of a relationship in terms of collaboration between people who work in the industry and what happens there and the academic curriculum.

Table 5 above generally highlights that entrepreneurship education is covered at a small scale taught once-off as a module and in only one department. In addition, the respondents expect the international academics to bring and share their expertise with local academics for the successful achievement of economic employment growth through the production of entrepreneurially vested graduates. The respondents also indicate that entrepreneurship is not fully embedded in all faculties of the university. All in all, they highlighted a vast number of problems hindering universities from becoming entrepreneurial.

Some of Which Include: lack of experienced staff, university vision, staff members' entrepreneurship mentality and lack of university collaboration with experts in the field.

Limitation: There is a need to acknowledge before conclusion and recommendations are postulated. The findings are only based on the literature and preliminary results for now as the empirical study is still under construction. On this account, the findings presented here cannot be generalised for the full sample of all South African universities perspective.

5. Conclusion and Recommendations

This study found that foreign academics have the required skills to drive the establishment of entrepreneurial universities in South Africa. In addition, the study highlighted the need for an establishment of an entrepreneurial institute affiliated to the traditional university. It also established that foreign academics have got diverse expertise needed for the development of entrepreneurial universities and have enhanced entrepreneurship mindset among students and staff members. Moreover, the study indicated that most respondents agree that universities should internationalise in order to succeed in entrepreneurial education. All in all, the study concluded that the establishment of entrepreneurial universities is the way to go in South Africa.

Recommendations: Since literature has indicated that there are not enough entrepreneurial skills, therefore, this study recommends that the hiring of foreign academics with the much needed entrepreneurial expertise should be taken into consideration by the South African authorities. Due to the lack of knowledge with regard to the entrepreneurial skills necessary to drive/ transform the universities into becoming entrepreneurial universities, South African government should rework education and development policy in order to allow the adoption of much required and highly specialised international people to come to South Africa and teach and transfer knowledge to the local universities and communities. According to the study, if a tertiary institution provides adequate knowledge and inspiration for entrepreneurship, the possibility of choosing an entrepreneurial career might increase among students after graduation. It is demonstrated that this result confirms the key role of education in the development of entrepreneurial intention. Therefore, it might be stated that entrepreneurship can be enhanced as a result of a learning process. Literature also provides validation that South African universities need to be transformed into entrepreneurial universities. All in all, internationalisation of universities and establishment of entrepreneurial universities is the way to go to South Africa if the country is to succeed in employment creation and poverty reduction.

Implications: The implications of this research consist of two main aspects namely: Implications of the establishment of entrepreneurial universities theory and Implications of entrepreneurial universities practice.

Implications of the Establishment of Entrepreneurial Universities Theory: The implications of the theory will provide a theoretical knowledge framework by highlighting the aspects to be understood and known by the authorities with regard to the establishment of entrepreneurial universities in South Africa. In addition, the theory will also contribute towards introducing and imparting entrepreneurial skills among students earlier in their education career.

Implications of Entrepreneurial Universities Practice: The practical implication of this study will help the policymakers and will be used as a practical guide tool in formulating the education policies which enhance the development of entrepreneurial universities in the country. Moreover, this study will assist higher education authorities in providing an enabling environment for universities to transform into entrepreneurial.

References

Amadi-Echendu, A. P., Phillips, M., Chodokufa, K. & Visser, T. (2016). Entrepreneurial Education in a Tertiary Context: A Perspective of the University of South Africa. *International Review of Research in Open and Distributed Learning*, 17, (4).

Anguera, M. T., Camerino, O., Castañer, M., Sánchez-Algarra, P. & Onwuegbuzie, A. J. (2017). The Specificity of Observational Studies in Physical Activity and Sports Sciences: Moving Forward in Mixed Methods Research and Proposals for Achieving Quantitative and Qualitative Symmetry. Front. Psychol.

Baijnath, N. (2015). The urgent need to enable and sustain entrepreneurship. University World News, 13.

Blecher, T. (2015). Calls for entrepreneurship education in universities. University World News, 27 March: 3.

Business Tech. (2015). Here are South Africa's 26 universities, Business tech.

Chisholm, L. (2012). Apartheid education legacies and new directions in post-apartheid South Africa. *Storia delle donne*, 8, 81-103.

Coventry University. (2018). Academic partner institutions.

Coyle, P., Gibb, A. & Haskins, G. (2013). The entrepreneurial university: From concept to action. The Entrepreneurial University Leaders Programme (EULP). *National Centre for Entrepreneurship in Education (NCEE),* 4, 1-59.

Denanyoh, R., Adjei, K. & Nyemekye, G. E. (2015). Factors That Impact on Entrepreneurial Intention of Tertiary Students in Ghana. *International Journal of Business and Social Research,* 05(03), 19-29.

Eke, P. O., Okoye, L. U., Evbuomwan, G. O. (2018). A Dynamic Analysis of the Nexus between Entrepreneurship, Human Capital Development and Financial Deepening: Evidence from Selected African Economies. *Journal of Applied Economic Sciences, Volume XIII*, 5(59).

Fernández-Nogueira, D., Arruti, A., Markuerkiaga, L., Sáenz, N. (2018). The entrepreneurial university: a selection of good practices. *Journal of Entrepreneurship Education,* 21, 1-17.

Foko, B. (2015). Closing South Africa's High-Skilled Worker Gap: Higher Education Challenges and Pathways. *African Economic Brief,* 6(7), 1-20.

Garbuio, M., Dong, A., Lin, N., Tschang, T. & Lovallo, D. (2018). Demystifying the genius of entrepreneurship: How design cognition can help create the next generation of entrepreneurs. (2018). Academy of Management Learning and Education, 17, (1), 41-61.

Gibb, A. (2014). Towards the entrepreneurial University. Entrepreneurship education as a lever for change, A National Council for Graduate Entrepreneurship (NCGE), 1-14.

Guerrero, M. & Urbano, D. (2012). The development of an entrepreneurial university. *The Journal of Technology Transfer,* Springer, 37, 43-74.

Grundling, J. & Steynberg, L. (2008). Academic Entrepreneurship: Challenges facing South Africa. The 16th Annual High Technology Small Firms Conference. University of Twente, Enschede, The Netherlands, 22-23 May 2008. Enschede, The Netherlands: University of Twente, 1-16.

Hannon, P. D. (2013). Why is the Entrepreneurial University Important? *Journal of Innovation Management*, 1(2), 10-17.

Henderson, R. & Robertson, M. (2000). Who wants to be an entrepreneur? Young adult attitudes towards entrepreneurship as a career.

Henning, S. & Akoob, K. (2017). Motivational factors affecting informal women entrepreneurs in North-West Province, *Southern African Journal of Entrepreneurship and Small Business Management,* 9(1), 91.

Fokon, S. L. (2011). Research methods: A modular approach. 2nd ed. Wadsworth: Cengage Learning.

Jaffe, A., Lerner, J., Stern, S. & Thursby, M. (2007). Academic Science and Entrepreneurship: Dual Engines of Growth. *Journal of Economic Behavior and Organization,* 63(4).

Jameson, J. & O'Donnell, P. (2015). The Entrepreneurial University: A Unifying Theme for TU4Dublin. Stream 1: Enterprise and Engagement*,* 69-81.

Kolvereid, L. & Moen, Ø. (1997). Entrepreneurship Among Business Graduates: Does a Major in Entrepreneurship Make a Difference? *Journal of European Industrial Training,* 21, 154-160.

Kroll, H. & Liefner, I. (2008). Spin-off enterprises as a means of technology commercialisation in a transforming economy—Evidence from three universities in China. *Technovation,* 28, 298-313.

Motsoeneng, M. (2015). Calls for entrepreneurship education in universities. University World News, 27.

Nourizadeh, M. (2017). Assessing organizational entrepreneurship in Alzahra University. *Quantitative Models and Techniques in Management,* 1(1), 1-9.

OECD. (2012). A Guiding Framework for Entrepreneurial Universities.

Radipere, S. (2012). South African university entrepreneurship education. *African Journal of Business Management,* 6(44), 11015-11022.

Ramjugemath, D. (2015). Six key elements of an entrepreneurial university. University World News, 7 November: 1.

Remeikiene, R., Startiene, G. & Dumciuviene, D. (2013). Explaining Entrepreneurial intention of university students: The role of entrepreneurial education. Management, Knowledge and Learning International Conference. Zadar, Croatia, 19-21 June.

Rorwana, A. & Tengeh, R. K. (2015). The role of academic entrepreneurs in the process of technology transfer and commercialization: the case of a University of Technology in South Africa. *Environmental Economics,* 6(4), 25-37.

Sperrer, M., Müller, C. & Soos, J. (2016). The Concept of the Entrepreneurial University Applied to Universities of Technology in Austria: Already Reality or a Vision of the Future? *Technology Innovation Management Review,* 6(10), 37-44.

Statistics South Africa. (2016). South Africa Unemployment Rate 2000-2017.

Statistics South Africa. (2018). SA unemployment rate rises to 27.2% in Q2.

The University of Manchester. (2018). University of Manchester Equity and Diversity Policy.

Turker, D. & Selcuk, S. S. (2009). Which factors affect entrepreneurial intention of University students? *Journal of European Industrial Training*, 33(2), 142-159.

University of Oxford. (2017). Annual Staffing Figures 2016/17 reporting year.

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Happiness Index for Human Resource Management Practitioners Associated with the Professional Body

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Abstract: The study explored the perceptions of human resource management (HRM) practitioners in South Africa, using the following happiness dimensions: positive emotions, job-related wellbeing, affective commitment, employee engagement and distributive justice. The research approach was quantitative, and the research design was descriptive and longitudinal (i.e. over a two-year period). The convenience sampling technique was used to select participants. In 2016, the sample size was 204, and in 2017, the sample size was 76. The data were collected at the conventions hosted by the Institute of People Management (IPM). The major findings were that the majority of the participants were females, were employed on a full-time basis, had degrees, earned R40 000 and above, and were not unionized. Participants rated the positive emotions negatively, suggesting that they were disaffected with their remuneration, and they rated the job-related wellbeing, affective commitment, employee engagement and distributive justice items positively. The implication of this study for policymakers is that they must review their remuneration policy and practices. The implication for managers is that they might struggle to keep HRM practitioners effective, motivated, and having cordial relationships.

Keywords: *Affective commitment, employee engagement, job-related wellbeing, distributive justice, positive emotions*

1. Introduction

Happiness is a positive emotion comprising positive emotions, job-related wellbeing, affective commitment, employee engagement and distributive justice as dimensions (Fisher, 2010). Scholars conducting research in the workplace found that happy employees are productive (Armenta, Fritz & Lyubomirsky, 2017; Bakhtiar, Bahrami, Keyvanara & Kalantari, 2009; De Neve, Diener, Tay & Xuereb, 2013; Lyubomirsky King & Diener, 2005; Wesarat, Yazam, & Halim, 2014; Zarei & Hughgooyan, 2011). The challenges for HRM practitioners are two-fold- they are both implementers and recipients of human resource practices (Pereira & Fontinha, 2016). As the first and largest HR professional body in Africa, the IPM is recognized by the South African Qualifications Authority (SAQA). The first branch of the IPM was established in August 1945, as an affiliate of the British IPM, and since then, the organization has produced numerous HR professionals, who have effectively managed the evolution of the HR profession in South Africa (A History of People Development, 2013). The IPM hosts an annual gathering of HR industry thought leaders, where practitioners can gain valuable insight into various topical issues presented by experts. At these gatherings, practitioners can keep up to date with the business trends and challenges facing South African organizations. Data about the happiness index dimensions from the HRM practitioners were collected in 2016 and 2017 at the IPM-hosted conventions at Monte Casino, Gauteng, South Africa. Thus far, there is no study that has developed an HRM practitioners' happiness index in South Africa that is affiliated to a professional body. This study addressed this gap by developing an HRM index, using validated and reliable scales (i.e. positive emotions, job-related wellbeing, affective commitment, employee engagement and distributive justice).

2. Theoretical Framework

Happiness has two components, affective and cognitive. The affective component deals with employees' emotions (Fors & Kulin, 2016; Ryan & Deci, 2001) and the cognitive component includes virtue, morality, being truthful to self, meaning, and growth (Ryff & Singer, 2008). Employers make efforts to keep employees happy, in order to enhance employment relationships (Rodriques & Sanz, 2013; Roehling, Cavanaugh, Moynihan & Boswell, 2000; Weserat, Yazam & Halim, 2014), and to retain competent and productive employees (De Neve et al., 2013). Pryce-Jones and Lindsay (2014) suggested that happy and effective employees have a positive mindset, perform optimally, and help employers to achieve production, sales and

profit targets. In this study, the dimensions of happiness index discussed are positive emotions, job-related wellbeing, affective commitment, employee engagement and distributive justice.

Positive Emotions: A positive emotion is an emotive state of joy, being inspired and grateful (Frederickson & Kurt, 2011; Kuppens, Realo & Diener, 2008; Shahrabani, Benzion, Rosenbiom & Shavit, 2012; Stahl, 2016; Zizek, Mulej & Milfelner, 2017). Employees experience positive emotions when they interact with other employees, and when they are allocated resources (Xanthopoulou, Bakker & Fischbach, 2013). In this study, resources refer to remuneration. Research consistently found that no difference in positive emotions of high and low self-compassion employees (Choi, Lee & Lee's, 2014) and dysphonic and non-dysphonic groups watching a movie (McMakin, Santiago & Shirk, 2009).

Job-Related Wellbeing: Another happiness index dimension with almost the same definition as positive emotions is job-related well-being. However, it is related to energy, inspiration, fulfilment and excitement (Bakker & Oerlemans, 2011; Keeman, Naswall, Malinen & Kuntz, 2017; Kirsten, Van der Walt & Viljoen, 2009; Rodríguez & Sanz, 2013), which leads to organizational success (Page & Vella-Brodrick, 2009). The study conducted by Warr and Inceoglu (2017), which comprised of two groups, found no significant differences between them in relation to wellbeing.

Affective Commitment: A happiness index dimension that may ultimately enhance employees' loyalty to organizations is known as affective commitment (Abdullah, Ling. & Peng, 2016; Ghaffaripour, 2015; Ha & Ha, 2015; Hechl, 2017; Lambert, Kim, Kelly & Hogan, 2013; Simons & Buitendach, 2013; Toga, Qwabe & Mjoli, 2014). It is suggested that employees who are affectively committed to their organizations are productive, do not take leave on a regular basis, and do not resign from their organizations (Akar, 2018). Studies in India and the Orange County Interscholastic Athletic Association (OCIAA) in the United States of America found no differences in the affective commitment scores of men and women employees (Sharma, 2015; Rainayee & Zaffar, 2013; Voloshin, 2017).

Employee Engagement: A happiness index dimension that is closely related to job-related wellbeing is employee engagement (Albrecht, 2012). Employee engagement refers to employees' cognitive (Moradi, Jafari & Abedi, 2005; Shuck & Wollard, 2010) and emotional attachment to their roles (Bakker & Schaufeli, 2014; Rich, Lepine & Crawford, 2010), which leads to an employee being motivated to do more at work (Joo & Lee, 2017). One element that distinguishes it from positive emotions and job-related well-being is that it is related to successful implementation of the organization's strategy (Maleka, Schultz, Van Hoek, Dachapalli & Ragadu, 2017), especially when union members are involved (Maleka, 2018; Nienaber & Martins, 2016). The empirical research by Wilson (2009) found no difference between the participants with supervisory job titles and non-supervisors. A recent study conducted by Vorina, Simonic and Vlasova (2017), found that there is no difference between gender and employee engagement. Similarly, Tshilongamulenzhe and Takawira (2015) found that male and female employees demonstrated almost equal levels of engagement to their work.

Distributive Justice: Whereas the other happiness index dimensions discussed above are about emotions and strategy implementation, distributive justice is" the perceived fairness of outcome one receives" (Ha & Ha, 2015, p. 109) based on income (Bayarcelik & Findikli, 2016; Ohana & Meyer, 2016). and job (Demir, 2016). Employees who deemed work practices to be fair were happy, and performed optimally (Kalay & Turkey, 2016; Nasurdin & Khuan, 2011). Hataman, Fardid and Kavosi (2013) study found no differences in the distributive justice scores of nurses in general and speciality in Shiraz's hospitals. Distributive justice originates from Adams' (1965) equity theory. Akram, Qamar, Answer, Malik and UI Haq (2015) compared organizational justice and commitment in public universities in Pakistan, and found that there is no statistically significant difference between the scores of male and female university teachers. In another study, Brienza and Bobocel (2017) found that there was no statistically significant difference between the distributive justice scores of younger and older employees. However, Mendryk's (2017) study on the impact of procedural and distributive justice on the organizational commitment of employees of different ages found a difference in the distributive justice scores of younger and older age groups. The literature clearly shows the paucity of studies that measure the happiness dimensions' index of HRM practitioners attending a professional body convention. Some of the previous research found no significant difference in terms of age (Brienza & Bobocel, 2017) and gender (Vorina et al., 2017). The research methods used to achieve the study

objective are discussed in the next section. The majority of the participants were permanently employed. This appears to suggest that their organizations invested in their skills development, as the cost (i.e. around R10 000.00) of their convention attendance included convention fees and accommodation.

3. Methods

The discussion in this section focuses on the research design, participants' biographical data, the research procedure, measuring instrument, and data analysis.

Research Design and Participants' Biographical Data: The research design was longitudinal (i.e. i.e. over a two-year period). The convenience sampling technique was used to select participants. As it can be observed from Table 1 below, in 2016, 250 questionnaires were printed and only 204 were completed, while 3 had missing information, and were therefore discarded. The majority of the participants were females (56.57%), were employed on a permanent basis (96.47%), had degrees and post-graduate qualifications (78.20%), ranged in age from 35 to 65 (7.30%), earned R40000 and above (62.24%), and were not unionized (64.32%). Seventy-six questionnaires were completed in 2017 and 200 questionnaires were distributed. The response rate was 39%. The 2017 data revealed that 68.52% of the participants were females, 96.05% were employed on a permanent basis, had degrees and post-graduate qualifications (94.80%), ranged in age from 35 to 65 (72.37%), and earned R40000 and above (60.53%). Almost sixty-seven percent (66.70%) of the participants were not unionized.

Table 1: Biographical Data of Participants

Variables	2016 frequencies	2016 percentages	2017 frequencies	2017 percentages
Gender	Male (n=86)	43.43%	Male (n=24)	31.57%
	Female (n=112)	56.57%	Female (n=52)	68.52%
Employment status	Permanently employed (n=191)	96.47%	Permanently employed (n=73)	96.05%
	Non-permanent workers (n=6)	3.03%	Non-permanent workers (n=2)	2.63%
Education level	Grade 12 (n=0)	0.00%	Grade 12 (n=0)	1.30%
	Certificate (n= 7)	3.55%	Certificate (n= 1)	2.60%
	Diploma (n= 36)	18.27%	Diploma (n= 16)	21.10%
	Degree (n= 80)	40.61%	Degree (n= 31)	40.80%
	Post-graduate (n= 74)	37.56%	Post graduate (n= 24)	32.90%
	Other (n=0)		Other (n=1)	1.30%
Age	18-34 (n=41)	20.70%	18-24 (n=21)	27.63%
	35-65 (n=157)	79.30%	35-65 (n=55)	72.37%
Household income	Less than R10000 (n=3)	1.56%	Less than R10000 (n=0)	0.00%
	R10000 to R19999 (n=10)	5.10%	R10000 to R19999 (n=5)	6.58%
	R20000 to R29999 (n=29)	14.80%	R20000 to R29999 (n=14)	18.42%
	R30000 to R39999 (n=32)	16.32%	R30000 to R39999 (n=11)	14.47%
	R40000 and above (n=122)	62.24%	R40000 and above (n=46)	60.53%
Trade union membership	Yes (n= 71)	35.67%	Yes (n= 24)	31.58%
	No (n=128)	64.32%	No (n=52)	68.42%

Procedure: Ethical clearance for this study was granted by Tshwane University of Technology (TUT). Content validity was achieved by presenting the research instrument to human resource department experts (Struwig & Stead, 2013) at TUT. Once ethical clearance was granted, one of the researchers who attended the

IPM convention took the research instrument to the convention, and in both years, the master of ceremonies informed the HRM practitioners about the objective of the study. HRM practitioners participated voluntary, and their confidentiality and anonymity were guaranteed by not writing their names and contact numbers on the questionnaires.

Measuring Instrument: The questionnaire used to biographical (see Table 1) and happiness related data. The following happiness index scales were used to collect the data: positive emotions and job-related well-being (Van Katwyk, Fox, Spector & Kelloway, 2000), affective commitment (Allen & Meyer, 1990), employee engagement (Schaufeli & Baker, 2003) and distributive justice (Price & Mueller, 1986). Respondents rated 24 items in the study on a 7-point Likert scale (1 =strongly disagree to 7 = strongly agree).

Data Analysis: Descriptive statistics were frequencies and means and standard deviations. Principal components analysis (PCA) was used to extract items (Leedy & Ormrod, 2015). The T-test was calculated to determine group differences (Bless, Higson-Smith & Sithole, 2013). The data were analyzed in the Statistical Package of Social Sciences (SPSS) version 25.

4. Results

In this section, factor analysis, means and standard deviations and T-test are discussed.

Factor Analysis: It can be argued that construct validity was achieved because the Kaiser-Meyer-Olkin (KMO) since was above 0.80 (Melewer & Alwi, 2016), and the KMO and it was above the threshold of 0.5 limit recommended by Field (2013). The Bartlett's Test of Sphericity was statistically significant, with $p<0.5$ (Pallant, 2016). PCA components revealed the presence of five happiness dimensions with eigenvalues above 1, explaining 56.52% of the total variance. The rotated solution revealed a five-factor model (refer to Table 2), where the first factor was labelled positive emotions, with four statements or items. The item with 0.96 loading was, "I generally feel inspired about my remuneration", and the second factor, with four items, was labelled job-related well-being and had four items. The highest item of job-related wellbeing, with a factor loading of 0.99, was, "My job makes me excited." The third factor was labelled affective commitment, and it had two items. The highest item on affective commitment had a factor loading of 0.96, and it was, "I feel emotionally attached to my organization." The fourth factor was labelled employee engagement, and it had two items. The highest item on employee engagement had a factor loading of 0.90, and it was "When I am working, I forget everything around me." The fifth factor was labelled distributive justice, and it had three items. The highest item on highest distributive justice had a factor loading of 0.93, and it was, "Overall the rewards I receive here are quite fair." The cut-off point to include items in the factor loading was 0.3 (Field, 2013; Pallant, 2016). The Cronbach's alphas ranged from 0.78 to 0.98, which suggests that the happiness index dimension or factors were reliable (Maree, 2016).

Table 2: Happiness Index Dimensions Extracted Using Exploratory Factor Analysis

Measuring instrument items	Positive emotions	Job-related wellbeing	Affective commitment	Employee engagement	Distributive justice
I generally feel inspired about my remuneration	.96				
I generally feel excited about my remuneration	.96				
I generally feel enthusiastic about my remuneration	.94				
I generally feel proud about my remuneration	.91				
My job makes me feel excited		.99			
My job makes me feel ecstatic		.95			
My job makes me feel energetic		.94			
My job makes me feel inspired		.83			
I feel emotionally attached to this organization			.96		

I feel a strong sense of belonging to my organization			.81		
When I am working, I forget everything around me				.90	
I feel happy when I am working intensively				.84	
Overall, the rewards I receive here are quite fair					.93
I am rewarded fairly for the amount of effort I put in					.66
I am rewarded fairly for the work that I have done					.66
Cronbach's alphas	0.98	0.97	0.85	0.78	0.90

The data presented in Table 3 show that the 2016 group had slightly higher positive emotions mean score (M=3.84, SD=1.70) than the 2017 group (M=3.73, SD=1.66). Since their mean scores were below 4, it can be argued that HRM practitioners were not happy with their remuneration. Participants rated other happiness index dimensions (i.e. job-related wellbeing, affective commitment, employee engagement and distributive justice) positively, since their mean scores were above 4.

Table 3: Happiness Dimensions Scores

HRM practitioner groups		Positive emotions	Job-related wellbeing	Affective commitment	Employee Engagement	Distributive justice
2016	Mean	3.84	4.70	4.46	4.79	4.12
	N	181	184	185	186	189
	Std. Deviation	1.70	1.72	1.71	1.50	1.63
2017	Mean	3.44	4.52	4.28	4.59	3.87
	N	72	73	75	73	72
	Std. Deviation	1.51	1.36	1.60	1.28	1.34
Total	Mean	3.73	4.65	4.41	4.73	4.05
	N	253	257	260	259	261
	Std. Deviation	1.66	1.62	1.68	1.44	1.56

Prior to conducting the statistical difference test, the researchers conducted a normality test using the skewness test, and found that the skewness values were less than +-1 (Leech, Barrett & Morgan, 2015). The P-P plots centred on the diagonal straight lines (Pallant, 2016) of the happiness index dimensions. These statistics suggested that the data were normally distributed. Based on these statistics, the researchers deemed the T-Test an appropriate statistic to determine if there are statistically significant differences in the happiness index dimensions. The data displayed in Table 4 below showed that there is no statistically significant difference in the happiness index dimension means scores of two groups (i.e. HRM practitioners who attended the 2016 and 2017 IPM conventions). Consistent with previous research in this area, the data in this study revealed that HRM practitioners rated positive emotions (i.e. remuneration items) negatively (Maleka, Mmako & Swarts, 2017). The results were surprising because the majority of the respondents earned R40 000 and above.

Table 4: T-Test for Happiness Index Dimensions

Happiness index dimensions	F	Sig.	T	DF	Sig. (2-tailed)
Positive emotions	1.97	.16	1.86	146.44	.07
Job-related wellbeing	4.78	.03	.92	165.58	.36
Affective commitment	.07	.80	.78	258	.44
Employee Engagement	1.89	.17	1.00	257	.32
Distributive justice	4.62	.03	1.26	154.41	.21

5. Discussion:

The trend looked similar to the living wage study that was conducted on low-income workers who earned between R1500 to R4500 (Maleka, 2016). This might have negative managerial implications for organizations, as other scholars have found that unhappy employees are not effective (Rodriques & Sanz, 2013; Weserat et al., 2014), motivated (De Neve et al., 2013), and they end-up having bellicose or adversarial relationships with managers (Roehling et al., 2000). The data showed that most participants were aged 35 years and above. This suggested that most of the HRM practitioners were not millennials, as millennials are aged between 18 and 24 years (Migacz & Petrick, 2018). Most of the participants were not unionized and had tertiary qualifications (undergraduate and postgraduate). International scholars also found that educated employees are not unionized, and that management plays a role in discouraging the unionization of employees (Evans, Pyman & Byford, 2016). Prior to this study, there was no happiness index for HRM practitioners in South Africa, using the dimensions considered in this study. The happiness index dimensions were developed using EFA (Refer to Table 2). Since the happiness index dimensions Cronbach's alphas were above 0, 7, the cut-off suggested by Maree (2016), it can be argued that they were reliable.

Even though 2016 groups were happier than those who attended the 2017 convention, there were statistically significant differences amongst the happiness index dimensions. In terms of policy-makers, this study suggested that they should review the remuneration practices for HRM practitioners. This study had several limitations. Firstly, there was limited literature measuring the statistically significant differences of HRM practitioners attending a professional body convention. Therefore, in address the aim of the study, the researchers relied on studies that measured biographical differences (Brienza & Bobocel, 2017; Choi, Lee & Lee, 2014; Rainayee & Zaffar, 2013; Sharma, 2015; Tshilongamulenzhe & Takawira, 2015; Voloshin, 2017; Vorina et al., 2017), other groups, such as dysphonic and non-dysphonic (McMakin et al., 2009), and supervisors and non-supervisors (Wilson, 2009). Secondly, the sample sizes were very small, data were collected using the non-probability sampling technique, and the researchers did not collect data from HRM practitioners attending other professional bodies' conventions in South Africa. Consequently, the study findings cannot be generalized to all HRM practitioners in South Africa. Despite the limitations of this study, it contributed to the body of knowledge by developing a happiness index for HRM practitioners using reliable and valid measuring scales.

Future research should be qualitative, in order to further explore the subtle narratives of why HRM practitioners have negative perceptions of their remuneration. Using a qualitative approach, an in-depth investigation should be conducted as to why employees who earn R40 000 and above are still unhappy with their salaries. Future research should focus on millennials and be extended to include other HRM professional bodies in South Africa, as well as other African countries. A larger and more representative sample should be selected from the IPM database, and an online survey should be conducted. As indicated by Leedy and Ormrod (2015) and Bless et al. (2013), this will help to achieve external validity. It is also recommended that organizations do the following in order to enhance employees' happiness: 1) review and benchmark remuneration practices; 2) investigate and implement best HRM practices and non-remuneration practices that will keep employees excited, energized and inspired; 3) engage employees so that they are invigorated and work intensely to be productive; 4) treat HRM practitioners well, so that they are affectively committed to the organization; and 5) implement fair rewards practices.

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References

Abdullah, A. G. K., Ling, Y. & Peng, C. (2016). Workplace happiness, transformational leadership and affective commitment. International Conference on Social Sciences and Humanities (SOSHUM), Kota Kingbalu, Sabah.

Adams, J. S. (1965). Inequity in social exchange. In I. Berkowitz (Ed.). *Advances in experimental social psychology*, 2, 367-299.

Allen, N. J. & Meyer, J. P. (1990). Affective, continuance and normative commitment to the organization: An examination of construct validity. *Journal of Vocational Behavior*, 49(3), 252-276.

A history of people development. (2013). Mail & Guardian, 8 November.

Akar, H. (2018). The relationships between quality of work life, school alienation, burnout, affective commitment and organizational citizenship: a study on teachers. *European Journal of Educational Research,* 7(2), 169-180.

Akram, M., Qamar, A. H., Answer, M., Malik, M. I. & UI Haq, A. (2015). *Comparing the organizational justice and commitment in public universities in Pakistan,* (4), 71-84.

Albrecht, S. L. (2012). The influence of job, team, and organizational level resources on employee well-being, engagement, commitment and extra-role performance: Test of a model. *International Journal of Manpower*, 33(7), 840-853.

Armenta, C. N., Fritz, M. M. & Lyubomirsky, S. (2017). Functions of positive emotions: gratitude as a motivator of self-improvement and positive change. *Emotion Review*, 9(3), 183-190.

Bakhtiar, N. H. A., Bahrami, S., Keyvanara, M. & Kalantari, M. (2009). Studying the happiness level among staff at Isfahan Medical University, Iran, *Labor Health*, 3, 5-11.

Bakker, A. B. & Demerouti, E. (2008). Towards a model of work engagement. *Career Development International*, 13(3), 209-223.

Bakker, A. B., Schaufeli, W. B. (2014). Employee engagement. In Y. Feeney & P. Flood. (Eds.), Organizational Behavior volume of Blackwell Encyclopedia of Management.

Bakker, A. B. & Oerlemans, W. (2011). Subjective wellbeing, in Handbook of Positive Organizational Scholarship, 178-189.

Bayarcelik, E. B. & Afakan Findikli, M. (2016). The mediating effect of job satisfaction on the relationship between organizational justice perception and intention to leave. 12th International Strategic Management Conference, ISMC, Antalya, Turkey. *Procedia-Social and Behavioral Sciences*, 235, 403-411.

Bless, C., Higson-Smith, C. & Sithole, S. L. (2013). Fundamentals of social research methods: An African perspective. Cape Town: Juta & Company Ltd.

Brienza, J. P. & Bobocel, D. R. (2017). Employee age alters the effects of justice on emotional exhaustion and organizational deviance. *Frontiers in Psychology*, 6, 1-15.

Choi, Y. M., Lee, D. & Lee, H. (2014). The effect of self-compassion on emotions when experiencing a sense of inferiority across comparison situations. Counselling and Guidance WCPCG. *Procedia –Social and Behavioral Sciences*, 114, 949-953.

Demir, K. (2016). Relations between teachers: Organizational justice perceptions, organizational commitment, and job behaviour in the school: a meta-analysis. *International Journal of Human Sciences,* 13(1), 1409-1417.

De Neve, J. E., Diener, E., Tay, L. & Xuereb, C. (2013). The objective benefits of subjective well-being. In J. Helliwell, R. Layard, & J. Sachs (Eds.), World happiness report 2013, 54–79. New York, NY: UN Sustainable Development Solutions Network.

Evans, S. Pyman, A. & Byford, I. (2016). What are the consequences of a managerial approach to union renewal for union behaviour? A case study of USDAW. *Employee Relations*, 39(1), 2-18.

Field, A. (2013). Discovering Statistics using IBM SPSS Statistics. London: Sage Publications.

Fisher, C. D. (2010). Happiness at work. *International Journal of Management Reviews*, 12, 384-412.

Fors, F. & Kulin, J. (2016). Bringing affect back in: Measuring and comparing subjective well-being across countries. *Social Indicators Research*, 127(1), 323-339.

Frederickson, B. L. & Kurt, L. E. (2011). Cultivating positive emotions to enhance human flourishing. In S.I. Donaldson, Czikszenthmihalyi, M. & Nakamura, J. (Eds.), Applied Positive Psychology: Improving everyday life, health, schools, work, and society (35-47). New York: Routledge.

Ghaffaripour, S. (2015). Prediction of affective organizational commitment based on employee characteristics and psychological factors among oil personnel. *International Journal of Management Business and Residence*, 5(4), 337-350.

Ha, J. & Ha, J. (2015). Organizational justice-affective commitment in a team sports setting: The moderating effect of group cohesion. *Journal of Management*, 21(1), 107-124.

Hataman, N., Fardid, M. & Kavosi, Z. (2013). Perceptions of organizational justice among nurses working in university hospitals of Shiraz: A comparison between general and speciality settings. *Nurses Midwifery Studies*, 2(4), 77-82.

Hechl, C. (2017). Affective commitment to organizations: A comparative study of reverse mentoring versus traditional mentoring among millennials. *Binus Business Review*, 8(2), 157-165.

Joo, B. & Lee, L. (2017). Workplace happiness: Work engagement, career satisfaction, and subjective well-being. *Evidence-based Human Resource Management: A Global Forum for Empirical Scholarship*, 5(2), 206-221.

Kalay, F. & Turkey, V. (2016). The Impact of Organizational Justice on Employee Performance: A Survey in Turkey and Turkish Context. *International Journal of Human Resource Studies,* 6(1), 1-20.

Keeman, A., Naswall, K., Malinen, S. & Kuntz, J. (2017). Employee well-being: *Evaluating a wellbeing intervention in two settings*, 4, 505.

Kirsten, T. J., Van der Walt, H. L. & Viljoen, J. T. (2009). Health, well-being and wellness: An anthropological eco-systematic approach. *Journal of Interdisciplinary Health Science*, 14(1), 1-7.

Kuppens, P., Realo, A. & Diener, E. (2008). The role of positive and negative emotions in life satisfaction judgement across nations*. Journal of Personality and Social Psychology*, 95(1), 66-75.

Lambert, E. G., Kim, B., Kelly, T. & Hogan, L. N. (2013). The association of affective and continuance commitment with correctional staff line satisfaction. *The Social Science Journal*, 50(1), 195-203.

Leech, N. L., Barrett, K. C. & Morgan, G. A. (2015). IBM SPSS for intermediate statistics. Use and interpretation. New York, Routledge Francis and Taylor Group.

Leedy, P. D. & Ormrod J. E. (2015). Practical research: Planning and design. (11th ed). Boston: Pearson Education Limited.

Lyubomirsky, S., King, L. & Diener, E. (2005). The benefits of frequent positive affect: does happiness lead to success? *Psychological Bulletin*, 131, 803– 855.

McMakin, D. L., Santiago, C. D. & Shirk, S. R. (2009). The time course of positive and negative emotion in Dysphonia. *Journal of Positive Psychology*, 4(2), 182-192.

Maleka, M. J. (2016). Narratives of employees visiting Tshwane mall who earn above and below an estimated living wage. GBATA conference proceedings in October 2016.

Maleka, M. J., Mmako, M. & Swarts, I. (2017). Antecedents of affective commitment of human resource management practitioners attending a professional body convention, *Journal of economics and behavioral sciences*, 9(3), 121-132.

Maleka, M. J., Schultz, C. M., Van Hoek, L., Dachapalli, L. & Ragadu, S. (2017). Measuring employee engagement of low-income workers either working at or visiting Marabastad Mall in the City of Tshwane Metropolitan Municipality. *Journal of economics and behavioral sciences*, 9(5), 74-82.

Maleka, M. J. (2018). The biographical and human resource management predictors of union membership engagement of low- and middle-income workers, *Journal of economics and behavioral sciences,* 10(1), 207-216.

Maree, K. (2016). First Steps in Research. (2nd ed). Pretoria: Van Schaik.

Melewar, T. C. & Alwi, S. F. S. (2016). Corporate branding: Areas, arenas and approaches. London, United Kingdom: Routledge, Francis & Taylor Group.

Mendryk, I. (2017). The impact of procedural and distributive justice upon the organizational commitment of age-diversified employees. Research Results, 108-114.

Moradi, J. J. E., Jafari, S. E. & Abedi, M. R. (2005). Happiness and personality: a review study. *Advances in cognitive science*, 7(2), 60-71.

Migacz, S. J. & Petrick, J. F. (2018). Millennials: America's cash cow is not necessarily a herd. *Journal of tourism futures,* 4(1), 16-30.

Nasurdin, A. Z. & Khuan, S. L. (2011). Organizational justice, age, and performance connection in Malaysia. *International Journal of Commerce and Management*, 21(3), 273-290.

Nienaber, H. & Martins, N. (2016). Employee engagement in a South African context. Randburg: KR Publishing.

Ohana, M. & Meyer, M. (2016). Distributive justice and affective commitment in non-profit organizations: which referent matters? *Employee Relations*, 38(6), 841-858.

Page, K. M. & Vella-Brodrick, D. A. (2009). The 'what' 'why' and 'how' of employee well-being: A new model. *Social Indicators Research*, 90, 441-458.

Pallant, J. (2016). SPSS Survival Manual. A Step-by-step Guide to Data Analysis Using IBM SPSS (6th ed.). Crows' Nest: Allen & Unwin.

Pereira, V. S. & Fontinha, R. (2016). An exploration of the role duality experienced by HR professionals as both implementers and recipients of HR practices: Evidence from Indian Railways. *Human Resource Management*, 55(1), 127-142.

Price, L. L. & Mueller, C. W. (1986). Handbook of Organizational Measurement. Marshfield, MA: Pitman.

Pryce-Jones, J. & Lindsay, J. (2014). What happiness at work is and how to use it? *Industrial and Commercial Training*, 46(3), 130-134.

Rainayee, R. A. & Zaffar, S. (2013). Affective commitment: An empirical study of executive and non-executive bank employees. *Global Journal of Management and Business Research Interdisciplinary*, 13(7), 1.0.

Rich, B. L., Lepine, J. A. & Crawford, E. R. (2010). Job engagement; antecedents and effects on job performance. *Academy of Management Journal*, 53(3), 617-635.

Rodríguez, M. A. & Sanz, V. I. (2013). Happiness and well-being at work: A special issue introduction. *Journal of Work and Organizational Psychology*, 29, 95-97.

Roehling, M. V., Cavanaugh, M. A., Moynihan, L. M. & Boswell, W. R. (2000). The nature of the new employment relationship: a content analysis of the practitioner and academic literature. *Human Resource Management*, 39, 305–320.

Ryan, R. M. & Deci, E. L. (2001). On happiness and human potentials: a review of research on hedonic and eudaemonic well-being. *Annual Review of Psychology*, 52, 141–166.

Ryff, C. D. & Singer, B. H. (2008). Know thyself and become what you are: a eudemonic approach to psychological well-being. *Journal of Happiness Studies*, 9, 13–39.

Schaufeli, W. B. & Bakker, A. B. (2003). Utrecht Work Engagement Scale: Preliminary Manual. Utrecht: Occupational Health Psychology Unit, Utrecht University.

Shahrabani, S., Benzion, U., Rosenbiom, M. & Shavit, T. (2012). Does moving from war zone change emotions and risk perceptions? A field study of Israel students. *Judgement and Decision Making*, 7(5), 609-678.

Sharma, P. (2015). Organizational commitment among faculty members in India: A study of public and private technical schools. Global Business and Organizational Excellence, July/August, 30-38.

Shuck, B. & Wollard, K. (2010). Employee engagement and human resource development: A seminal review of the foundations. *Human Resource Development Review*, 9(1), 89-110.

Simons, J. & Buitendach, J. (2013). Psychological capital, work engagement and organizational commitment amongst call centre employees in South Africa. *Journal of Industrial Psychology*, 39(2), 1-12.

Stahl, S. (2016). Evoking positive emotions through the use of virtual reality in relation to technique acceptance. The University of Twente.

Struwig, F. W. & Stead, G. B. (2013). Research: Planning, Design and Reporting. 2nd ed. Boston: Pearson Education Limited.

Toga, R., Qwabe, N. P. & Mjoli, T. Q. (2014). The impact of age and gender diversity on organizational commitment. *Mediterranean Journal of Social Sciences*, 5(1), 657-671.

Tshilongamulenzhe, M. C. & Takawira, N. (2015). Examining gender influence on employees' work engagement within a South African University. *Risk governance & control, financial market & institutions*, 5(2), 110-119.

Van Katwyk, P. T., Fox, S., Spector, P. E. & Kelloway, E. K. (2000). Using job-related well-being scale (JAWS) to investigate affective responses to work stressor. *Journal of occupational health psychology*, 5(2), 219-230.

Vorina, A., Simonic, M. & Vlasova, M. (2017). An analysis of the relationship between job satisfaction and employee engagement. *Economic Themes*, 55(2), 243-262.

Voloshin, G. V. (2017). Differences in organizational commitment between male and female coaches at the high school level. Doctorate of Education in Executive Leadership. St. John Fisher College.

Warr, P. & Inceoglu, I. (2017). Work orientations, well-being and job content of self-employed and employed professionals. Work, employment and society, 1-20.

Wesarat, P., Yazam, M. S. & Halim, A. M. A. (2014). A conceptual framework of happiness at the workplace. *Asian Social Science*, 11(2), 78-88.

Wilson, K. (2009). A survey of employee engagement. Columbia: University of Missouri.

Xanthopoulou, D., Bakker, A. B. & Fischbach, A. (2013). Work engagement among employees facing emotional demands: the role of personal resources. *Journal of Personnel Psychology*, 12(2), 74-84.

Zarei, M. & Hughgooyan, Z. (2011). Happiness in work and life. Qom Al-Hadi Publications.

Zizek, S. S., Mulej, M. & Milfelner, B. (2017). Determinants of subjective emotional well-being and self-determination of employees: Slovene Case. *Nase gospodarstvo/Our Economy*, 63(4), 54-65.