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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, Nigeria, Zimbabwe, Namibia, Tanzania, Uganda, Rwanda and China. Empirical investigation of the declining sucrose content, financial inclusion & macroeconomic performance, antecedents of supply chain performance, prevalence & magnitude of social loafing & biographical influences, drivers of agricultural funding, profile variables as a basis for segmenting markets, water infrastructure financing & water provision, investigating the exhaustion of police officers, financial sector development & tourism-growth nexus, location-specific antecedents to foreign direct investment, technical efficiency in seed potato production systems, impact of short-term interest rates on bank funding costs, marital status a strategic parameter in implementing hiv/aids campaigns, unemployment rate announcement, demographic factors as a catalyst for the retention of academic staff, psychological contract breach and engagement, shifts in herd mentality of investors in uncertain market conditions, fiscal policy & macroeconomic shocks, growth constraints of formal & informal micro & small-scale enterprises, sustainable marketing practices & consumer behaviour, free cash flow & firms' growth and flexible work arrangements, job satisfaction & performance 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

An Empirical Investigation of the Declining Sucrose Content in South African Sugar Cane

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Abstract: This study is aimed at investigating the declining sucrose levels in South African sugar cane using principal component analysis. The agricultural production of sugar cane has been one of the major sources of income to the South African economy. Sucrose has been classified in the analysis of Brix percentage of sugarcane juice as one of the most important parameters of sugar composition, due to its usefulness, among the components in sugar cane which are needed for farmers to generate income within the economy. However, data indicates that the sucrose content decline which began in 2014 is still ongoing, representing great loss to the farmers. To investigate this trend, this study has regressed the sucrose percentage in cane as a dependent variable against the ratio in Tons of cane to 1 Ton of sugar, tons of cane crushed, tons of sugar made, and yields per hectare of harvested cane. The study used correlation matrices, summary statistics and principal component analysis as tools in carrying out its investigation. From the regression result, the proportional composition value of sucrose which stands at 0.6059-the highest compared to others in the model - indicates that it is an essential component in the chain of sugar production. However, when the maximum value of sucrose (14.24000) is compared with its minimum (12.92000), a remarkable decline is observed. Since a remarkable difference is also observed when the mean value of 13.55353 is compared with the standard deviation value of 0.378318, the study can conclude that the percentage level of sucrose is low compared to other explanatory variables. This typically signifies a decline in the value of sucrose when compared with other variables under investigation.

Keywords: *Sucrose, Sugar Cane, Principal Component Analysis*

1. Introduction

Dated back to 1970's, the deterioration of sucrose content in cane under South African conditions has been investigated by (Wood, 1973). Similarly, Robillard, Vawda and Lionnet (1990) have indicated that for the deterioration of whole stalk sugar cane, ethanol could be adopted as a chemical index. Ethanol extract concentrations are now being adopted at the industrial level in the monitoring of cane delays. However, one essential part which appears not to have been covered concerns the application of the concentration of ethanol to evaluate the quantity of losses in sucrose as a result of the post-harvest deterioration process. It is important to note that apart from the aspect of sugar recovery, as a result of lower purities at the factory, the destruction of sucrose in the stalk represents a direct loss to the farmer who delivers the cane (Robillard, Vawda, and Lionnet, 1990). Among the raw materials rich in sucrose that produce sugar all over the world, sugar extraction from sugarcane makes up 70% (Butterfield et al., 2001). Due to its ability and peculiarity in the phenomenal dry matter production, it is also being adopted as a bioenergy crop. In fact, the crop is gaining great significance in the biofuel industry (Chohan et al., 2014). Again, as a result of the consistent increase in population, the demand for bio-energy, sucrose and white sugar is increasing day by day. Due to low production, however, the present production of sucrose requirement is not enough to meet the increasing demand needed for man's consumption (Cheema, and Mahmood, 2005). Low sugar yields, low sucrose, low rate of adoption of the available varieties and high cane are some of the sugarcane yield productions limiting factors, amongst others (Chohan et al., 2007; Ong'ala, Mwanga, and Nuani, 2016).

Again, in terms of global sucrose and cane production, current global production is in the average of 1450 million tons of cane from 22 million hectares worldwide, thus making sugar cane the world's primary sugar crop. Brazil and India are currently the two major sugar cane producing countries in the world, with the global production accounting for about 60% in addition to its impacts in the food industry, while South Africa is the highest cane producing country in Africa. For instance, Brazil, dedicates 48% of her sugar cane production capacity to the production of ethanol, while 52% is allocated to meeting the sugar production requirements in the country. Whereas, in Asia, nations such as China, India, Philippines, Thailand, and Pakistan have already taken biofuel crop for ethanol production as main output resulting from their ambitious plans in the use of sugar cane. It is expected that such a production capacity will be able to meet up

with fuel mixture requirements. For instance, among other fuel requirements, these countries have been able to adopt 10% of E10 with the fuel of ethanol and 90% is gasoline. Basically, more than a hundred countries under temperate tropical, subtropical conditions grow sugar cane. This is because sugar cane, whose yield is affected significantly by temperature, is basically a crop of tropical climates, relative humidity and solar radiation. Likewise, grand growth period favors stalk development the relative humidity ranges between 55 – 85%, while the optimum mean daily temperature range is 14 to 35°C. The optimal solar radiation requirement is 18 – 36 MJ/m² (Total annual: 6350 MJ/m²). With daylight in the range of 10 – 14 hours, stalk growth increases.

With special attention to the South African sugar industry, the industry produces an approximate 2.3 million tons of sugar rich in sucrose annually (Anon, 2014a), 75% of which is marketed and sold within the Southern African Customs Union (SACU), and the remaining 25% in other parts of Africa, the USA, and Asia. It has thus continued to rank among the top fifteen sugar producing countries in the world. However, a consistent decline in production has been observed over the past two decades peaking in the recent past planting season, with various factors speculated as being responsible. Some of those factors are weakening yields and a reduction in sugar-cane production area according to the Bureau for Food and Agricultural Policy (BFAP) in Anon (2014b); rising input costs and a lack of cohesion and economies of scale (Anon, 2014b; Stainbank, 2011); a growing culture of minimum reinvestment into farm infrastructure (especially among commercial farmers) due to the threat of land claims, poor soil health, and replanting (Anon, 2014b; Harris, 2016). There is an ongoing debate in the literature on the possible reasons for the decline in sucrose ratio to overall sugar cane. This study is out to investigate with empirical evidence the reality/veracity of the purported decline of sucrose in the South African sugar industry, and then propose suggestive corrective measures to the current low level of sucrose in sugar cane. This is because growing a crop with high sucrose quality is of great relevance for maximum profitability. In some certain cases, nutrients rich in sucrose that could move sugarcane quality forward, has the tendency of also enhancing the sugar quality and content of the harvested cane crop. Again, since sucrose improvement in sugarcane enhances the market value, the sucrose content of cane remains the primary driver of on-farm profitability both to the individual and to the national GDP growth. This is partly because the logistical cost of harvesting and transporting large volumes of cane with a low sucrose content is prohibitive, and also because sucrose is the primary component of the RV payment system (Robert, 2017).

2. Literature Review

The Empirical Approach: Ftwi, Mekbib and Abraha (2016) adopted principal component analysis to achieve their study's objectives, which aimed at assessing the inter-relationships among traits considered and the phenotypic nexus among 49 sugarcane genotypes. The demonstrated cluster analysis indicated that the 49 sugarcane genotypes under investigation were highly different for Pol in juice and were made to clustered into nine groups as indicated by milleable stalk population (ha⁻¹), the cane yield (tons ha⁻¹m⁻¹), number of tillers (ha⁻¹), and purity percentage. It was noted that the relationship among sugarcane genotypes was not dependent on geographic origin, indicating a variation in the large proportion of complete genetic which was retained within the origin groups. Where active genetic exchange was found, milleable stalk diameter and milleable stalk height had been seen to be greatly associated with sugar yield while there is weak correlation between sugar yield and quality traits. On the other hand, multiple regression analysis and path indicated that recoverable sucrose percentage (%), cane yield, and Pol impact closely to the variability of sugar yield; these traits are very vital for high sugar yield, and may be put into consideration in sugarcane breeding programs. More importantly, milleable stalk population and milleable stalk height through Brix and cane yield, purity, Pol, together with the number of internodes via recoverable sucrose % had large indirect impacts on sugar yield indicating that such traits could be given consideration during sugar yield high selection. Generally, adequate and similar information was provided following the adoption of cluster, linear discriminant, principal component, multiple regression analyses, and path coefficient. The adoption of multivariate analyses led to positive results, and the outcomes of the study were highly adequate for offering concrete recommendation.

Again, (Zhou, 2014) data gathered from the variety testing final stage estimated by adopting the SAS mixed method to analyze cultivar least square means. The objectives of the research were to investigate which

trends determine genetic gains for sucrose content, cane yield, and sugar yield for cultivars that germinates in the sandy and humid soils of the Midlands region, so as also determine the characteristics of the cultivar and the soil types. Quality over time and trends in yield and were examined by adopting simple linear regression analysis. There were significant and consistent increase in cane sugar yield with year of release, implying remarkable achievement in the genetic gains. When comparing sugar yield and higher cane with that of older cultivars, the currently released cultivars produced more significantly, showing that there will be significantly increased profitability through the adoption of new cultivars. Gains in sucrose content were limited, showing the necessity to promote breeding for sucrose content. The negative association between sucrose content and cane yield was found by the use of principal component analysis, implying that there exist the main variables that grouped the cultivars. Specifically, cultivars generating low level sucrose content (for instance N31) appear not to be suitable for the humid soils, while cultivars generating low cane yield (for instance N37) appear not to be suitable for planting in the sandy soils. Consequently, breeding cultivars generating high cane yield for the sandy soils and high sucrose content for the humid soils would increase genetic gains for sugar yield. Hence, increasing planted area to current cultivars is expected to enhance sugar yield by 7-20%.

Sugar yield is obtained from cane yield and sucrose content (Terzi et al., 2009) and therefore, cane yield and sucrose content and their interaction are important parameters for developing superior genotypes (Zhu et al., 2000; Chohan et al., 2007). Several reports clarify the relationship between cane yield components and cane yield and cane quality traits. For example, Ahmed et al. (2010) reported positive correlation between cane yield and its components (number of milleable stalks/m², milleable stalk height internodes/stalk and single weight) but negative association with milleable stalk diameter, Pol in juice and purity. Similarly, Tyagi and Lai (2007) reported that the weight of milleable stalks contributed high direct effect on cane yield followed by milleable stalk, height, number and thickness. Ei-Shafi and Ismail (2006) used a multiple regression model and reported that the main contributors for sugar yield were cane yield, sugar recovery percentage and milleable stalk diameter. Generally, the results of different studies showed discrepancies to the level of sugar yield and cane yield. This phenomenon necessitates successive studies to be conducted to determine the relationship and association of the traits to increase the efficiency of selection.

Barnes, Meyer and Schmidt (2000) offer an alternative method of reducing the delay in the harvest to crush of sugar cane through the instrumentality of sugar cane. It has been discovered that the main source of losses in sucrose and deterioration of cane quality and other sugar cane components in the sugar cane processing industry is the long-time delay between the period of harvest and the crushing. Data were collected from the Sezela mill area using simulation model, well developed strategies for reducing harvest-to-crush delays were adopted, such as implementation of harvesting groups and altered burning and delivery schedules were examined for the mill area. Major sources of data collection came from hauler and extension growers and personnel, interviews with mill personnel by means of surveys of transport systems and harvesting were used in the area. Previous simulation model of the Sezela mill-yard were derived from analytic data on mill-yard operations while further time studies were carried out in the mill-yard. The software with which to develop the mode was chosen from the Arena Simulation System. The outcome of simulation modelling application to the analysis of delays in harvest-to-crush in the harvesting of sugarcane and transport system could be said to be a successful investigation. The modelling of what is known as complex system became easy through the application of simulation modelling and this complex task which would have been somehow complex to be accurately represented by adopting other related analytical techniques such as scheduling algorithms, queuing theory or linear programming.

Harris (2016) investigated the post- harvest deterioration in the south African sugar-cane supply chain where temperature and burn harvest to crush time are seen as two major determinants of sugar-cane deterioration. The study undertook analytical work on Maid-stone Mill where various delivery data were gathered for 2015/16 season and robust correlations were derived from spreadsheet based model for regression analysis. The result indicated that if 12 hours reduction for the current 2016/17 season could be achieved, R9694352 would be saved as a result of the combined efforts in reduction of losses incurred from post- harvest deterioration and mill extraction improvement and recovery in the boiling house. Singh (2013), taking Uttar Pradesh and four districts as a focus point to analyze economies of sugar-cane base farming because this product is a very important cash crop with domineering impacts in the farming system. Data collection were sourced mainly from both primary and secondary sources. The suggestion spanning from the outcome of the

research has shown that simultaneous planting of two heterogeneous products such as wheat and sugar-cane would reduce cultivation cost where attention is to be given to yields, production and technology of plantation.

Again, one of the earliest works carried on sugar cane extraction is that of Buchanan (1976) who attempted to study the impacts of sugar cane quality on the performance of the processing factory. Twenty-five annual quality trends in cane sugar content were correlated. Understandably with level of consternation, the trend was viewed from some quarters especially when forecasts are postulated based on past trends. When the observation is compounded, it is noted that purity in mixed juice decline at a rate of 0,038 per annum. It is However required that some compensation could be achieved from the fact that the percentage in fiber cane has declined at the average rate of 0,053 per annum particularly when recent addition of suspended solid is corrected. The trend is considered from the perspective of time trend in yield and age, and the following summary conclusion were made from the research: statistical trends in yields and the quality of cane must be economic supported for yields to continue to increase, otherwise, there must be decline in cane quality. It is certain that the cane quality on its own must not be maximized at the expense of yield, particularly, the rates in relation to which the variation in the two variables are to be closely screened. There should be exclusion of the unnecessary aspect of cane quality as this form part of the above conclusions. However, in certain situations the non-leaf part of the tops can be processed to the advantage of the economy. These areas should be subjected to more investigation in details.

3. Methodology

To ascertain the decline of sucrose in the production process through the cleaner production strategies in the sugar milling industry, this model built on the work of (Zhou, 2014; Ong'ala, Mwanga, and Nuani, 2016). Hence, from the foregoing:

$$\text{Suc} = f(\text{LOGTS}, \text{LOGTC}, \text{LOGYP})$$

$$\text{Suc} = \alpha_1 + \alpha_2 \text{LOGTS} + \alpha_3 \text{LOGTC} + \alpha_4 \text{LOGYP} + \mu$$

The model transformation is based on time series data analysis, hence:

$$\text{Suc}_t = \alpha_{1t} + \alpha_2 \text{LOGTS}_t + \alpha_3 \text{LOGTC}_t + \alpha_4 \text{LOGYP}_t + \mu_t$$

Suc implies sucrose percentage in cane; LOGTS implies Tons of cane to 1 Ton of sugar; LOGTC implies Tons of cane crushed; YP implies Tons of sugar made; Tons implies yields per hectare of harvested cane. This section wants to establish with empirical evidence that there is consistent decline of sucrose in the sugar cane production is South Africa in the recent years. The stages shall include: Data source, stationarity test, descriptive statistics, correlation Matrix and principal component analysis.

Data Source: Data on sucrose percentage in cane (Suc); Tons of cane to 1 Ton of sugar (LOGTS); implies Tons of cane crushed (LOGTC); Tons of sugar made (YP); yields per hectare of harvested cane (Tons) are adopted to enable us establish this fact was on SASA statistical Bulletin, 2016/2017 session.

Test stationary: Tests for unit root for all the variables in the data set had been conducted to determine the form of model to adopt in this study. This process has been achieved by testing the unit root with three method alternatives offered by robust versions of Augmented Dickey Fuller, Phillip Peron and Dickey Fuller.

Table 1: Results from Augmented Dickey Fuller, Phillip Peron and Dickey Fuller Tests for Unit Root

Augmented Dickey Fuller			Phillip Peron		
Variables	Order of Integration	P-Value	Order of Integration	P-Value	Order of Integration
SUC	I(0)	0.0077	I(0)	0.0048	I(0)
LOGTS	I(1)	0.0043	1(1)	0.0002	1(1)
LOGT_C	I(1)	0.0229	I(1)	0.0000	I(1)
Y_P	I(1)	0.0360	I(1)	0.0000	I(1)
TONS	I(0)	0.0066	I(0)	0.0027	I(0)

Source: Author's Computation, 2017***, ** and * represent statistical significance at 1%, 5%, and 10%, respectively.

4. Results

Suc implies sucrose percentage in cane; LOGTS implies Tons of cane to 1 Ton of sugar; LOGTC implies Tons of cane crushed; YP implies Tons of sugar made; Tons implies yields per hectare of harvested cane. The study identifies the integration order for all variables in first differences and levels it tested for the presence of unit roots. Several approaches had been engaged to compare, test, and validate the findings in the results so as to further ascertain consistency. The unit root test results are reported in Table 1. The result as indicated showed that none of the variables is of I (2). Again, Table 1 showed that LOGTS, LOGTC and YP have unit root and are thus integrated at I (1), thereby becoming stationary at 1% level of significance. However, yields per hectare of harvested cane (Tons) and sucrose percentage in cane are all devoid of unit root, and thus, integrated at I (0). This unit root test offers mixed outcome because part of the variables was found stationary at order one while others were stationary at levels.

Table 2: The result of correlation Matrix on the series Suc (dependent variable), LOGTS; LOGTC and YP Tons

	Ordinary correlations:				
	SUC	LOGTS	LOGT_C	Y_P	TONS
SUC	1.000000				
LOGTS	0.037980	1.000000			
LOGT_C	-0.170939	0.976405	1.000000		
Y_P	-0.074525	0.841162	0.853532	1.000000	
TONS	-0.837841	-0.530342	-0.334820	-0.314510	1.000000

Source: Authors computation

Note: Suc implies sucrose percentage in cane; LOGTS implies Tons of cane to 1 Ton of sugar; LOGTC implies Tons of cane crushed; YP implies Tons of sugar made; Tons implies yields per hectare of harvested cane

Table 2 replicates the result of the correlation matrix in the variables adopted in our time series model. From the information supplied in the Table 2 and taking sucrose as dependent variable, the variables exhibit different forms of relationship with one another within the model. The study particularly, gives special attention to the noticeable relationship between sucrose and the other independent variables as indicated in the table, of course this is the main focus of this study. Suc maintains positive but weak relationship with LOGTS, whereas from the Table 2, it is clear that Suc reflects inverse relationship with all other variables respectively. In terms of weak association, all other variables have weak correlation with Suc except Tons which exhibit a high correlation. This is an interesting result as it indicates that the variables under investigation have no multicollinearity problem.

Table 3: The result of Summary Statistics on the series Suc. (dependent variable), LOGTS; LOGTC and YP Tons

	SUC	LOGTS	LOGT_C	Y_P	TONS
Mean	13.55353	14.62045	16.77559	64.92529	8.633529
Median	13.68000	14.63489	16.79734	65.14000	8.530000
Maximum	14.24000	14.83179	16.98839	73.95000	9.170000
Minimum	12.92000	14.30249	16.51428	54.36000	8.330000
Std. Dev.	0.378318	0.139621	0.125383	4.577430	0.279149
Skewness	-0.129136	-0.578284	-0.367312	-0.274145	0.770162
Kurtosis	2.410539	2.917479	2.600903	3.472520	2.250200
Jarque-Bera	0.293369	0.952325	0.495089	0.371094	2.078816
Probability	0.863566	0.621162	0.780715	0.830650	0.353664
Sum	230.4100	248.5477	285.1851	1103.730	146.7700
Sum Sq. Dev.	2.289988	0.311902	0.251534	335.2458	1.246788
Observations	17	17	17	17	17

Source: Authors computation

Note: Suc implies sucrose percentage in cane; LOGTS implies Tons of cane to 1 Ton of sugar; LOGTC implies Tons of cane crushed; YP implies Tons of sugar made; Tons implies yields per hectare of harvested cane

Table 3 reports the summary statistics results for all variables engaged in this study. The mean result of every variable used in this study is given in the second row, mean is one of the Essential statistical tool for measuring central tendencies. In the third and fourth rows, the value of maximum and the minimum are recorded for all the variables. While the result of standard deviation is reported in row five. As for the case of sucrose percentage in cane which is the study's dependent variable, the study compared the maximum value with its minimum in the value of 14.24000 as against 12.92000. Again, with the mean value of 13.55353, was compared with them egre value 0.378318 of the standard deviation, then the study can conclude that the amount of sucrose percentage in relationship to other explanatory variable is low and this typically signifies a decline in the value of sucrose when compared with others. A further comparative look of Tons of cane to 1 Ton of sugar shows that the maximum value 14.83179 is closer to the mean than the minimum value 14.30249 and we also noted that the standard deviation which is a good measure of dispersal has a low value of 0.139621. This claim is further supported and strongly confirmed by the value of the standard deviation which is closer to the mean. Indicating that there is considerable gap between the expected sucrose percentage and that of Tons of cane to 1 Ton of sugar. This result is supported substantially by the existing prior expectations in the South Africa sugar producing company which concurred that the value of sucrose is declining. The same trend of event is obtainable for tons of cane crushed (LOGTC); tons of sugar made (YP); yields per hectare of harvested cane (Tons), the maximum values are all closer to the mean than the minimum. Hence, there is clear indication that the value of sucrose percentage is significantly low in comparison with other values under investigation. However, the study takes a further step by examining principal company analysis.

Table 4: The result of the principal component analysis on the series: Suc (Dependent variable), LOGTS; LOGTC and YP Tons

Principal Components Analysis					
Date: 11/03/17 Time: 21:47					
Sample: 2000 2016					
Included observations: 17					
Computed using: Ordinary correlations					
Extracting 5 of 5 possible components					
Eigenvalues: (Sum = 5, Average = 1)					
Number	Value	Difference	Proportion	Cumulative Value	Cumulative Proportion
1	3.029429	1.292057	0.6059	3.029429	0.6059
2	1.737372	1.529287	0.3475	4.766801	0.9534
3	0.208085	0.182983	0.0416	4.974886	0.9950
4	0.025102	0.025090	0.0050	4.999988	1.0000
5	1.17E-05	---	0.0000	5.000000	1.0000
Eigenvectors (loadings):					
Variable	PC 1	PC 2	PC 3	PC 4	PC 5
SUC	0.092412	-0.741012	0.222217	0.626867	0.004312
LOGTS	0.563876	0.082381	-0.343466	0.130955	0.734942
LOGT_C	0.536581	0.241349	-0.338337	0.330641	-0.655772
Y_P	0.510731	0.196959	0.825873	-0.135203	-0.003877
TONS	-0.353184	0.589128	0.190034	0.679916	0.172600

Source: Authors computation

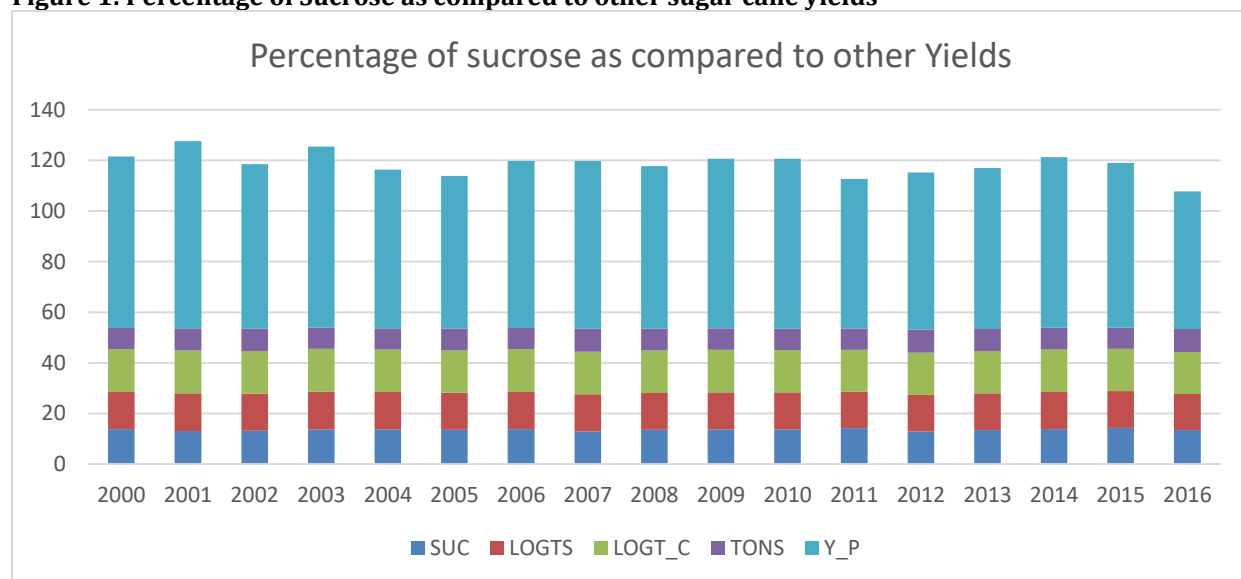
Note: Suc implies sucrose percentage in cane; LOGTS implies Tons of cane to 1 Ton of sugar; LOGTC implies Tons of cane crushed; YP implies Tons of sugar made; Tons implies yields per hectare of harvested cane

Principal Component Analysis: The principal component analysis (PCA) is one powerful statistical method widely applied to classify phenotypic traits in crop germplasm into groups based on similarities (Rukundo, et al., 2015). The purpose of principal component analysis is to find the best low-dimensional representation of the variation in a multivariate data set. We can carry out a principal component analysis to investigate whether we can capture most of the variation between samples using a smaller number of new variables (principal components), where each of these new variables is a linear combination of all or some of the traits. PCA reduces the original variables into a new set of uncorrelated variables known as principal components

(PCs). These PCs clarify the connections between traits and divide the total variance of the original traits into a small number of uncorrelated new variables (Wiley, and Lieberman, 2011). The PCA allows visual differentiation among entries and identify possible associations (Mohammadi, and Prasanna, 2003) by providing a two dimensional scatter plot consisting of individual entries. This section addresses the result on the principal component analysis on the series Suc. (dependent Variable), LOGTS; LOGTC and YP Tons

Table 4 showcase the result of the principal component analysis. The basic phenomenon in the Principal component analysis (PCA) rest in its ability to adopt a statistical procedure to operate through orthogonal transformation to convert a set of observations of possibly correlated variables into a set of values of linearly uncorrelated variables called principal components. This study uses this underlying principle to examine and to compare the declining level of sucrose percentage in cane in the model. The value 0.092412 for Sucrose percentage in cane when compared with other value has shown a consistent decline under the Eigenvectors (loading). However, the proportional composition of 0.6059 of sucrose is the highest particularly as we compare this value with others in the model, indicating it is principally an essential component in the chain of sugar production. The result of statistical analysis has clearly shown the importance of sucrose in the production of sugar cane but at a declining state. The implication of this declining and yet essential product generates the possible questions as to why the decline. In answering this question, Harris (2016) argue that the decline in the sucrose yield in the average from 11%-38% across the South African geographic and climatic zones is more than what can be attributed to reduction in climatic potential (Anon, 2014). Harris (2016) substantiated that the major factors responsible to this bulk of reduction includes the followings: the sugarcane production area originated from the segment of small scale grower that witness a reduction for the period from 2001 to 2014 in area in the order of 47 000 Ha. Again, rising costs of input, a lack of economies of scale and cohesion from the grower's group appear to be one of the important contributing factors to the decline in sucrose in South Africa (Anon, 2014; Stainbank, 2011). In addition, the ever available and the ongoing South African real threat of land claims has triggered the general opinions, particularly among large scale commercial farmers, of minimum replanting and soil health, reinvestment into farm infrastructure, as these factors have considerably contributed to the prolonged passage of sucrose yield decline in the industry (Anon, 2014).

Figure 1: Percentage of Sucrose as compared to other sugar cane yields



Source: Authors' Computation, 2017.

Again, this study has taken further step to represent the decline in sucrose in a graphical form as noted in figure 1. From the figure, the portion of the sky blue which has the lowest yield is the sucrose. This is immediately followed by Tons of cane to 1 Ton of sugar; Tons of cane crushed; Tons of sugar made and yields per hectare of harvested cane respectively.

5. Conclusion, Summary and Recommendations

The study is out to investigate with empirical evidence whether there is an existence of decline of sucrose in the cane sugar among the South African sugar industry. In achieving this objective, the study compared principal component analysis result with that summary statistics and correlation matrix. The result clearly indicates that a low sucrose level exists when compared with other content of sugar cane. The implication of this ratio is that sucrose does not grow in proportion with other component of sugar cane. Implication of this findings is that South African sugar cane growers suffer for the decline as farmers are only paid based on the quantity of sucrose in the sugar cane. The findings negated the result of Ahmed et al. (2010) but it however corroborates the findings of Barnes, Meyer and Schmidt (2000) in their study in Sezela mill area in South Africa. Hence the result has shown that the objective of the study has been achieved. The improvement of sucrose cultivation could be achieved by identifying genes associated with important agronomic traits in sucrose content. These genes can then be used to generate transgenic plants or can serve as molecular markers for map-assisted breeding which will eventually improve the sucrose content sugar over time

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Financial Inclusion and Macroeconomic Performance in Nigeria

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Abstract: The paper examines the relationship between financial inclusion and macroeconomic performance in Nigeria from 1981 to 2014. The data for the study were sourced from Central Bank of Nigeria statistical bulletins. The study employs the Ordinary Least Square and Granger Causality tests as estimation techniques. From the result, using the coefficient, Gross Domestic Product (GDP) is positive at constant of 2573.946. This means that when all variables are held constant, there will be a positive variation up to 2573.946 units in GDP. This implies that there is a significant and positive effect of financial inclusion on macroeconomic performance in Nigeria. It is concluded that Credit to the Private Sector as a ratio of GDP (CPS/GDP), Money Supply as a ratio of GDP (MS/GDP), and Numbers of Bank Branches (NBB) have a unidirectional relationship to GDP – while Currency Out Banks (COB), Interest Rate (INT) and Total Saving (TSA) are independent of GDP. The study therefore recommends that the government and the Central Bank of Nigeria should improve on the facilitation of credit to the private sector, and money supply should be properly managed. The Central Bank of Nigeria should encourage the provisions of more bank branches to rural and urban areas in order to promote easy access to financial services.

Keywords: *Financial inclusion, macroeconomic performance, number of bank branches, OLS*

1. Introduction

Financial inclusion entails the process that eases access, availability and usage of the formal financial system – to all the segments of an economy (Sarma & Pais, 2010). The features of financial inclusion particularly in the developing countries is of relevance to economic growth, and as such, policy-makers have expressed that financial inclusion can help poor households improve their lives and promote economic activity. The financial inclusive system facilitates the efficient allocation of productive resources and, at the same time, reduces the cost of capital and of the prevalence of informal financial institutions that are usually exploitative. Financial inclusion targets are to reduce the unbanked populace to formal financial system to give them the opportunity to access financial services – ranging from savings, payments and transfers to credit and insurance. Financial inclusion neither implies that everybody should make use of the supply, nor that providers should disregard risks and other costs when deciding to offer services. Nigeria reported that 39.2million adult Nigerians (46.3%) are financially excluded with regard to provision of banking and financial services. Thus only 31 million adult Nigerians are served with formal financial banking services (Friday, 2015).

The idea of these broad indicators of financial inclusion are based on the premise that in Africa, and with particular reference to Nigeria, it is not enough to have a bank account because unbanked or under-banked people, despite having access to formal financial institutions, usually do not use the financial services due *inter alia* to the remoteness of the bank branch, the cost of banking services like ATM charges, SMS alert charges and other ATM usage charges of ₦65, mobile bank-balance charges, drawer charges, transfer charges, stamp duties, etc. Some of the ways of encouraging and ensuring financial inclusion are circulation of deposit accounts, loans, insurance, and automated electronic transfers. As such, for any economy where most citizens are financially excluded and unbanked, the implication is perhaps that this is a threat to the economy (Friday, 2015). For instance, according to the Central Bank of Nigeria (CBN, 2009), about 83.9% of the total money in circulation is outside the banking system, and the banking sector accounts for an abysmally low 16.1% of the money in circulation (Friday, 2015). Presently, the Economic and Financial Crime Commission (EFCC) and whistle blowers have recovered some funds which are unbanked and the economic implications are telling for the monetary authority, citizenry and financial institutions. Nonetheless, this study examines the relationship between financial inclusion and macroeconomic performance in Nigeria. The remaining part of this work is divided into four sections. Section two deals with a review of the literature, section three focuses

on the research method, section four presents the empirical results and discussion of the findings, and section five concludes the study.

Financial Inclusion: Financial inclusion is defined as the access to and use of formal financial services. This implies that finance should be available to uses: accounts to receive income or transfers, savings accounts to store money safely and prudently, credit sources for personal or business borrowing, and insurance products to protect people during bad times. As The World Bank (2014) opined that financial inclusion could range from “access and use of services provided responsibly and sustainably” to “delivery of financial services at affordable costs to disadvantaged and low-income segments of society.”

Macroeconomic Performance: Macroeconomic performance includes indicators like GDP, unemployment rates, national income, price indices, and the interrelationships among the different sectors of the economy in order to better understand on how the whole economy functions. Macroeconomists develop models that explain the relationship between factors like national income, output, consumption, unemployment, inflation, savings, investment, international trade, and international finance. The well-established literature (summarized, for example, in Levine (2005) and Pasali (2013)) suggests that under normal circumstances, the degree of financial inclusion is positively correlated with growth and employment, and causally impacts on growth.

2. Literature Review

Migap, Okwanya and Ojeka (2015) studied the level of financial inclusion and its potential impact on an inclusive growth of the Nigerian economy, using relevant inclusive growth indices and indicators. The results revealed that the depth of financial inclusive is shallow even among African economies and more-so with emerging economies. It therefore recommends amongst others, the deployment of enhanced mobile banking and internet services by financial institutes to improve access to bank accounts and other services as well as the active participation of educational institutes in furthering financial literacy. Sarker, Ghosh and Palit (2015) investigated role of banking-sector to inclusive growth through inclusive finance in Bangladesh using simple linear regression model. The results suggest that banking sector's credits are significantly facilitating financial inclusion in Bangladesh. In addition; the study recommends some policy measures to overcome the challenges of financial inclusion with regards to the banking sector's initiatives in financing agriculture in Bangladesh. Friday (2015) examined financial inclusion and economic growth in Africa: insights from Nigeria from 1981 to 2013 using Ordinary Least Square as the estimation technique. The result revealed a high level of financial exclusion of bankable adult citizens in Nigeria, in particular, and in Africa in general. The study suggests a more inclusive financial system in Nigeria (and Africa) – with a focus on the rural populace, because “growth is good, sustained high growth is better and sustained high growth with financial inclusiveness is best of all”, and especially in a developing economy.

In a similar work of Abiola, Folasade, and Alexander (2015) employing Ordinary Least Square Regression Model for analytical purpose. Their findings revealed that financial inclusion is a significant element for factor of production and capital per worker which determines the final output level of the economy. Sarma (2012) evaluated the level of financial inclusion for 94 countries across the world from 2004 to 2010. Findings were that in 2009, of the 91 countries finally measured, Chad with an index of financial inclusion (IFI) value as low as 0.016 was the lowest financially inclusive country, while Cyprus with an IFI value of 0.996 ranked highest as the most financially inclusive country (Muneer et al., 2011). Then, in 2010, Afghanistan ranked lowest with an IFI value of 0.052, while Luxembourg with an IFI value of 0.996 was ranked highest. The study concludes that different countries around the world are at different levels of financial inclusion and exclusion, and recommends consistent use of the multidimensional approach to monitor the level of financial inclusion and exclusion in various countries as it is a good indicator of economic growth. Nwafor and Anyanwaokoro (2017) examined the impact of financial inclusion on economic growth in Nigeria for the period 2006 to 2015. Bivariate correlation analysis and other descriptive statistical tools were used.

Financial inclusion was found to be a positive and significant function of economic growth. Nigerian banks and other financial institutions should be encouraged to increase their number of branches and to deploy more ATMs and other e-payment services, in order to take financial services to areas not adequately reached–

especially the rural sector. The government and monetary authorities should create the enabling environment for them to do so. Mbutor and Ibrahim (2013) investigated the impact of financial inclusion on monetary policy in Nigeria from 1980 and 2012 using Ordinary Least Square and Co-integration as the estimation techniques. The results support the notion that growing financial inclusion would improve the effectiveness of monetary policy. However, the coefficient of the number of bank branches has the wrong sign and this is explained by the fact that, in opening branches, banks mainly pursue profits and not financial inclusion.

3. Methodology

Theoretical Framework: Circuit Theory Bossone (1998, 2000), in articulating the circuit theory of finance, incorporated a microeconomic dimension into the theory. Central to the circuit process is the complementary functions of banks and non-banking financial intermediaries in terms of originating money and making it circulate in a manner beneficial to all agents. The implication is that those financial systems where money and capital market functions are segmented but rudimentary or absent, as in many developing economies, they are prone to circuit malfunctioning and instability.

Selection of Period and Data Description: The period of the study covers 1981 to 2014. It is important to note that structural adjustment program (SAP) was ushered into Nigeria in 1986 to address the perceived economy imbroglio of the country. Its components include financial liberalization, interest rate liberalization and deregulation of the money and capital market, it is expected that these policies will bring about increase in the number of banks, banks' accessibility and financial inclusion. The period of the study captured both the pre and post liberalization periods to clearly see how it affected financial inclusion and how the economy performed during these periods. The chosen period is justified on the basis of the above points.

Table 1: Data description

Variable	Short form	Definition	Proxy
National gross domestic product growth rate	GDP gr	This is the rate at which the total monetary value of goods and services at current basic prices grow in the economy	Macro-Economic performance
Number of Bank Branches	NBB	This is the total number of indigenous bank branches excluding branches outside the country	Accessibility to Financial Institutions and financial inclusion
Money Supply to Gross Domestic Product	M2/GDP	Ratio of Money Supply by the monetary authority to the economy compared with total goods produced within the country.	Funds availability and financial intermediation
Credit to Private Sector to Gross Domestic Product	CPS/GDP	Ratio of Credit given to the production/real sector for investment compared to Gross Domestic Product	Investment
Currency outside Banks	COB	This is total unbanked money in the economy	Financial leakages that is the volume of unbanked money financial exclusion
Interest Rate	INT	This is the amount paid by the banks to the depositors or the opportunity cost for saving their money	Cost of fund to the bank/ cost of financial inclusion

Source: Authors' computation (2018)

Model Specification: The study adopts an econometric model in determining the causality links of financial inclusion with respect to macroeconomic performance in Nigeria. The study adopts a model similar to that used by Nwafor and Anyanwaokoro (2017) – which is specified below as:

$$Y_t = f(X_t) \text{ -----1Where}$$

Y = the dependent variable represented by Gross Domestic Product,

X = the independent variables represented by: Deposit Money Bank Branches (DMBB); Retirement Savings Accounts (RSA); Broad money supply to GDP (M2/GDP); Credit to Private Sector to Gross Domestic Product (CPS/GDP); Number of ATMs per 100,000 people (NATM); and Gross Savings Rate (GSR).

In stipulating the model for this research, the above model will be amended by adding to the explanatory variables. As a result, the new model adopted to underpin the research, is specified below as:

$$\text{GDPgr} = f(\text{NBB}, \text{M2/GDP}, \text{CPS/GDP}, \text{COB}, \text{TSA}, \text{INT}) \text{ -----2}$$

$$\text{GDPgr} = \gamma_0 + \gamma_1 \text{NBB} + \gamma_2 \text{M2/GDP} + \gamma_3 \text{CPS/GDP} + \gamma_4 \text{COB} + \gamma_5 \text{TSA} + \gamma_6 \text{INT} + \epsilon_t \text{ -----3Where}$$

GDPgr represents Gross Domestic Product growth rate,

NBB represents Number of Bank Branches,

M2/GDP represents the ratio of Money Supply to Gross Domestic Product,

CPS/GDP represents the ratio of Credit to Private Sector relative to Gross Domestic Product,

COB represents Currency Outside Banks,

TSA represents Total Savings, and

INT represents Interest Rate

$\gamma_0 = \text{Constant}$

$\gamma_1 - \gamma_6 = \text{Shift parameters}$

f represents functional denotation

4. Results and Discussion

Table 2: Descriptive Analysis

	GDP	CPS_GDP	COB	INT	M2_GDP	NBB	TSA
Mean	17827.15	12.84335	1826.131	11.66349	17.25827	2947.714	2072.166
Median	4189.250	10.91669	156.7161	11.69083	16.56882	2362.000	200.0651
Maximum	94144.96	36.89332	7420.946	23.24167	37.95685	5807.000	12008.21
Minimum	94.32502	5.917133	3.861900	5.699167	8.577088	862.0000	6.562600
Std Dev.	28092.36	6.547699	2669.591	4.006678	5.838363	1582.014	3457.948
Skewness	1.688211	1.877912	1.198296	0.758806	1.655927	0.657230	1.684234
Kurtosis	4.405487	6.880788	2.780508	3.511568	6.868021	2.063961	4.595928
Jarque-Bera	19.50612	42.53481	8.446420	3.740403	37.81453	3.797463	20.26144
Probability	0.000058	0.000000	0.014652	0.154093	0.000000	0.149759	0.000040
Sum	623950.4	449.5173	63914.60	408.2222	604.0393	103170.0	72525.80
Sum Sq.Dev.	2.68E+10	1457.660	2.42E+08	545.8180	1158.941	85094153	4.07E+08
Observations	35	35	35	35	35	35	35

Source: Author's computation (2018)

The mean, median, maximum, minimum and standard deviation are presented in Table 1 above together with the normality test statistics like Skewness, Kurtosis and Jarque-Bera. The Skewness statistic reveals that all the variables were positively skewed. Kurtosis statistics reveal that GDP, CPS_GDP, INT, M2_GDP and TSA were leptokurtic (fat tailed), while COB and NBB were platykurtic (tin tailed). The Jarque-Bera (JB) test is also reported in the table. Based on the probability scores, the JB statistic result shows that all the variables were normally distributed – except for INT and NBB which were not normally distributed during the study period.

Unit Root Result: The Augmented Dickey Fuller (ADF) test was used to analyze stationarity of the variables. The results are presented in level and first difference.

Table 3a: Augmented Dickey Fuller Unit Root Test at Level

Variable	ADF Test Statistic	95% Critical Value	ADF	Remark
GDP	3.332824	-2.951125		Non-stationary
NBB	-0.062327	-2.954021		Non-Stationary
M2/GDP	-2.075021	-2.951125		Non-Stationary
CPS/GDP	-	-2.951125		Non-Stationary
	1.899665			
COB	-8.413328	-2.976263		Stationary
TSA	-0.267289	-2.960411		Non-Stationary
INT	-2.845594	-2.960411		Non-Stationary

Source: Author's Computation (2018)

Table 3b: Augmented Dickey Fuller Unit Root Test at First Difference

Variable	ADF Test Statistic	95% Critical ADF Value	Remark
DGDP	-3.999098	-2.954021	Stationary
DNBB	-4.312080	-2.957110	Stationary
DM2/GDP	-5.470327	-2.954021	Stationary
DCPS/GDP	-5.829786	-2.957110	Stationary
DTSA	-5.871264	-2.960411	Stationary
DINT	-3.447312	-2.963972	Stationary

Source: Author's Computation (2018)

Table 3c: Order of Integration

Variable	Order of Integration
GDP	I(1)
NBB	I(1)
M2/GDP	I(1)
CPS/GDP	I(1)
COB	I(0)
TSA	I(1)
INT	I(1)

Source: Author's Computation (2018)

Ordinary Least Square: Tables 3a,3b, and 3c (above) present the result of the unit root testing and the results show that all variables were stationary. Currency outside Banks (COB) was the only variable that is stationary at level or I(0) – while all other variables were stationary after converting them to first differencing or I(1).

Table 4 shows a regression result of financial inclusion and macroeconomic performance in Nigeria. As specified above, the results were acquired using Ordinary Least Square (OLS) which tests short-run equilibrium of the variables. The results reveals that the Coefficient of Multiple Determinant(R^2) was considered high in this study with over 97%; the adjusted R-square was also over 97%; the Durbin-Watson statistic; and the F-test, were significant at the 5% level of significance. The equation reveals that some signs were not in line with expectation. From the result, TSA was the only variable in line with expectation, while other variables also did not conform with the expectation in the model. From the result, the coefficient of the variables showed different results– representing the financial inclusion contributions to macroeconomic performance in Nigeria (GDPgr).

Table 4: OLS Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2573.946	21257.66	0.121083	0.9045
CPS_GDP	-550.3142	466.2632	-1.180265	0.2482
INT	147.6357	214.6926	0.687661	0.4975
M2_GDP	-612.6581	389.2338	-1.574010	0.1271
NBB	-4.706515	2.295448	-2.050368	0.0502
TSA	1695.218	2144.112	0.790639	0.4360
COB	13.72998	1.044044	13.15077	0.0000
R-squared	0.979460			
Adjusted R-squared	0.974895			
F-statistic	214.5826	Durbin-Watson stat		1.261453
Prob(F-statistic)	0.000000			

Source: Author's computation (2018)

In this result, using the coefficient, GDPgr is positive at a constant of 2573.946. This means that when all variables held constant, there will be a positive variation up to 2573.946 units in GDPgr. Implying that there is significant and positive effect of financial inclusion on macroeconomic performance in Nigeria. The result equally reveals that the regression coefficient of Credit to Private Sector/GDP (CPS_GDP) in GDPgr is -550.3142, and its P-values are 0.2482. This implies that CPS has a negative and insignificant impact on macroeconomic performance (GDPgr) in Nigeria. The negative signed coefficient of CPS_GDP. The regression coefficient of Interest Rate (INT) in GDPgr is 147.6357, and its P-values are 0.4975. This implies that INT has a positive and insignificant impact on GDPgr in Nigeria. The regression coefficient of Money Supply/GDP (M2_GDP) in GDPgr is -612.6581, and its P-values are 0.1271. This implies that M2_GDP has a negative and insignificant impact on GDP in Nigeria. The coefficient of Number of Bank Branches (NBB) in GDPgr is -4.706515, and its P-values are 0.0502.

Lag Length: This implies that NBB has a negative and significant impact on GDPgr in Nigeria. The coefficient of Total Saving (TSA) in GDPgr is 1695.218, and its P-values are 0.4364. This implies that TSA has a positive and insignificant impact on GDPgr in Nigeria, the regression coefficient of Currency outside Banks (COB) in GDPgr is 13.72998, and its P values are 0.0000. The OLS equation shows that COB has a positive and significant impact on economic development in Nigeria. The lag-length selection results in Table 4 indicate that Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Criterion (SC), and Hanann Quin (HQ) all suggested 3 lags. These lags are followed in the next regression (Granger Causality).

Table 4: Lag Length Selection Criterion

Lag	LogL	LR	FPE	AIC		HQ
0	-1326.906	NA	3.80e+27	83.36915	83.68978	83.47543
1	-1149.018	266.8321	1.30e+24	75.31364	77.87868	76.16388
2	-1055.211	99.67028	1.28e+23	72.51319	77.32263	74.10738
3	-899.6934	97.19847*	8.32e+20*	65.85584*	72.90969*	68.19399*

Source: Author's computation (2018)

Granger Causality: In Table 5 (above), there is a unidirectional relationship between CPS_GDP and GDPgr which implies that CPS_GDP can influence GDPgr. M2_GDP reveals that there is a unidirectional relationship to GDPgr which implies that M2_GDP can cause the variation to GDPgr, while NBB equally depicts a unidirectional relationship to GDPgr. Based on the above result, COB, INT and TSA move independently to GDPgr– meaning there is a causality link among the variables to GDPgr.

Table 5: Granger Causality Result

CPS_GDP does not Granger Cause GDPgr	32	21.0793	5.E-07
GDPgr does not Granger Cause CPS_GDP		5.16233	0.0065
COB does not Granger Cause GDPgr	32	45.2718	3.E-10
GDPgr does not Granger Cause COB		2.17644	0.1159
INT does not Granger Cause GDPgr	32	0.11206	0.9522
GDPgr does not Granger Cause INT		0.78773	0.5121
M2_GDP does not Granger Cause GDPgr	32	10.4720	0.0001
GDPgr does not Granger Cause M2_GDP		2.48154	0.0842
NBB does not Granger Cause GDPgr	32	5.17635	0.0064
GDPgr does not Granger Cause NBB		1.68972	0.1947
TSA does not Granger Cause GDPgr	32	15.3148	7.E-06
GDPgr does not Granger Cause TSA		24.0993	2.E-07

Source: Author's computation (2018)

5. Conclusion and Recommendations

This study examined short-run relationship between financial inclusion and macroeconomic performance in Nigeria. It concluded that financial inclusion has a high influence on macroeconomic performance in Nigeria. It also concluded, from the analysis presented above, that credit to the private sector as a ratio of GDPgr, money supply as a ratio of GDPgr, and numbers of bank branches have a unidirectional relationship with macroeconomic performance, while currency out banks (COB), interest rate (INT) and total savings(TSA) move independently. It is recommended that the government and Central Bank of Nigeria including Banks are urge to reduce most of these charges discouraging access to financial services thereby increases financial inclusion. It is also recommended that the Banks and the Banking regulators should continuously organize sensitization programs to facilitate credit to the private sector in both rural and urban areas. It is also recommended that money supply should be properly managed. Furthermore, the Central Bank of Nigeria should encourage the provisions of more bank branches to rural and urban areas to promote easy access of financial services

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Antecedents of Supply Chain Performance: A Case of Food Retail Industry

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Abstract: Food retail industry plays an important part in gross domestic product (GDP). Buyers and suppliers in this industry work in collaboration with each other to achieve an optimal supply chain performance. The purpose of this study is to investigate the drivers of supply chain performance in the food retail industry in Gauteng province. These drivers are known as buyer-supplier trust (BST), buyer-supplier commitment (BSC) and supply chain relationship longevity (RL). This study adopted a quantitative method where a questionnaire was used to collect data from 429 food retailers in the Gauteng province. The study used a convenience sampling technique to select respondents. The Statistical Package for the Social Sciences (SPSS) 24.0 and Smart PLS were used to assist in the data analysis. The results of the research revealed that buyer-supplier trust, buyer-supplier commitment and RL have a strong, positive and important impact on supply chain performance. Based on the results of this study, it can be concluded that to achieve supply chain performance, business's operators should develop a significant relationship based on trust, commitment and relationship longevity. Furthermore, the results of this study provide useful insights on how businesses should benefit from trust, commitment and relationship longevity as well as how to improve supply chain performance. Practical and theoretical contributions, implications and recommendations are provided.

keywords: *Food retail, buyer-supplier trust, buyer-supplier commitment, supply chain relationship longevity, commitment-trust theory*

1. Introduction

The importance of the study is to investigate the influence of buyer-supplier trust (BST), buyer-supplier commitment (BSC) and supply chain relationship longevity (RL) on supply chain performance (SCP). The pioneering research of supply chain relationship performance is an important point of study for new generations of researchers and practitioners in conducting research. For retailers and suppliers, it is relevant and critical to know and understand how to build long-lasting relationships among partners in a competitive environment characterised by success and customer satisfaction. Through relationship longevity, firms adopt a long-term approach with joint efforts by each partner to create unique value that neither partner can create independently (Nyaga, Whipple & Lynch, 2010). Organisations have to do so, in order to achieve efficiencies, flexibility, an economical advantage and supply chain performance (Nyaga et al., 2010). In fact, many researchers have investigated supply chain performance from a different perspective. Wang, Chang and Wang (2009) investigated supply chain performance in relation to product development strategy focusing on efficiency, but not necessarily the potential benefits sought by supply chain members. Regarding competitive and cooperative positioning in supply chain logistics relationships, Klein, Rai and Straub (2007) as well as Bichescu and Fry (2009) researched supply chain performance in relation to decision making. According to Gavrea, Ilies and Stegorean (2011), achieving supply chain performance is the focus of any organisation, because it is only through performance that organisations are able to grow and progress.

Supply chain performance is one of the most important variables in management research and possibly the most important indicator of organisational performance. For a firm to achieve supply chain performance, it is important for partners to enhance the relationship by building trust and commitment (Nyaga et al., 2010). The influence of trust is crucial to the success of the supply chain system. In fact, Ghosh and Fedorowicz (2008) examined the influence of trust among the collaborative, planning, forecasting and replenishment processes and found that trust is critical in the implementation and improvement of supply chain performance. In addition, Panayides and Venus Lun (2009) indicate that trust is of fundamental importance to supply chain operators since without it many of the supply chain systems that are implemented practically would not have functioned efficiently. In this sense, trust is relevant in supply chain, because it is a critical component for building and maintaining healthy long-term relationships among partners (Pinto, Slevin & English, 2009). This study provided a discussion on buyer-supplier relationship practices from a service industry perspective, which is beneficial to the food retail industry in Gauteng province.

Problem statement: According to the Industrial Development Corporation (2013), the food retail industry is one of the most important industries in driving the South African economy, since it employs millions of people and is responsible for ensuring the survival of people in the country by providing them with food. This importance attracts the need for continued research in this industry in order to generate information that may be used in both problem solving and decision making. Supply chain management is important to the food retail industry since it facilitates the efficient movement of required materials and information, and transportation of the products from the factories to markets that are closer to consumers (Levy & Weitz, 2009). With the continuous growth and increasing complexity of the supply food retail industry in South Africa comes various mounting supply chain-related challenges that demand effective business strategies. Examples of such challenges include exchange rate fluctuations, intense competition, inter-organisational relationship conflict, and the lack of trust and commitment between business partners, which have the effect of reducing both business and supply chain performance. It becomes necessary then, to direct empirical attention on these issues in order to cultivate a better understanding of the developments occurring within the industry (Dos Santos, 2010)

Trust is an important factor in promoting commitment among partners in the supply chain and the presence of trust increases chances of supply chain success (Agha Mohammadi, Bazrafshan, Naeimi & Rad, 2014). Besides studies by Xiao, Zheng, Pan and Xie (2010) as well as Nyaga et al. (2010) there is limited evidence of previous research that has examined similar constructs. In addition, limited research has been conducted in the field of supply chain management concerning buyer-supplier relationships in South Africa. In the same context, there is a research gap in the relationship between buyer-supplier trust, buyer-supplier commitment, and supply chain relationship longevity and supply chain performance in the food retail sector. Prajogo and Olhager (2012) also add that internationally, most studies investigating the relationship between buyers and suppliers have been less than encouraging. This provided evidence that more studies focusing on these constructs were still required in South Africa. Therefore, the purpose of this study was to investigate the drivers of supply chain performance in the retail food industry in Gauteng province.

2. Literature Review

For Stefanie, Philip, Kim and Helmut (2010) trust is the firm's (food retailer) faith that another partner (supplier) will achieve actions that will have positive results for the firm as well as not take unanticipated actions that will result in negative consequences. Buyer-supplier commitment is seen as a long-term relationship between the informal food retailer and the supplier in engaging their capital resources to improve and develop common benefits (Tungjitjarun, Suthiwartnarueput & Pornchaiwiseskul, 2012). In addition, supply chain relationship longevity or relationship longevity is the commitment of a buyer to a lasting affiliation with a supplier (Flynn, Morita & Machuca, 2011). Lastly, supply chain performance is defined as the ability of any food retailer to deliver products with good quality and the required quantity at low cost and at the precise time (Zelbst, Green, Baker & Sower, 2010).

The Commitment-Trust Theory: This study is based on relationship marketing, namely the commitment-trust theory of Morgan and Hunt (1994). The theory emphasises on illustrating the development of long-term relationship between exchanges partners (Li, Browne & Wetherbe, 2006) such as informal food retailers and suppliers. The key evidence of this theory is the adoption of commitment and trust as inseparable and essential elements for the development and continuing business relationships between exchange parties. According to Morgan and Hunt (1994), the commitment-trust theory inspires individuals such as food retailers and their suppliers who are engaged in making purchase decisions to work at preserving relationship investments by working together with exchange partners. With this kind of relationship, it is sure that a long-term relationship is possible between informal or independent food retailers and their respective suppliers. In accordance with the theory, Ideet and Wanyoike (2014) say that the two fundamental factors, which are trust and commitment, must exist for a relationship to be successful. Consistent with Li, Humphreys, Andy, Yeung and Cheng (2007), for buyer and supplier to achieve successful relationships with long-term goals and vision, the establishment of trust and commitment is vital. For mutual benefit, if they do not establish trust and commitment there will be no relationship between exchange partners. Instead of focusing on short-term profits, businesses are committed to the principles of relationship marketing in order to forge long-term promises with their buyers. Therefore, buyers have the ability to trust the suppliers and

this creates a mutual loyalty that helps both parties—buyers and suppliers, to satisfy their needs (Ideet & Wanyoike, 2014).

Food Retail Industry: In South Africa, an increasing food retail industry with a population close to 49 million individuals, holds an up-to-date infrastructure associated relatively with efficient suppliers of goods to metropolitan centers, cities and rural regions across the country (Ntloedibe, 2011). Therefore, in South Africa, food retail is defined as an extreme level of competition, attentiveness and a unique South African customer base, which varies from the poor rural areas to the rich cities metropolis (Ideet & Wanyoike, 2014). During the apartheid era, large food retailers did not serve townships. Due to that, informal food retailers were created to supply the population with goods via independent grocery stores known as tuck shops and spaza shops (Ntloedibe, 2011). Since the end of apartheid in 1994, the food retail sector has grown rapidly (Edwards & Jenkins, 2015). Throughout the years, the food retail sector has been urbanized through an increased number of shopping centers in the country (Gauteng Province, 2012).

South Africa is the African leader in terms of economic growth with approximately 55 percent share of hypermarkets in global food retail. The food retail industry includes two subdivisions: the informal or independent subdivision including hawkers, small stands and spaza shops, and the formal subdivision involving large hyper- and supermarkets (Pereira & Ruyselaar, 2012), such as Shoprite, Pick and Pay, Spar and Woolworths. Being a good developing country, South Africa ensures corporate sustainability that combines social, environmental and economy impact of the industries. Therefore, numerous sectors such as food retail have initiated a change to sustainability in order to improve the state of the economy through social and environmental enhancement measures (Christelis, 2013).

Buyer-supplier trust and buyer-supplier commitment: Based on the study of Eden (2008), buyer-supplier trust and commitment are important for supply chain partners because these two concepts lead to positive assistance that greatly improves the performance of businesses such as informal food retailers. The same author goes further by saying that trust and commitment are linked to social elements such as active communication, cultural sensitivity and the friendliness of the partner. Thus, the finding of Frassetto, Calderon and Cervera (2012) reveal that there is a direct relationship between trust and commitment and due to that, the relationship between the partners is improved. When investigating the link between trust and commitment, some scholars concluded that trust precedes commitment (Tan & Lim, 2009; Lacey & Kennett-Hensel, 2010; Aysel, Sevtap, Burcu & Hatice, 2012). In other words, trust impacts on commitment (Abdullah & Musa, 2014). This is possible because trust has an added significant importance and it is becoming one of the top main concerns of perpetuating the relationship among supply chain partners (Yeung, Selen, Zhang & Huo, 2009).

While some authors imply that it is commitment that improves trust (Harris, Kuivalainen & Stoyanova, 2012), others simply imply that trust and commitment are not just social matters, they are important drivers of business performance (Eden, 2008). In the same vein, Rehman, Shareef and Ishaque (2012) argue that trust and commitment are powerfully associated to each other. Buyer-supplier relationships can exist only if there is commitment and trust (Jie, Parton & Mustafid, 2016). For this reason, it is significant for formal food retailers and their suppliers to build a relationship based on trust and commitment. In addition, trust and commitment impact on the performance of food retailers, whether formal or informal; based on this, positive results increase implicitly and the relationship is maintained (Palmatier, Jarvis, Bechkoff & Kardes, 2009). Based on the above mixed findings, the following hypothesis is suggested:

Buyer-supplier trust and supply chain relationship longevity: Many researchers have made an effort to understand the acceptance of long-term relationships within the retail sector, emphasising the fundamental role of trust for both parties to maintain the relationship (Bordonaba-Juste & Polo-Redondo, 2011). According to Abbad, Pache and Fernandez (2013), trust impacts on relationship longevity between buyer and supplier in three ways; first, it decreases the opinion of risk related to opportunist behaviours by the supplier, secondly, it increases the assurance for both buyer and supplier that short-term problems and disparities will be solved in the long-term and, thirdly, it reduces transaction costs in exchange relationships. Additionally, as proven by Leonidou, Talias and Leonidou (2008), relationship longevity, developed through trust, ends up with positive results and avoids negative activities. To achieve efficiency in supply chain, trust must be built

up in the supply chain longevity relationships between suppliers and buyers (Ha, Park & Cho, 2011). Buyer-supplier trust requires longevity relationships to ensure that mutuality can happen (Tidd & Bessant, 2009) and this leads to satisfaction of the supplier's members and future business growth as well as profits. Therefore, in the above view, the following hypothesis is worth exploring:

H1: There is a positive and significant relationship between buyer-supplier trust and buyer-supplier commitment.

H2: There is a positive and significant relationship between buyer-supplier trust and supply chain relationship longevity.

Buyer-supplier commitment and supply chain relationship longevity: The study of Jie et al. (2016) reveals that commitment is characterised by a supply chain relationship longevity, which can be seen as the willingness of members to continue the relationship. According to Tidd and Bessant (2009), the existence of commitment between buyers and suppliers allows the parties to continue the relationship. In accordance with these authors, Lee (2015) adds that the objective of buyer and supplier commitment is to achieve long-term relationships in order to cultivate respect, friendship, trust and reciprocity over time and decrease the costs of transactions. Additionally, commitment is a long-term relationship between buyers and suppliers to increase the quality, technical-, delivery- and cost capabilities and to foster ongoing improvements of the supplier (Handfield, Krause, Scannell & Monczka, 2006). Commitment develops quality attitudes between the supply chain parties and continuously focuses on quality of the goods, production and performance (Aslan, Elif, Orhan & Cetin, 2011). Commitment helps to improve the capabilities of the suppliers and the knowledge transfer from the buyer to the supplier (Wagner, Coley & Lindemann, 2011). To develop supply chain longevity relationships between buyers and suppliers, both partners start with determining which suppliers will benefit from long-term goals (Kumar, Clemens & Keller, 2014). Therefore, after the above explanation, the following hypothesis can be formulated:

H3: There is a positive and significant relationship between buyer-supplier commitment and supply chain relationship longevity.

Supply chain relationship longevity and supply chain performance: Establishing long-term relationships between buyers and suppliers is the key to the success of the retail industry (Loice, 2015). Buyers and suppliers want to build and maintain long-term supply chain relationships because the parties consider it one of the principal factors of supply chain performance success. Williams (2013) say that supply chain longevity relationship between buyers and suppliers is the principal key to the success of the food retail industry. In order to amplify the previous statement, Lin (2012) points out that it is indeed obligatory for formal food retailers to develop and preserve longevity relationships with their suppliers if they want to achieve supply chain performance. Hence, the study of Loice (2015) reveals it is necessary for supply chain partners to develop long-term relationships in order to preserve the relationship and to improve competitive advantage, as well as improving supply chain performance. According to Williams (2013), the success of supply chain performance is linked to a good relationship with the parties involved in the relationship. Thus, relationship longevity leads to the creation of value, which leads to the supply chain performance, more clearly, to the satisfaction of the end customers as well as the buyers and suppliers' future business growth. Based on the above issues, the following hypothesis is addressed:

H4: There is a positive and significant relationship between supply chain relationship longevity and supply chain performance.

Buyer-supplier trust and supply chain performance: Ryu, So and Koo (2009) found that trust is developed as a result of collaboration between two supply chain members with the objective of increasing the supply chain partner's operational performance. Trust in supply chain performance allows the parties to act in an unselfish manner in order to achieve positive results in the supply chain (Mohamed, Omar & Wei, 2015). Supply chain performance requires several factors to be achieved, which include trust, cooperation and communication, as observed in the theory (Hidayat, Hudha & Akhmad, 2015). Accordingly, trust is seen as an important predictor of positive performance results such as cost reduction, enhanced flexibility and responsiveness. In the same way of thinking, Capaldo and Giannoccaro (2015) clearly state that trust is a central forecaster of positive supply chain performance. Furthermore, trust increases the possibility for informal food retailers and suppliers to exchange information and exploit new opportunities, with significant

impacts on performance (Lado, Dant & Tekleab, 2008). Therefore, in the above view, the following hypothesis is worth exploring:

H5: There is a positive and significant relationship between buyer-supplier trust and supply chain performance.

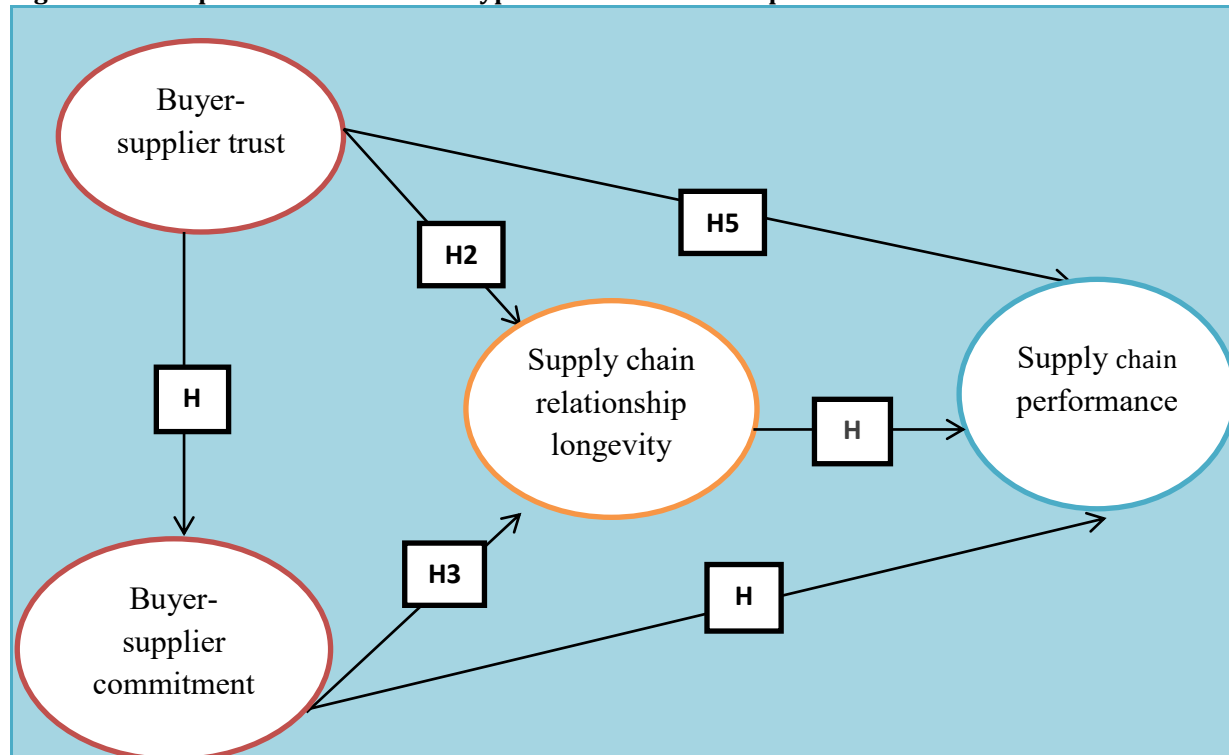
Buyer-supplier commitment and supply chain performance: To show the relationship between buyer-supplier commitment and supply chain performance, the study of Gupta, Choudhary and Siraj-Alam (2014) reveals that commitment has a direct and positive impact on supply chain performance. In the same view, Khan, Liang and Shahzad (2015) argue that buyer-supplier commitment allows buyers and suppliers to realise favourable or positive results for each party. Furthermore, Styles, Patterson and Ahmed (2008) state that commitment of both buyers and suppliers is related directly to the supply chain performance of the business. This means that commitment cannot be separated from the performance of any organisation. Crook, Giunipero, Reus, Handfield and Williams (2008) state that when autonomous businesses such as formal food retailers join forces with suppliers and other retailers they can attain the advantages beyond what could be achieved in arm's length exchange. This study proposes that a relationship between food retailers and suppliers characterised by commitment might lead to improving supply chain performance considerably. Therefore, based on the above mixed findings the following hypothesis is suggested:

H6: There is a positive and significant relationship between buyer-supplier commitment and supply chain performance.

Conceptualised Framework and Research Hypotheses Formulation: The aim of this study is to investigate the drivers of supply chain performance in the food retail industry in Gauteng province.

Conceptualised framework: A framework was conceptualised specifically to study the relationship between buyer-supplier trust, buyer-supplier commitment, supply chain relationship longevity and supply chain performance. In this framework, buyer-supplier trust and buyer-supplier commitment are the predictor variables, supply chain relationship longevity is the mediator variable and supply chain performance is the outcome construct. The figure shows a framework of the constructs and hypothesised relationships investigated in the study.

Figure 1: Conceptual framework and hypothesised relationships



3. Methodology

This study was subject to the cross-sectional survey design. The cross-sectional survey design was selected in this study to show that relationships exist between the different constructs. In this study, the quantitative approach was adopted. Since this study tested relationships between several variables and hypotheses were tested, a quantitative approach was selected. Convenience sampling was used because of the ease of access, geographic closeness and the disposition of the sample unit to participate in this study. Moreover, the advantages of convenience sampling, namely the target population was easy to reach; the least expensive and the least time consuming technique are the reasons why this method was used in this study. In this study, the target population consisted of food retailers located in Gauteng province because of easy access and time saving. The sample size for this study was 429 formal food retailers. Several scholars and academics such as Joshi and Mani (2016) and Vera and Rozida (2016) have used a sample size of 400 and have obtained significant, accurate and reliable results. In total, 483 questionnaires were distributed; out of this, 429 were retained and 54 questionnaires were unusable because of errors such as uncompleted questions. The respective response rate of the 429 was 89 percent. This response rate was acceptable because it is above the 50 percent minimum threshold suggested by Kidder (1981).

Measurement instruments: The questions for this study were developed from pre-existing scales in the literature. The existing items were adopted to suit this study. For this reason, questions were reformulated. The measurement instruments were measured using five-point Likert-type scales with the following representative values: 1=strongly disagree, 2=disagree, 3=moderately agree, 4=agree and 5=strongly agree. Buyer-supplier trust was measured with five questions adopted from Chen, Wang and Yen (2014). Buyer-supplier commitment was measured with five items adapted from Aziz and Noor (2013). Supply chain relationship longevity was measured with five measurement items adopted from Chen, Lee and Paulraj (2014) and supply chain performance was measured with six measurement instruments adapted from Qrunfleh and Tarafdar (2014).

4. Results

Psychometric properties of the measurement scale: Psychometric properties of the measurement scale are reported in Table 2, which presents the research constructs, Cronbach alpha test, composite reliability (CR), average variance extracted (AVE) and item loadings. Convergent validity is a technique to assess construct validity (Ghadi, Alwi, Bakar, & Talib, 2012). In the current study, convergent validity was determined through item to total correlation and factor loading. Item to total correlation and factor loading were assessed using SPSS. For consistency to assess the items, factor loading should be greater than 0.5 (Fornell & Larcker, 1981). As seen in Table 2, the factor loadings of all the measurement instruments are within the range of 0.615 to 0.910. All the items are greater than 0.5. These results mean that all the items are acceptable and that there is a relationship between each construct and each item. To evaluate the internal consistency of the research constructs, CR was conducted in this study.

The following formula was used to calculate CR. $CR = \frac{(\sum \lambda_{yi})^2}{(\sum \lambda_{yi})^2 + (\sum \epsilon_i)}$ CR= (square of the summation of the factor loadings) / [(square of the summation of the factor loadings) + (summation of error variances)] According to Hair, Babin, Anderson and Tatham (2010), CR greater than 0.7 reflects a good consistency of the variable. As shown in Table 2, all four constructs in this study had a CR between 0.76 and 0.81. Therefore, these results prove the existence of a good internal reliability of the constructs in this study. According to Chin (1998), the AVE of the research constructs should be greater than 0.5. The AVE was calculated by using the following formula of Fornell and Lacker (1981:64): $VE = \frac{\sum \lambda_{yi}^2}{(\sum \lambda_{yi}^2 + \sum \epsilon_i)}$ AVE= summation of the square of factor loadings / [(summation of the square of factor loadings) + (summation of error variances)] The values of AVE of the research constructs are between 0.51 and 0.65(as presented in Table 2), these values exceed the recommended threshold of 0.50 (Fornell & Larcker, 1981). Therefore, these results are acceptable.

Path modelling results: After confirming the reliability and validity of the measurement instruments (reported in Table 2), the study proceeded to test the proposed hypotheses. In total, there are six hypotheses that are tested. Figure 2 provides the proposed hypotheses and the respective path coefficients. The same

results of the path coefficients are tabulated in Table 2 depicting the item to total correlations, AVE, CR and factor loadings.

Path model results and factor loadings: Figure 2 indicates the path modelling results as well as the item loadings for the research constructs. In figure 2, BST stands for buyer-supplier trust; BSC for buyer-supplier commitment; RL stands for supply chain relationship longevity and SCP for supply chain performance.

Table 1: Accuracy analysis statistics

Research constructs		Descriptive statistics		Cronbach's test		CR value	AVE value	Factor loading
		Mean	SD	Item-total	α value			
Buyer-supplier trust	BST1			0.693				0.740
	BST2			0.794				0.735
	BST3	3.637	4.200	0.722	0.86	0.76	0.56	0.802
	BST4			0.752				0.858
	BST5			0.779				0.824
Buyer-supplier Commitment	BSC1			0.766				0.898
	BSC2			0.799				0.856
	BSC3	3.942	4.147	0.728	0.90	0.81	0.65	0.796
	BSC4			0.698				0.809
	BSC5			0.812				0.910
Supply chain relationship longevity	RL1			0.687				0.872
	RL2	3.791	3.228	.0720	0.79	0.73	0.51	0.896
	RL3			0.529				0.753
	RL5			0.505				0.615
Supply chain performance	SCP1			0.672				0.800
	SCP2			0.725				0.727
	SCP3		5.035	0.716	0.91	0.79	0.63	0.773
	SCP4	3.775		0.894				0.913
	SCP5			0.800				0.909
	SCP6			0.888				0.906

Note: BST= Buyer-supplier trust; BSC=Buyer-supplier commitment; RL=Supply chain relationship longevity; SCP= Supply chain performance; CR: Composite reliability; AVE: Average varianceextracted

Results of the Hypotheses: As presented in Table 4, the levels of the coefficients of all the six hypotheses are significant at a level of $p < 0.01$. All the hypotheses present three stars (***) According to Chinomona, Lin, Wang and Cheng (2010), significant levels of $p < 0.05$, $p < 0.01$ and $p < 0.01$ are indicators of positive, strong and significant relationships between the research constructs. Based on that, it can be concluded that the hypotheses in this study are significant and acceptable. Table 2 shows a positive significant correlation between the different constructs. The correlation between BSC and BST has a value of ($r = 0.705$; $p < 0.01$). Moreover, the correlation matrix describes a positive relationship between RL and BST with a value of ($r = 0.661$; $p < 0.01$) as well RL and BSC with a value of ($r = 0.796$; $p < 0.01$). Furthermore, the same type of correlation exists between SCP and BST ($r = 0.618$; $p < 0.01$); SCP and BSC ($r = 0.681$; $p < 0.01$) as well as SCP and RL ($r = 0.691$; $p < 0.01$).

Table 2: Correlations between constructs

Research construct	Construct correlation			
	BST	BSC	RL	SCP
Buyer-supplier trust (BST)	1.000			
Buyer-supplier commitment (BSC)	0.705**	1.000		
Relationship longevity (RL)	0.661**	0.796**	1.000	
Supply chain performance	0.618***	0.681**	0.691**	1.000

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

Figure 2: Path modelling and factor loading results

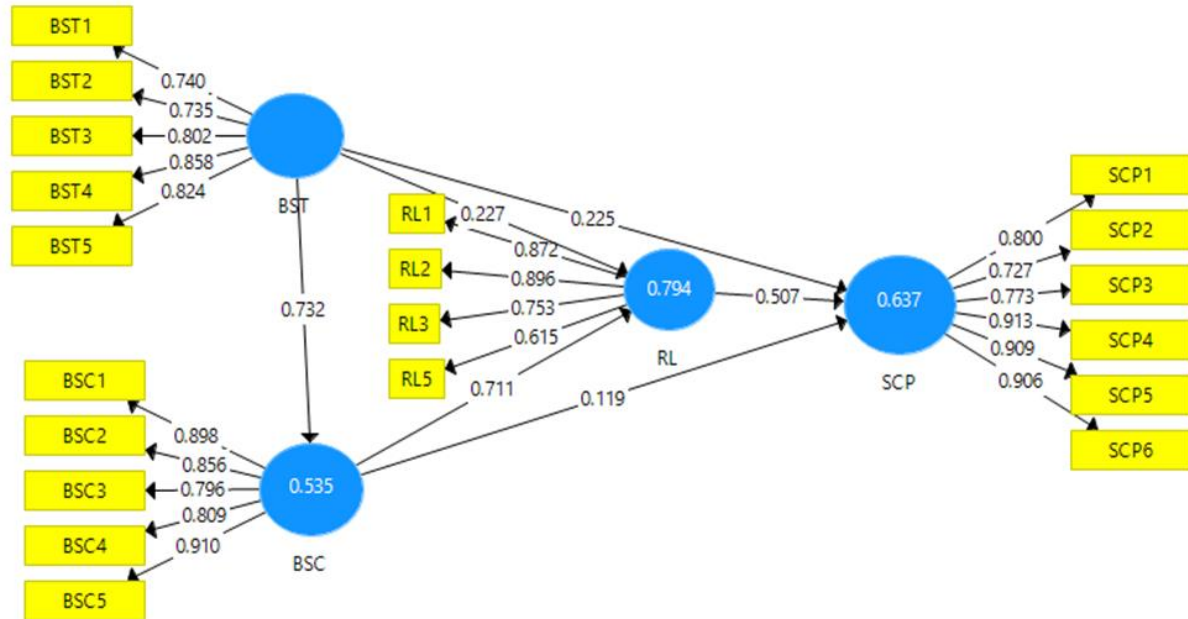


Table 3: Results of hypotheses testing (path modelling)

Proposed hypothesis relationship	Hypothesis	Path coefficient estimates	Decision
Buyer-supplier trust→Buyer-supplier commitment	H1	0.732***	Accepted
Buyer-supplier trust→Supply chain relationship longevity	H2	0.227***	Accepted
Buyer-supplier commitment →Supply chain relationship longevity	H3	0.711***	Accepted
Supply chain relationship longevity → Supply chain performance	H4	0.225***	Accepted
Buyer-supplier trust → Supply chain performance	H5	0.119***	Accepted
Buyer-supplier commitment →Supply chain performance	H6	0.507***	Accepted

Discussion of the Results: The following section discusses the result of hypotheses that are indicated in the Table 3.

(H1): The first hypothesis (H1) in this study stated that buyer-supplier trust has a significant impact on buyer-supplier commitment. The 0.732 is the path coefficient of (H1); this value indicates a very strong relationship between buyer and supplier in the food retail industry. Thus, the p value is significant at 99 percent ($r=0.001$), which means that this hypothesis is supported and significant. These results are in line with a study conducted by Mpinganjira, Roberts-Lombard and Svensson (2017) who show that buyer-supplier trust positively influences buyer-supplier commitment in a business relationship. Additionally, Abdullah and Musa (2014) confirm that buyer-supplier commitment considerably influenced buyer-supplier trust; the authors go further by saying that the impact of buyer-supplier trust on buyer-supplier commitment is greater and more significant. The results of this study agreed with the results of a study conducted by Hashim and Tan (2015) on the mediating role of trust and commitment on members' continuous knowledge sharing intention. The authors found that trust is the key factor to develop and increase commitment for both parties involved in a relationship.

(H2): With reference to the second hypothesis (H2), the study hypothesized that buyer-supplier trust significantly influenced supply chain relationship longevity. Table 3 indicates a path coefficient value of ($r=0.227$) with ($p<0.001$) for H2; the results are significant and confident at 99 percent. The path coefficient confirms the existence of a reasonable relationship between buyer-supplier trust and relationship longevity. The positive correlation found between buyer-supplier trust and supply chain relationship longevity is consistent with the results provided by Mugarura (2010) as well as Ziggers & Henseler (2016). Drawing from a study conducted by Ahimbisibwe, Nangoli and Tusiime (2012), trust is an indispensable precondition for operational relationship between buyer and supplier. From this study, it can be said that supply chain relationship longevity between buyer and supplier built on trust has the ability to increase the performance of the supply chain members and consequently it is advisable to invest in relationship longevity.

(H3): A positive correlation was hypothesised between buyer-supplier commitment and supply chain relationship longevity. After testing H3, a path coefficient of ($r=0.711$) was obtained. The result confirms that there is a positive relationship between BSC and RL. The relationship between these two constructs is highly significant at 99 percent indicated by a ($p<0.001$). The results confirm or validate the existence of the relationship. These results are consistent with the results of Le Tuong and Vo Hong (2014) where commitment is the most significant factor to influence supply chain relationship longevity. Moreover, the study of Cambra-Fierro and Polo-Redondo (2011) reveals that commitment influences buyer-supplier to carry on with relationship in the future. This means that once buyer and supplier are committed in the relationship, the establishment of the association between them is possibly to have a long lasting direction. Therefore, supply chain members are willing to sacrifice short-term welfares to preserve the relationship.

(H4): The fourth hypothesis (H4) showed that supply chain relationship longevity is strongly associated with supply chain performance. The relationship is validated based on the result of the path coefficient ($r=0.225$) and the regression path highly significant ($P<0.001$) at 99 percent of confidence interval. Accordingly, the current study validates and supports that supply chain relationship longevity positively influences supply chain performance. The results of this study are consistent with the results of a study conducted by Adams, Khoja and Kauffman (2012), whereby supply chain relationship longevity is positively associated with supply chain performance. The results are also in congruence with previous studies by Prajogo & Olhager (2012) and Moshkdanian & Molahosseini (2013). In addition to the results of this study, it emerged that buyers and suppliers in the food retail industry are seeking supply chain relationship longevity to achieve firm's performance.

(H5): The fifth hypothesis (H5) was supported and accepted in this study. To confirm this decision, there was a positive and significant correlation ($r=0.119$; $p<0.001$) between buyer-supplier trust and supply chain performance. This relationship is validated at 99 percent. These results are consistent with previous studies (Sung & Kang, 2013; Nyakundi, 2014). Hence, these results support a study conducted by Revilla and Knoppen (2015) by confirming that buyer-supplier trust is positively associated with supply chain performance. The results of this study show that it is very important for supply chain members to develop

trust in their relationships in order to achieve supply chain performance. Relationship longevity and supply chain performance associated together demonstrates a perfect connection for a firm's success.

(H6): With regard to the sixth hypothesis (H6), it has been found that there is a positive relationship between buyer-supplier commitment and supply chain performance with positive path coefficient of ($r=0.507$; $p<0.001$) that validates the hypothesis. These results are in line with the studies of Ziaullah, Feng and Akhter (2015) who found that commitment strongly impacts on supply chain performance. In this study, commitment is one of the key factors to achieve supply chain performance. A relationship associated with commitment between supply chain partner results in improving the performance of the firm involved in the relationships. Therefore, it is clear that no relationship exists without commitment.

5. Conclusion and Recommendations

In order to improve buyer-supplier trust, food retailing firms are encouraged to develop a reliable communication; through communication supply chain partners will be able to have a healthy relationship, in which important information will be shared. They should also ensure transparency through technology. Trust is an important factor to develop buyer-supplier relationships and the best way to develop trust is to create transparency. In order to improve buyer-supplier commitment, food retailing firms respect and consider the needs and ideas of the other party, which clears the ground for supply chain partners to work in methods, which maximise the welfares of both parties. In addition, maximum attention should be given to commitment because it leads to long-term relationships. Therefore, they have to enrich commitment to achieve competitive advantage, which will lead to enhanced supply chain performance. In order to improve supply chain relationship longevity, food retailing firms are encouraged to establish relationships longevity with their buyers; suppliers have to deliver quality products and ensure services. Also, knowing the partners; through relationship longevity supply chain partners know with whom one cannot conduct business with.

In order to improve supply chain performance, food retailing firms are encouraged to inspire buyers and suppliers to agree on common objectives of engagements, so that they can both be satisfied with the results. Supply chain partners should engage in mutual and forecast activities with each other in order to reinforce their relationship and to achieve common goals. Lastly, it should be required that the longer the relationship, the lower the costs. This paper makes both a theoretical and a practical contribution. To the best of the researcher's knowledge, this is the first paper that applied the commitment-trust theory in the organisational behaviour literature, which means the theory added new knowledge to the existing literature on organisational behaviour. The paper includes the practical contribution to managers or owners of food retailers to practice good management relations to have greater BST, BSC, SCRL and SCP.

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The Prevalence and Magnitude of Social Loafing, and Biographical Influences, in a Team-Based Organizational Setting

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Abstract: This paper assesses the prevalence and magnitude of social loafing in a team-based organizational setting as social loafing has the potential to threaten and disrupt the effectiveness of teams. The presence of social loafing is evaluated in terms of perceived co-worker loafing, nature of tasks, visibility of contribution, group size, individual outcomes and rewards and, group cohesiveness. Biographical influences on perceptions of the factors having the potential to influence social loafing are also assessed. A consensus sample of 80 employees formed part of the sample. Data was collected using a self-developed, precoded questionnaire whose psychometric properties (validity and reliability) were assessed using Factor Analysis and Cronbach's Coefficient Alpha respectively. The results indicate that social loafing does exist in the organization and is sparked by various factors which in descending level are perceived co-worker loafing, visibility of contribution, nature of tasks, group size, individual outcomes and rewards and, group cohesiveness. Furthermore, social loafing is moderate in magnitude and is not influenced by biographical variables (gender, age, marital status, tenure) except for the influence of age on individual outcomes and rewards. Recommendations are presented, which when implemented, have the potential to reduce the prevalence and magnitude of social loafing in a work environment.

Keywords: *Social loafing, visibility of contribution, group size, group cohesiveness, outcomes and rewards*

1. Introduction & Literature Review

The chronicles of human existence are punctuated by people functioning together in teams and groups in order to accomplish, overcome and discover. The realization of common goals by individuals combining their effort to satisfy basic needs has been fundamental to mankind's survival ever since their initial existence. In the contemporary organizational setting, there seems to be added impetus and recognition of the value of this primitive principle in the accomplishment of work. Organizations rely more on teams and groups to accomplish an array of activities, from designing commodities to developing services, with the belief that team functioning leads to better outcomes and enhanced level of performance. However, group and team functioning is not without challenges and working in teams or groups can also result in reduced effort. One such challenge is the prevalence and magnitude of social loafing that has the potential to threaten the effectiveness of teams, which this study aims to assess. In an environment engulfed with immense competitiveness and pressures, organizations increasingly rely on teams to enhance performance and productivity and to gain a competitive advantage. However, an obstacle in the path of team performance and goal accomplishment is having team members who fail to contribute and, who engage in social loafing. The impact of social loafing on team performance and organizational survival, growth and profitability is immense and therefore, deserves to be studied to better understand how its prevalence may be minimized, if not curtailed.

The Challenge Posed by Social Loafing: There is increasing evidence that the challenges of teamwork have the propensity to produce disappointments and even catastrophic problems. Poor group or team effectiveness in the key areas of leadership, coordination, communication, procedures, roles and responsibilities, and positive relationships lends itself to team dysfunction (Goldenberg, 2010; Kozlowski & Ilgen, 2006; Marks, 2006). An ever increasing number of people who work on collaborative projects have begun to manifest negative perceptions regarding the benefits of group work (Hurley & Allen, 2007). Recent group process research contends that working collectively can affect people's motivation and effort, resulting in process losses for teams and reduced productivity gains for organizations (Chidambaram & Tung, 2005). In addition, social psychologists are discovering that group participation may actually result in decreased effort being exerted by individuals (Brooks & Ammons, 2003). These findings are crucial to organizational performance and become more profound when organizations

are aiming to increase efficiencies and performance during difficult economic climates (Dennis, Wixom & Vandenberg, 2001). This has moved group behavior researchers to examine the effect of individual contributions combined with those of other people (Karau & Williams, 2001). It is in this context that the study of social loafing, a phenomenon that has been shown to threaten and disrupt the effectiveness of teams, has emerged (McFarlin & Sweeney, 2001). Social loafing occurs when employees expend less effort when working in a team than they would when working individually (Latané, Williams & Harkins, 1979; Ying, Li, Jiang, Peng & Lin, 2014).

The Nature of Social Loafing, Its Prevalence and Magnitude: A specific dysfunction that has been shown to threaten and disrupt the effectiveness of teams is social loafing (McFarlin & Sweeney, 2001). Formally, social loafing is characterized by reduced motivation and effort when employees work in a group as opposed to when they work alone or coactively (Karau & Williams, 2001; Meyer, Schermuly & Kauffeld, 2015). Meydan, Kahraman and Basar (2014) report that loafers who feel disconnected tend to be distracted and behave disruptively. The principal reasons for this occurrence include tasks that are not intrinsically motivating, deficiencies in performance feedback within the group, situations in which the performance of others will conceal the reduced effort exerted by a given member, and not wanting to exert oneself more than the perceived effort exerted by others (Luthans, 2005). Research findings indicate that cultures dominated by individual and self-interest values are more inclined to have groups that experience social loafing (Earley, 1989 cited in Clark & Baker, 2011; Erez & Somech, 1996). Conversely, collectivist cultures have a stronger focus on the collective good of the group and may, therefore, experience less social loafing by group members (Earley, 1989 cited in Clark & Baker, 2011; Erez & Somech, 1996).

However, Clark and Baker (2011) did not find that individuals from collectivist cultures are less likely to loaf socially but deduced that social loafing occurs across a multicultural group. Prokofieva, Jackling and Natoli (2015) noted that levels of optimism about participating in a group may differ across cultures and language may be an obstacle to effective group functioning. Social loafing is expected to appear more in large teams, where individual inputs are difficult to identify. To reduce the impact of members exerting less effort and to ensure that they are fully contributing members of the team, it has been recommended that teams be kept small in size, task specialization be increased so that the contributions of individual members are identifiable, individual performance be measured and, highly motivated employees be selected when creating teams (Judge & Chandler, 1996). Whilst numerous variables may impact on the prevalence and magnitude of social loafing in the workplace, the current study focusses on perceived co-worker loafing, nature of tasks, visibility of contribution, group size, individual outcomes and rewards and group cohesiveness.

Perceived Co-Worker Loafing: Individuals can potentially hide in a group and go unnoticed through the practice of social loafing. This allows them to freewheel on the team's energies especially when their separate inputs cannot be known. Perceived co-worker loafing refers to the degree to which members of a group are of the opinion that others in the group are engaging in social loafing (Comer, 1995) and these opinions will be based on perceptions of the actions of group members irrespective of whether the actions are taking place (Meyer et al., 2015; Mulvey & Klein, 1998). Hall and Buzwell (2013) refer to this behavior as free-riding, like Ringleman did over a century ago (1986), and describe it as a universal group concern. It is these perceptions that cause negative influences on other group members, who react based on personal interactions and perceptions (Plaks & Higgins, 2000). Irrespective of whether a job is interactive or individual, employees base their effort on perceived contextual issues (Plaks & Higgins, 2000). However, successful teams challenge the tendency of social loafing because they take responsibility for both individual and team performance. They also hold one another accountable to their commitments to the team (Gilligan & Carter, 2006). Members are sure of what they are individually and jointly responsible for.

Nature of Tasks: The nature and significance of tasks can influence the occurrence of social loafing. Tasks can be categorized into simple, novel, non-routine tasks or complex, routine, standardized tasks. Robbins, Judge, Odendaal and Roodt (2009) contend that complex tasks profit the group by promoting discussions around unconventional work techniques that can be successfully utilized. They add that when it comes to simple tasks, members do not need to discuss such alternatives and merely rely on regular operating procedures to do the job. However, in the situation where tasks largely intercept each other, members are required to interact continuously. Efficient communication and negligible amounts of conflict will therefore

affect group performance when tasks are interdependent. Tasks that have higher levels of uncertainty, complexity and interdependence will require more information processing. Task uncertainty can be moderated by the information processing capacity within group processes (Buss, Meinlschmidt & Foerstl, 2016). A group characterized by ineffective communication, feeble leadership and elevated levels of conflict will not necessarily be low performing since the presence of effective information processing and good group decision-making can moderate these group processes and result in high performance (Robbins et al., 2009).

The significance of a task is pivotal to group and team performance. Essentially, the size-performance relationship of a group or team is regulated by the task requirement it has to accomplish (Robbins et al., 2009). Group effectiveness research suggests that when the task requirement involves making an important decision by pooling comprehensive information on an issue that may affect people in many areas of the organization, a larger group representative of individuals in each of the affected areas within the company will better facilitate the task requirement. A diverse assessment by an information gathering or problem-solving team characteristically results in process gains. Conversely, when a group's task requirement is coordinating and implementing a specific and precise decision, a process loss is produced by each additional member's presence and this is likely to be greater than the process gain produced by the individual (Saavedra, Earley & Van Dyne, 1993; Tufail et al., 2016). Similarly, Hinsz (2015) noted that two drawbacks of team performance on cognitive tasks are delay in taking action and coordination losses. Furthermore, the size-performance relationship of a group or team is regulated by the group's task requirement (Robbins et al., 2009). These research studies also contend that the effect of team processes on team performance and member satisfaction is also moderated by group tasks.

These studies indicate that the complexity and interdependence of the task impacts on group effectiveness (Saavedra et al., 1993). Various factors of work design also influence social loafing, namely, freedom and autonomy, the prospect of utilizing distinct skills and talent, the ability to finish a complete and identifiable task or product, and working on a task or project that has a considerable influence on others (Robbins et al., 2009). The characteristics increase member motivation, awareness of responsibility and ownership for the work thereby making the work appealing to perform (Campion, Papper & Medsker, 1996) and consequently, enhance team effectiveness and reduce the occurrence of social loafing. However, social loafing can increase when stronger team members exclude a weak member of the team (Pieterse & Thompson, 2010 cited in Jones, 2013).

Visibility of Contribution: Task visibility is an employee's perception that his/her effort is being noticed (Kidwell & Bennett, 1993) and is thus, negatively related to social loafing (George, 1992, cited in Simms & Nichols, 2014). When working in a team, employees may care less to contribute, may lapse in self-discipline and hence, the performance standard is compromised. To combat this, Black (2002) advocates assigning team leaders, having clearly defined individual roles within the group, employing methods to increase task visibility and the individual's perception that others are contributing their fair share of the workload. These methods include ensuring that group members establish performance targets, communication procedures, and methods for solving problems. This can be achieved by creating timeframe milestones for large group projects or assignments, restriction of communication methods to ones that can be monitored by the team leader for participation, assigning roles with clearly defined responsibilities, and peer evaluation of group members (Piezon & Donaldson, 2005). To enhance self-awareness of standards of performance, peer evaluations (Stevens cited in Perron, 2011), group assessments and group discussion boards (the scheduling of personal contributions as set by the leader) may be used. However, these are often conducted at the tail-end of group activities and can therefore, have a negative effect as team members may retaliate on non-performers (Brooks & Ammons, 2003). Evidently, the benefit of group assessments will depend on the timing of the assessments and in this regard, Brooks and Ammons (2003) developed recommendations for assessments that include early implementation, multiple evaluation points and specific evaluative criteria. Multiple evaluation points enhance task visibility and awareness of each member's contribution thereby, discouraging social loafing and providing the opportunity for non-performers to adjust their behavior and performance (Piezon & Donaldson, 2005).

Group Size: The size of the group has the potential to influence social loafing because as the size of the group increases, team member behavior may be less productive (Czyz, Szmajke, Kruger & Kubler, 2016). The most

successful groups or teams are neither very small nor very large. A very small team is composed of less than four or five members and a very large team is typically composed of more than 12 members. Small teams lack the value of diversity and in large teams it is difficult to accomplish much. In addition, in larger teams' members have difficulty interacting constructively and agreeing. Moreover, they may lack cohesiveness, commitment, and the mutual accountability required to achieve high performance. In the case of a natural working unit that is larger than 12 members it is conceivable to obtain team efforts from such a unit if it is broken down into sub-teams (Robbins et al., 2009). Evidently, in establishing a suitable group size the group goals, purpose and function should be taken into consideration (that is, brainstorming, decision-making, problem-solving).

When taking into account the group's purpose, it is crucial to consider how group size may impact on group outcomes. In larger groups, individuals generally believe they make less of a difference, are less effective, and that their individual contributions are less visible (Kerr, 1989), thereby creating the potential for social loafing to occur. Moreover, increased group size makes it more complicated to assess and evaluate each individual's contribution to the group (Belanger, Watson-Manheim & Jordan, 2002). An additional harmful effect of large groups is that cooperation and self-efficacy tend to decline as groups grow (Kerr, 1989; Komorita, Parks & Hulbert, 1992), thereby creating the potential for social loafing. Research indicates that in smaller groups, individuals may feel their contributions are more essential to the success of the process than when they work in larger groups (Hindriks & Panscs, 2001). As member contribution becomes less recognizable, effort decreases and hence, social loafing increases.

It is difficult to determine the ideal group size. Piezon and Donaldson (2005) believe that larger group sizes are valuable for brainstorming but not otherwise and recommends a small group size of six. Similarly, Soboroff (2012) found that members of larger groups were less committed, that groups larger than six members experienced lower levels of trust and that group members prefer to work with groups of four to six members. With regards to trust, Buvik and Tvedt (2016) emphasize the importance of nurturing a climate of high trust in groups and found that trust impacts on task commitment and team performance. Meyer et al. (2015) found that there is higher probability of social loafing among the members of teams with strong fault lines (dividing line that splits a team into rather homogenous subgroups) who are members of larger subgroups and those who exhibited low levels of social competence.

Individual Outcomes and Rewards: The reward system is a potential predictor of the motivation to withhold effort (Kidwell & Bennett, 1993 cited in Stark, Shaw & Duffy, 2007). If people do not get rewarded fairly or get recognized for their contribution, they will exert less effort and social loafing will increase (Hassan, 2010 cited in Davoudi, Oraji & Kaur, 2012). Team members need to be both individually and collectively accountable. This requires that the conventional, individually oriented evaluation and reward system be adapted to reflect team performance (Wageman, 1997). Individual performance appraisals, fixed hourly wages, individual incentives, and the like are beneficial for evaluating and rewarding members for their individual contributions but are not consistent with the development of high-performance teams. Management must, therefore, consider evaluation and reward system adaptations that will strengthen team effort and commitment.

These system changes may include group-based appraisals, profit sharing, gain-sharing and small-group incentives (Robbins et al., 2009). Critical to effort and rewards are the issues of distributive justice and procedural justice. Distributive justice is the awareness of a just distribution of rewards and compensation among group members. When the distribution of rewards are perceived as being fair, social loafing decreases (Liden, Wayne, Jaworski & Bennett, 2004), for example, effective performance appraisals conducted in the past can decrease social loafing (Hildreth, 2015). However, when employees perceive that their rewards (salary, fringe benefits, promotion) are not commensurate with their effort or that rewards are unfairly distributed they are likely to reduce their effort after taking cognizance of issues such as task visibility. From the study of De Backer, Boen, De Cuyper, Hoigaard, and Vande Broek (2014), it is evident that perceived fairness in general, not only related to rewards, is imperative for the optimal functioning of teams. Individuals may choose to withhold effort because they believe that the benefits of social loafing outweigh the cost of their lack of participation (Murphy, Wayne, Liden & Erdogan, 2003). Whilst distributive justice refers to the distribution of rewards, procedural justice is the perceived fairness of the procedures or policies that

surround distributive justice (Piezon & Donaldson, 2005). Evidently, perceptions of fairness in distribution procedures influences effort expended on tasks and social loafing whereby perceived procedural injustice results in increased social loafing (De Backer et al., 2014; Brooks & Ammons, 2003; Liden et al., 2004; Murphy et al., 2003). Procedural justice dictates that rewarding through distributive justice must be based on well-established and specific evaluative criteria (Brooks & Ammons, 2003).

Group Cohesiveness: Group cohesion moderates the relationship between teamwork and social loafing (Alnuaimi, Robert Jr & Maruping, 2010). Group cohesiveness is the potential of the team to connect effectively with each other. The greater the cohesiveness of the team, the greater the possibility of goal accomplishment and the lower the incidence of social loafing (Davoudi et al., 2012; Karns, 2006 cited in Rich, Owens, Johnson, Mines & Capote, 2014; Simms & Nichols, 2014). A cohesive and effective group or team accomplishes the results that it sets out to achieve and does it consistently (Lencioni, 2005). According to the social exchange theory, when group members believe that they are engaging in a high-quality interaction they are more likely to reciprocate and contribute (Murphy et al., 2003).

Research reflects that feelings of group cohesiveness results in reduced social loafing (Høigaard, Tofteland & Ommundsen, 2006 cited in Nilsen, Haugen, Reinboth, Peters & Høigaard, 2014) particularly because members do not want to disappoint their team members (Liden et al., 2004). Jaikumar and Mendonca (2017) found that perceived loafing by colleagues may lead to counterproductive work behaviors towards such colleagues and such interpersonal relations had the potential to impact on the cohesion of the group. Team cohesiveness may be enhanced through team building strategies (Black, 2002), group discussions, meaningful feedback, equitable rewards and by creating a culture and atmosphere of mutual respect and appreciation for team member contributions. The study therefore assesses:

- 1) The influence of the dimensions (perceived co-worker loafing, nature of tasks, visibility of contribution, group size, individual outcomes and rewards, group cohesiveness) on the prevalence and magnitude of social loafing in a team-based organization.
- 2) The influence of the biographical variables (gender, age, marital status, tenure) on perceptions of the aforementioned dimensions having the potential to influence social loafing.

2. Methodology

Respondents: The population comprised of all employees in the organization who are members of a team or a group. The entire population consisted of 80 employees. This team-based organization was selected because the study aimed at assessing the impact of visibility of contribution in a team, group size and group cohesiveness on the prevalence and magnitude of social loafing in a team. According to Sekaran and Bougie's (2010) population-to-sample size table, the corresponding minimum sample size for a population of 80 employees is 66. The study however utilized the responses of all 80 employees who participated, thereby confirming the adequacy and appropriateness of the respondents. Therefore, in this research a census study was undertaken and was considered to be appropriate given the population size. The adequacy of the sample was further determined using the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.733) and the Bartlett's Test of Sphericity (1552.414; $p = 0.000$) for factors influencing social loafing, which respectively indicated suitability and significance. The results indicate that the normality and homoscedasticity preconditions are satisfied (Oodith & Brijball Parumasur, 2012). In terms of the composition of the sample, there are more females (53.8%) than males (46.3%), more employees <30 years old (55%) than >30 years old (45%), more unmarried (58.8%) than married (41.3%) employees, and given their age, naturally more employees with <5 years of tenure (75%) than >5 years of length of service (25%). Seventy-five percent of the participants are team members as opposed to supervisors or team leaders (25%) and the majority of them are permanent staff members (92.5%) with only 7.5% being contract/temporary.

Measuring Instrument: Data was collected using a self-developed, pre-coded, self-administered questionnaire consisting of two sections. Section A dealt purely with the biographical variables (gender, age, marital status, tenure) and operational data (status in group, namely, supervisor/team leader or team member and status of post, namely, permanent or contract/temporary) of participants. Section B of the questionnaire elicited information on employee perceptions of the prevalence and magnitude of social loafing within their respective groups or teams. It used 35 items to tap into six key sub-dimensions that have the

potential to promote social loafing, namely, perceived co-worker loafing (6 items), nature of tasks (5 items), visibility of a member's contribution (8 items), size of group (6 items), individual outcomes and rewards (5 items) and group cohesiveness (5 items). Whilst Section A was nominally scaled with precoded option categories, Section B required respondents to rate each item using the Likert Scale ranging from strongly disagree (1) to strongly agree (5). The questionnaire was formulated on the basis of identifying recurring themes that surfaced while conducting the literature review. These ensured face and content validity. Furthermore, in-house pretesting was adopted to assess the suitability of the instrument. Pilot testing was also carried out on ten employees working in groups/teams to test the appropriateness of questions and their understanding. No inadequacies were reported and the final questionnaire was considered appropriate in terms of relevance and construction.

Research Procedure: The research was only conducted after ethical clearance was obtained for the study and upon completion of the pilot study.

Measures/Statistical Analysis of the Questionnaire: The validity of the questionnaire was assessed using Factor Analysis. A principal component analysis was used to extract initial factors and an iterated principle factor analysis was performed using SPSS with an Orthogonal Varimax Rotation. In terms of the validity, 6 factors influencing the prevalence and magnitude of social loafing with latent roots greater than unity were identified (4.427, 3.921, 3.670, 2.924, 2.667 and 2.510). The items were also reflected as having a very high level of internal consistency and reliability, with the Cronbach's Coefficient Alpha being 0.913 with reliabilities for the sub-dimensions ranging from moderate (0.558) to very high (0.845) as follows: perceived co-worker social loafing ($\alpha = 0.558$), task accomplishment ($\alpha = 0.605$), visibility of contribution ($\alpha = 0.801$), group size ($\alpha = 0.811$), individual outcomes and rewards ($\alpha = 0.814$) and group cohesiveness ($\alpha = 0.845$).

Administration of the measuring instrument: The questionnaires were personally administered in conjunction with the director of the organization to all employees who presently belong to either a team or a group. The administration was convenient as the participants were geographically concentrated and conveniently assembled in a single open-plan office space and employees completed the questionnaires during 20 minutes prior to their lunch break.

Statistical analysis of the data: Descriptive statistics (mean, variance, standard deviation) were used to evaluate the prevalence and magnitude of social loafing in the organization and an inferential statistic (t-test) was used to assess the influence of biographical variables (gender, age, marital status, tenure) respectively. The t-test was used because due to the sample size of 80 the biographical data was divided into two categories in each case so as to avoid insignificant cells which can occur with over-stratification.

3. Results

The perceptions of employees regarding the prevalence and magnitude of social loafing was assessed by asking participants to respond to established dimensions and aspects of social loafing using a 1 to 5 point Likert scale (Table 1).

Table 1: Descriptive statistics: Dimensions having the potential to influence the prevalence and magnitude of social loafing

Dimension	Mean	95% Confidence Interval		Variance	Std.Dev.	Minimum	Maximum
		Lower Bound	Upper Bound				
Perceived co-worker loafing	2.76	2.61	2.91	0.461	0.679	1	4
Nature of tasks	2.55	2.38	2.72	0.616	0.785	1	5
Visibility of contribution	2.67	2.48	2.85	0.715	0.845	1	5
Group size	2.53	2.34	2.72	0.725	0.851	1	5
Individual outcomes & rewards	2.51	2.30	2.71	0.871	0.933	1	5
Group cohesiveness	2.46	2.24	2.68	0.949	0.974	1	5

Table 1 indicates that employees differ in their perception of the various dimensions having the potential to influence social loafing, which in decreasing level based on the mean score values are:

- Perceived co-worker loafing (Mean = 2.76)
- Visibility of contribution (Mean = 2.67)
- Nature of tasks (Mean = 2.55)
- Group size (Mean = 2.53)
- Individual outcomes and rewards (Mean = 2.51)
- Group cohesiveness (Mean = 2.46)

It is evident that perceived co-worker loafing has the highest mean, thereby indicating that employees do believe that social loafing occurs in their organization. Evidently, social loafing has been found to consistently occur as a negative outcome of each of the aforementioned dimensions and is moderate in magnitude. In order to assess employee perceptions, frequency analyses were conducted.

In terms of perceived co-worker loafing, frequency analyses indicate that 65% of the respondents are in agreement that they considered it inequitable that each person in the group receives the same reward, when certain group members may have exerted lower levels of effort compared to the rest. However, 66.3% of the respondents disagreed that they have preconceptions that group members withhold effort during collaborative tasks, which has resulted in them withholding effort as well. In addition, 71.3% of the subjects disagreed that in an attempt to avoid carrying group members whom they believe are not pulling their own weight during collaborative tasks, they exert less effort themselves.

Visibility of contribution had a mean score value of 2.67, thereby indicating that employees do believe that it plays a role in influencing social loafing in their organization. With regards to visibility of contribution, frequency analyses indicate that 56.3% of the employees agreed that when their group members are not held accountable for their contributions, the said members do not perform an equitable share of the workload. Moreover, 48.8% of the participants agreed that when the individual contributions of their group members could not be easily observed, measured, and evaluated, the said members worked less intensely. However, 66.3% of the employees disagreed that when individual roles and performance targets were not established in the group, they personally exert less effort. Additionally, 63.8% of the respondents disagreed that when they believe their input is immaterial to making a difference to the group outcome, they do not utilize all their effort.

Nature of tasks had a mean score value of 2.55, thereby indicating that employees believe that it plays a role in influencing social loafing in their organization. In terms of nature of tasks, frequency analyses reflect that 48.8% of employees agreed that when team leaders do not acknowledge that individual tasks are critical to group success, they personally lose motivation to utilize the maximum effort. Moreover, 38.8% of the participants agreed that collaborative tasks make the members in their group more inter-reliant; hence, the said members do not experience a true sense of personal accomplishment, causing a reduction in their levels

of effort. However, 85.1% of the employees disagreed that for uncomplicated, simple, and well-learned tasks, the increased presence of co-workers reduces their personal desire to respond effectively, and as such they exert less effort. Additionally, 73.8% of the subjects disagreed that when they are given complicated, complex, and unfamiliar tasks to accomplish, they are not stimulated to respond effectively and they work less intensely.

Group size had a mean score value of 2.53, thereby indicating that employees do believe that it plays a role in influencing social loafing in their organization. In terms of group size, frequency analyses indicate that 46.3% of the respondents were in agreement that as the size of the group increases, there is a progressive reduction in group members' personal contribution to the group. Moreover, 45.1% of the subjects agreed that when the number and demands of supervisors or team leaders increases, pressure is defused across all group members, and there is a progressive reduction in group members' contribution to a collaborative task. However, 73.8% of the employees disagreed that as the size of their group increases, the assessment and evaluation of their personal contribution to collaborative tasks decreases, thereby causing them to work less intensely. Additionally, 68.8% of the participants disagreed that as the size of their group increases, cooperation amongst group members decreases, causing them to personally work less intensely and that in large group settings, they consider their contribution too small to make a difference and that consequently, they are not motivated to apply total effort.

Individual outcomes and rewards had a mean score value of 2.51, thereby indicating that employees do believe that it plays a moderate role in influencing social loafing in their organization. In terms of individual outcomes and rewards, frequency analyses reflect that 42.6% of the employees agreed that when they perceive that the policies and procedures used to establish the distribution of rewards and compensation amongst members are biased, they are personally less motivated to expend absolute effort. Moreover, 26.3% of the respondents agreed that when the policies and procedures used to establish the distribution of rewards and compensation amongst members are not based on specific criteria, they personally apply less effort. Furthermore, 70.1% of the participants disagreed that they work intensely when group outcomes are not linked to favorable individual outcomes. Additionally, 63.8% of the employees disagreed that they withhold their complete effort when they perceive the distribution of rewards and compensation amongst members to be unjust.

Group cohesiveness had a mean score value of 2.46, thereby indicating that employees do believe that it plays a less than moderate role in influencing social loafing in their organization. In terms of group cohesiveness, frequency analyses indicate that 32.6% of the employees agreed that they work less intensely when the presence of domineering and intimidating group members make them feel that their contributions are not welcomed. Moreover, 31.3% of the respondents agreed that they personally exert effort proportionate to the cohesiveness of their group. However, 67.6% of the participants disagreed that they work less intensely as a consequence of the presence of domineering and intimidating group members who make them feel that their knowledge is insufficient to be useful to the group. Additionally, 67.5% of the employees disagreed that they work less intensely when group members are not closely knit and well bonded. The influence of the biographical variables on individuals' perceptions of the dimensions having the potential to influence social loafing, were assessed (Table 2).

Hypothesis: There is a significant difference in the perceptions of employees varying in biographical profiles (gender, age, marital status, tenure) regarding the dimensions having the potential to influence social loafing (perceived co-worker loafing, nature of tasks, visibility of contribution, group size, individual outcomes and rewards, group cohesiveness) respectively. Table 2 indicates that there is no significant difference in the perceptions of employees varying in biographical profiles (gender, age, marital status, tenure) regarding the dimensions having the potential to influence social loafing (perceived co-worker loafing, nature of tasks, visibility of contribution, group size, individual outcomes and rewards, group cohesiveness) respectively except for age which significantly influences individual outcomes and rewards at the 5% level of significance. Hence, hypothesis 1 may be rejected except in the case of age and individual outcomes and rewards.

Table 2: T-test: biographical variables and dimensions having the potential to influence social loafing

Dimension	Gender			Age			Marital status			Tenure		
	T	Df	p	T	Df	p	T	Df	p	T	Df	p
Perceived co-worker loafing	0.536	78	0.593	-0.511	78	0.611	0.442	78	0.660	0.031	78	0.975
Nature of tasks	-0.721	78	0.473	0.285	78	0.777	0.620	78	0.537	0.987	78	0.327
Visibility of contribution	-0.666	78	0.508	1.054	78	0.295	1.100	78	0.275	0.475	78	0.636
Group size	-0.226	78	0.822	0.539	78	0.592	-0.098	78	0.922	-0.276	78	0.783
Individual outcomes and rewards	-1.024	78	0.309	2.059	78	0.043*	0.112	78	0.911	0.248	78	0.805
Group cohesiveness	-0.475	78	0.636	-0.238	78	0.812	-0.702	78	0.485	0.158	78	0.875

* p < 0.05

In order to assess where the differences lie amongst the age groups in terms of individual outcomes and rewards, mean analyses were undertaken. It was found that individuals 30 years and under (Mean = 2.70) were more inclined to engage in social loafing than those who are over 30 years (Mean = 2.27) when they perceive rewards as being unsatisfactory and unjust in terms of distributive and procedural justice.

Perceptions of the dimensions having the potential to influence social loafing: In the current study, perceived co-worker loafing has the highest mean score value (Mean = 2.76), thereby, indicating that employees do believe that it occurs in their organization. According to Mulvey and Klein (1998), the mere perception of a co-worker's loafing (whether accurate or not) may have negative effects on a group member's motivation and could result in them loafing. Consistent with Mulvey and Klein's assertion, the frequency distribution of the current study indicates that 26.25% of the respondents revealed that they noticed a reduction in their level of motivation when working collectively compared to working individually. The resultant act of group members carrying a perceived social loafer has been termed playing the *sucker role*. Avoiding to play the sucker role by reducing one's effort has been termed the sucker effect (Robbins, 1995). Evidence for the sucker effect has been provided in research with participants who were led to believe that their partner, who had the ability to perform, was failing to do so (Karau & Williams, 2001). These individuals subsequently reduced their individual efforts and performance. In this study, the frequency analyses indicate that 37.5% of the employees disclosed that they exert less effort when working in a group than when working independently. This is consistent with Schnake's (1991) contention that preconceptions of co-worker loafing may direct individuals to produce less effort in groups in an attempt to maintain an equitable division of labour because there is no reason to work hard in aid of 'shirkers' or 'incompetents'. Similarly, Chidambaram and Tung (2005) in their empirical study of social loafing contend that people exert a level of effort proportionate to their perception of the effort of others.

Visibility of contribution has a mean score value of 2.67, thereby indicating that employees do believe it plays a role in influencing social loafing in their organization. This is consistent with George's (1995) claim that social loafing occurs when individual input or contributions are perceived to be unidentifiable. Likewise, Hurley and Allen (2007) contend that when individual inputs are difficult to identify and evaluate, one is likely to 'hide in the crowd', making it easy to slacken off and avoid taking the appropriate blame for poor group performance. Similarly, Charbonnier, Huguot, Brauer and Monteil (1998) assert that when individuality and the recognition that comes with contributions are not identified in a group, members lose motivation to exert their full effort. When studying social loafing in technology supported teams, Beenen, King, Wang, Chang, Frankowski, Resnick and Kraut (2004 cited in Abraham & Trimutiasari, 2015) found that perception saliency about the uniqueness of an individual's contribution to the group's performance will degrade online social loafing. Likewise, Rich et al. (2014) recommend that valuable individual contributions must be emphasized in attempts to reduce social loafing. Hart, Karau, Stasson and Kerr (2004) conclude that members might be reluctant to exert effort if they have an idea that their contributions are redundant or unneeded in

comparison with those of other group members, or else are immaterial to group performance and, consequently, not acknowledged or identified. Mullen (1983) proposes that working on a collaborative task will lead to a decrease in self-awareness for individuals and in their conviction that their effort is being observed, thus precipitating social loafing, a disregard for performance standards and less self-regulation. Conversely, Thompson and Thornton (2007) maintain that social loafing is said to disappear when participants believe their individual effort can be observed, measured or evaluated, resulting in them being held accountable for their contribution.

Nature of tasks has a mean score value of 2.55, indicating that employees do believe that it plays a role in influencing social loafing in their organization. This finding is consistent with the claim of Latané et al. (1979) that members are tempted to redefine a maximising task to an optimising task and, consequently, do not exert maximum effort towards task accomplishment, but merely exert adequate effort to reach some more or less well-defined standard. Likewise, Piezon and Donaldson (2005) contend that in submaximal goal setting the task becomes an optimising rather than a maximising task and team members may perceive that with a well-defined goal and with several people working towards it, they can work less towards task accomplishment. Charbonnier et al. (1998) proposes that individuals will be reluctant to apply exceptional effort on a task unless they consider their individual task as meaningful and unique. Karau and Williams (2001) affirm that working collectively reduces stimulation, thereby reducing performance on simple tasks but enhancing performance on complex tasks. However, Schippers (2014) found that a high level of conscientiousness and agreeableness within a group will pacify members to compensate for social loafing habits, thereby leaving performance unchanged. On the other hand, Ulke and Bilgiç (2011) did not find relations between conscientiousness and agreeableness and social loafing respectively.

Group size has a mean score value of 2.53, indicating that employees do believe that it plays a role in influencing social loafing in their organization. This finding is consistent with Soboroff's (2012) finding that the greater the number of members in a group, the lower an individual's effort and commitment to group tasks. Similarly, Chidambaram and Tung (2005) contend that larger groups intrinsically have more sources and targets of social impact than smaller groups. An outside source of social influence such as one's boss is divided across all group members or multiple targets, leading to decreased levels of motivation and effort and therefore, members are more prone to social loafing. Kidwell and Bennett (1993) maintain that members are less motivated to perform in larger groups, thus, precipitating social loafing. Similarly, Weisband (2002) concludes that in large groups individuals view their effort as being too small to make a difference, thus withdrawing effort from the group. Kerr (1989) declares that in larger groups, individuals generally believe they make less of a difference, and eventually exert less effort. Conversely, Hindriks and Pans (2001) confirm that in smaller groups, individuals may feel their contributions are more essential to the success of the process than when they work in larger groups. A field study investigation on social loafing conducted by Liden et al. (2004) noted that as group size increases, the group members are more likely to reduce their effort. Contrary findings in research on brainstorming groups have demonstrated that productivity is positively related to group size. A larger group size produces a more productive brainstorming session (Valacich, Dennis & Connolly, 1994). However, most other studies have suggested that increasing group size can have detrimental effects on group goal achievement (Hurley & Allen, 2007).

In this study, individual outcomes and rewards has a mean score value of 2.51, indicating that employees believe that it does play a role in influencing social loafing in their organization. This finding is consistent with Karau and Williams' (2001) assertion that individuals will exert effort on collaborative tasks to the extent that they perceive their efforts to be influential in obtaining outcomes that they personally value. Karau and Williams (2001) confirm that when outcomes linked to the group's performance are not meaningful, important, or intrinsically satisfying, individuals are less likely to exert effort. Liden et al. (2004) and Kidwell and Bennett (1993) assert that if individuals perceive an unfair distribution in rewards and resultant outcomes, they will withhold their individual work effort. Moreover, accounts of social loafing in group projects are a common complaint among members who report dissatisfaction with the procedures surrounding the distribution of rewards (Brooks & Ammons, 2003). Murphy et al. (2003) acknowledge that social loafing is likely to occur in the presence of unfair procedural justice, which ultimately influences the distribution of rewards.

In this study, group cohesiveness has a mean score value of 2.46, indicating that employees believe that it does play a role in influencing social loafing in their organization. Supportive of this finding, Murphy et al. (2003) claim that if group members do not feel closely-knit they may be more inclined to engage in social loafing. Michaelsen, Fink and Knight (1997) note that fragmented groups lacking cohesiveness lead to less assertive group members feeling intimidated and hence, are more likely to engage in social loafing. From the aforementioned it is evident that in this study, social loafing has been found to consistently occur as a negative outcome of each of the respective dimensions (perceived co-worker loafing, nature of tasks, visibility of contribution, group size, individual outcomes and rewards, group cohesiveness) and is moderate in magnitude. Similarly, a meta-analytic synthesis by Karau and Williams (2001) of 78 studies on social loafing consistently found social loafing occurring across all the studies and it was moderate in magnitude, indicating that individuals tended to engage in the phenomenon when working collectively.

Influence of Biographical Variables: The biographical variables (gender, age, marital status, tenure) did not influence perceptions of employees regarding the dimensions having the potential to influence social loafing (perceived co-worker loafing, nature of tasks, visibility of contribution, group size, individual outcomes and rewards, group cohesiveness) respectively except for age which significantly influences individual outcomes and rewards. Similarly, a number of studies have revealed significant social loafing regardless of participant's gender, nationality or age (Guerin, 2003; Harley, 2001; Okuda & Inoue, 2002). However, several researchers (Gabrenya, Wang & Latané, 1985 cited in Tsaw, Murphy & Detgen, 2011; Simms and Nichols, 2014) found that gender plays a substantial role in social loafing and that males were more likely to loaf than females.

4. Conclusion and Recommendations

It can be concluded that social loafing is occurring as a result of all the dimensions studied and is moderate in magnitude. A notable finding of the study in terms of perceived loafing indicated that more than one third of the respondents admitted having preconceptions that their co-workers were loafing, which resulted in them withholding effort themselves. It is a matter of concern that individuals may potentially loaf as a result of preconceptions. Consequently, individuals need to be made aware of the error of unauthentic perceptions of co-worker loafing since if this continues unchecked it will advance a cycle of needless loafing. Team members may also be involved in team assessments of outputs so that there is greater visibility of each team member's outputs. With reference to nature of tasks, more than one third of the employees felt that collaborative tasks make the members in their group more inter-reliant; hence, they do not experience a true sense of personal accomplishment, causing a reduction in their levels of effort. In addition, almost half of the employees believed that team leaders did not acknowledge that individual tasks are critical to overall group success and therefore, employees lost their motivation to utilise their absolute effort. It is therefore, recommended that individual roles and responsibilities be succinctly clarified and individual contribution to team efforts should be closely monitored as this will allow group members to gain a sense of personal achievement. In addition, group members must share awareness that teamwork and inter-reliance is a precondition for achieving the end goals of the team. It is also recommended that team leaders ensure that all group members understand that their respective individual tasks are critical to the success of the overall goal of the group.

With reference to visibility of contribution, half of the respondents admitted that when the individual contributions of their group members are not easily observed, measured, and evaluated and when they are not held accountable for their contributions, these group members worked less intensely. To combat this, it is important to appoint team leaders to groups with the expressed purpose of overseeing the contributions of individual members and ensuring clearly defined individual roles and performance targets for members. This is imperative as personal feedback, accountability and assessment provides an employee with insight into his/her work and reduces social loafing. In addition, timeframes or milestones for large group projects or assignments should be set, communication channels and methods should be limited to ones that can be monitored by the team leader for participation, roles with clearly defined responsibilities should be assigned to team members and peer evaluation of group members should be undertaken or team members should display their contributions on boards. In a technologically advanced work environment, creatively displaying and monitoring individual contributions and engaging in evaluations becomes easier and less time consuming and can be a fun-filled exercise especially when the process is developmental rather than punitive. With regard to group size, nearly half of the respondents indicated that as the size of the group increases, there is a

progressive reduction in group members' personal contribution to the group and, when the number and demands of supervisors' increases, pressure is defused across all group members, and there is a progressive reduction in group members' contribution to a collaborative task. In establishing a suitable group size, it is recommended that cognizance be given to the group goals, purpose, and function, especially in terms of brainstorming, decision making, problem solving. When taking into account the group's purpose, it is crucial to consider how group size may impact group outcomes and when brainstorming is not a function of the group, the group should be kept as small as needed.

With reference to individual outcomes and rewards, just under half of the employees admitted that when they perceived that the policies and procedures used to establish the distribution of rewards and compensation amongst members were biased, they felt less motivated to expend absolute effort. Procedural justice is the perceived fairness of the procedures or policies that surround distributive justice. A possible means by which procedural justice could be addressed is through individual assessments and evaluations. These evaluations could be determined by a combination of looking at overall group performance, individual contribution to the final project, group meetings attendance, and the ability to meet individual submission requirements by the group; rewards must be based on well-established, objective and clear evaluative criteria.

In terms of group cohesiveness, more than one third of the employees admitted that they exerted effort proportionate to the cohesiveness of their group and, that the presence of domineering and intimidating group members made them feel that their contributions were not welcomed, consequently they worked less intensely. It is recommended that constructive team building strategies should be incorporated into team tasks and assignments. In addition, teams need to consciously strive to create an atmosphere in which the values and contributions of all members are encouraged, respected, and appreciated. Accountability, constructive feedback, fair rewards for outputs and open discussions are also imperative to enhance group cohesiveness. With globalisation and the increase in multinational corporations it is imperative to also take cognizance of the impact of cultural orientations on group cohesion as individualistic cultures may experience greater social loafing whilst collectivist cultures thrive on loyalty to the group and embrace opportunities to contribute effectively. It is therefore, imperative to facilitate group cohesion in multinational groups. The aforementioned practical interventions suggested, when implemented, have the potential to reduce social loafing in a work environment.

Suggestions for Future Research: This study focused on one group in one setting. Future research could validate social loafing in other settings such as multinational corporations as this would enable the generalizability of social loafing in terms of dispositional and situational factors.

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Drivers of Agricultural Funding in a Post Partially Dollarized Zimbabwe

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Abstract: Agriculture has long been the backbone of the Zimbabwean economy contributing in excess of 40% at its peak. There has been a sharp decline in the performance of this sector over the years especially from 2000. Concurrently the sector has been struggling to access financing from the conventional financial system despite its strategic importance to the economy. This study sought to unravel the major fundamentals behind the financing vacuum in the agricultural sector. It adopts a survey approach for data collection and applies both descriptive and inferential methods. A questionnaire was used for data collection on a sample of 117 respondents comprising of farmers' representatives, bank employees and ministry of agriculture officials. Data was analyzed using SPSS' Analysis of Moment Structures software which allows for structural equation modeling to identify multiple relationships among variables simultaneously. The study identifies the efficient and reliable value chain mechanism, volatile government policy, short term deposits experienced by banks, land tenure system and lack of investor confidence as the underlying fundamentals behind the low financing in agriculture.

Keywords: *Value chain, default rate, investor confidence, institutional arrangement, and deregulation*

1. Introduction

With the majority of Zimbabweans being rural populace, agriculture remains the backbone of the Zimbabwean economy. In excess of 60% to 70% of the population survives from agriculture as livelihood source and more than 60% of the industrial sector inputs come from agriculture (Biyam, 2013). Regrettably the performance of the agricultural sector in terms of contribution to Gross Domestic Product and exports has been on a steady decline from 2000. The deregulation of the agricultural sector following market reforms culminated in drastic increases in production costs in the sector driven mainly by cost of capital and agricultural inputs at a time transport costs were also swelling up. Research on the impact of agriculture on the economy with respect to downstream and upstream benefits indicates in excess of a fivefold multiplier effect (Mlambo, 2015). Disturbingly, despite the importance of the agricultural sector to the Zimbabwean economy, an average of only 10% of commercial banks' lending goes to agriculture in the sub-Saharan region and an average of 10% of treasury budget is dedicated to agriculture. Whilst there has been consensus among authors on the need to priorities the growth of the agricultural sector in Zimbabwe (Gono, 2006; Fowler & Panetta, 2011; Biyam, 2013) there has equally been a general concern on the continual neglect of the sector by private financiers (Gambara, 2015; Mtomba, 2013). In the context of the of agricultural funding in Zimbabwe, studies have mainly focused on the nature of agricultural funding, sources of agricultural funding and bank concerns on the financing models applied. This study focuses on identifying the underlying challenges faced in the supply of agricultural funding in Zimbabwe and investigates the factors that have contributed to deteriorating private funding in the sector. Motivation for the study emanates from calls for further study in the complex issue of funding needs and challenges in attracting private agricultural funding in Zimbabwe.

2. Literature Review

Literature has shown that effective access to financing for the agricultural sector from the conventional financial system in Zimbabwe and abroad is generally hinged on a variety of factors ranging from the tenurial system, nature of deposits, institutional arrangements, value chain system, investor confidence, default rate and government policy (Vitoria, Mudimu, & Moyo, 2012; Malaba, 2014; Mtomba, 2013; Fowler & Panetta, 2011; Vitoria et al., 2012; Anseeuw, Kapuya, & Saruchera, 2012; Kudzai, 2015). Successful agriculture worldwide has long been hinged on an effective land tenure system with a robust market for agricultural land based on property rights. Agro financing in Zimbabwe prior to the land redistribution exercise was largely shaped by dualism – commercial farming versus communal farming (Biyam, 2013) with banks focusing on commercialized farming. With the land redistribution, ordinary citizens mainly the rural poor and civil

servants in excess of 350 000 were resettled in formerly commercial farms under the A1 and A2 models. This presented challenges as the products and services delivery mechanism of financial institutions are not in line with the requirements (especially collateral) of the newly resettled farmers (Fowler & Panetta, 2011) who in most cases consist of the average citizen and the rural poor. The land tenure system obtaining in Zimbabwe since the adoption of the land reform program has not been conducive for agriculture financing. Banks have been unwilling to extend loans to farmers because of land tenure insecurity (Vitoria et al., 2012) since the collateral base available to back up loans to the agricultural sector was significantly reduced by land resettlement. Banks have thus sought to land to other sectors where there is low risk and collateral requirements meet their expectation. Gono, (2006) noted that the proportion of commercial bank loans to agriculture declined from a high of 91% to an average of 14% as a result of the fast track land reform program that changed the land tenure system.

Anseeuw et al. (2012) presented that Zimbabwean farmers have limited access to agriculture finance due to financial products that are incongruent and poorly structured to the new tenurial system that has left farmers without collateral. Nationalizing land has locked up the market value of land as it is no longer transferable and bankable. Commercial Farmers Union of Zimbabwe (2012), in their report on agricultural and economic recovery in Zimbabwe, bemoan the absence of a robust market for agricultural land which is evidenced by a locked mortgage market in agricultural land owing to a lack of an enabling legal framework in agriculture that should enable use of land as collateral. The banks rejected the offer letters as not bankable and the government tried to solve the collateral issue by subsequently converting some of the offer letters to 99 year leases. This did not convince banks who still rejected the 99 year leases (Kudzai, 2015) as the land still belonged to the state and the leases can be withdrawn at the discretion of the minister. Gambara, (2015) in a report on challenges in mobilizing agricultural funding for the 2015/16 season presented that banks often demanded that farmers produce title deeds to urban properties for loans advanced of which only a few have urban properties and even so wouldn't want to use the properties as collateral especially after some farmers lost their properties to banks and contractors after failing to repay loans (Chikwati, 2015). However, contrary to the common belief that the land tenure system is the chief driver of financial dehydration in the agricultural sector, Scoones(2014) argues that though land tenure is often cited as the main reason for non-funding of agriculture by banks, it is a facade as there are possibilities of extending finance with other forms of security besides freehold tenure that accrue commercial benefits to financial institutions.

Whilst accepting that lack of title deeds is not conducive for farming, Makunike, (2010) argues that what is more essential is the lack of a socio economic support system appropriate for the obtaining farming system. Equally disturbing is the lack of policy consistence and adherence to rule of law. Despite the land tenure system, Matunhu (2013) and Mtomba (2013) argue that a general lack of collateral exists among the majority of farmers. Many farmers do not have titled properties for collateral thereby creating a credit void that has been exacerbated by a lack of insurance mechanism. A disturbing feature of the nature of the intermediary role of the banks especially since the adoption of the multicurrency regime has been the lack of long term deposits. Banks have largely accessed short term deposits (Malaba, 2014), a development that has limited the ability of the banking sector to extend medium to long-term loans that are in tandem with agricultural finance. Further fueled with rising corporate non-performing loans, (Malaba, 2014), banks shifted to personal and consumer loans which are mainly short term loans (Mtomba, 2013).

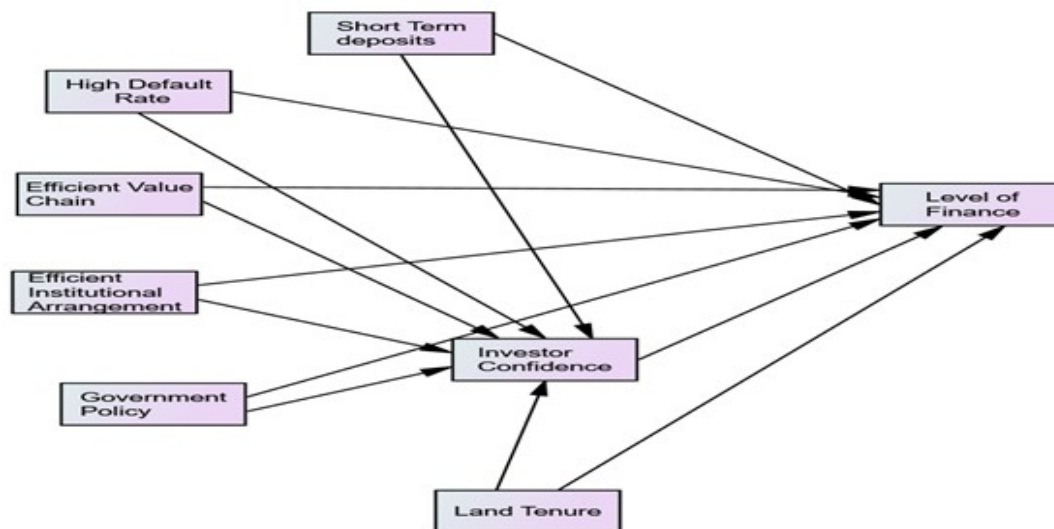
Ineffective institutional arrangements have had a significant impact on agricultural sector financing. Agricultural sector enjoyed quite enormous success before market reforms were instituted because the sector had effective and proper regulated structures that oversaw and championed the operations of farmers (Biyam, 2013). This made it easier for the financiers to bankroll farming activities. The advent of market reforms and land invasions brought chaos into the sector and with it the flight of capital from the sector. Of note-worth is the fact that the majority of the resettled farmers are either not active in farmers' unions activities or are not even members. On the other hand, Zimbabwean banks have been grappling with excessively high levels of nonperforming loans. Regrettably, a study by Chikomba et al. (2013) on the effectiveness of risk management policies employed on credit finance to SMEs found that in all sectors, agriculture had the highest number of loan defaults. Possibly this is because the land resettlement exercise significantly changed the structure of farming from sustainable commercial viabilities to peasantry farming that rely much from the highly unpredictable proceeds from the farms. Given that agricultural loan

repayments depend mainly on the successful planting and harvesting of crops as well as marketing of the commodity, it is thus a high risk sector thus possibly explaining the low financial support to agriculture (Vitoria et al., 2012). The financial sector's ability to provide tailored products and services for the agricultural sector is hampered by high non-performing loans to the sector (Mlambo, 2015; Biyam, 2013; Mtomba, 2013; Majoni, 2014) and the dependence of agriculture on natural resources, long production cycles and the vulnerability to multiple risks such as drought and other natural disasters. Furthermore, farmers lack established track records with financial institutions in an environment where there is no credible credit bureau. Similarly, Ejike et al. (2013), in their study on agriculture credit risk and default management by Nigerian banks, found that banks were reducing risk exposure especially to the agricultural sector owing to its high credit risks and defaults. Moreover, an exacerbating factor has been the high costs of loan administration in the agricultural sector (Sanderatne, 1986 cited in Ejike et al., 2013)

An efficient and reliable value chain system is essential for the success of agriculture especially where banks wouldn't want to bear the risk directly related to farming. Zimbabwean banks have been preferring to finance tobacco merchants and other cash crops like sugar cane for on lending owing to the reliable repayment system in the value chain as compared to traditional cereals where there is considerably high uncertainty on repayment especially maize (Malaba, 2014; Gambara, 2015). Because contract farming transfers the burden of collection to contractors, banks tend to prefer contract farming (Gambara, 2015) even though challenges are still prevalent in contract farming due to side marketing. Side marketing challenges have been most in cotton production resulting in drastic fall in cotton financing and production. Vitoria et al. (2012), in their study on the status of agricultural and rural finance in Zimbabwe, found that financial institutions were reluctant to advance loans to the agricultural sector due to a volatile government policy that has significantly impacted on investor confidence. Similarly, Makunike (2010) found that lack of confidence particularly on adherence to the rule of law and protection of private property rights is one factor that hampers banks' efforts in lending to agriculture as they are afraid that they may not be able to enforce their rights on collateral. Despite agriculture being high risk, a general lack of insurance for the majority of farmers expose banks in the event that crops are damaged either by hail storms, fire outbreaks quelea attacks among other incidents (Majoni, 2014) hence banks end up limiting their exposure to agriculture.

Conceptual Model: Informed by the review of relevant literature, we develop and test the following conceptual model. The model presumes that ineffective institutional arrangements, lack of insurance, volatile government policy, high default rate in agriculture, short term deposits experienced by banks and land tenure system directly affect investor confidence and eventually impact on financial support for the agricultural sector.

Figure 1: Conceptual Model



3. Methodology

The study adopted a survey approach to collect data from the respondents. The target population involved bank employees from commercial banks, farmers and ministry of agriculture employees. A distinctive list of the possible respondents could not be obtained hence the study had to consider the number of model variables as provided by Pallant (2011). The study utilized both primary and secondary data to evaluate the major antecedents of dehydration of financial support in the agricultural sector. For purposes of obtaining primary data, questionnaires were administered. The questionnaires to farmers were administered through farmer associations. In line with the proposition of Pallant (2011), when using structural equations modelling, there has to be at least 15 respondents for each upstream variable in the model. The study considered the number of variables in the model in deciding on the sample size. The structural model had a total of 7 variables hence the target sample size had to be at least 105. To guarantee this cutoff rate, a total of 150 were distributed taking into account the possibility of non-response. A total of 117 questionnaires were successfully administered resulting in a response rate of 78% comprising of banks: 40%, farmers 45% and ministry of agriculture officials 15%. The study sought to test the following major hypothesis:

H₁: there is a direct relationship between any of ineffective institutional arrangements, lack of insurance, volatile government policy, high default rate in agriculture, short term deposits experienced by banks, land tenure system and investor confidence.

H₂: there is a direct relationship between any of ineffective institutional arrangements, lack of insurance, volatile government policy, high default rate in agriculture, short term deposits experienced by banks, land tenure system, investor confidence and level of financing.

H₃: there is an indirect relationship between any of ineffective institutional arrangements, lack of insurance, volatile government policy, high default rate in agriculture, short term deposits experienced by banks, land tenure system, and level of financing.

It is thus hypothesized that these factors have a direct and indirect impact on the level of financial support with investor confidence as the intermediating variable. We test these set of hypothesis using SPSS AMOS to conduct structural equation modeling and generate path coefficients. The model is tested at a 5 percent significance level. Structural equations modelling allows for multiple relationships to be simultaneously tested and allows for easy calculation of indirect effects of upstream variables. Structure Equation modelling was chosen for the study given the multi-relationships that were being considered amongst several variables. The structural equation models have become the mostly applied modern tools and techniques used to justify decision on hypothesis acceptance and rejection through their ability to generate direct effects and indirect effects of mediator variables in a multi relationship model (Kumar, 2015).

4. Data Analysis

After running the model using AMOS, the following model fit tests were analyzed to verify the appropriateness of the model.

Model values: Minimum was achieved and a Chi-square = 0.000 was obtained with Degrees of freedom = 0. The model achieved a chi-square value of 0.00 reflecting that a saturated model has been achieved and all paths have been fully identified which indicates that all possible relationships within the model have been tested. Correlation analysis from the model results show acceptable levels of correlations between upstream factors.

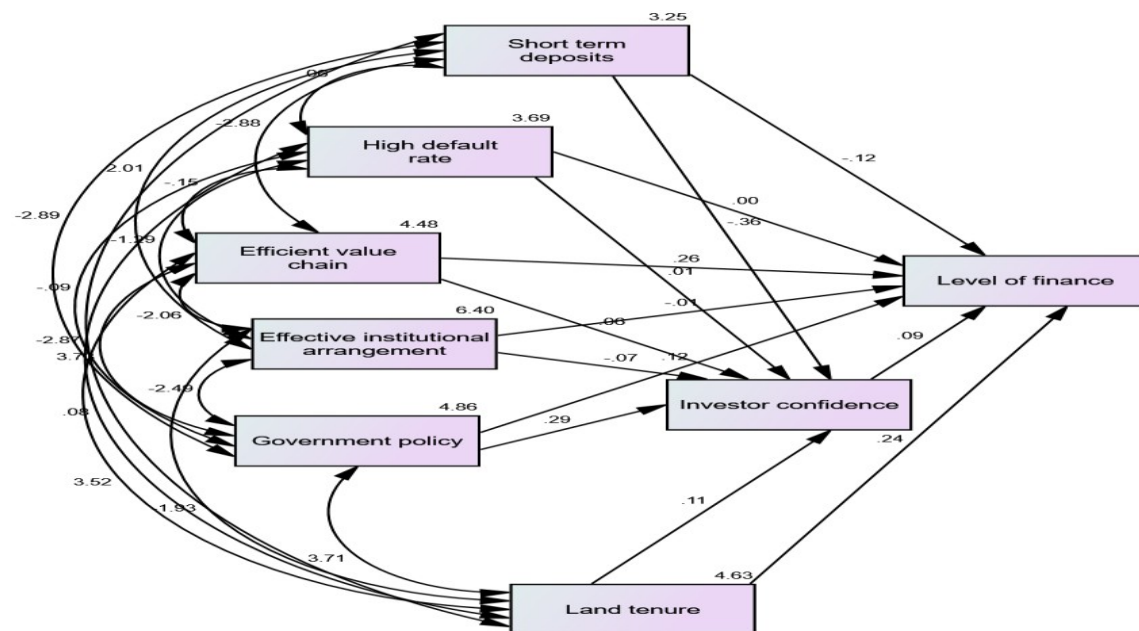
Model fit: In our model the minimum value of the discrepancy between the model and the data (CMIN) has been achieved at 0 indicating no discrepancy between the research data and the model. The CMIN/DF which is the chi-square divided by its degrees of freedom is undefined in our case since the model achieved zero degrees of freedom. This is an acceptable value since values that are generally in the 3/1 or 2/1 range are acceptable. Table 1 below indicates the level of model fit.

Table 1: CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	36	.000	0		
Saturated model	36	.000	0		
Independence model	8	856.197	28	.000	30.578

The Root Mean Square Residual (RMR) for the model which is the square root of the average squared amount by which the model's estimated sample variances and co variances differ from their actual values in the data = 0 indicating a perfect fit. The Goodness of Fit Index (GFI) which is similar to the Baseline Comparisons give a statistic between 0 and 1, with 1 indicating perfect fit, and issued with maximum likelihood estimation for missing data. For our model the goodness of fit has been achieved at 1 implying a perfect fit.

Figure 2: model paths



Regression weights: Based on the maximum likelihood estimation approach to estimate the strength and magnitude of the impact of the predictors on the level of financing the results indicate that there is a strong positive relationship between government policy and the level of investor confidence in the agricultural sector with an unstandardized regression weight of 0.295 at a p-value of 0.00. This indicates that the more favorable government policy is for agricultural promotion, the more investor confidence we have in the sector. Effective institutional arrangements have an insignificant impact on investor confidence as revealed by a p-value of 0.159 which is way above the 0.05 significance level threshold at which the model was run. On the other hand, nature of deposits has a significant impact on investor confidence with a path coefficient of -0.359 at a p-value of 0.00 implying that as the financial sector fails to obtain long term sources of funding, confidence is significantly lost. Results indicate no significant relationship between efficient and reliable value chain mechanism in agriculture and investor confidence (as shown by a p-value of 0.464), the default rate and the level of investor confidence at 5% significance level (as indicated by a p-value of 0.832) as well as the land tenure system and the level of investor confidence. The results indicate that default rate on loans to the agricultural sector does not significantly affect the level of financing by banks to the sector as indicated by a p-value of 0.831. This invalidates the long held speculation that banks have been shunning the agricultural sector owing to the subsisting relatively high levels of loan delinquencies and default rate in the sector. This result contradicts the claims by Chikomba et al. (2013); Vitoria et al. (2012) and Majoni (2014) who

presented that the financial sector's ability to provide tailored products and services for the agricultural sector is hampered by high non – performing loans to the sector.

Effective institutional arrangements in agriculture do not significantly determine the level of financing to the sector. This implies that though institutional arrangements may encourage financial support to the agricultural sector, its absence may not significantly reduce the level of funding to the sector. This contradicts with the findings of Biyam(2013) who present that a lack of proper regulated structures that oversee and champion the operations of farmers, brought by market reforms and land invasions make it difficult for the financiers to bankroll farming activities. The results indicate a significant relationship between the nature of deposits financial banks can access and the level of financing banks commit to the agricultural sector thus buttressing the contributions by Malaba (2014) and Mtomba (2013) who argued that the current deposits in the financial system are mainly short term deposits that are unsuited to and cannot support agricultural finance needs which by nature are mainly long term. Land tenure system has a significant impact on the level of financing directed to the agricultural sector by banks as indicated by a path coefficient of 0.236 at a p-value of 0.00. This support the results of Fowler & Panetta (2011); Vitoria et al. (2012); Anseeuw et al. (2012); Kudzai, (2015) among others who presented that the obtaining tenurial system in Zimbabwe does not support the provision of financial assistance to farmers based on collateral as all land has been nationalized. There is a significant relationship between Investor confidence, government policy, Efficient and reliable value chain mechanism in agriculture and the level of financing committed to agriculture. This resonates well with the findings of Malaba (2014) and Gambara (2015) who presented that in tobacco and sugar cane, there are more efficient and reliable value chain mechanism that involve contractors and side marketing is minimized in the value chain and consequently there has been remarkably more financing from the financial system. The path weights are as indicated in table 2 below.

Table 2: Regression Weights

			Estimate	S.E.	C.R.	P
INVECON	<---	GOVPOL	.295	.085	3.465	***
INVECON	<---	EIA	-.066	.047	-1.409	.159
INVECON	<---	ERVCM	.065	.088	.732	.464
INVECON	<---	HDR	.011	.054	.212	.832
INVECON	<---	LANDTEN	.112	.083	1.347	.178
INVECON	<---	STD	-.359	.093	-3.873	***
FINLEV	<---	HDR	.005	.022	.214	.831
FINLEV	<---	EIA	-.014	.019	-.714	.475
FINLEV	<---	STD	-.119	.041	-2.929	.003
FINLEV	<---	LANDTEN	.236	.035	6.784	***
FINLEV	<---	GOVPOL	.115	.037	3.129	.002
FINLEV	<---	ERVCM	.263	.036	7.205	***
FINLEV	<---	INVECON	.093	.038	2.423	.015

Indirect effects on level of financing: The study also tested the existence of indirect effects between the upstream variables and the level of finance with investor confidence as the intermediating variable. The results indicate that efficient and reliable value chain mechanism in agriculture has an almost insignificant indirect positive effect on level of financing as indicated by an indirect path weight of 0.006 whilst land tenure system has a moderate positive indirect relationship with level of finance. This finding corroborates the findings of Biyam (2013); Malaba (2014) and Gambara (2015). Short term deposits have a negative moderate indirect relationship with level of finance whilst effective institutional arrangement has a small negative indirect relationship with the level of finance to the agricultural sector as indicated in table 3 below.

Table 3: Indirect Effects

	ERVCM	LANDTEN	STD	EIA	GOVPOL	HDR	INVECON
INVECON	.000	.000	.000	.000	.000	.000	.000
FINLEV	.006	.010	-.033	-.006	.027	.001	.000

5. Conclusion

Lack of financing has become major challenge for farmers in Zimbabwe which has severely impacted on agricultural production in Zimbabwe. The financial sector has over the years been devoting an increasingly small proportion of the advances to the agricultural sector. Given that Zimbabwe's economy is agro based, a crippled agriculture performance poses a critical threat to the economy. This study sought to establish the main drivers of lack of financing to the agricultural sector. This study identifies, efficient and reliable value chain mechanism, volatile government policy, short term deposits experienced by banks, land tenure system and lack of investor confidence as the underlying fundamentals behind the low financing in agriculture. The study could not find a significant relationship between the level of financing and high default rate in agriculture as well as institutional arrangement hence can conclude that the two variables could not have led to the current finance vacuum in agriculture. The implications of this study are that in order to address the obtaining financing challenges in the agricultural sector, the government should ensure an efficient and reliable value chain mechanism and a favorable government policy are put in place. The recommendations emanating from the study are that the government needs to address the land tenure system to ensure land becomes a bankable security. Government should also focus on building investor confidence in the economy in order to attract private funding to the agricultural sector. It is also recommended that necessary fiscal and monetary measures be taken to ensure banks have access to long term deposits which are suitable for most agricultural financing needs that by nature tend to be long term. There is scope for further study to be carried to ascertain the impact of inadequate financing to the sector and possibly look at ways to increase bank deposits especially long term deposits.

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Profile Variables as a Basis for Segmenting Markets: A Guesthouse Perspective

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Abstract: Marketers frequently use profile variables to differentiate between groups of customers. The question arises as to whether these variables can also be used by guesthouses in segmenting their market. Segmentation helps marketers better meet customers' needs and leads to increased customer satisfaction. This study determines whether significant differences exist in visitors' perceptions of experience realms, given their age, gender, education level, and prior visits to the guesthouse, and whether these variables can be used in segmenting the market. The analysis of data provided by 541 guests who stayed at 51 guesthouses in Ghana shows that visitors from different age groups differ significantly with respect to the experience realms, except for Escape. Prior visits to the guesthouse resulted in significant differences in perceptions of Entertainment, Escape, Atmospherics, Peace of mind, and Efficiency, while education resulted in different perceptions of the Entertainment realm. The results can assist guesthouse managers in Ghana in allocating resources to segments that would yield maximum returns in Ghana.

Keywords: *Age, Customer experience, Education, Gender, Guesthouses, Prior visits*

1. Introduction

Ghana is one of the few emerging African countries regarded as being peaceful, politically stable, and growing (Oduro, Awal & Ashon, 2014). Since the reinstatement of a constitutional democracy in 1993 and several successful democratic elections, the government initiated a number of policies and programs (e.g. Economic Recovery program) intended to attract foreign direct investment (FDI), boost trade, growth and development (Sakyi, Comodore & Opoku, 2015). The tourism sector has been singled out in this regard. This sector is the fourth largest foreign exchange earner in Ghana after cocoa, gold, and remittances from abroad. With an annual growth rate of 12%, the tourism sector makes an important contribution to socio-cultural, political, and economic development in the country (Mensah-Ansah, Emma & Egan, 2011; World travel & tourism council, 2015). Tourists, holidaymakers, and business travelers have to rely on hotels and guesthouses for their accommodation needs (Travel & tourism, 2016). Despite the accommodation sector being one of the fastest growing sectors in Ghana, it is still confronted by numerous challenges. Many accommodation providers are accused of offering poor services and not having the capacity to deal with service problems such as staff with bad attitudes and faulty or defective equipment (Mensah-Kuffuor, Mensah & Amenumey, 2015). Furthermore, many guestrooms are untidy, and employees are not properly trained to deliver effective services to customers (Mensah-Kuffuor et al. 2015; Travel & tourism, 2016). A large number of accommodation providers are also inexperienced and unable to tailor offerings to customers' expectations and specifications (Travel & Tourism, 2016).

The focus of the study was guesthouses because although there is an increase in their numbers, they also suffer from the aforementioned problems, leading to negative customer perceptions. Guesthouses thus lose out on the benefits of a reasonably positive customer experience, namely customer satisfaction, visitors' return to the service provider and spreading of positive word-of-mouth messages about the service provider (Tussyadiah, 2016; Worsfold, Fisher, McPhail, Francis & Thomas, 2016). While previous studies into Ghana's hospitality sector (e.g. Adam & Amuquandoh, 2014; Mensah-Ansah et al., 2011; Nimako & Mensah, 2013; Amoah, Radder & van Eyk, 2016) have been undertaken, little is known about the effect of customer profile variables on visitors' perceptions of the guesthouse experience. In addition, most the factors often investigated are within the control of marketers while those factors that generally cannot be controlled by the service provider are ignored and hence impede operations and competitiveness. Studies dealing with uncontrollable factors such as age, education, prior visits, and gender are rare especially within the guesthouse industry in Ghana. However, these variables are frequently used to construct customer profiles and segment consumer markets (Carpenter & Moore, 2006; Falk & Dierking, 2016; Juwaheer, 2007; Pride & Ferrell, 2017). Providing the required experiences to specific segments of customers may help to raise levels of satisfaction, if not with the service per se. The aim of the study was to determine whether perceptions of

the guesthouse experience differ based on visitors' age, gender, education level, and prior visits to the guesthouse to such an extent that different clusters of customers' result, which warrant a differentiated managerial and marketing approach to the guesthouse experience. The remainder of this paper is structured as follows. A short literature review introduces the customer experience and profile variables relevant to the study, followed by a description of the research methodology, results and conclusions. The last section of the paper provides the managerial implications and recommendations.

2. Literature Review

The literature review focuses on two concepts that provide the context for the study, namely customer experience and experience realms, and customer profile variables.

Customer experience and experience realms: The customer experience has become an important marketing concern in contemporary business (Tapar, Dhaigude & Jawed, 2017; Yoon & Lee, 2017). Experiences are said to span a number of stages and realms. While every customer experience is different, some fundamental principles can be identified from seminal work to guide staggers of the experience. For example, Jain, Aagja and Bagdare (2017) and O'Sullivan and Spangler (1998) point out that an experience generally comprises three stages namely pre-experience, participation, and post-experience. The pre-experience stage refers to anything and everything that the customer engages himself/herself in *before* the participation in the experience itself (Jain et al., 2017; O'Sullivan & Spangler, 1998), such as searching for information and making contact with service providers to gain knowledge about the tourist destination. The pre-experience stage is also characterized by decision making regarding issues of pricing, affordability, availability and assortment of actions and activities that can evoke a memorable experience. In a guesthouse setting, guests might search for accommodation that is affordable, offers a variety of activities that would engage the customer, and result in a pleasant experience. The second stage of a typical experience is the participation stage and includes the *actual involvement* in the experience. Holbrook (1994) notes that in the participation stage the individual or customer can either play a passive or active role in the experience. Passive participation is derived from the consumer's understanding of, appreciation for, or response to a consumption object or experience. With active participation, the customer is involved in intense collaboration with the marketing activity. The more active or participative the customer is, the higher the collaboration between the consumer and the marketing entity (Holbrook 1994) and the more memorable the experience will be (e.g. providing the necessary facilities in the guesthouse that will enable guests to prepare their own menu). The final stage of the experience is the post-experience stage, which represents the *aftermath* of the participation. During this stage, the individual makes three important decisions, namely whether to replicate the same experience; whether to look for alternatives that will bring more fun and enjoyment; or whether to cherish or try to forget the memories from the experience (Jain et al., 2017; O'Sullivan & Spangler, 1998). As indicated in the introduction of this article, a positive experience might result in customer satisfaction, return and spread of favorable-of-mouth information about the guesthouse. If the experience has met expectations, the customer will repeat and remember such experiences. In contrast, if an experience falls below expectations, the individual will begin searching for more alternatives that will meet his/her expectations (such as vivid entertainment and appropriate esthetic facilities). Therefore, in the post-experience stage, positive experiences may offer various marketing opportunities for the experience provider (Jain et al., 2017; O'Sullivan & Spangler, 1998).

Another seminal approach that embodies the progression of stages describing experiences is the progression of "economic value" leading to the so-called "experience economy" (Pine & Gilmore 1998). The experience economy gained popularity in the 1990s and has influenced many research foci in the past 10 years. The progression in economic value begins with the extraction of commodities and moves through the stages of making products and delivering services, to the final stage of staging experiences. The last stage, representing the experience economy, is the source of a competitive strategy that can be used to differentiate one organization from the other (Pine & Gilmore 1998). Pine and Gilmore (1998:98) argue that "an experience is not an amorphous construct, it is as real as offering any service, good, or commodity". The above experience knowledge also led to the idea of finding out how to create a good experience. Buonincontri, Morvillo, Okumus and van Niekerk (2017) suggest that creating a good experience revolves around a number of realms and levels of customer participation and involvement. Participation in the experience can be passive or active,

while involvement in the experience can be described as absorption or immersion. If participation in the experience is passive, the customer does not actively participate in, or influence the experience, while, if there is active participation, the customer can act and influence the experience. Passive customers have no influence on the performance of the experience stager (organization) (for example, when watching a movie in the guestroom or requesting the waitress to deliver the menu to the guestroom). In active participation, the participants become co-creators of the experience (for example, involving guests to prepare their own breakfast, mix their own drinks in the honesty bar in the guesthouse). Absorption attempts to occupy the customer's attention to the experience (e.g. watching a movie) while immersion indicates that the customer gets drawn into the experience (Mehmetoglu & Engen, 2011).

In building on the four experience realms suggested by Pine and Gilmore (1999), a number of authors further explored these realms. For example, Oh, Fiore and Jeoung (2007) identified entertainment, aesthetics, escape and education as experience realms in a bed-and-breakfast context. Hosany and Witham (2010) confirmed entertainment, aesthetics, escape and education as realms of the cruising experience. Manthiou, Lee, Tang and Chiang (2014) also confirmed entertainment, aesthetics, escape and education as experience realms for a festival marketing. Radder and Han (2015) however found only three realms (edutainment, escapism and aesthetics) in a museum context. Amoah, Radder and van Eyk (2016) found atmospherics, enjoyment, entertainment, escape, efficiency, excellence and economic value as guesthouse experience realms. The current research focuses on five experience realms, namely entertainment, escape, atmospherics, peace of mind, and efficiency. These realms were chosen based on prior research (Ali, Ryu & Hussain, 2016; Amoah et al., 2016) indicating that these realms positively influence satisfaction and behavioral intentions. *Entertainment* involves fantasies, feelings of joy, and fun (Amoah, et al. 2017; Holbrook & Hirschman, 1982) and represents one of the fundamental experiences that people typically seek at a destination. *Escape*, a critical motivation for unleashing the customer experience (Pine & Gilmore, 1999), includes activities and situations that help the customer forget about daily routine activities and problems (for example mini competitions for guests to participate in their various apartments of the guesthouse). *Atmospherics*, also known as esthetics, refers to the physical surroundings at the destination. With respect to guesthouses, it might include the natural scenery, neatness of the rooms and the general design and appearance of the buildings, all of which could lead to a sense of liberation (Xu & Chan, 2010) and pleasure. Safety, security and privacy collectively provide the customer with *peace of mind*. Safety and security threats in the form of various types of crime are occurring more frequently and place increasing pressure on businesses and society at large (Habibi, 2017). Hence, it is assumed that safety and security are expected to be important to tourists when choosing a destination (Habibi, 2017) and to guests when selecting accommodation. Customers' perceptions of *efficiency* can be evaluated in terms of what they received relative to what has been sacrificed in terms of money, time and effort (Holbrook, 1994; Sánchez-Fernández & Iniesta-Bonillo, 2009; Zeithaml, 1988). In a guesthouse setting, employees' performance and customer service might be crucial because most customers form their experiences on the basis of how employees react to them and perform their duties. A customer profile and knowledge of customer perceptions of their experience might assist guesthouse managers in tailoring their services in a manner that will suit the demands of specific guests.

Customer profile variables: Customers' socio-demographic characteristics are often used as a basis for effective market segmentation and the consequent optimisation of marketing and promotional resources (Juwaheer, 2007; Radder & Han, 2011). The customer profile variables considered for this study are age of the customer, gender, educational level, and prior visits to the guesthouse. These variables have been used in several studies as foundations of successful market segmentation (Juwaheer, 2007; Radder & Han, 2011; Seiler, Rudolf & Krume, 2013) and were deemed relevant profile variables in terms of a guesthouse experience. *Age* of the consumer is important because different age groups tend to exhibit different behavioural characteristics (Theodoridis & Chatzipanagiotou, 2009) associated with their particular needs and wants (Kotler & Armstrong, 2013). For example, research by Radder and Han (2015) shows that the age of a customer has a significant effect on the judgement about edutainment (entertainment and education), escapism and esthetics provided by a museum visit. Letho, Cai, O'Leary and Huan (2004) found that age significantly influences the amount of money travelers spent on shopping and the items that they prefer to buy. Age also had a significant effect on 8 out of 9 service quality dimensions measured by Juwaheer (2007). For example, the age group of 25-34, showed the highest importance ratings on cleanliness of hotel rooms, while guests aged 45-54 years emphasised reliability of staff. Elderly consumers are more focused on

customer service and are more economy conscious (Theodoridis & Chatzipanagiotou, 2009) and might therefore prefer a guesthouse with a full range of services at a price that represents value for money. Lambert-Pandraud, Laurent and Lapersonne (2005) found that older consumers select long-established brands and repurchase a brand more often than younger customers. The post-hoc results conducted by Deshwal (2016) showed no significant difference among various age groups regarding their perceptions of peace of mind in a retail context. Individuals younger than 25 years of age constitute about 50% of the population in Africa and are expected to be the prime consumers of this continent in the next 10 years (Kotler & Armstrong, 2013). Knowledge of, and possibly targeting different age groups, is therefore important because the needs of the different age groups might cause a shift in the market profile which could significantly impact the strategic focus of the organisation in terms of product and service delivery (Okumus, Altinay & Chathoth, 2010). Based on the preceding discussion, it is hypothesized that:

H1: Different age groups perceive the guesthouse experience differently.

Gender forms the second profile variable investigated in the study. Since individuals' beliefs, values and customs differ, this might influence their decision making. Zeithaml (1985) conducted a study on supermarket shoppers and found that gender influences the preparation and execution of supermarket shopping. Satisfaction with a product has a significant effect on repurchase intention for men but not for women (Homburg & Giering, 2001). Seiler et al. (2013) found no significant differences in the mean scores for different gender groups regarding the type of private banking service provider used and size of liquid assets. Deshwal (2016) establishes that statistically significant differences exist between male and female customers with regard to peace of mind. Female customers showed higher levels of peace of mind than their male counterparts in the context of retail stores. The current study aimed to determine if the difference in perception between genders is also the case with the guesthouse experience in Ghana. It is therefore hypothesized that:

H2: Different genders perceive the guesthouse experience differently.

Education is another important profile variable that may affect the needs, expectations and perceptions of customers. Education influences an individual's social identity and self-concept, which in turn effects consumer preferences and behaviour. For example, contrary to the importance of age, Juwaheer (2007) found that education has little effect on 1 out of 9 service quality dimensions measured. However, Kim, Lee and Klenosky (2003) found a significant difference in travellers' motivations and destination choice when compared across different educational levels. Education has also resulted in different levels of customer satisfaction (Theodoridis & Chatzipanagiotou, 2009). Deshwal (2016) found that significant differences exist in the mean scores for peace of mind for respondents with higher secondary or below education levels, and respondents with a masters' degree in the case of a retail store context. Haralambopoulos and Pizam (1996) established that education levels of visitors correlated with positive tourism attitudes, which might also be the case with guesthouses. With respect to the accommodation sector, guests with a higher educational background might prefer accommodation that matches their status and educational achievement. For the purposes of the current study, it is hypothesized that:

H3: Visitors with differing levels of education perceive the guesthouse experience differently.

Customers' *prior visits* is the final variable researched in the current study. Kotler and Armstrong (2013) deemed prior experience with a product or service to be an important market segmentation variable. Furthermore, satisfaction with the accommodation may prompt visitors to choose the same accommodation for subsequent visits or to recommend the particular accommodation to friends and family (Amoah, 2016). Juwaheer (2007) found that 'first visit or not' exerted a significant effect on expectations and that those visiting the destination for the first time showed the highest ratings for service quality variables. Weaver and Lawton (2001) noted that there are significant differences in the length of stay based on tourists' attitudes to a tourism destination. With respect to guesthouses, this could imply that customers with prior visits may have different attitudes compared to newcomers. It is thus hypothesised that:

H4: Visitors with and those without prior visits to the guesthouse perceive the guesthouse experience differently.

3. Methodology

This study formed part of more comprehensive research into the guesthouse industry in Ghana. Four major cities namely Accra, Cape Coast, Koforidua, and Kumasi formed the study area. The target population included guests who have stayed in a guesthouse in these areas for at least one night. A proportional sampling method used to select the guesthouses resulted in the inclusion of 51 guesthouses in the study. Using convenience sampling, a self-administered questionnaire was distributed to guests of the 51 guesthouses. After a period of three months a total of 650 completed questionnaires were received, of which 541 was useable. Prior to the data collection, an initial pool of 38 items was generated to describe the five experience realms. The majority of these items were sourced from the work of Otto and Ritchie (1996) and Chen and Chen (2010), and a few items originated from the relevant literature on the topic. Subject experts from Ghana and South Africa, and four guesthouse managers in Ghana scrutinized these items for relevance and content validity, resulting in 24 items being retained. The final questionnaire was tested in a pilot study with 50 respondents, followed by a reliability assessment for each of the dimensions. The Cronbach's alpha for all of the experience realms were above 0.80, thus exceeding the generally acceptable lower limit of 0.70 (Hair, Black, Babin & Anderson 2010). These coefficients suggest that the scale was internally reliable. Analysis of Variance (ANOVA), post-hoc Scheffé tests, and cluster analysis formed the core of the data analysis.

4. Results

Profile of respondents: The data indicates that 58.0% of the sample were males. The age distribution includes the following age categories: 18-30 years (50.8%); 31-40 years (24.0%); 41-50 years (20.7%); 51-60 years (4.1%); and 61 years and older (0.4%). The educational levels of the respondents include less than a high school certificate (4.6%); high school certificate (40.7%); postgraduate certificate (7.6%); and a diploma or degree (47.1%). Information about respondents' visits to the guesthouse shows that: 27.9% had no previous visits, 34.4% visited the guesthouse once or twice before; 24.9% did so 3-4 times; and 12.8% visited the guesthouse more than four times.

Analysis of Variance (ANOVA): ANOVA was used to investigate whether perceptions of the guesthouse experience realms differ based on the respondent profile variables (age, gender, educational level, and prior visits to the guesthouse). The results are summarized in Table 1.

Table 1: ANOVA Results

Independent variables	Dependent variables					
	Entertainment		Escape		Atmospherics	
	F-value	p-value	F-value	p-value	F-value	p-value
Age	7.48	.001*	1.47	.231	10.07	<.0005**
Gender	1.39	.239	.03	.860	.14	.704
Education	3.98	.047*	1.07	.301	1.99	.159
Prior visits	4.10	.017*	5.00	.007*	6.23	.002*

*p<0.05; **p<0.001

Table 1: ANOVA Results

Independent variables	Dependent variables			
	Peace of mind		Efficiency	
	F-value	p-value	F-value	p-value
Age	8.27	<.0005**	8.73	<.0005**
Gender	2.68	.102	2.73	.127
Education	3.97	.002*	.93	.336
Prior visits	6.30	.047*	8.16	<.0005**

*p<0.05; **p<0.001

It follows from Table 1 that respondents' perceptions of entertainment differed significantly based on age, education and prior visits, while differences in perceptions of Escape only depended on whether the respondent has previously visited the same guesthouse. Respondents from different age groups and with

different levels of experience perceived differences in Atmospherics and in Efficiency. In contrast, age, education level as well as prior visits, resulted in significant differences in their perceptions of Peace of mind. The findings provide support for hypotheses H1, H3, H4. H2 is rejected because no significant differences based on gender were found.

Post-hoc Scheffé test: A post-hoc Scheffé test was performed to determine where the mentioned differences occur and to investigate the effect size of the difference. The post-hoc Scheffé test results are more useful than the ANOVA results, because the ANOVA results only indicate statistical significance. Cohen's d-value, in contrast, reflects a more stringent test of significant differences (practical significance). In addition, the post-hoc Scheffé test helps identify which pair of samples can be considered distinct. This will assist guesthouse managers in focusing on or adjusting their planning and decision-making in accordance with the demands and expectations of individual groups of customers. Cohen's d-values of below 0.20 are regarded as not significant; those between 0.20-0.49 are regarded as indicating a small effect size; those of 0.80 and above as having a large effect size, and those of 0.50-0.79 as having a medium effect size (Pallant, 2013:251). Consistent with prior studies (Huck, 2012), a significant level of $p < 0.05$ was chosen for the ANOVA and the post-hoc Scheffé test. Tables 2, 3, 4, 5 and 6 show the results of the post-hoc Scheffé tests. In all cases where a significant difference was evident, the effect size was small. The post-hoc Scheffé test results for *Entertainment* showed significant differences for respondents aged 18-30 and 31-40; respondents aged 18-30 and those 41 years and older; those guests with or without higher education, as well as those with no previous visits and those who have visited the guesthouse three or more times. With respect to the *Escape* realm, only one paired respondent profile showed significant differences, namely respondents with no prior guesthouse visits and those with three and more visits. In the case of *Atmospherics*, significant differences were found for those respondents aged 18-30 and 31-40, and between those aged 18-30 and 41 years and older. Significant differences were also evident between guests with no previous experience with the guesthouse, and those who have visited the guesthouse more than three times. Respondents' perception of *Peace of mind* also showed three significant differences namely those aged between 18-30 and 31-40; those aged between 18-30 and 41 years and older; respondents with no prior guesthouse experience and those with three and more visits. Concerning *Efficiency*, significant differences were found for those aged between 18-30 and 31-40; between 18-30 and 41 years and older; those with no prior visits to the guesthouse and those with 1-2 visits as well as with more than 3 visits.

Table 2: Post-hoc Scheffé Test Results for Entertainment

Respondents profile	Level 1	Mean	Level 2	Mean	p-value	Cohen's d
Age	18-30	3.46	31-40	3.76	.005**	0.36
	18-30	3.46	41+	3.70	.028*	0.28
	31-40	3.76	41+	3.70	.873	0.07
Gender	Male	3.65	Female	3.52	.239	0.15
Education	High sch./less	3.64	D.D.PG	3.56	.047*	0.09
Prior visits	No prior visits	3.43	1-2 times	3.57	.317	0.17
	No prior visits	3.43	3 times+	3.74	.004**	0.38
	1-2 times	3.57	3 times+	3.74	.164	0.21

* $p < 0.05$; ** $p < 0.001$, Note: D.D.PG=Diploma, Degree, Post graduate

Table 3: Post-hoc Scheffé Test Results for Escape

Respondents profile	Level 1	Mean	Level 2	Mean	p-value	Cohen's d
Age	18-30	3.16	31-40	3.23	.696	0.09
	18-30	3.16	41+	3.16	1.000	0.00
	31-40	3.23	41+	3.16	.776	0.09
Gender	Male	3.19	Female	3.17	.860	0.02
Education	High sch./less	3.23	D.D.PG	3.13	.301	0.11
Prior visits	No prior visits	3.05	1-2 times	3.13	.726	0.09
	No prior visits	3.05	3 times+	3.31	.015*	0.31
	1-2 times	3.13	3 times+	3.31	.087	0.24

* $p < 0.05$; ** $p < 0.001$, Note: D.D.PG=Diploma, Degree, Post graduate

Table 4: Post-hoc Scheffé Test Results for Atmospherics

Respondents profile	Level 1	Mean	Level 2	Mean	p-value	Cohen's d
Age	18-30	3.69	31-40	3.99	.001*	0.36
	18-30	3.69	41+	3.96	.002*	0.31
	31-40	3.99	41+	3.96	.944	0.04
Gender	Male	3.85	Female	3.79	.704	0.08
Education	High sch./less	3.83	D.D.PG	3.82	.159	0.00
Prior visits	No prior visits	3.65	1-2 times	3.81	.129	0.19
	No prior visits	3.65	3 times+	3.97	<.0005**	0.38
	1-2 times	3.81	3 times+	3.97	.127	0.19

*p<0.05; **p<0.001, Note: D.D.PG=Diploma, Degree, Post graduate

Table 5: Post-hoc Scheffé Test Results for Peace of mind

Respondents profile	Level 1	Mean	Level 2	Mean	p-value	Cohen's d
Age	18-30	3.67	31-40	3.94	.005*	0.32
	18-30	3.67	41+	3.90	.018*	0.27
	31-40	3.95	41+	3.90	.910	0.05
Gender	Male	3.85	Female	3.70	.102	0.18
Education	High sch./less	3.82	D.D.PG	3.76	.047	0.07
Prior visits	No prior visits	3.62	1-2 times	3.75	.302	0.15
	No prior visits	3.62	3 times+	3.95	.001*	0.39
	1-2 times	3.75	3 times+	3.95	.048	0.25

*p<0.05; **p<0.001

Note: D.D.PG=Diploma, Degree, Post graduate

Table 6: Post-hoc Scheffé Test Results for Efficiency

Respondents profile	Level 1	Mean	Level 2	Mean	p-value	Cohen's d
Age	18-30	3.48	31-40	3.78	.004*	0.35
	18-30	3.48	41+	3.76	.006*	0.32
	31-40	3.78	41+	3.76	.985	0.02
Gender	Male	3.60	Female	3.66	.127	0.08
Education	High sch./less	3.62	D.D.PG	3.63	.336	0.01
Prior visits	No prior visits	3.40	1-2 times	3.63	.033*	0.27
	No prior visits	3.40	3 times+	3.78	<.0005**	0.46
	1-2 times	3.63	3 times+	3.78	.213	0.19

*p<0.05; **p<0.001

Note: D.D.PG=Diploma, Degree, Post graduate

Cluster Analyses: Following the approach and recommendation by several scholars (Hair, Black, Babin & Anderson 2010:536; Josiam, Huang, Bahulkar, Spears & Kennon 2012: 85; Li, Zhang, Mao & Deng 2011:637; Lo, Law & Cheung 2011:832), this study adopted a combination approach using a hierarchical approach followed by a non-hierarchical approach to extract clusters. Firstly, Ward's hierarchical cluster analysis using the squared Euclidean distance as a measure of similarity was performed to establish the optimal number of clusters by reviewing the amalgamation schedule. Different cluster solutions ranging from two to ten were given special attention (see Table 7).

Table 7: Amalgamation schedule

Number of clusters	Coefficient	Change in coefficient	Change rate
2	399.047	206.919	107.70%
3	192.128	37.362	24.14%
4	154.766	76.531	97.82%
5	78.234	14.199	22.17%
6	64.035	8.377	15.05%
7	55.658	14.286	34.53%

8	41.372	2.768	7.17%
9	38.604	2.101	5.76%
10	36.503	4.136	12.78%
11	32.367	-	-

It emerged that the largest change in the coefficient occurred from a cluster three to a cluster two solution, suggesting that the two cluster solutions would be the optimal option for the current study. The K-means non-hierarchical cluster analysis was conducted with two clusters (see Figure 1). The results showed two different clusters. According to the mean scores characteristics with regard to the clustering variables (see Table 8), the first cluster (n=374 or 69.1%) had a higher mean score for all the variables than those in the second cluster (n=167 or 30.9%). The results of ANOVA indicated that the mean scores were all significantly different between the two clusters ($p < 0.001$).

Figure 1: Plot of K-mean scores for each Cluster

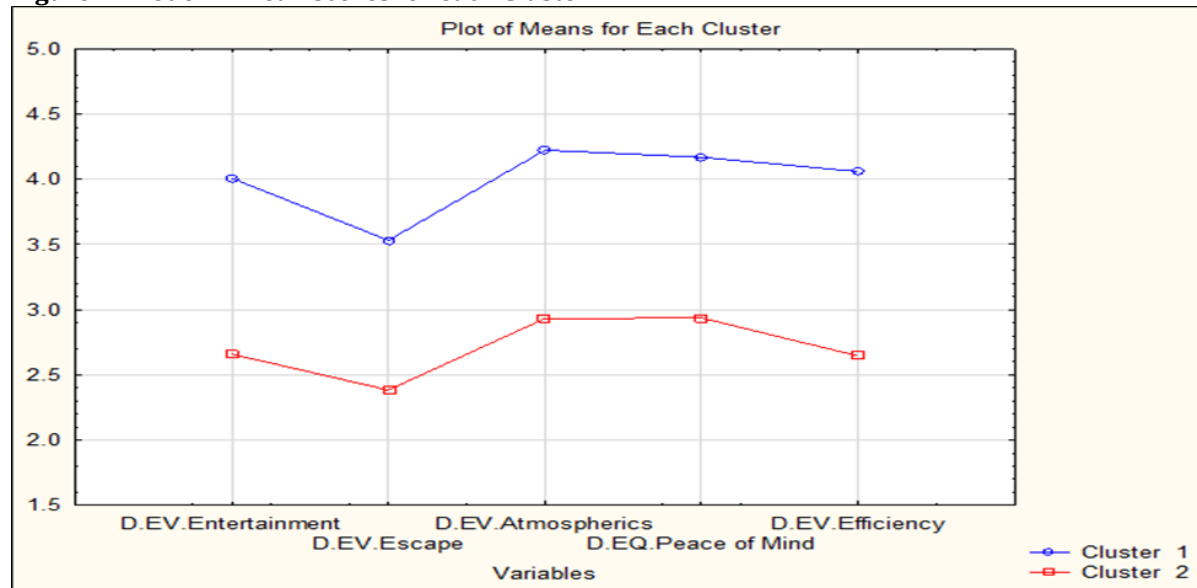


Table 8: Descriptive statistics for clusters

Experience realms	Cluster 1 Low expectation/motivated n=374		Cluster 2 High expectation/concerned n=167		F-value
	Mean	Std	Mean	Std	
Entertainment	4.01	0.58	2.66	0.75	513.71***
Escape	3.53	0.68	2.38	0.65	341.74***
Atmospherics	4.22	0.40	2.93	0.59	869.80***
Peace of mind	4.17	0.53	2.94	0.63	552.34***
Efficiency	4.06	0.48	2.65	0.64	808.60***

Note: *** $p < 0.001$

Table 9: Cluster profile differences

Variable	Cluster 1 (n=374)		Cluster 2 (n=167)		CHI-SQUARE
	Low expectation/motivated		High expectation/concerned		
	Frequency	Percentage	Frequency	Percentage	
Age					31.097***
18-30	162	43.3	113	67.7	
31-40	105	28.1	25	15.0	
41-50	92	24.6	20	12.0	
51+	15	4.0	9	5.4	
Gender					0.864
Male	222	59.4	92	55.1	
Female	152	40.6	75	44.9	
Education					4.591
<High sch.	13	3.5	12	7.2	
High sch.	150	40.1	70	41.9	
Dipl./ Degree	180	48.1	75	44.9	
Postgrad.	31	8.3	10	6.0	
Prior visits					29.935***
No previous visits	79	21.1	72	43.1	
1-2 visits	134	35.8	52	31.1	
3-4 visits	106	28.3	29	17.4	
5+ visits	55	14.7	14	8.4	

Note: ***p<0.001

A cross-tabulation analysis with a chi-square test was performed to determine the demographic characteristics of each of the two clusters. As displayed in Table 9, only two variables (age and prior visits) were found to differ significantly between the two clusters. In terms of Age, cluster 1 (LEM) had a comparatively larger proportion of people who were between 31 and 50 years old (52.7% vs 27.0%), whereas cluster 2 (HEC) had a comparatively larger proportion of people who were in either the youngest age group of 18-30 years (67.7% vs 43.3%) or the oldest age group of 51 years and older (5.4% vs 4.0%). With reference to prior visits, respondents with no prior visit to the guesthouse were relatively more in cluster 2 (HEC) (43.1% vs 21.1%), whereas those who have visited the guesthouse before and had some level of experience with the guesthouse were likely to be more in cluster 1 (LEM) (78.8% vs 56.9%).

5. Discussion and Conclusion

The purpose of this study was to determine whether perceptions of the guesthouse experience differed based on visitors' age, gender, education level, and prior visits to the guesthouse to such an extent that different clusters of customers' result which warrants a differentiated managerial and marketing approach to the guesthouse experience. It emerged from the empirical findings that practically significant differences in perceptions exist for *age* in the case of Entertainment, Atmospherics, Peace of mind, and Efficiency but not for the Escape realm. The finding supports *H1* (the guesthouse experience is perceived differently by different age groups) and is consistent with research by Carpenter and Moore (2006), Deshwal (2016), O' Mahony and Hall (2007), Radder and Han (2015), and Theodoridis and Chatzipanagiotou (2009) albeit in different contexts. Respondents aged 31-40 (M=3.76), as well as those 41 years and older (M=3.70), had a higher mean score for *Entertainment* than the 18-30-year-old (M=3.46), which indicate that different forms of entertainment should be provided to satisfy the different groups. Although, no significant differences were evident with regards to *age* from the post-hoc Scheffé test for *Escape*, it is worth noting the differences in the mean scores. Respondents aged 31-40 years old had a higher mean score (M= 3.23) than the 18-30 years olds (M=3.16) and those older than 41 years (M=3.16), suggesting the need for different amenities and activities that will enhance the feeling of escape. The results further show that those older than 30 years had a higher mean score (M=3.99) for *Atmospherics* than those younger than 30 years (M=3.69). Those aged between 31-40 years old had a higher mean score (M=3.99) for *Atmospherics* than those older than 41 (M=3.96). These results suggest different levels of perceptions among the various age categories. Respondents aged 31-40

(M=3.94) and those aged 41 years and older (M=3.90) had higher mean scores when compared to those aged 18-30 (M=3.67) with respect to *Peace of mind*. The finding seems to suggest that the older group is more conscious of their safety, security, and privacy than the younger generation. With respect to *Efficiency*, the mean scores for those aged 31-40 (M=3.78) and 41 years and older (M=3.76) were higher than for respondents aged 18-30 (M=3.48). This might suggest that the older population may perceive time, value for money, and employees' performance towards guests as important experience characteristics.

Significant differences in customers' perceptions of *Entertainment* exist for different educational levels, and thus support H3. This finding also lends support to Juwaheer's (2007) and Haralambopoulos and Pizam's (1996) research results. Guesthouse visitors with lower levels of education had a higher mean score (M=3.64) for *Entertainment* than those with post school education (M=3.56). Although there are no significant differences in customers' perceptions of *Escape*, *Atmospherics*, *Peace of mind*, and *Efficiency*, it is still worthwhile to consider the differences in the mean scores. Respondents with lower levels of education had a higher mean score for *Escape* than those with post school education. Those with lower levels of education had a higher mean score for *Atmospherics* than those with post school education. Those with lower levels of education had a higher mean score for *Peace of mind* than those with post school education. Respondents with post school education had a high mean score for *Efficiency* than those with lower levels of education. It appears that visitors with lower levels of education might be more satisfied with current offerings by the guesthouses.

Significant differences are also evident in customers' perceptions of all the experience realms, when the realms are compared based on *Prior visits* to the guesthouse. H4 is thus supported. The findings also lend support to those of Juwaheer (2007) and Weaver and Lawton (2001) albeit in different contexts. Those who have visited the guesthouse once or twice had a higher mean score (M=3.57) for *Entertainment* than those with no prior knowledge (M=3.43). Those who have visited the guesthouse on more than three occasions had a higher mean score (M=3.74) for *Escape* than those who have visited the guesthouse on at least two occasions. Customers with prior visits to the guesthouse (at least two occasions and those visiting on more than three occasions) had higher mean scores for atmospherics than those with no experience. Customers who have visited the guesthouse on more than three occasions had a higher mean score (M=3.97) for *Atmospherics* than those who have visited the guesthouse on at least two occasions (M=3.81). Customers with no previous visits (M=3.62) to the guesthouse had a lower mean score for peace of mind than those with at least two occasions (M=3.75). Lower mean scores were also evident for peace of mind between those with no prior visits (M=3.62) and those with more than three visits (M=3.95) as well as those with at least two visits (M=3.75) and those with more than three visits (3.95). In all cases for efficiency, those with no previous visits to the guesthouse had a lower mean score when compared to those with at least two visits and more than three visits to the guesthouse. Those with at least two visits to the guesthouse for efficiency also had a lower mean score (M=3.63) than when compared to those with more than three visits to the guesthouse (M=3.78). Thus, it can be concluded that customer perceptions become more positive with an increase in the number of visits to the same guesthouse. The cluster analysis also provided additional evidence that marketers might consider segmenting their market based on two categories of customers. Cluster 1 are likely to consist of customers aged 31 to 50 years old with some level of prior visits to the guesthouse. The second group of customers are likely to be those aged between 18-30 and 51+ years old.

Managerial implications and recommendations: Accommodation is important to the Ghanaian tourism industry. However, it has been shown that managers in the hospitality sector often experience service failures and lack the necessary marketing and management skills, resulting in a negative effect on the industry (Mensah-Kufuor, Mensah & Amenumey 2015). Guesthouses, as important and emerging role-players in the industry, do not only provide accommodation, but also offer entertainment and escape, and when coupled with particular atmospherics, could enhance visitors' experience. Safety, security, and privacy, which forms the peace of mind realm and efficient staff, also cannot be ignored if the guesthouse aims to be competitive and position itself above similar establishments. Better tailoring experiences to meet the needs of specific groups of visitors can enhance the likelihood of success of the guesthouses, and also the industry.

The results of the study therefore hold important implications for guesthouse managers. When considering the differences in visitor perceptions, it is worth noting that significant practical differences exists between

those visitors under the age of 31 and those aged 31 and older, suggesting two distinct market segments. While no significant differences existed with respect to *Escape*, the 30 years and younger group perceived *Entertainment*, *Atmospherics*, *Peace of mind*, and *Efficiency* to be less to their liking compared with the older group. To attract the younger age group, the following recommendations are offered. Guesthouse management have to add additional forms of entertainment that will appeal to young people, such as a reserved destination or apartment within the guesthouse set aside for live cultural and musical performances (e.g. on weekends and public holidays), provision of bus travel tour opportunities to the city and other heritage sites to visitors with minimal or at no cost. Other sporting entertainment activities (e.g. table tennis courts, grass courts for volley ball, full sized billiard table, pool table) can also be introduced to attract more visitors. Security and safety measures such as access cards to guest rooms should be introduced, with security personnel on guard at all times. Personal information about customers should remain confidential and stored at a central database in order to minimize time spent during check-in and to easily access guest preferences. To improve on the effectiveness of employees, it is recommended that guesthouse managers recruit staff with high integrity, knowledge in dealing with customer complaints, and good general etiquette. Employees should be encouraged to attend programs designed to enhance their knowledge and expertise not only within the industry, but also with respect to their interpersonal skills. The attendance of these programs can be sponsored by the respective guesthouse.

Level of education made a difference to perceptions of *Entertainment*, but not to perceptions of *Escape*, *Atmospherics*, *Peace of mind*, or *Efficiency*. Two distinct groups of customers resulted: those with a high school or lower educational level, and those with post school education. The first group are more positive about the *Entertainment* provided by the guesthouses, suggesting that guesthouses should differentiate its entertainment activities to match the level of education and provide visitors with the desired levels of stimulation and escape. Prior experience with the guesthouse also resulted in two distinct groups of customers, namely those with no prior visits, and those with three and more visits. Those customers who have visited the guesthouse on more than three occasions had higher mean scores for *Entertainment*, *Escape*, *Atmospherics*, *Peace of mind*, and *Efficiency*, implying that repeat customers are more positive about their experience than first time customers. The latter points to the importance of loyalty, as repeat customers are the loyal ones, and guesthouse managers are advised to recognize customers who have visited the guesthouse before. These customers can be approached with special offerings such as discounts, and providing the preferred room and entertainment on each visit.

Finally, segmentation is an important marketing ploy, which can assist organizations in better understanding the needs, preferences and attitudes of a smaller group of customers (Theodoridis & Chatzipanagiotou, 2009) rather than trying to understand the total market. In addition, segmentation can also assist marketers in the effective use and targeting of marketing communication, and positioning of the organization (Juwaheer, 2007; Morritt, 2007; Theodoridis & Chatzipanagiotou, 2009), and optimizing the possibilities of influencing customer behavior (Stanford, 2014). The cluster analysis in the current study provided support that the guesthouse industry (at least within the current study focus) can segment the market into two distinct groups of customers. The first group can be customers between 31 to 50 years old with previous experience of the guesthouse and the second group are likely to be customers aged 18-30 and 51+ years with no prior visits to the guesthouse. Customers within the second cluster (18-30 and 51+ years) had lower mean scores when compared to customers in the first cluster, which could suggest that they had high expectations. Guesthouse managers are advised to tailor made their services to meet the needs of the different group of customers. For example, those within the second cluster (18-30 and 51+ years) can be offered special guest rooms with age-relevant entertainment facilities, maximum security area and offered professional services.

Limitations and recommendations for further studies: Although the profile variables investigated in the current study might assist guesthouse managers in Ghana to overcome the numerous challenges facing the industry, it is important to acknowledge, and therefore it is recommended, that other variables, such as income, may be equally important. The study focused on only four major cities in Ghana, therefore further research may extend the horizon of the study area in the effort to generalize the findings. Finally, several authors have contextualized numerous realms of customer experience of which only five were investigated in the current study. An extension of the realms might be necessary to provide more scientific evidence within the study area.

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An Analysis of the Link between Water Infrastructure Financing and Water Provision South Africa

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Abstract: This paper evaluated the relationship between water infrastructure financing and water provision in South Africa. The research followed a quantitative research design; secondary data for water infrastructure financing and water provision in South Africa was obtained from the Trans-Caledon Tunneling Agency (TCTA) and the World Bank for the period 1994-2014. The regression results indicated two separate findings which offers unique contribution to the current literature; results from water asset finance as a single independent variable on water provision showed a significant relationship. However, an addition of two control variables, corruption and violence, neutralised the effectiveness of water asset finance on water provision to the extent that water asset finance became less significant with a P value of 0.05. The paper makes a nuance contribution from the findings, which specifically is that finance alone may not deliver target water provision if corruption and violence is left unbridled. The paper thus recommends the need for public policy makers to control the rate of corruption and violence to enable effective application of water infrastructure finance in water provision. The paper also recommends the need for further research on other government departments to integrate corruption and violence as control variables.

Keywords: *Infrastructure finance; economic development; Water Infrastructure, water provision,*

1. Introduction

Urbanization and development of urban communities in developing countries have increased demands for water infrastructure expansion for water service delivery (Tortajada, 2014). Thus there is a more pronounced urgency for water infrastructure development in developing countries (Reddy, 2015). Whilst effective water service delivery requires improved infrastructure, the infrastructure cannot function in isolation. Infrastructure efficiency and effectiveness rely upon a blend of responsive financing, a proactive governance system and financial accountability (Tortajada, 2014). South Africa is a semi-arid country and has experienced poor water service and sanitation delivery over a prolonged period of time (Chetty & Luiz, 2014), and water is perceived as a basic human right in South Africa and globally (Mehta & Knapp, 2004). However, South Africa is experiencing a serious backlog in the investment of water infrastructure for the management and delivery of required water services (Ruiters, 2013). It is therefore not surprising that from 1994, South Africa has constantly faced a number of service delivery challenges relating to water (Nleya, 2011). At the inception of democracy in 1994, out of the 40 million population of South Africa 15.2 million people did not have to access basic water supply (Note, 2002). However, despite many years into democracy, there is still a pervasive insufficient provision of safe potable water in most parts of South Africa (Mackintosh & Colvin, 2003; Kehler, 2013). Water infrastructure financing has been blamed for the lack of the effective distribution of water to all the citizens (Bakker, 2013). The majority of capital investments in South Africa were made in the 1970s and 1980s and only catered for a small population. The increased population size in urban areas means that the existing water infrastructure is not sufficient to carry increasing demands for water services (Hanjra & Qureshi, 2010). According to Ruiters (2013), there is an under-investment of more than R600 billion per annum in the South African water infrastructure. Hence there is a dire need for putting in place new institutional structures and a water infrastructure financing framework in order to enhance water infrastructure and water provision solution to this backlog.

The importance of this research is two folds; firstly, it contributes to knowledge by bridging a gap in existing literature. This is because although the preceding literature allusions exist about low water infrastructure investment in South Africa, however, empirical research that points uniquely to the relationship between water infrastructure financing and water provision in South Africa has not yet been carried out. This research thus makes contribution to theory by providing an examination of how water infrastructure financing relates to water provision within the South African context. The second importance or significance of this research is that it provides an empirical test of previous research assertion by Tortajada (2014) that provision of finance alone might not function effectively to enhance water provision in isolation of some governance factors;

accordingly, given the rising trend of corruption and violence in South Africa (Clark, 2018; Meth, 2017; Stone, 2017), this research provides a further test on the extent of water provision in the presence of corruption and violence. Overall, the research is important as it uses the findings to provide a practical policy direction to water policy makers on the need to control corruption and violence as these factors have the propensity to neutralise the value of water asset finance if left unchecked.

Research Problem: Despite all efforts by the South African government, there are still some bottleneck in water infrastructure investment for the management and delivery of water services (Ruiters, 2013). However, this problem is not unique to South Africa. Research indicates that water infrastructure financing is a major problem inhibiting effective water provision in many developing economies (Sanders et al., 2013). There is, therefore, a dire need to improve water infrastructure finance and governance in South Africa. Although finance is important for water provision, financial provisioning without effective financial governance may still present a problem in securing the expected water service delivery (Mehta & Knapp, 2004). Efficient financial governance is crucial for attracting and retaining water infrastructure financing (De Asis et al., 2009). Current research has found that, despite sufficient water infrastructure financing, lack of financial governance and financial accountability in the water sector may present an obstacle to public water delivery (Egan, 2014). Although water infrastructure and water service provision are in dire need of expansion in South Africa (Ruiters, 2013), recent research about water delivery in South Africa has not focused much attention on the financing aspect of water infrastructure.

Rather, the attention of researchers has related more to issues such as mine water foot-printing, extractive based infrastructure with cursory highlight on financing and rescaling South Africa's water resource management (Ranchod et al., 2015; Blanc & Strobl, 2014). The closest related research is (Mostert & van Heerden, 2015) on general infrastructure expenditure in Limpopo province and Ruiters (2013) on a water infrastructure funding model. Mostert & van Heerden's (2015) research dwelt on "Computable General Equilibrium (CGE) Analysis of the Expenditure on Infrastructure in the Limpopo Economy in South Africa " (Mostert & van Heerden 2015, p. 227), but only touched briefly on water infrastructure expenditure, amongst other infrastructures. On the other hand, Ruiters (2013) focused on suggestions for a water infrastructure funding model for South Africa. Accordingly, it is evident that previous research in South Africa differs from this research focus because none of the previous researchers sought a relationship between water infrastructure financing and water provision in South Africa. Hence, after a rigorous literature search by the researchers, published research that focused uniquely on the authors' current research focus is uncommon. Therefore, this research bridges a gap in the literature and makes a contribution that is unique to water infrastructure financing by relating water infrastructure financing, corruption and violence to water provision in South Africa.

Research Question: This research addressed the following question: How does water infrastructure financing relate to water provision in South Africa?

Research Objective: In order to respond to the research question, the objective of this research was: To evaluate the relationship between water infrastructure financing and water provision in South Africa.

2. Literature Review

Agency and Stewardship Theory: A theoretical framework that underpins this research work involved both Agency and Stewardship theories. Both theories were then applied in the context of this research. The Agency theory is referred to as the principal-agent theoretical framework used as a basis for establishing organisational contract relationships and behaviour between the principal(s) and agent(s), thus describing the properties of a principal -agent behaviours (Hiller & Verdier, 2014; Atkinson & Fulton, 2013). The principal-agent model is applicable to contractual relationships within organisational structures between boards, directors, managers and employees, in private, public and non-profit organisations (Schillemans & Busuioc, 2015). In the context of South Africa, the Agency theory is applicable in a relationship between the public sector and the citizens of the country, where the public sector employees are expected to provide basic water and sanitation services to the citizens of the country who pay tax to finance the development and management of water infrastructure and water provision. The Stewardship Theory, on the other hand, is

focused on a contractual behaviour in which the emphasis is placed on common goals instead of the agent's interest (Van Slyke, 2007; Gilliland & Kim, 2014). In addition, Stewardship Theory exists where managers/stewards work is motivated by, and are aligned to the principals' objectives. The Stewardship Theory is based on the assumptions that contractual relations are based on collective aligned goals, confidence, and contribution resulting from mutual benefit, but in non-profit organisations, the stewards act in the interests of their donors (Biesenthal & Wilden, 2014; Van Slyke, 2007). Therefore, the application of a Stewardship Theory in the public sector suggests that the Department of Water and Sanitation serves as a steward to members of the public who are principals and taxpayers, who expect government administrators as stewards to deliver optimum and efficient services such as sustainable water provision to citizens. Therefore, the agency and stewardship theories are applicable to this research since government administrators (stewards) play the role of providing water to members of the public (principal). Therefore, both agency and stewardship theories constitute the theoretical foundation for this research.

Water Infrastructure Financing and Water Provision: Developing countries have critical requirements for sustainable development which involves social, economic and environmental improvement. Basic infrastructure services, such as power, transport, telecommunications, water and sanitation have to be efficient, reliable and affordable. Thus availability of water infrastructure services is essential for economic and social development. Access to inexpensive infrastructure services for consumption could improve poor household welfare (Kehler, 2013). Although the importance of water infrastructure financing is emphasised by most researchers, regrettably, the potential impact of water infrastructure on poverty alleviation and economic development has not been fully comprehended in developing economies (Jones et al., 2015). Consequently, existing water infrastructure development and services is lagging behind water requirements due to lack of financing for water infrastructure development (Marlow et al., 2013). There is lack of adequate strategies for local water and sanitation in many developing communities due to lack of appreciation for local context, challenges and dynamics (Carter et al. 1999). Most developing countries are confronted with low-impact water and sanitation infrastructure with poor maintenance programmes, which repels infrastructure investment (Chan et al., 2014). Recently, Africa's improved growth is attributable to infrastructure development, however, Africa's infrastructure lags behind other developing countries (Foster & Briceño-Garmendia, 2010). Furthermore, indirect infrastructure development and service costs in poor African countries are expensive compared to other developing countries, thus presenting a burden to local corporations and poor communities (Chan et al., 2014).

Africa's water infrastructure is generally financed domestically, mainly through the central government budget (Estache et al., 2014). Public infrastructure is largely financed by government through direct tax and user tariffs (Ahmad et al., 2015; Foster & Briceño-Garmendia, 2010). Thus, water infrastructure financial investment is important for sustainable water supply and for the refurbishment of aging infrastructure (Gleick & Ajami, 2014). However, high levels of poverty prohibit poor users from paying water tariffs (Akhmouch, 2012). Therefore, effective funding models are necessary for addressing financial challenges associated with water infrastructure development (Ruiters, 2013). Private investors have not helped matters because they invest in water infrastructure projects based on expected rate of financial returns. Consequently, water projects by private investors prove to be costly for poor communities (Arrow & Lind, 2014). Moreover, water utilities in Africa is highly inefficient due to water distribution losses and poor revenue collection resulting in reduced amounts for further water infrastructure development (Foster & Briceño-Garmendia, 2010). Consequently, most households in Africa still lack access to decent water and sanitation (Kehler, 2013; Tortajada, 2014). Poor communities resort to adopting readily available solutions such as stand posts, enhanced latrines and rainwater harvesting (Foster & Briceño-Garmendia, 2010). Although infrastructure financing is fundamental for sustainable water provision, research has indicated that policy reform, governance and accountability might impede water provision (Akhmouch, 2012; Ruiters, 2013).

Water governance involves economic, social and political administration however poor financial governance hinders effective provision of water (Pahl-Wostl et al., 2013; Tropp, 2007). For instance, the absence of legislation, regulations, decentralisation of authority, monitoring and evaluation, and public private partnerships promote poor financial governance of water (Shah, 2014). Thus, financial governance reform is necessary for efficient water infrastructure financial management. However, good financial governance, on its

own does not guarantee sustainable water provision to the public Stakeholder engagement should constitute an integral part of water governance (Henisz et al., 2014). Lack of accountability has been recognised by many researchers as being related to lack of water provision in rural areas in developing countries (Gleick & Ajami, 2014). Emphatically, many researchers agree that transparency is necessary to improve accountability by government officials and improved information delivery to the citizenry (Harrison et al., 2012). Limited financial resources, weak financial accountability and increased demands for water exerts pressure on the government to augment water infrastructure through the private sector (Alcaraz-Quiles et al., 2014). Although private companies would inherently enhance financial accountability for water provision, but they fail to meet desired affordable service delivery expectations of the public sector due to high water tariffs which may not be affordable to the poor (Odaro, 2012).

In many developing countries lack of community engagement initiatives in local water programmes, as well as poor communication and information dissemination of water related matters between the local authorities and communities contribute to poor financial accountability and inadequate water provision (Odaro, 2012). However, poor financial accountability is not solely responsible for lack of water provision; research has indicated additional factors such as lack of financial investment as well as poor financial governance (Pahl-Wost et al., 2013). In the context of South Africa, access to basic water related services continue to be a challenge which is largely attributed to water infrastructure maintenance backlogs and poor asset management within water utilities (Ruiters, 2013). Thus maintaining and managing drinking and wastewater service quality and the efficient use of water is a priority in South Africa. Research has revealed that the reactive management of water infrastructure by water utilities is unsustainable and costly as these are emergency repairs (Selvakumar and Tafuri, 2012). Therefore, adequate planning for new infrastructure and scheduled infrastructure management is fundamental for the management of water infrastructure in South Africa. Given the emphasized importance of finance on water provision in the preceding literature, the subsequent section provides the empirical analysis of how water infrastructure finance is related to water provision in South Africa.

3. Methodology

This research followed a positivist paradigm which involves the objective measurement of a relationship between variables (Ponterotto, 2005). Accordingly, a quantitative research approach was used to determine whether water infrastructure financing contribute to water provision in South Africa.

Data and Selection of Data Period: Secondary data for the entire South Africa, from 1994 to 2014 were collected from the TransCaledon Tunneling Authority (TCTA) and the World Bank archives. The TCTA is the custodian of South Africa's water asset infrastructure management. The justification for selection of data period, 1994 – 2014 (21 years) is that as at the time of completion of this research in 2017, the audited 2015/2016 water asset financial result for South Africa was not yet available; this is because South Africa runs a combined financial year, and audited financial results normally appear in the public domain around May – June of the subsequent year. Hence the researchers could not collect data beyond 2014. In addition, the researchers could not collect data before 1994 since the water asset finance data in the public domain are available from the inception of South African democracy in 1994, hence the data selection commenced from 1994.

Ols Regression Test and Justification: The regression statistics was used to determine the degree of relationship between the independent variable (water asset financing) and the dependent variable (water provision). There are two main justifications for using the OLS regression in this research; the first is that previous related research on water and water finance (Agyapong, 2017; Shi, 2000) equally applied the OLS regression test. The second justification is that the period of data collected 21 years is too short to validly conduct a time series analysis; drawing from expert indications, such a short time series would not be amenable to controlling for seasonality; one needs many years of time series preferably not below 50 observations to effectively model out seasonal components of time series (Box and Tiao, 1975). It is therefore for the preceding two justifications that the authors decided to use the OLS regression analysis in this research. The analysis was done at two levels; firstly, the regression was conducted with only the main independent variable (water asset finance); secondly, given the influence of corruption in the public sector

and violence that often erupts in various municipalities, which results in vandalisation of public infrastructure, it was deemed fit to include two control variables namely corruption and violence. These variables were collected from the archives of the World Bank for South Africa. Therefore, two regression models were applied and these are specified below. This paper also recommends further research on the application of corruption and violence as variables to examine other public service deliveries to see how these variables might impact on service deliveries such as education, housing and health service delivery.

4. Results and Discussion

Relationship between Water Asset Finance (WAF) and Water Provision

H0: there is no relationship between water asset finance and water provision

H1: there is a relationship between water asset finance and water provision

The Regression Model:

Model 1 with single independent variable

$$\gamma = \beta_0 + \beta_1\chi_1 + \varepsilon \dots\dots\dots(1)$$

Model 2 with three (3) independent variables

$$\gamma = \beta_0 + \beta_1\chi_1 + \beta_2\chi_2 + \beta_3\chi_3 + \varepsilon \dots\dots\dots(2)$$

Where:

γ = Water provision (dependent variable)

β_0 = regression intercept

$\beta_1 - \beta_3$ = regression coefficients

χ_1 = Water Asset Financing (main independent variable)

χ_2 = corruption (second independent variable [control variable-1])

χ_3 = violence (third independent variable [control variable-2])

Table 1: OLS, using observations 1994-2014 (T = 21): Dependent variable: WP

	Coefficient	Std. Error	t-ratio	p-value	
Const	79.1852	0.941583	84.0979	<0.00001	***
WAF	5.64854e-07	5.4062e-08	10.4483	<0.00001	***
	R-squared	0.851755			
	Adjusted R-squared	0.843953			
	F(1, 19)	109.1664			
	P-value(F)	2.59e-09			
	Schwarz criterion	96.43704			
	Rho	0.504086			
	Akaike criterion	94.34799			
	Hannan-Quinn	94.80137			
	Durbin-Watson	0.987779			

Table 2: OLS, using observations 1994-2014 (T = 21): Dependent variable: WP

	Coefficient	Std. Error	t-ratio	p-value	
Const	89.0127	2.48091	35.8791	<0.00001	***
WAF	1.99008e-07	9.52886e-08	2.0885	0.05211	*
Corr	-6.0968	2.38782	-2.5533	0.02057	**
Violence	-8.94969	2.28195	-3.9219	0.00110	***
R-squared	0.934801				
Adjusted R-squared	0.923296				

F(3, 17)	81.24703
P-value(F)	2.78e-10
Schwarz criterion	85.27617
Rho	-0.75974
Akaike criterion	81.09808
Hannan-Quinn	82.00483
Durbin-Watson	2.126532

Table 3: Tests for Normality and Heteroskedasticity of Data

Tests for Normality of Data

uhat1 Test for normal distribution

Frequency distribution for uhat1, obs 1-21

Test for normality of residual -

Null hypothesis: error is normally distributed

Test statistic: Chi-square (2) = 5.53266

with p-value = 0.0628923

Tests for Heteroscedasticity of Data

White's test for heteroscedasticity

OLS, using observations 1994-2014 (T = 21)

White's test for heteroscedasticity -

Null hypothesis: heteroscedasticity not present

Test statistic: LM = 7.41605

with p-value = $P(\text{Chi-square}(9) > 7.41605) = 0.593887$

Table 1 above tested the relationship between water asset finance and water provision in South Africa. The analysis was tested at an alpha (α) of 0.05. From the regression output, the P value is less than 0.01 ($P < 0.00001$). Since the p value is less than the alpha, the null hypothesis is therefore rejected in favour of the alternative hypothesis, which indicates a positive significant relationship between water asset finance and water provision in South Africa. The coefficient of determination (R^2) is 85%, this also shows a strong linear relationship between water asset financing and water provision. However, in South Africa, violent protests have been rife for years and this has often resulted to destruction of public infrastructure including water infrastructure; in addition to violent protests, corruption issues have also been rife in the public entities. It thus became important to add violence and corruption as additional independent variable (as control variables). Therefore, a new regression result appears in Table 2 and the result is very significant for research and public policy. After controlling for corruption and violence, it can be seen that the strength of water asset finance (represented by the P value) although still significant, weakened a little as the new P value for water asset finance in Table 2 became 0.05, which is equal to the 0.05 alpha value. However, the P values for corruption and violence showed stronger relationship with water provision with corruption at a P value of 0.02 and violence at a P value of 0.001. This indicates that, in the presence of corruption and violence, the effectiveness of water asset finance on water provision might weaken, which thus signifies that finance availability alone might not be the catalyst for provision of public water; corruption and violence pose obstacles to public water provision.

Furthermore, in comparison of the two models Table 1 with single predictor variable and Table 2 with three predictor variables, it can be seen that model 2 presents lower Akaike, Hannan-Quinn and Schwarz criterion, hence the lower Akaike Hannan Quinn and Schwarz criterion model in Table 2 is the better model amongst the two models (Sciendirect, 2018; Taylor Snipes & Barber, 2018; Ualberta, 2017; Bolboaca & Jäntschi, 2009). Furthermore, the Durbin Watson statistics was used to detect autocorrelation (a measure of independent of residuals); the Durbin Watson statistics value of 2 in Table 2 indicates there is no autocorrelation (Field, 2009), which shows that residuals are independent. The rank correlation (rho) of -0.75 indicates a strong but negative correlation, of which the negative correlation is largely accounted for by high level of violence and

public sector corruption and thus subduing the effect of financial provision. The F-test shows the overall significance of the combined three independent variables. The F values comprises the F-critical, which is 81.24 with associated P-value of F, which is 0.001 (lower than the alpha level of 0.05). The low P value of F-test indicates significant relationship between the combination of three independent variables and water provision. However, not all the variables contributed to this significance value, hence an examination of the significance of individual independent variables shows which predictor variable played a strong role in the overall P value of the F statistics.

The data for this research was tested further to validate the findings by testing for normality of variables and heteroscedasticity of variables in Tables 3. The uhat1's test for normal distribution and the test for heteroscedasticity were conducted at an alpha of 0.05. The resulting P value for both the uhat1's test for normal distribution and the test for heteroscedasticity were above the alpha level of 0.05. uhat1's test showed a P value of 0.062, higher than 0.05, hence the null hypothesis that data is normally distributed was accepted. Furthermore, the heteroscedasticity test showed a P value of 0.59, which is greater than 0.05 alpha level, hence the null hypothesis that heteroscedasticity is not present was accepted. These two additional tests in Table 3 validates the data used and hence adds authenticity to the findings (Halunga Orme and Yamagata, 2017).

This research finding compares with earlier assertions that apart from other technical and administrative issues, effective water financing contributes immensely to the maintenance and operations of community water provision in developing countries (Brikke Bredero Supply & Network, 2003). Another research conducted by Carlitz (2017) made a rather surprising finding, which shows that aside from water infrastructure finance, political favouritism is a strong factor that determines water provision; this finding by Carlitz (2017) seem to mimic the influence of corruption on water provision as indicated in this research finding. A related research by Ndikumana and Pickbourn (2017) supports the findings of this research as they find that improvement in water finance through improved aids support adds to increased water supply; they highlight though that this relationship is not linear in nature.

5. Conclusion

This paper examined whether water infrastructure financing, contributes effectively to water provision in South Africa. Using the OLS regression analysis, the following conclusion were drawn from the results. Within the South African context, water infrastructure financing promotes water provision when examined as a single independent variable at a p value of $P=0.001$, which is far less than the research alpha of 0.05 without controlling for other variables. However, an additional test, which includes corruption and violence as control variables, shows a new result in which water asset finance is still related to water provision at a significant level of $P = 0.05$, which is equal to the research alpha value. The increase in the P value of water asset finance when corruption and violence were introduced indicates a slight reduction in the level of significance of water asset finance, which shows that in the presence of corruption and violence, the value of water asset finance on water provision might be reduced. This became evident as corruption and violence showed stronger relationships with water provision at a P values of 0.02 and 0.001 for corruption and violence respectively. This means that a rise in violence and corruption would reduce the level of water provision. According to this result and within the years examined 1994 to 2014, the paper concludes that, against popular belief, water asset finance alone may not necessarily guarantee effective water provision especially within the context of South Africa. This means that in addition to finance, effective water provision would require effective and pragmatic control of corruption and violence. This finding offers a nuance contribution to the literature and for further research to examine the extent to which corruption and violence obscure effective water provision in other African countries.

Recommendations: drawing from the findings of this research, the paper recommends that public policy geared toward rural economic and social development through water provision need not position financial provision as the only machinery to achieve the goal of water provision. Government should institute water finance management accountability monitoring mechanisms to ensure probity in the usage of allocated water finance. Furthermore, civic education on the economic value of public infrastructure and the need to protect public infrastructure should be integrated in public water management policies. Water administrators should

receive constant training and/or workshop on the need to avoid corrupt practices to improve the usage of allocated water finance on effective and efficient provision of water. It is also recommended that education authorities may consider the need to incorporate anti-corruption and anti-violence courses at the basic education levels in South Africa.

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Investigating The Exhaustion of Police officers, Selected Regions Within Namibia

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Abstract: Recent studies showed that suicide among police officers are prevalent in certain countries. Burnout and subjective health complaints are considered as risks that are consistent with high levels of suicide ideation. Police officers are exposed to life-threatening traumatic experiences, such as physical assault or witnessing disturbing images of death. The aim of this study was to investigate the relationship between job demands-resources, authentic leadership, work engagement and burnout within the Namibian Police Force. A cross-sectional survey design was used collecting data about police officers in the Erongo, Oshana and Khomas regions (n=369). Data was analysed using SPSS (version, 24) and Pearson product correlations. Results indicated that when police officers experience high a workload and leaders who do not engage in the moral and ethical behaviour, they will experience higher levels of exhaustion. Factors like organisational support and resources also seemed to impact on work engagement. To reduce exhaustion and increase engagement, it is vital that the police force assesses person-job fit, implement stress management and wellness programmes to help employees cope better with work demands. Moral and ethical behaviour can be enhanced through leadership training/development. Improving on colleague relations (team building) and through mentorship programmes employees would have access to social support at work, buffering a high workload.

Keywords: *Job demands-resources, authentic leadership, work engagement, burnout.*

1. Introduction

Police officers in the Namibian police force experience occupational stress due to the nature of their jobs. Occupational stress also impacts on the effectiveness of police officer (Kangunga, 2016). Similar to Namibia, the greatest problems faced by the South African Police Force is the need to transform its perceived role of being an unrepresentative arm of the government. This would include to its initial role of being professional and satisfy the policing needs of all people in a democratic context (Govender, 2010). Based on Article 115 of the Namibian Constitution and the Police Act, Act No: 19 of 1990, section 13, the functions of the Namibian Police are to preserve the internal security, to maintain law and order, to inspect offences or alleged offences, to prevent crime and to protect life and property (Republic, of Namibia, 1990). The challenges faced are an indication that police officers have not fulfilled their role and the citizens are not satisfied by the policing in the community. Police officers are also being perceived as unreliable and not meeting the objectives as stipulated in their mandate. According to Shaw (1996), the criminal justice system is still far from complete and that the system is characterised by serious problems such as failure in detecting cases. This is an indication that not only is it difficult to change the public image of the criminal justice system, but there are serious problems within the system that are withholding police officers from carrying out their jobs efficiently.

Some of the basic requirements to meet the organisational objectives (police stations included) include being clear about work expectations, having the basic materials and the provision of necessary equipment (Harter, Schmidt, & Keyes, 2003). When police officers are not provided with the basic resources for their job and clarity about their work role, they are unable to execute their duties and serve the community. Police work has been recognised as one of the most stressful occupations in society (Anshel, 2000). According to Mostert (2006), most police officers go through stressful and traumatic situations. This is an indication that not only is the job demanding, but individuals in the police force also experience some hectic and distressing events when carrying out their duties. Police officers are exposed to life-threatening and traumatic experiences, such as physical assault or witnessing death (Stephens & Long, 2000), and may have poor coping strategies in dealing with the stress experienced (Ansheel, 2000). The variables being investigated in this study include job demands which refer to aspects that cause feelings of stress in the job (Bakker & Leiter, 2010). When employees are required to fulfil high job demands without the necessary resources, they may experience job stress. Job resources are defined as aspects that help employees to succeed within work tasks, even when

presented with stressful circumstances, aspects that make employees feel energetic, provide a sense of purpose and enable them to enjoy the work that they are doing (Bakker & Leiter, 2010). This means job resources involve factors that help an employee complete a task even when faced with challenges. According to Robbins, Judge, Odendaal, and Roodt (2009), an authentic leader knows themselves, know their beliefs and values, and they act on these beliefs and values freely and honestly. A supportive climate can act as an appropriate resource for individuals. Employees' performance is a result of their abilities, the type of support they receive when they are performing a task and the motivation they get (Luthans, Norman, Avolio, & Avey, 2008). This highlights the importance of leadership in the work environment, support and how authentic leadership improves performance. Another variable in this study is work engagement which has been regarded as a key to organisational success and competitiveness (Gruman & Saks, 2011). For an organisation to be successful and competitive, employees must be fully absorbed in their work. Work engagement is defined as a positive work-related attitude that is characterised by vigour, dedication and absorption (Schaufeli, Salanova, Gonzalez-Roma, & Bakker, 2002). Burnout occurs due to chronic emotional and interpersonal stressors on the job, characterised by exhaustion, cynicism, and inefficacy (Maslach, Schaufeli, & Leiter, 2001). Research done by Haarr (2005) indicated that distressing events often cause police officers to resign. Police resignation has been a big concern to the police executives, due to financial expenses of recruiting, selecting and training of new employees. Turnover also impacts on the indirect expenses brought about by the disruption of the services and organisational ineffectiveness (Haarr, 2005). This study is aimed at investigating the relationship between job demands-resources, authentic leadership, work engagement and burnout of police officers in selected regions in Namibia. This study is one of the first studies to explore the work engagement and burnout levels of police officers in Namibia and will also be a guiding tool for future research and interventions on police officers in Namibia.

2. Literature Review

Burnout: Burnout is defined as a condition characterised by emotional exhaustion, depersonalisation and reduced personal accomplishment that can occur among individuals (Maslach, 1982). This means that when employees experience burnout, they feel emotionally drained, have negative attitudes about their work and about themselves. Job stressors identified in the policing environment include staff shortages, lack of resources, time pressure, lack of communication and work overload (Kop, Euwema, & Schaufeli, 1999). Stearns and Moore (1993) identified an outcome of police stress to be burnout and they defined burnout as emotional exhaustion, lack of happiness and satisfaction. Burnout predicts individual outcomes such as psychosomatic complaints, life satisfaction as well as negative work outcomes (Martinussen, Richardsen, & Burke, 2007). This is an indication that burnout impacts how the individual experiences their own lives. Poor coping strategies appear to be a major factor in moderating how stress is experienced in police work (Ansheel, 2000). The workplace is an important part of an individual's life that disturbs the rest of his/her life. Thus, the wellbeing of employees is beneficial for the organisation and the community (Harter et al., 2003). Work-related stressors do not only affect the individual but also the society and the organisation they work for. Employees' wellbeing leads to a functional organisation as well as a functional society. Creating an atmosphere in which employees have opportunities to discuss their progress and growth contributes to positive emotions that construct intellectual resources for employees in the organisation. Positive emotions experienced by employees resulting from the satisfaction of basic psychological needs, feeling positive about their contributions and belonging also contributes to positive emotions (Harter et al., 2003).

A positive environment determines an employee's level of involvement in the organisation. When positive emotions are present in the organisation, employees get an opportunity to learn freely, discuss their progress and become more focused on the organisation's functioning (Harter et al., 2003). Employees react differently to work stressors. Some employees find pleasure/challenge in dealing with high work demands rather than experiencing burnout (Brand-Labuschagne, Mostert, Rothmann, & Rothmann, 2012). Other employees thrive when exposed to higher work demands, remaining engaged instead of experiencing negative work outcomes. Brand-Labuschagne et al. (2012) noted that there are two major categories of stressors that are often experienced by police officers. Inherent police stressors that refer to the different aspects that characterise the nature of police work such as danger, violence and crime. Organisational stressors which refer to stress that is caused by certain aspects of the police organisation itself, such as management style, staff shortages, inadequate resources, lack of communication and workload.

Job Demands-Resources: Job demands are defined as aspects employees find in their work that causes feelings of stress and exhaustion (Bakker & Leiter, 2010). Janssen (2001) defined job demands as a broad concept that includes both quantitative demands- work-load a person gets and qualitative demands- role ambiguity, conflict, obligations and worker experiences. Job resources are also defined as physical, psychological and organisational aspects that decrease demands associated with physical and psychological costs, are functional in accomplishing goals, and stimulate growth and development (Hakanen, Schaufeli, & Ahola, 2008). Thus, job resources may be defined as all aspects that provide a sense of meaning, purpose and that help employees accomplish goals, and stimulate growth and development. Feelings of stress often come as a result of threatened resources (Hobfoll, 1989). Job resources are aspects of the job that help you to succeed in work tasks (Bakker & Leiter, 2010). In research done by Mbenzi (2006), the unavailability of logistical support/resources was found to be the second cause of police inefficiency and public dissatisfaction after a lack of knowledge and skills. This indicates that when there are not enough resources to carry out the work, police officers cannot offer their services to the public adequately. This leads to low work engagement, exacerbated by the lack of knowledge and skills due to a lack of proper training. In reference to the job demands-resources model, Korunka, Kubicek, Schaufeli and Hoonakker (2009) stated that two different processes have to be identified. Namely the motivational process, that connects job resources with turnover intention through work engagement and an energetic process, that connects job demands and health through the facilitating role of burnout. If police officers have enough resources to carry out their work, they are likely to be more motivated, become engaged in their work and this also reduces the chances of employees leaving the organisation. The energy process suggests that energy is needed in a highly demanding job, and with less energy, police officers may suffer from health issues, such as burnout. Schaufeli and Bakker (2004) theorised that burnout come as a result of job demands but lack of job resources may as well anticipate burnout, whereas engagement is solely predicted by job resources. This is an indication that burnout is caused by high job demands and lack of resources, but job resources can predict the level of work engagement of employees. According to Schaufeli and Bakker, (2004), limited resources may increase demands. Job demands are also known as stressors, unavailability of resources may put pressure on an individual, often resulting in stress. Average levels of job demands can be a motivating factor for some employees who work well under pressure or a hindrance in the workplace for people who do not have the needed resources.

When job resources are lacking, employees often struggle with job demands, thus resulting in disengagement (Coetzer & Rothmann, 2007). This can be supported by Sekoere's (2015) work that provided a validation that job resources have the greatest impact on work engagement. Police officers do not only have a problem attending to crime on time but also with recording and investigating cases properly (Mbenzi, 2006). A police officer's job is highly demanding thus partially causing emotional exhaustion and this can lead to low engagement and poor performance. Knowledge and experience of police officers can only be attained on the job (Mafokeng, 2012). To increase job performance and decrease the effect of operational stress, appropriate and regular training should be provided. In his research on the Namibian Police Force, Mbenzi (2006) also found that while the police cannot completely prevent crime, the availability of resources would increase their response time. This acknowledges the usefulness of job resources in the police force when it comes to combating crime. Siegrist (2000) developed a model called the effort-reward model to explain work stress and this model assumes that work-related stress is caused by an imbalance between the efforts one puts into one's work and the rewards received in return for services. Dowler (2005) identified stressors in the police and they include low wages, weekend duties, limited chances of promotion, bureaucracy, lack of proper training and equipment, lack of support and poor relationships with superiors. High job demands and a lack of resources may result in burnout and reduce work engagement (Schaufeli & Bakker, 2004). Work overload or high demands may occur if employees do not have the essential skills, abilities and support to carry out these demands (Coetzer & Rothmann, 2007). When job demands are high and the resources are low, employees fail to carry out their jobs which later leads to work overload. Based on the literature discussed above the following hypotheses have been developed; Hypothesis 1: Workload is negatively related to work engagement. Hypothesis 2: Workload is positively related to burnout. Hypothesis 3: Job resources, organisational support, greener pastures (job security) and advancement opportunities are positively related to work engagement. Hypothesis 4: Job resources, organisational support, greener pastures (job security) and advancement opportunities are negatively related to burnout.

Authentic Leadership: Authentic leadership is defined as a leader's genuine desire to serve others through their leadership, investing in them so they can make a difference and directing them through the qualities of the heart, passion and compassion (George, 2000). When society has a negative perspective about organisations, it calls for a new leadership approach that focuses on restoring basic confidence, hope, optimism, resilience and meaningfulness (Avolio, Luthans, & Walumbwa, 2004). This is an indication that for the Namibian Police Force to restore its image there is a need for proper leadership to be implemented. Authentic leaders have a deep level of awareness of their own and other's values/ perspectives, the context in which they work and have a positive outlook on things (Avolio, Gardner, Walumbwa, Luthans, & May, 2004). Sekoere (2015) pointed out the four components that constitute authentic leadership and these are self-awareness, balanced processing, self-regulation and relational transparency. For employees to be active and filled with energy there should be an increase in enthusiasm, pride and challenge in accomplishing goals. It is expected that the organisation must advance organisational support, growth opportunities, societal support and advancement opportunities (Schaufeli & Bakker, 2004). It is important to address the level of organisational support employees get from their superiors, the clarity they have in terms of their job description, information they receive prior to tasks and the quality of the communication channels in the organisation (Coetzer & Rothmann, 2007).

In a study conducted on an offshore oil company in Norway, it was found that leadership qualities help in shaping a positive safety environment and lower the risk of accidents (Hystad, Bartone, & Eid, 2013). To create a positive working environment in the Namibian Police Force, leadership qualities have to be evaluated. If leaders in the police management lack leadership qualities, it is likely that the employees will fail at their job since they might not know what to do, where to go for guidance and what to do when experiencing difficulties. Positive attitudes and activity levels help employees create their own constructive feedback in terms of appreciation, recognition and success (Sekoere, 2015). Although engaged employees do feel tired after a long day of hard work, they describe their tiredness as rather pleasant, because it is associated with positive accomplishment. Working hard and receiving praise and acknowledgement from the public, colleagues or supervisors would make the hard work seem worthwhile. Employees imitate what their managers do (Sekoere, 2015). Managers have a great influence on their employees, because whatever they do, the employees imitate. Thus it is important for managers to lead by example. Management has an impact on the job resources of their employees and can indirectly influence work engagement (Sekoere, 2015). This means that the way things are done or the way in which resources are distributed in an organisation has an influence on the employees. The Namibian Police Force are structured as follows: Constable, Sergeant first class, Sergeant second class, Warrant first class, Warrant second class, Inspector, Chief Inspector, Deputy Commissioner, Commissioner, Deputy Inspector General and Inspector General. It is therefore critical that commanders are adequately empowered and given support to develop the necessary skills of their personnel in order to attain the ability to manage general and more complex crime investigations (Mafokeng, 2012). In addition, effective and efficient delegation as well as monitoring of cases requires that supervisors must initially clarify or give details of the assignment to detectives and then an enabling environment should be created by the supervisor, in ways such as empowering detectives with guidance, mentoring and resources to accomplish the investigative tasks effectively (Mafokeng, 2012). Mafokeng (2012) found that among police detectives, they felt that their commanders contributed the least to their development. Luthans and Avolio (2003) pointed out that for human resources to achieve sustainable growth and high performance and psychological capital, a positive supportive setting should be encouraged.

Equity theory indicates that individuals value and strive for equality in employee-employer exchange relationships (Adams, 1963). This means that individuals in organisations strive for fairness in all situations and within their relationships with each other. Employees would put in more or less effort depending on their interaction with their leaders. Greenberg (2011) stated that individuals make comparisons that result in three conditions: Overpayment inequity refers to a feeling of guilt when an individual earns more than another individual doing the same job as they are. Underpayment inequity refers to anger that result when an individual earn less than another individual doing the same job as they are. Lastly, equitable payment is a state of equivalence between two individuals doing the same job and earning the same reward. When leaders are transparent, engage in self-regulation or moral/ethical behaviour, ask views that challenge his or her reasoning and are self-aware, employees are more likely to put in more effort into their work. Adams (1963) proposed that equality is maintained if employees perceive that their outcomes are equal to their

contributions. Employees in the organisation make comparisons by contrasting their input and outcomes with others and if the relation is uneven, they experience inequity tension. This is an indication that if employees perceive their superiors as unfair and perceive injustice in the workplace, then they become discouraged in doing their job. The Leader-member exchange theory states that role development will result in different role definitions and therefore in different member connections with leaders (Dienesch & Liden, 1986). This means that through role development, leaders naturally develop different relationships with their subordinates. The Leader-member exchange theory also states that leaders' interaction with each follower differs.

This determines the type of relationship that will exist between the leader and the follower, ultimately impacting on how followers respond to requests or instructions from leaders (Dulebohn, Bommer, Liden, Brouer, & Ferris, 2012). Reinforcing this differentiation is the time restriction all leaders face on the job and because of these time pressures; the leader develops a close relationship with only a few subordinates (Dienesch & Liden, 1986). The quality of the leader-member relationship will impact on the execution of tasks and how members adhere to the leaders' requests. When leaders have healthy relationships with members, leaders will be more effective and members will also likely be happier to work with that specific leader. Authentic leadership reduces chances of workplace bullying and develops and contributes to a workforce who is less burned out, is satisfied with their job and decreased turnover intentions (Laschinger, Wong, & Grau, 2012). Authentic leadership can be an ideal leadership approach in the police force, as authentic leaders rule with genuine desire and this can lead to an increase in work engagement and a decrease in burnout. Based on the literature discussed above, the following hypotheses have been developed; Hypothesis 5: Workload is negatively related to authentic leadership. Hypothesis 6: Job resources, organisational support, greener pastures (job security), and advancement opportunities are positively related to authentic leadership. Hypothesis 7: Authentic leadership is positively related to work engagement. Hypothesis 8: Authentic leadership is negatively related to burnout.

Work Engagement: Work engagement is defined as a person's participation, satisfaction and enthusiasm for the work they do (Robbins et al., 2009). Schaufeli, Salanova, Gonzalez, Roma, and Bakker (2002) added to this definition by characterising work engagement as more than just an involvement but as a psychological state, which is categorised by energy, dedication and absorption in one's job. Hobfoll (1989) indicated that work engagement is impacted by both environmental and psychological aspects. This is an indication that both external and internal individual factors can influence how an employee will carry out their work. Mostert (2006) highlighted that it could explain why some employees can achieve so much work with enthusiasm and pleasure without experiencing sickness or being burned out. According to Cardwell, Chatman and O'Reilly (1990), engaged workers actively get involved in their jobs and are pleasurably occupied by the demands of their work. Disengaged employees are not connected with their jobs which often leads to absenteeism, poor performance and turnover. In addition, employees may thrive if they are cognitively, physically and emotionally involved in their work (Gilson & Harter, 2004). Demerouti et al. (2001) introduced the Job Demands-Resources model in an effort to understand the development of burnout and work engagement. Many studies have used the Job Demands-Resources model as the theoretical framework to explain work engagement (Bakker & Leiter, 2010). Schaufeli and Bakker (2004) indicated that the JD-R model is the key to understanding human performance under stress through a cognitive and emotional framework. When employees are exposed to high work demands with limited job resources they are likely to experience burnout. However, when employees are provided with the necessary resources, they are able to remain engaged even when tasked with high job demands. Being able to remain engaged in work has a lot to do with motivation as explain by the self-determination theory.

The Self-determination theory deals with human motivation and personality in their social context (Deci & Ryan, 2011). This theory states that the key to autonomous regulation is through fulfilment of basic psychological needs for autonomy, competence and relatedness (Deci & Ryan, 2011). This means that for people to be motivated and engaged in their work, they should experience satisfaction with regards to autonomy, competence and relatedness. Research by Meyer and Gagne (2008) also supported this notion by showing that if there is a lack of fulfilment of these innate needs, it may lead to poor performance, and a reduction in physical and psychological well-being. This is an indication that when employees are motivated, it helps them carry out their duties efficiently and effectively. When employees are allowed to decide how to

execute work related activities, they also become more engaged in their work. Autonomy refers to the independence in one's behaviour guided by one's interests and values. Competence refers to the individual's urge to be effective in their activities and to being presented with opportunities to show and express their capacities (Deci & Ryan, 2002). Lastly, relatedness refers to the desire to belong, connect with others and having mutual respect for others (Bausmeister & Leary, 1995). When employees experience higher levels of autonomy, competence and relatedness, they become more engaged in their work. These employees would have the necessary freedom to decide how best to execute duties, have the necessary skills and abilities and can rely on colleagues and supervisors for the needed support. To achieve high levels of work engagement, an organisation should focus on implementing programmes that addresses employees' needs; managers should provide resources and benefits and focus on how employees perceive organisational support (Bakker & Demerouti, 2007).

This is an indication that management needs to improve relations with employees and know what resources to provide for employees to become engaged in their work. Employees, who perceive high organisational support and who are given jobs that match their personalities, are likely to reciprocate with high levels of engagement in their work and the organisation (Schaufeli et al., 2002). Engaged employees also have better relationships with their employers which lead to more positive attitudes, intentions and behaviour. The public opinion of the police officers is that they are incompetent, corrupt, poorly trained and that the criminal justice system is not in order (Govender, 2010). Public safety is the essential role of the police force. However, the public does not feel safe. This can be supported by a study conducted by Mbenzi (2006) who pointed out that people may not trust the police and often attempt to take the law into their own hands. Based on the literature discussed above, the following hypothesis has been developed; Hypothesis 9: Work engagement is negatively related to burnout.

3. Methodology

Respondents: The sample consisted of 369 police officers from the Erongo, Khomas and Oshana regions. The total population consist of 7 286 (Erongo-918, Khomas- 4802, and Oshana- 1566). The majority of the sample were females (53.4%, n=197), aged between 32-35 years (20.6%, n=76), only n=4 having worked for less than a year (1.1%). The majority of the sample had grade 12 (58.3%, n=215), n=213 (57.7%) of the sample indicated that they are single, 36% (n=133) of them have 1 or 2 dependents, n=166 (45.0%) sergeants and n=300 from the Erongo and Oshana region (n=150 each region). The rest of the biographical information can be obtained from Table 1 below.

Table 1: Frequency Distribution of Sample

Item:	Category:	Frequency:	Percentage:
Gender	Male	170	46.1
	Female	197	53.4
	Missing values	2	0.5
Age	Below 24 years	21	5.7
	24-28	74	20.1
	28-31	60	16.3
	32-35	76	20.6
	36-40	46	12.5
	41-45	43	11.7
	46-50	28	7.6

	51 and older	17	4.6
	Missing values	4	1.1
Tenure	Less than a year	4	1.1
	1-2	44	11.9
	3-4	70	19
	5-6	69	18.7
	7-8	48	13
	9-10	41	11.1
	11-15	23	6.2
	16 and more	69	18.7
Marital status	Missing values	1	0.3
	Single	213	57.7
	Married	141	38.2
	Divorced	5	1.4
	Widow	5	1.4
	Missing values	5	1.4
Dependents	None	61	16.5
	1-2	133	36
	3-4	92	24.9
	5-6	46	12.5
	7-9	19	5.1
	10 and more	15	4.1
	Missing values	3	0.8
	Grade 12	215	58.3
Highest qualification obtained	Certificate	57	15.4
	Diploma	53	14.4
	Degree	19	5.1
	Honours Degree	11	3.0
	Masters	2	0.5
	Missing values	12	3.3
	Constable	148	40.1
	Sergeant 1 or 2	166	45.0
	Warrant 1 or 2	34	9.2
	Inspector/Chief Inspector	18	4.9
Rank	Commissioner	1	0.3
	Missing value	2	0.5
	Erongo	150	40.7
	Oshana	150	40.7
	Khomas	69	18.7
TOTAL		369	100.0

The researchers used a non-probability sampling method, which means that the probability of participants being part of the study was unknown. The convenience sampling method was used to select participants. Convenience sampling is defined as a non-random sampling method which involves choosing research participants on the basis of availability (Beins & McCathy, 2012). The researchers used a quantitative approach, which is a method for testing objective theories by looking at relationships between variables (Creswell, 2013). This method allowed to collect data from different regions within a short period of time and also to assess the attitudes of police officers. This study collected information on job demands-resources, authentic leadership, work engagement, and burnout of police officers in the Erongo, Khomas and Oshana regions in Namibia (n=369). The quantitative approach allows for more information to be collected from participants and relationships between variables to be studied in detail (Creswell, 2013). Research assistants, fourth year research students, were used to collect the data in the different regions. The data was used as part

of their individual research projects. Approximately 90,000 cases were reported to the Namibian police between the year 2016 and 2017 (Amakali, 2017).

The Erongo region is situated in the western part of Namibia bordering the Atlantic Ocean. The total population was 182 402 in 2016 with a population growth rate of 3.8% between the year 2011 to 2016 (Namibia Statistics Agency, 2017). Chief Inspector Amulungu in his public address indicated that crime has been on the increase between 2015 and 2016. He also urged the community to work closely together with the police in an effort to curb crime in the region (Finck, 2016). A total of 7 012 cases was reported in the Erongo region between the year 2016 and 2017 (Amakali, 2017). The current approved staff structures indicated that 2 328 should be employed in the Erongo, however a meagre 918 position is currently occupied. This stresses the staff shortages and the challenges regarding a heavy workload that police officers face in the region. In the Khomas region, situated in the central parts of Namibia, the population was reported to be 415 780 in 2016. The growth rate was recorded at 3.9% between the year 2011 and 2016 (Namibia Statistics Agency, 2017). Deputy Commissioner Kanguatjivi indicated that 39.7% (37 635) of cases that was reported to the Namibian police were from the Khomas region (Amakali, 2017). The current staff compliment is 4 802 in the Khomas region. The Oshana region is located in the central northern part of Namibia with a population of 189 237. The growth rate was reported at 1.4% between the year 2011 and 2016 (Namibia Statistics Agency, 2017). It was noted that 9 217 cases were reported to the Namibian police in the Oshana region even though it is regarded as one of the smallest regions in Namibia. Deputy Commissioner Kanguatjivi stated that the number of police officers employed in Namibia is quite small in comparison to the number of cases that these investigative officers need to attend to (Amakali, 2017). The staff compliment for the Oshana region is 1 566.

Measuring Instruments: A demographic questionnaire developed by the researchers was used to obtain information about participants' gender, age, tenure, marital status, number of dependents (children), highest qualification obtained, rank and region employed in. The Job Demand-Resources Scale (JD-RS), developed by Rothman and Jackson, (2005) was adapted and used to measure the job demands-resources. The scale consists of 46 items and five dimensions namely; Workload ("Do you have too much work to do"), Resources ("Does your work make sufficient demands on all your skills and capacities"), Organisational support ("Can you count on your colleagues when you come across difficulties in your work"), Job security referred to as "Greener pastures" in this study ("Do you need to be more secure that you will still be working in one year's time") and Advancement opportunities ("Do you think your organisations pays good salaries"). The response scale ranges from 1-never, 2-sometimes, 3-often to 4-always. Rothmann, Mostert and Strydom (2006) found the following reliabilities for the different dimensions: Workload $\alpha=0.76$, resources $\alpha=0.86$, organisational support $\alpha=0.92$, Greener pastures (job security) $\alpha=0.89$ and advancement opportunities $\alpha=0.83$. Authentic leadership was measured using the Authentic Leadership Questionnaire (ALQ) developed by Avolio and Gardner (2005). The scale consists of 16 items and four dimensions namely; Transparency ("...admits mistakes when they are made"), Self-regulation or Moral/Ethics ("...demonstrates beliefs that are consistent with actions"), Balance Processing ("...solicits/ asks views that challenge his or her deeply held positions") and lastly Self-Awareness ("...seeks feedback to improve interactions with others") all in reference to "my leader"). The response format ranges from 0 (not at all), 1 (once in a while), 2 (sometimes), 3 (fairly often), to 4 (frequently if not always). The reliability of the instrument was found for transparency $\alpha=0.95$ (Tonkin, 2013), moral/ethics $\alpha=0.93$ (Zhu, 2008), balanced processing $\alpha=0.79$ (Tonkin, 2013) and self-awareness $\alpha=0.84$ (Ashley & Reiter-Palmon, 2012).

The Utrecht-Work Engagement Scale (UWES), developed by Schaufeli, and Bakker, (2003) was used to measure work engagement. The scale consists of nine items and three dimensions, which are vigour ("At my work I feel bursting with energy"), dedication ("I am enthusiastic about my job") and absorption ("I get carried away when I am working"). The response options ranges from 0 (never), 1 (a few times a year or less), 2 (once a month), 3 (a few times a month), 4 (once a week), 5 (a few times a week), to 6 (everyday). All three dimensions reported the same alpha coefficient of $\alpha = 0.85$ (Rothman, & Rothman, 2010). The Maslach Burnout Inventory (MBI), developed by Maslach, Jackson and Leiter (1997) was used to assess burnout. The scale has 16 items and three dimensions, namely, exhaustion ("I feel emotionally drained from my work"), cynicism ("I doubt the significance of my work") and professional efficacy ("In my opinion, I am good at my job"). This scale consists of a 6-point response scale, ranging from 0 (never), 1 (a few times a year or less), 2 (once a month), 3 (a few times a month), 4 (once a week), 5 (a few times a week), to 6 (everyday). Cronbach

alphas were recorded for exhaustion $\alpha=0.91$, cynicism $\alpha=0.74$ and professional efficacy $\alpha=0.81$ within the Namibia context (Louw, George, & Esterhuyse, 2011).

Research Procedure: Permission was obtained from the Ministry of Safety and Security, Lieutenant General of the Namibian Police Force and station commanders. Employees were informed about their rights to privacy, confidentiality and anonymity. The questionnaires were numbered and no names have been used. The participants were informed about how the data will be used. The data will be kept safe and the respondents were not harmed in this study. A total of 450 questionnaires were distributed and 369 completed questionnaires were returned and included in this study (response rate 82%). The data collection took place between June-September 2017.

Statistical Analysis: The data collected was analysed using the Statistical Package for Social Sciences Version 24 (SPSS, 2017). Reliability analysis was used to test the consistency of instruments used in the study. The researchers used the Pearson product-moment correlation to determine whether there is an association between the variables being studied.

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 22.08 was reported for workload, 21.26 for resources, 62.52 for organisational support, 8.75 for greener pastures (job security) and 11.16 for advancement opportunities. Moral/ethics reported a mean of 8.77, 11.57 for transparency, 6.80 for balanced processing and 9.70 for self-awareness. Vigour reported a mean score of 13.18, 14.09 for dedication and 2.70 for absorption. A mean score was reported for exhaustion of 10.50. Workload reported a Standard Deviation of 4.60, 5.01 for resources, 11.31 for organisational support, 2.93 for greener pastures (job security) and 4.87 for advancement opportunities. Moral/ethics reported a SD of 3.82, 4.74 for transparency, 3.33 for balanced processing and 4.36 for self-awareness. A SD score of 4.93 was reported for vigour, SD=5.42 for dedication and SD=5.20 for absorption. Exhaustion indicated a SD of 8.39.

Table 2: Mean, Standard Deviation, Cronbach Alpha and Pearson Product-Moment Correlation

VARIABLE	M	SD	α	1	2	3	4	5	6	7	8	9	10	11	12	13
1.JDR_WL	22.08	4.60	.76	-												
2.JDR_RES	21.26	5.01	.75	.04	-											
3.JDR_OS	62.52	11.31	.88	-.18*	.55++	-										
4.JDR_GP/JS	8.75	2.93	.79	-.13*	.18*	.15*	-									
5.JDR_AO	11.16	4.87	.88	-.24*	.27*	.33*	.11*	-								
6.AL_TRA	11.57	4.74	.80	-.12*	.20*	.45*+	.13*	.26*	-							
7.AL_ME	8.77	3.8	.74	-.03	.13*	.33*+	.13*	.26*	.68++	-						
8.AL_BP	6.80	3.33	.74	-.06*	.19*	.34*+	.10*	.34*+	.62++	.59++	-					
9.AL_SA	9.70	4.36	.84	-.10*	.23*	.40*+	.21*	.31*+	.70++	.63++	.74++	-				
10.WE_VIG	13.18	4.93	.71	-.02	.18*	.24*	.04	.12*	.24*	.26*	.28*	.23*	-			
11.WE_DED	14.09	5.42	.87	-.06*	.21*	.25*	.11*	.10*	.18*	.17*	.14*	.17*	.69++	-		

12.WE_ABS	12.70	5.20	.76	-.01	.11*	.24*	.08*	.05*	.16*	.19*	.07*	.10*	.62++	.74++	-
13.BO_EXH	10.50	8.39	.80	.42*+	-.04	-.18*	.03	-.15*	-.13*	-.05*	-.06*	-.12*	-.17*	-.18*	-.07*

*Statistically significant: $p \leq 0.05$

+ Practically significant correlation (medium effect): $0.30 \leq r \leq 0.49$

++ Practically significant correlation (large effect): $r \geq 0.50$

JD-R = Job Demands- Resources

JDR_WL= Job demands-resources (workload)

JDR_R= Job demands-resources (resources)

JDR_OS= Job demands-resources (organisational support)

JDR_GP/JS= Job demands-resources (greener pastures/job security)

JDR_AO= Job demands-resources (advancement opportunities)

AL= Authentic Leadership

AL_ME= Authentic leadership (moral/ethics)

AL_TRA= Authentic leadership (transparency)

AL_BP= Authentic leadership (balance processing)

AL_SA= Authentic leadership (self- awareness)

We= Work Engagement

EE_VIG=Employee engagement (vigour)

EE_DED= Employee engagement (dedication)

EE_ABS= Employee engagement (absorption)

Bo= Burnout

BO_EXH= Burnout (exhaustion)

The Job Demands-Resources scale was found to be reliable. Workload recorded a reliability of 0.76, resources 0.75, organisational support 0.88, greener pastures (job security) 0.79 and 0.88 for advancement opportunities. The authentic leadership scale was found to be reliable. Transparency recorded a reliability of 0.80, moral/ethics 0.74, balanced processing 0.74 and self-awareness 0.84. The Utrecht-work engagement scale was found to be reliable in this study. The following Cronbach alphas were found; vigour 0.71, dedication 0.87 and absorption 0.76. The Maslach burnout inventory was found to be reliable with exhaustion indicating a reliability of .80. Cynicism and professional efficacy did not meet the expected reliability scores of 0.70 and were excluded from this study and further analysis. Workload (JDR) reported a relationship with resources (JDR) ($r = 0.04$, $p < 0.05$; almost no effect), organisational support (JDR) ($r = -0.18$, $p < 0.05$; small effect), greener pastures (job security) (JDR) ($r = -0.13$, $p < 0.05$; small effect), advancement opportunities (JDR) ($r = -0.24$, $p < 0.05$; small effect), transparency (AL) ($r = -0.12$, $p < 0.05$; small effect), moral/ethics (AL) ($r = -0.03$, $p < 0.05$; almost no effect), balanced processing (AL) ($r = -0.06$, $p < 0.05$; small effect), Self-awareness (AL) ($r = -0.10$, $p < 0.05$; small effect), vigour (WE) ($r = -0.02$, $p < 0.05$; almost no effect), dedication (WE) ($r = -0.06$, $p < 0.05$; small effect), absorption (WE) ($r = -0.01$, $p < 0.05$; almost no effect) and exhaustion (BO) ($r = 0.42$, $p < 0.05$; medium effect). Resources (JDR) reported a relationship with organisational support (JDR) ($r = 0.55$, $p < 0.05$; large effect), greener pastures (job security) (JDR) ($r = 0.18$, $p < 0.05$; small effect), advancement opportunities (JDR) ($r = 0.27$, $p < 0.05$; small effect), transparency (AL) ($r = 0.20$, $p < 0.05$; small effect), moral/ethics (AL) ($r = 0.13$, $p < 0.05$; small effect), balanced processing (AL) ($r = 0.19$, $p < 0.05$; small effect), self- awareness (AL) ($r = 0.23$, $p < 0.05$; small effect), vigour (WE) ($r = 0.18$, $p < 0.05$; small effect), dedication (WE) ($r = 0.21$, $p < 0.05$; small effect), absorption (WE) ($r = 0.11$, $p < 0.05$; small effect) and exhaustion (BO) ($r = -0.04$, $p < 0.05$; almost no effect).

Organisational support (JDR) reported a relationship with greener pastures (job security) (JDR) ($r = 0.15, p < 0.05$; small effect), advancement opportunities (JDR) ($r = 0.33, p < 0.05$; medium effect), Transparency (AL) ($r = 0.45, p < 0.05$; medium effect), moral/ethics (AL) ($r = 0.33, p < 0.05$; medium effect), balanced processing (AL) ($r = 0.34, p < 0.05$; medium effect), self-awareness (AL) ($r = 0.40, p < 0.05$; medium effect), vigour (WE) ($r = 0.24, p < 0.05$; small effect), dedication (WE) ($r = 0.25, p < 0.05$; small effect), absorption (WE) ($r = 0.24, p < 0.05$; small effect) and exhaustion (BO) ($r = -0.18, p < 0.05$; small effect). Greener pastures (job security) (JDR) reported a relationship with advancement opportunities (JDR) ($r = 0.11, p < 0.05$; small effect), transparency (AL) ($r = 0.13, p < 0.05$; small effect), moral/ethics (AL) ($r = 0.13, p < 0.05$; small effect), balanced processing (AL) ($r = 0.10, p < 0.05$; small effect), self-awareness (AL) ($r = 0.21, p < 0.05$; small effect), vigour (WE) ($r = 0.04, p < 0.05$; almost no effect), dedication (WE) ($r = 0.11, p < 0.05$; small effect), absorption (WE) ($r = 0.08, p < 0.05$; small effect) and exhaustion (BO) ($r = 0.03, p < 0.05$; almost no effect). Advancement opportunities (JDR) reported relationship with transparency (AL) ($r = 0.26, p < 0.05$; small effect), moral/ethics (AL) ($r = 0.26, p < 0.05$; small effect), balanced processing (AL) ($r = 0.34, p < 0.05$; medium effect), self-awareness (AL) ($r = 0.31, p < 0.05$; medium effect), vigour (WE) ($r = 0.12, p < 0.05$; small effect), dedication (WE) ($r = 0.10, p < 0.05$; small effect), absorption (WE) ($r = 0.05, p < 0.05$; small effect) and exhaustion ($r = -0.15, p < 0.05$; small effect). Transparency (AL) reported a relationship with moral/ethics (AL) ($r = 0.68, p < 0.05$; large effect) balanced processing (AL) ($r = 0.62, p < 0.05$; large effect), self-awareness (AL) ($r = 0.70, p < 0.05$; large effect), vigour (WE) ($r = 0.24, p < 0.05$; small effect), dedication (WE) ($r = 0.18, p < 0.05$; small effect), absorption (WE) ($r = 0.16, p < 0.05$; small effect) and exhaustion (BO) ($r = -0.13, p < 0.05$; small effect).

Moral/ethics (AL) reported a relationship with balanced processing (AL) ($r = 0.59, p < 0.05$; large effect), self-awareness (AL) ($r = 0.63, p < 0.05$; large effect), vigour (WE) ($r = 0.26, p < 0.05$; small effect), dedication (WE) ($r = 0.17, p < 0.05$; small effect), absorption (WE) ($r = 0.19, p < 0.05$; small effect) and exhaustion (BO) ($r = -0.05, p < 0.05$; medium effect). Balanced processing (AL) reported a relationship with self-awareness (AL) ($r = 0.74, p < 0.05$; large effect), vigour (WE) ($r = 0.28, p < 0.05$; small effect), dedication (WE) ($r = 0.14, p < 0.05$; small effect), absorption (WE) ($r = 0.07, p < 0.05$; small effect) and exhaustion (BO) ($r = -0.06, p < 0.05$; small effect). Self-awareness (AL) reported a relationship with vigour (WE) ($r = 0.23, p < 0.05$; small effect), dedication (WE) ($r = 0.17, p < 0.05$; small effect), absorption (WE) ($r = 0.10, p < 0.05$; small effect) and exhaustion (BO) ($r = -0.12, p < 0.05$; small effect). Vigour (WE) reported a relationship with dedication (WE) ($r = 0.69, p < 0.05$; large effect), absorption (WE) ($r = 0.62, p < 0.05$; large effect) and exhaustion (BO) ($r = -0.17, p < 0.05$; small effect). Dedication (WE) reported a relationship with absorption (WE) ($r = 0.74, p < 0.05$; large effect) and exhaustion (BO) ($r = -0.18, p < 0.05$; small effect). Absorption (WE) reported a relationship with exhaustion (BO) ($r = -0.07, p < 0.05$; small effect).

5. Conclusion

The purpose of this study was to investigate the relationship between job demands-resources, authentic leadership, work engagement and burnout of police officers in selected regions in Namibia. This study found that workload (average) is negatively related to work engagement (high), supporting Hypothesis 1. This indicates that when police officers have a high workload, they would become less engaged in their work. This was also supported by studies by Coetzer, and Rothmann, (2007), Mbenzi, (2006), Schaufeli, and Bakker, (2004), and Sekoere, (2015). Considering that the workload and resources are on average levels for the sample and work engagement is high, if the workload gets increased without the necessary resources, these police officers are likely to become disengaged. Workload reported a positive relationship with exhaustion (average). This means that the higher the workload of employees, the more exhausted they become. The result of this study also supports Hypothesis 2 and the work of Coetzer and Rothmann (2007), Mbenzi (2006), Schaufeli and Bakker (2004), and Sekoere, (2015). Schaufeli and Bakker (2004) also theorised that burnout come as a result of job demands. The job of police officers is highly demanding, thus causing emotional exhaustion which results in disengagement and lower levels of performance. This study also investigates Hypothesis 3: Job resources, organisational support, greener pastures (job security) and advancement opportunities are positively related to work engagement. The results support Hypothesis 3, indicating that job resources (average), organisational support (average), greener pastures (job security - average) and advancement opportunities (low) enhances work engagement of the sample in this study. Having the necessary resources and support from the organisation, employees are more likely to be engaged

in their work and achieve satisfactory levels of productivity (Korunka et al., 2009; Schaufeli & Bakker, 2004; Schaufeli et al., 2002). Korunka et al. (2009) also noted that when employees do not receive the necessary resources, they become disengaged and even suffer from poor health, such as burnout. The results of this study support Hypothesis 4 and the negative relationship between job resources, organisational support, advancement opportunities and burnout (Schaufeli & Bakker, 2004; Coetzer & Rothmann, 2007).

When employees do not receive the required resources, it adds to the workload, frustration and burnout experienced by them. The sample experienced low levels of advancement opportunities. Siegrist (2000) also found that when there is an imbalance between efforts and outcomes, employees become disengaged and are likely to experience burnout. Hypothesis 5 investigated the relationship between workload and authentic leadership. Hypothesis 6 aimed at investigating the relationship between job resources, organisational support, greener pastures (job security), advancement opportunities and authentic leadership. This study found a negative relationship between workload and authentic leadership but a positive relationship between job resources, organisational support, greener pasture (job security), advancement opportunities and authentic leadership supporting Hypotheses 5 and 6. These findings also support the work of Coetzer and Rothmann, (2007), Schaufeli and Bakker (2004), and Sekoere (2015). Coetzer and Rothmann (2007), Mafokeng (2012), Sekoere (2015) indicated that when leaders provide guidance and clarity (job resources), it reduces the workload of employees, making employees more enthusiastic (Schaufeli & Bakker, 2004), productive (Luthans & Avolio, 2003) and it reduces work accidents (Hystad et al., 2013).

Authentic leaders are also able to positively energise their employees making them become more engaged in their work or result in burnout. Hypothesis 7 investigated the relationship between authentic leadership and work engagement. Hypothesis 8 investigated the relationship between authentic leadership and burnout. The results of this study support Hypotheses 7 and 8 as well as the work of Dienesch and Liden (1986), Luthans and Avolio (2003), Mafoken (2012), and Sekoere (2015). A leader has the ability to provide or withhold resources, impacting on the workload of employees (Sekoere, 2015), affecting productivity and levels of work engagement (Luthans & Avolio, 2003; Mafokeng, 2012). The quality of the relationship between the leader and his/her followers will also impact on the degree to which subordinates follow and execute the commands of the leader (Dienesch & Liden, 1986; Dulebohn et al., 2012). The manner in which the leader can impact on workload as well as communication may impact on burnout, health and life satisfaction of police officers (Harter et al., 2003; Kop et al., 1999). Hypothesis 9 of this study investigated the negative relationship between work engagement and burnout. The results of this study supported Hypothesis 9 and the work of Bakker and Leiter (2010), Demerouti et al. (2001), and Schaufeli and Bakker (2004). It was found that work engagement and burnout are opposites experienced by employees, being impacted by job demands, job resources, the working environment and individual characteristics. When employees experience high job demands with a lack of resources, they are likely to experience burnout. Having average work expectations with the needed resources, employees will become engaged in their work. When employees are provided with a high level of resources, they would still be able to handle high work demands, remaining engaged and not experiencing burnout.

In order to keep police officers engaged in their work, it is suggested that employees' capability to handle work stress should be assessed. Based on these results employees should be placed within the organisation whilst considering the required competencies and skills. Having a better person-job fit - how the employees' skills, potentials, competencies and abilities match the requirements of a certain job, the higher the likelihood that these employees would be productive and prosper. Trying to have a better person-job fit can also be done with new recruits or by reshuffling current employees. It is further suggested to provide employees with the required resources, which include resources to execute their duties, training opportunities to improve and gain skills, sufficient salaries and benefits to make a living, and provide praise and recognition where needed. Employees need to be allowed to influence decisions within the organisation, with supportive colleagues to rely on for guidance when needed, be informed about their work expectations and levels of performance. These resources include being informed about critical information within the organisation, supervisory support and healthy relations, being paid equitably for work efforts and being provided with sufficient opportunities to be promoted. It would serve a great deal considering that job resources buffer the impact from high workload requirements, preventing burnout of employees. It was noted that as part of the organisational support/resources, advancement opportunities were low for this sample. This indicates that

these police officers are unhappy with their level of remuneration and benefits; they are unable to live comfortably on their pay, unable to progress financially, and have limited opportunities for training or to be promoted. Perhaps the salaries and benefits of police officers need to be reviewed by the government, taking into account the type of work they do and the amount of effort they invest when executing their duties. Considering that the police force has different ranks, it is commendable that the management considers a promotion system that considers years of service, academic qualifications and exceptional performance as part of the promotion criteria.

Seeing that at some regional police stations only a certain number of senior officers may be accommodated, perhaps other incentives would also be included such as a day off for the best performing employee of the month. To ensure these incentives serve its purpose, management needs to investigate what officers would prefer and if these incentives are reasonable. Looking at the age, tenure and highest qualifications obtained, it is recommended that the police force also identifies or develop short courses that can enhance the capabilities of these employees. These employees are young and may be working for the police force for many years. The police force may think of shaping these employees for the future, ensuring continuity, increased productivity, reduces crime, increased crime solving and customer satisfaction restoring the image of the Namibian Police Force. The Namibian Police Force is having a monitoring and evaluation policy in place. This study recommends that the leadership on all levels within the police force be monitored and evaluated closely. Leaders need to ensure that the distribution of resources and work duties are done fairly and equitably. This will enhance the perceived distributive justice within the organisation, improving the relationship between leaders and followers, making it more likely that followers will execute and implement commands from the leader.

It is recommended that leaders be provided with leadership training to enhance their level of transparency and moral/ethical behaviour, balanced processing and self-awareness. This means that leaders will need to own up to their mistakes, allow followers to speak openly about their challenges and grievances, and speak out about decisions or practices within the organisation that are unfair or unacceptable. Leaders should also not only tell followers how to behave and execute their work duties, but be an example of exemplary service and diligent work ethics. Leaders also need to be impartial; listen to different views and considers all relevant information before making a decision. Leaders need to become more aware of how their actions, view points and decisions affect followers, be aware of how followers perceive their capabilities and aim to improve interactions with others. These leadership qualities can also be assessed when candidates apply for a leadership position. The police force can consider implementing a leadership development program, where young and capable employees are identified and groomed for future leadership positions within the organisation. Developing leaders from within the organisation enhances satisfaction within the organisation, indicating that the organisation and management are devoted to the progress and future of the employees. Considering the factors in this study that impact on burnout, it is suggested that the workload of employees be monitored and kept to average levels. When employees experience high workloads, they may become disengaged and experience burnout. Seeing that police work is very stressful and strenuous, it is recommended that officers who are exposed to gruesome and traumatic experiences be sent for mandatory counselling. Being able to talk to a trained professional will help police officers manage their work stress better. It may also be considered to enhance employees' coping ability with hardiness training. In light of the fact that the government also has other financial obligations and that job resources may be scarce, it is also recommended that police officers be taught how to work with the limited resources.

Educating police officers about health and well-being will improve their levels of burnout. Eating healthier, reducing alcohol intake and becoming more active will help to mitigate the effects of work stress. The police force may also approach healthcare providers to present health education seminars, or collaborate with them to build health and wellness facilities for police officers to have access to, with the necessary training on how to use and manage these facilities. Having authentic leaders within the police force will ensure that resources and work duties are distributed fairly and equally. This will make police officers become engaged in their work instead of experiencing burnout, ensuring that there is a balance between job demands and resources. Authentic leaders are also likely to advance job resources of employees with support, guidance, effective communication, role and expectation clarity, communicating the expected and current levels of performance ensuring that employees know what to do and how to improve performance and reduce burnout. Having

leaders that are honest and concerned about their followers, speak out against unfair decisions and practices, listen to the concerns of employees, provide guidance and support. This will ensure that police officers become more engaged in their work, become healthier, experiencing improved job and life satisfaction instead of ill health, absenteeism, turnover intention or burnout. Due to the limited nature and scope of this study, these findings may not be generalised to the entire Namibian Police Force. The Maslach Burnout Inventory did not achieve acceptable reliability results for all dimensions, thus it is recommended that a qualitative approach be used in future studies to assess burnout. Bearing in mind that grade 12 was the highest qualification obtained by many of the participants in this study and English being the second language for many of them, this could have been the reason for the unacceptable reliability levels for cynicism and professional efficacy.

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The Role of Financial Sector Development in the Tourism-Growth Nexus: A Case of Southern African Countries

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Abstract: The study explored the impact of financial development on the tourism-growth nexus in Southern African (SADC) countries using the three panel data analysis approaches (pooled OLS, fixed and random effects). Specifically, the study investigated whether financial development is a channel through which tourism influences economic growth in SADC countries or if the complementarity between financial development and tourism has a significant positive impact on economic growth in the SADC region? Theoretical and empirical literature review shows that the positive separate impact of tourism and financial development on economic growth is no longer a disputed matter. What has so far not been conclusively studied is whether financial management is a channel through which tourism influences economic growth. It is against this backdrop that the author undertook the current study in order to make a contribution to literature. The study found out that tourism had a significant negative influence on economic growth whereas financial development positively and significantly affected economic growth in the SADC region. The complementarity between tourism and financial development had a positive (fixed effects) and significant positive influence (pooled OLS and random effects) on economic growth in SADC countries, in line with theoretical predictions. SADC countries are therefore urged to improve their financial sector development levels in order to enhance the impact of tourism on economic growth.

Keywords: *Tourism; Growth; Financial Development; SADC Countries*

1. Introduction

Background of the study: Although their conclusion is similar, empirical studies on tourism-growth nexus done for the African continent have so far focused on individual countries. Specifically, Southern African Development Community (SADC) countries have been under-researched on the subject matter despite the fact that they receive quite a sizeable number of tourists per annum. Prior studies show that tourism-growth nexus is now a settled matter as the majority of them contend that tourism, just like other international capital inflows provides a spring board through which economic growth takes place. However, the role of financial development in the tourism-growth nexus has so far received very little attention (Ohlan, 2017). For example, Karadzova and Dicevska (2011) noted that effective financial systems alongside living standards of the people and economic development boosted the tourism industry in the Republic of Macedonia. Isik et al. (2017) noted that there was a co-integrating relationship between economic growth, financial development, international trade, tourism expenditure on CO2 emissions in the Republic of Macedonia. Moreover, Ohlan (2017) revealed that in the case of India, financial development, tourism and economic growth were co-integrated. On the contrary, money supply and export volumes were found to have been positively influenced by the number of tourist arrivals (Narayan et al., 2013). Although it is documented that financial development separately enhances tourism and economic growth, the role of financial development in boosting tourism's ability to influence economic growth has been overlooked in the literature. The study is expected to help Southern African countries to develop financial development policies that not only contributes to an increase in tourism arrivals but also enhances tourism's impact on economic growth.

Problem statement and research gap: Empirical research that studied the relationship between (1) tourism on economic growth and (2) the separate impact of tourism and financial development on economic growth is conclusive. Majority of these studies conclusively found out that tourism and financial development have a separate positive and significant influence on economic growth. What has so far not been investigated is the joint impact of tourism and financial development on economic growth. Moreover, studies which explored the relationship between tourism and financial development are quite scant, consistent with Cannonier and Burke (2017). Very little is also known about the finance-tourism-growth nexus in the Southern African region despite high tourism's influence on economic growth in these countries.

Contribution of the paper: This paper attempts to fill the gap in the literature by exploring the nexus between various financial development measures and tourism in the SADC region. There are two ways in which the current paper contributes to the debate on financial development-tourism nexus: (1) This is the first study according to the author's best knowledge which investigated the role played by financial development in enhancing tourism's ability to influence economic growth and (2) in the SADC region.

Organization of the paper: Section 2 is theoretical literature on the impact of tourism on economic growth, section 3 is empirical literature whereas research methodology (data description, econometric model estimation technique and results discussion and interpretation) constitutes section 4. Section 5 summarizes the study.

2. Literature Review

Croes and Vanegas (2008) argued that tourism transfers income and wealth from developed countries' residents to developing and less developed countries' residents thus increasing employment opportunities, income levels, standard of living and general economic growth activities in the tourists receiving countries. Yamakawa (2007) also noted that tourism enhances the growth of not only the service sectors but agricultural and industrial economic sectors as well. Theoretically, higher levels of financial development in the tourists receiving country enhances tourism as it enables tourists to access banking, financial and investment services whilst they are enjoying their holiday. The tourists are also able to trade in financial markets while on holiday if the financial sector in the tourists receiving country is well developed. Despite the clear benefits of tourism to the tourists receiving nation, it is not without its own negatives. For example, Kumar et al. (2015) argued that tourist destinations which are seasonally active are characterised by seasonal unemployment. This forces both local and national governments to absorb some extra strain as they have to reallocate the available resources towards a bigger population (Kumar et al., 2015:407). A leakage takes place from the tourists receiving country through profits repatriation in a case in which hotels are owned by foreign based companies. Large tourism participants normally practice central buying from their countries of origin in order to be able to negotiate favourable prices thus economically disadvantaging the tourists receiving countries (Mathieson & Wall, 1982). What is coming out of the theoretical literature is that (1) financial development enhances tourism, (2) tourism can have a positive or negative impact on economic growth and (3) financial development has a positive influence on economic growth in line with Keynes (1936). What has not received full attention is the role of financial development on enhancing tourism's impact on economic growth especially in the Southern African region. The current study fills in that gap.

Empirical literature review: Studies on the impact of tourism on economic growth were done by several authors. Using vector error correction model (VECM), Cortes-Jimenez and Pulina (2010) found out that inbound tourism played a very critical role in influencing long term economic growth in developing countries. Using the ordinary least squares approach with annual time series data ranging from 1985 to 2005, Gokovali (2010) studied the role played by tourism on economic growth in Turkey. Tourism receipts was found to have had a significant positive impact on long run economic growth in Turkey. Narayan et al. (2010) explored the linkage between tourism and economic growth in Pacific Island Countries (PICs), namely Tonga, Fiji, Papua New Guinea and Solomon Islands using panel data analysis. Their study revealed that economic growth was positively influenced by tourism exports revenue in both the short and long run in the PICs.

In summary, the findings from studies on tourism-growth nexus fall into three dominant categories: (1) tourism enhances the growth of the economy, (2) tourism has got a deleterious effect on economic growth, (3) there is a negligible relationship between tourism and economic growth. The question which still remains is does tourism influence economic growth through a certain channel? If so, is financial development a channel through tourism influence economic growth, in the case of Southern African countries? The current study addresses these questions. The impact of financial development or financial markets on tourism has also been investigated by very few empirical studies. For example, a study by Song and Lin (2010) using an ARDL approach noted that both inbound and outbound tourism were negatively affected by the financial crisis in Asia. The finding was supported by Ridderstaat and Croes (2015) whose study revealed that the money supply cycles in United States of America, United Kingdom and Canada had a direct influence on the demand of tourism products in Barbados and Aruba. A study carried out by Basarir and Cakir (2015)

observed that there existed a bi-directional causality relationship between financial development and tourism in Spain, Greece, Italy and France. Bi-directional relationship between tourism and financial development was also detected by a study done by Shahbaz et al. (2016) in the case of Malaysia. Moreover, Ngoasong and Kimbu (2016) found out that the informal microfinance institutions were instrumental in spearheading tourism entrepreneurship (small scale tourism firms) in Cameroon.

Table 1: Empirical literature on the tourism-growth nexus

Author	Country/Countries of study		Methodology	Research findings
Kibara et al. (2012)	Kenya		Autoregressive Distributive Lag (ARDL)	Tourism industry had a positive impact on economic growth in the long and short run in Kenya. The same study also revealed that tourism industry enhanced trade in Kenya.
Narayan et al. (2013)	Pacific countries	Island	Panel regression framework	The number of tourist arrivals had a negligible impact on gross domestic product (GDP) and exchange rates. Money supply and export volumes was also found to have been positively influenced by the number of tourist arrivals.
Antonakakis et al. (2015)	European countries		Spillover index approach	The tourism led economic growth and the economic growth led tourism were found to be time dependent in the European countries.
Chou (2013)	Transition countries		Panel data analysis	The neutrality hypothesis was found to be valid in Bulgaria, Romania and Slovenia whilst the bi-directional causality held for Estonia and Hungary. Tourism had a positive impact on Cyprus, Latvia and Slovakia whilst tourism was found to have been positively affected by economic growth in Poland and Czech Republic.
Tang and Tan (2013)	Malaysia		Co-integration and Granger causality test	Tourism and economic growth were found to be co-integrated. Economic growth was found to have been Granger caused by tourism in Malaysia. Further analysis shows that tourist receipts from developed countries significantly contributed towards economic growth in Malaysia.
Ridderstaat et al (2014)	Aruba		Co-integration tests, Vector Error Correction Model and Granger causality tests.	Tourism and economic growth were found to have had a reciprocal relationship in Aruba.
Tugcu (2014)	Mediterranean region		Panel Granger causality analysis	Tourism was found to have inspired economic growth in the Mediterranean region. The same study also revealed that economic growth played a very important role in terms of positively influencing tourism levels in the Mediterranean region.
Pablo-Romero and Molina (2013)	Focused on a variety of empirical studies		Empirical literature review	The findings on the study of tourism-growth nexus are threefold: (1) tourism-led growth, (2) growth-led tourism and (3) neutrality hypothesis.
Belloumi (2010)	Tunisia		Co-integration and Granger causality tests	Tourism and economic growth variables were found to be co-integrated in Tunisia. The same study revealed a uni-directional causality running from tourism towards economic growth in Tunisia both in the long and short run.

Mishra et al. (2011)	India	VECM model	A uni-directional causality relationship running from tourism to economic growth in India was detected in the long run.
Caglayan et al. (2012)	11 groups of countries	Panel analysis	There was no causal relationship that was found between tourism and economic growth in Sub-Saharan African countries, Asia, Middle East and North African countries. Economic growth was positively affected by tourism in Oceania, South Asia and East Asia. Economic growth had a positive impact on tourism in Latin America and Caribbean and America. Moreover, a feedback effect between tourism and economic growth was detected in European countries.
Srinivasan et al. (2012)	Sri Lanka	ARDL Approach	In both the short and long run, tourism was found to have played a very important role in positively influencing economic growth in Sri Lanka.
Cortes-Jimenez et al. (2011)	Tunisia	VECM model	Although tourism exports enabled Tunisia to have foreign currency needed to import capital goods, its direct impact on economic growth was not significant. Economic growth led tourism hypothesis was also found to have been valid in Tunisia.

Source: Author Compilation

Kumar (2014), Kumar and Kumar (2013), Ohlan (2017), Karadzova and Dicevska (2011) and Isik et al. (2017) are some of the few authors whose studies investigated the finance-tourism-growth nexus. Using an ARDL framework, Kumar (2014) studied the interrelationship between financial development, tourism, information communication technology and economic growth in Vietnam with time series data ranging from 1980 to 2010. The study noted that financial development had a positive influence on both tourism and economic growth in Vietnam. Kumar and Kumar (2013) also explored the contribution of tourism, urbanization and financial development towards economic growth in Fiji using ARDL approach with time series data from 1981 to 2009. Their study revealed that financial development, tourism and urbanization were co-integrated and that tourism alongside financial development had a positive influence on economic growth of Fiji.

Karadzova and Dicevska (2011) observed that effective financial systems alongside living standards of the people and economic development boosted the tourism industry in the Republic of Macedonia. Isik et al. (2017) noted that there was a co-integrating relationship between economic growth, financial development, international trade, tourism expenditure on CO2 emissions in the Republic of Macedonia. Moreover, Ohlan (2017) revealed that in the case of India, financial development, tourism and economic growth were co-integrated. The same study also detected a uni-directional causality relationship running from tourism towards economic growth in the long run in India. These empirical studies deviate from the current study in the following ways: (1) they ignored the impact of financial development on tourism's ability to trigger economic growth, (2) did not focus on the African continent, in particular Southern African countries which heavily rely on tourism for economic growth purposes., (3) used time series analysis, (4) they are single country studies and (5) used outdated data. The current study fills in these gaps.

Table 2: Variables, a priori expectation and theory intuition

Variable	Theory intuition	Expected sign
FIN	The provision of financial services such as savings mobilisation, risk diversification and management and the allocation of capital towards high yielding projects were according to Schumpeter (1911) the channels through which a financial sector positively influences economic growth. Keynes (1936) observed that stock market returns volatility lead to non-efficient allocation of resources and slow economic growth especially when speculative bubbles are influencing the returns in contradiction to the dictates of economic fundamentals present.	+/-
OPEN	Balassa (1978) argued that exports revenue increases foreign currency inflow and this makes it cheaper to import critical implements that are needed for the production process. In the presence of trade openness, large corporates also prefer to import inputs and products that can be sourced locally thereby crowding out domestic firms (Baltagi et al. 2009).	+/-
INFL	Schreft and Smith (1997) argued that higher inflation pushes up interest rates which leads to non-efficient resources allocation in contradiction, Tobin (1965) showed that consumers increase their levels of investment and contribution to financial development and economic growth by shifting their money assets to capital assets in a bid to protect themselves from the effects of high inflation.	+/-
POP	Higher levels of population increase positive spillovers for economic growth as more workers increase their level of specialisation in the consumer sector (Becker et al. 1999). On the other hand, increased population means more resources are channelled towards consumption expenditure instead of productive activities.	+/-
GC	Keynes (1936) argued that government consumption expenditure is instrumental in stimulating economic growth. According to Suruga and Le (2005), government's non-capital expenditure negatively affects the growth of the economy. The same study observed that foreign direct investment, itself a source of economic growth is stifled by the excessive government's non-capital expenditure.	+/-
FDI	Calvo and Sanchez-Robles (2002) noted that economic growth requires capital investment, technology, innovation, skills and market know-how, all of which comes through FDI. On the other hand, Bornschier and Chase-Dunn (1985) explained that FDI negatively impacts on economic growth by promoting a predominantly monopolistic industrial structure which does not enhance the use of factors of production.	+/-
UNEMPL	Higher levels of unemployment imply less income tax revenue collected which could have been used to stimulate economic growth related initiatives. It also leads to less demand of the final goods hence stifling production activities in the economy.	-

Source: Author compilation

3. Methodology

Data used for the study: Panel data ranging from 1995 to 2014 was used for the purposes of the current study for Southern African countries such as Zimbabwe, South Africa, Namibia, Swaziland, Malawi, Mauritius, Mozambique, Madagascar, Seychelles and Tanzania. Some Southern African countries such as Botswana, Zambia, Democratic Republic of Congo, Angola and Lesotho were excluded because of the unavailability of data for some variables. The period from 1995 to 2014 was selected mainly because of data availability considerations. The secondary data was extracted from the World Development Indicators, African Development Bank, International Monetary Fund and United Nations Development Programme databases.

4. Results

General and Econometric Model Specification: The relationship between economic growth, independent and explanatory variables as described and explained in the literature is shown in the form of equation 1 (general model specification).

$$GROWTH = f(TOURISM, FIN, OPEN, INFL, POP, GC, FDI, UNEMPL) \quad [1]$$

Where GROWTH, TOURISM, FIN, OPEN, INFL, POP, GC, FDI and UNEMPL stands for economic growth, international tourism receipts, financial development, trade openness, inflation, population growth, government consumption expenditure, foreign direct investment and unemployment rate respectively. Table 3 summarises the proxies for all the variables used by the current study.

Table 3: Proxies used to measure the variables

Economic growth (GROWTH)	GDP per capita
International tourism (TOURISM)	International tourism, receipts (% of GDP)
Financial development (FIN)	Domestic credit provided by financial sector (% of GDP)
Trade openness (OPEN)	Exports of goods and services (% of GDP)
Inflation (INFL)	Inflation, consumer prices (annual %)
Population growth (POP)	Population growth (annual %)
Government consumption expenditure (GC)	General government consumption expenditure (% of GDP)
Foreign direct investment (FDI)	Foreign direct investment, net inflows (% of GDP)
Unemployment rate (UNEMPL)	Unemployment, total (% of total labour force)

Source: Author's compilation

The proxies for variables were selected in line with similar previous studies and was also a function of data availability. To investigate the impact of tourism on economic growth in the SADC countries, the following general econometric model was used.

$$GROWTH_{i,t} = \beta_0 + \beta_1 TOURISM_{i,t} + \beta_2 X_{i,t} + \mu_i + \varepsilon_{it} [2]$$

Where X represents for a matrix of control variables, subscripts t and i stands for country and time respectively whereas μ_i represents the time invariant and unobserved country specific effect. β_0 stands for the intercept term, ε_{it} is the error term whilst $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ and β_7 are the co-efficients of the variables used.

The full econometric model (equation 3) captures the following: (1) the nexus between tourism and economic growth and (2) the impact of the interaction between financial development and tourism on economic growth and (3) the relationship between economic growth and explanatory variables.

$$GROWTH_{i,t} = \beta_0 + \beta_1 TOURISM_{i,t} + \beta_2 FIN_{i,t} + \beta_3 (TOURISM_{i,t} \cdot FIN_{i,t}) + \beta_4 OPEN_{i,t} + \beta_5 INFL_{i,t} + \beta_6 POP_{i,t} + \beta_7 GC_{i,t} + \beta_8 FDI_{i,t} + \beta_9 UNEMPL_{i,t} + \mu_i + \varepsilon_{it} [3]$$

A positive and significant (β_3) shows that the complementarity between tourism and financial development enhanced economic growth in Southern African countries. Pooled OLS, fixed and random effects were the three panel data analysis methods that were used to estimate equation 3. The three panel data estimation techniques were all used for the current study in order to ensure the results are robust. Their other advantage why the current study used panel data estimation techniques is that they are better able to capture the complexity of human or data behaviour in comparison to time series or cross sectional data, they are

better placed to control the effects of omitted variables and produce more accurate estimations for individual outcomes by pooling the data together.

Pre-estimation diagnostics: Correlation analysis and descriptive statistics were the two pre-estimation diagnostics that were performed in this sub-section.

Table 4: Correlation analysis

	GROWTH	TOURISM	FIN	OPEN	INFL	POP	GC	FDI	UNEMPL
GROWTH	1.0000								
TOURISM	0.7799***	1.0000							
FIN	0.5576***	0.2831***	1.0000						
OPEN	0.6567***	0.6101***	0.1606**	1.0000					
INFL	-0.0781	-0.0114	0.0189	0.0038	1.0000				
POP	-0.5868***	-0.4189***	-0.5752***	-0.5946***	-0.0633	1.0000			
GC	0.5293***	0.5301***	0.2968***	0.4079***	-0.1987	-0.2178	1.0000		
FDI	0.2478***	0.3277***	-0.0974	0.2552***	-0.0546	0.0577	0.2978***	1.0000	
UNEMPL	0.0044	-0.3656***	0.1661**	0.0359	-0.0780	-0.0960	0.1036	0.0105	1.0000

Source: Author's compilation from E-Views

Note: ***, ** and * denote 1%, 5% and 10% levels of significance, respectively.

It is clear in Table 4 that variables such as tourism, financial development, trade openness, government consumption expenditure and FDI were individually positively and significantly correlated with economic growth in the Southern African countries. The finding resonates with theoretical literature as espoused in Table 2. As per theoretical expectation, both inflation and population growth were significantly negatively correlated with economic growth in the case of Southern African nations. Contrary to theoretical predictions, a positive correlation between unemployment and economic growth was detected. Following Stead (1996), the correlation results in Table 4 shows that the problem of multi-collinearity does not exist.

Table 5: Descriptive statistics

	GROWTH	TOURISM	FIN	OPEN	INFL	POP	GC	FDI	UNEMPL
Mean	2 907	7.74	50.73	38.9	324	1.97	17.97	4.73	12.78
Median	1 129	3.35	28.1	31.87	7.21	2.01	16.94	2.91	7.45
Maximum	15 687	44.08	192.7	107.99	36 012	3.52	63.94	54.06	37.6
Minimum	142	0.29	1.69	10.17	0.01	0.01	2.05	0.03	1.30
Std. Dev.	3 395	10.4	50.57	20.75	3 068	0.93	7.83	6.68	9.70
Skewness	1.47	2.02	1.30	1.09	10.36	-0.32	1.92	4.09	0.48
Kurtosis	4.68	5.97	3.69	3.63	111.62	1.86	9.96	24.7	1.60
Jarque-Bera	95	210	60	43	101 903	14	526	448	24
Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Source: Author's compilation from E-Views

There are two major reasons which compelled the author to first convert all the data for the variables studied into natural logarithms before using it for main data analysis (Nor. et al. 2015). These are: (1) To address the problem of inaccurate results due to the data which did not follow a normal distribution. The probabilities equal to 0 of the Jarque-Bera criteria for all the variables studied supports this assertion. (2) To deal away with the problem of extreme and abnormal values. In table 5, the standard deviation of economic growth and inflation which exceeded a 1 000 provides evidence that there existed abnormal or extreme values in the two variables.

Main data analysis and interpretation: Three econometric procedures were sequentially performed in this sub-section, namely panel unit root tests, followed by panel co-integration test and finally panel data analysis using pooled OLS, fixed and random effects.

Table 6: Panel unit root tests –Individual intercept and trend

Level	LLC	IPS	ADF	PP
L(GROWTH)	-1.1777	-1.3597*	27.1262	18.6193
L(TOURISM)	-0.2979	-0.2009	21.4607	32.0100
L(FIN)	-0.9089	-0.5215	20.8430	23.6723
L(OPEN)	-2.8560***	-2.3662***	39.4252***	46.6409***
L(INFL)	-4.2214***	-2.9473***	42.5822***	52.0118***
L(POP)	-5.1658***	-5.5907***	68.9231***	52.8591***
L(GC)	-0.2369	-0.1122	20.0532	23.2694
L(FDI)	-1.8102**	-2.1166**	34.5590**	84.8921***
L(UNEMPL)	-0.2395	-1.0879	25.4225	43.4559***
First difference				
L(GROWTH)	-4.5293***	-3.0907***	40.8655***	74.1177***
L(TOURISM)	-4.3585***	-4.0856***	50.6874***	140.3720***
L(FIN)	-1.3148*	-2.4689***	36.1715**	95.1515***
L(OPEN)	-7.0592***	-4.9248***	60.0255***	115.8950***
L(INFL)	-9.2231***	-6.4087***	74.5379***	150.9230***
L(POP)	-3.5388***	-4.6351***	57.2571***	87.1192***
L(GC)	-1.0492*	-3.4050***	48.8738***	101.6050***
L(FDI)	-4.1054***	-6.7393***	78.4082***	171.4140***
L(UNEMPL)	-2.9268***	-3.1032***	42.9001***	110.3280***

Source: Author's compilation from E-Views

Note: LLC, IPS, ADF and PP stands for Levin, Lin and Chu (2002); Im, Pesaran and Shin (2003); ADF Fisher Chi Square and PP Fisher Chi Square tests respectively. *, ** and *** denote 10%, 5% and 1% levels of significance, respectively.

All the variables were stationary at first difference, a finding which could not be found at level. This means that the data for the variables under study were integrated of order 1, a condition which must be satisfied before con-integration tests are done (Jiang & Liu. 2014). Kao residual co-integration test was then done and the results showed that there is a long run relationship between and among the variables studied in the SADC countries.

Table 7: Kao Residual Co-Integration Test - Individual intercept

	T-statistic	Probability
Augmented Dickey-Fuller (ADF)	-2.8404	0.0023

Source: Author's compilation from E-Views

All the three panel data analysis frameworks (pooled OLS, fixed and random effects) shows that tourism had a negative and significant influence on economic growth in the Southern African countries in line with arguments by Mathieson and Wall (1982) and Kumar et al (2015). In line with literature (Schumpeter. 1911 & Keynes. 1936), the current study found out that financial development positively and significantly affected economic growth in Southern African countries across all the three panel data analysis frameworks used. According to fixed effects approach, the interaction between tourism and financial development positively but non-significantly impacted on economic growth whereas random effects and pooled OLS noted that the interaction between tourism and financial development had a positive and significant influence on economic growth in the SADC countries. These findings resonate with theoretical literature. It is evident from these results that the complementarity between financial development and tourism improved the economic growth rate in Southern African countries in line with Ohlan's (2017) findings.

Table 8: Panel data analysis results

Variable	Fixed effects	Random effects	Pooled OLS
TOURISM	-0.4658***	-0.5599***	-0.5599***
FIN	0.2330*	0.5914***	0.5914***
TOURISM.FIN	0.0978	0.7139***	0.7139***
OPEN	0.2069**	0.6139***	0.6139***
INFL	-0.0443**	-0.1332***	-0.1332***
POP	-0.0307	-0.0938***	-0.0938
GC	0.0560	0.3572***	0.3572***
FDI	0.0753***	0.0057	0.0057
UNEMPL	-0.1770*	0.3955***	0.3955***
Adjusted R-squared	0.9488	0.8175	0.8175
F-statistic	206.02	100.04	100.04
Prob (F-statistic)	0.0000	0.0000	0.0000

Source: Author's compilation from E-Views

Note: ***, ** and * denote 1%, 5% and 10% levels of significance, respectively.

Across all the three panel data analysis methods, economic growth was positively and significantly influenced by trade openness, a finding which resonates with Balassa (1978) whose study observed that exports revenue brings foreign exchange (a key ingredient for economic growth) into the exporting country's economy. Inflation had a significant negative influence on economic growth in support of the available literature explained by Schreft and Smith (1997). According to fixed effects and pooled OLS, population growth negatively but non-significantly influenced economic growth whereas the random effects approach observed that economic growth in Southern African countries was negatively and significantly influenced by population growth.

In support of Keynes (1936) whose study argued that government consumption expenditure is instrumental in stimulating economic growth, random effects and pooled OLS showed that government consumption expenditure positively and significantly affected economic growth in Southern African countries. Fixed effects approach, however, observed that government consumption expenditure positively but non-significantly influenced economic growth in the Southern African countries studied. Whilst fixed effects noted that FDI had a significant positive impact on economic growth, random effects and pooled OLS revealed that economic growth was positively but non-significantly affected by FDI. The finding supported Calvo and Sanchez-Robles (2002) whose study argued that skills, innovation, market know how and capital investment which all comes along with FDI are instrumental in spearheading economic growth. Unemployment had a significant negative impact on economic growth under the fixed effects approach, in line with the theory intuition (see Table 2). The random effects and pooled OLS showed that economic growth was positively and significantly affected by unemployment, a finding which contradicts majority of existing theoretical and empirical literature on the subject matter.

5. Conclusion

The study explored the impact of financial development in the tourism-growth nexus in Southern African countries using three panel data analysis approaches (pooled OLS, fixed and random effects). Specifically, the study investigated whether financial development is a channel through which tourism influences economic growth in SADC countries or if the complementarity between financial development and tourism has a significant positive impact on economic growth in the Southern African region? Theoretical and empirical literature review shows that the separate positive impact of tourism and financial development on economic growth is no longer a disputed matter. What has so far not been conclusively studied is whether financial management is a channel through which tourism influences economic growth. It is against this backdrop that the author undertook the current study in order to fill in that gap and make a contribution to literature. The paper found out that tourism had a significant negative influence on economic growth whereas financial development positively and significantly affected economic growth in the Southern African region. The complementarity between tourism and financial development had a positive (fixed effects) and significant positive influence (pooled OLS and random effects) on economic growth in Southern African countries, in line

with literature. Southern African countries are therefore urged to develop policies aimed at deepening financial sector development levels in order to enhance tourism and economic growth. The study also urges Southern African countries to develop their financial sector in order to accelerate the positive impact of tourism on economic growth. Moreover, policies aimed at increasing trade openness, government consumption expenditure and FDI inflows should be implemented by the Southern African countries in order to enhance the growth of the economy. Future studies should investigate how other macro-economic variables influence tourism's ability to positively impact on economic growth not only in the Southern African region but in other African regions and continents as well.

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An Exploratory Factor Analysis of the Location-Specific Antecedents to Foreign Direct Investment in Post-Crisis Zimbabwe (2009-2015)

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Abstract: While there are a plethora of studies based on the generic determinants of foreign direct investment, there is a discernible dearth of research into location-specific antecedents of distinct foreign direct investment typologies. This paper identifies the location-specific antecedents influencing foreign investors considering exploiting international business opportunities in post-crisis Zimbabwe. The literature provided the bases for the propositions advanced by this paper. Quantitative survey data was generated from a purposive sample of $n=305$ foreign investors. An exploratory factor analysis was conducted. The findings suggest that post-crisis Zimbabwe possesses the location-specific antecedents required by market-, resource-, efficiency-, and strategic asset-seeking FDI inflow. It is recommended that Zimbabwean policy-makers take cognisance of these nuances and implement appropriate market entry strategies to lure investors to Zimbabwe to grow the post-crisis economy.

Keywords: *Location-specific antecedents; foreign direct investment; behavioural finance; investment market entry decisions; Zimbabwe*

1. Introduction

Within the contemporary international business environment, the attractiveness of particular countries to foreign capital is premised on the availability of lucrative foreign direct investment (FDI) opportunities (Festervand, 2011; Musila & Sique, 2006). However, this paper argues that subjective location heuristics (based on specific location-specific antecedents) precede the attractiveness of any country-specific FDI opportunities, and influences the perceptions held by foreign investors of potential FDI locations, thus contributing to the competitiveness of certain countries in attracting FDI. While there is some literature (Browning, 2016; Simelyte, Peleckis & Pelekiene, 2015), to generally support this notion, little is still known about the potential influence of country-specific antecedents on FDI activity, more-so within the African context. This paper seeks to contribute to this emerging discourse in FDI theory, particularly within an African context, by establishing the location-specific antecedents of FDI in post-crisis Zimbabwe.

De Vries, Erasmus and Gerber (2017) advance the view that investor's behaviour in financial markets mimics that of consumer buying behaviour within the conventional product consumption context. Despite the increasing significance of investor perceptions to FDI location selection, a significant proportion of contemporary studies (Anyanwu & Yameogo, 2015; Etim, Onyebuchi & Udo, 2014; Kariuki, 2015), relating to the bases for FDI to the African continent have primarily focused on examining the generic determinants of FDI utilising panel data, albeit subject to its availability. Relatedly, while some studies (Du & Boateng, 2015; Mahembe & Odhiambo, 2013; Sikharulidze & Kikutadze, 2013), have explored the location-specific antecedents of specific FDI typologies in the African context, none of these studies, to the best of the researchers' knowledge, have generated comprehensive primary data-based empirical evidence of the location-specific antecedents of FDI by examining all four theoretical FDI typologies in the context of one specific African country. Therefore, a discernible gap exists with regards to the antecedents of FDI to specific African countries, particularly in relation to the FDI motives of Multi-National Enterprises (MNEs), based on primary data. More ominously, since experiencing a protracted economic crisis from 1998 to 2008, research into the determinants and/or nature of FDI to post-crisis Zimbabwe has largely been neglected by researchers.

This paper, thus extends behavioural finance theory to the foreign direct investment (FDI) decision-making process by advancing the notion that, foreign investors are influenced by certain location-specific antecedents as precursors to their FDI activity in post-economic crisis countries, such as Zimbabwe. Consequently, a critical query in the contemporary FDI discourse within the African context is centred on the antecedents of FDI activity within the African continent's individual economies. In the case of post-crisis Zimbabwe, beyond

the intention to exploit FDI opportunities in the country, the location-specific antecedents that exist to influence and motivate foreign investors to exploit certain FDI opportunities in the country becomes crucial. With this in mind, the aim of this paper is to identify the location-specific antecedents to FDI inflow to opportunities in Zimbabwe, in order to better explain the nature of FDI activities foreign investors have considered engaging in within the post-crisis Zimbabwean context.

This paper makes three significant contributions to the growing body of knowledge in the FDI discourse. Firstly, the findings of this paper represent the first empirical evidence of the location-specific antecedents considered to be influential to the attractiveness of FDI in post-crisis Zimbabwe (2009-2015). Secondly, this paper provides an empirical basis for the evaluation of the nature (market-resource, efficiency, strategic asset-oriented) of the antecedents of FDI in post-crisis Zimbabwe (2009-2015). Lastly, this paper advances a new theoretical basis for a novel evaluative scale for the determination of the antecedents for FDI typologies within the African context. To the best of the authors' knowledge, this is the first comprehensive Afrocentric explanatory framework for the location-specific antecedents of FDI inflow. With these significant contributions in mind the present paper is important in two aspects.

Firstly, the Zimbabwean government may gain important insights into the inherent subjective factors foreign investors considered to be germane to their motives to invest in post-crisis Zimbabwe. These factors may be managed by the Zimbabwean government as part of an investment promotion strategy to boost post-crisis Zimbabwe's competitive and comparative advantage within the global and regional FDI markets respectively. Secondly, the evaluative framework and results of the study make a novel contribution to the extent of the literature, potentially improving the understanding of the antecedents of FDI, particularly within a post-crisis African country context from the perspective of foreign investors – thereby contributing to both the FDI and behavioural finance discourses. The remainder of this paper is structured as follows: literature review, followed by an outline of the research methodology adopted for the study, the presentation and discussion of the empirical findings of the study, and finally the conclusions, their implications and avenues for future research.

2. Literature Review

Overview of the motives of internationalisation: The location aspect of the OLI framework lends credence to the dichotomous nature of the motives on MNEs for engaging in FDI. Within the location taxonomy of the OLI framework, investors typically fall into the four distinct categories which are based on the intent (motive) that the foreign investor has for engaging in FDI in a particular country. These motives are market-, resource-, efficiency- and strategic asset-seeking (Dunning, 2000; Eden & Dai, 2010). Each is discussed in more detail.

Investor motives for market-seeking foreign direct investment: Market-seeking investors are primarily concerned with internationalising for the purpose of market consolidation and/or expansion (Akpan, 2013). Kharwish and Siam (2010) advance that internationalisation based on the possibility of creating and/or exploiting existing marketing channels in a potential investment location could be considered as market-seeking FDI. While, Moghaddam, Sethi, Weber and Wu (2014), affirm that, market seeking FDI seeks to ensure access to new and larger markets outside of its own home country. By locating in certain foreign markets, the market-seeking foreign investor, may exploit opportunities which include exploitation of host country incentives, avoiding barriers to market entry, such as tolls and import quotas (Lintunen, 2011). Other market opportunities include more effective positioning in the foreign market; substantial labour and input cost-saving potential, as well as the effectiveness of promotion activities by government and quasi-government development agencies (Sikharulidze & Kikutadze, 2013; Wilson, Baack & Baack, 2014). Despite offering very little in terms of sustainable market demand due to Zimbabwe's largely unemployed population (up to 96% unemployment), Zimbabwe offers market-seeking investors many investment opportunities in its relatively diversified economy (Danha, Takaindisa, Mlotshwa & Simlet, 2015; KPMG, 2012; Zimbabwe Investment Authority, 2015). Zimbabwe's strategic location within the Southern African Development Community (SADC), offering market-seeking investor's access to the regional market being bordered by Zambia, Mozambique, Botswana and South Africa (World Bank Group, 2014). This makes Zimbabwe a potentially attractive location for market-seeking FDI. With this in mind the following proposition is put forward:

P₁: Zimbabwe possesses market-seeking antecedents that may influence FDI inflow into the country.

Investor motives for resource-seeking foreign direct investment: Resource-seeking foreign investors engage in FDI in order to legitimise and secure their acquisition of the often government-regulated desired resources (Cui, Meyer & Hu 2014; Dunning, 2000), as well as, secure stable supplies of the resources at a lower acquisition cost (Lintunen, 2011; Wilson et al., 2014). Resource-seeking investors also seek to benefit from government FDI incentives such as favourable tax, repatriation, capital gains tax allowances, and access to resource-oriented joint venture projects (Sikharulidze & Kikutadze, 2013). A government's policy on the beneficiation of resources prior to exporting to a country is a critical antecedent for resource-seeking investors (Mahembe & Odhiambo, 2013). Access to specialised advanced production-oriented technology is also critical for FDI (Udo and Obiora, 2006). The repatriation of resources by foreign investors is also a consideration for foreign investors (Dupasquier & Osakwe 2005; Hailu, 2010). Key to the extraction of natural resources is also the aspect of infrastructural logistics (Oyin, 2014). Zimbabwe is well endowed with factors of production such as mineral resources and primary agricultural outputs, and Zimbabwe's economy is considered by the World Economic Forum, as one of the world's thirty-seven factor-driven economies (Schwab, 2014). Zimbabwe is well integrated within the global value chain of a significant number of primary resources and has the capacity to extract and process gold, diamonds and platinum, as well as to grow, process and manufacture products from primary agricultural outputs such as cotton, sugarcane and tobacco (Monyau & Bandara, 2014). Zimbabwe also has substantial coal, platinum, diamond, gold, iron ore and copper nickel deposits, as well as large tracts of arable land suitable for agriculture (African Development Bank, 2013; Monyau & Bandara, 2014). All these factors are important to resource-seeking investors. With this in mind the following proposition is put forward:

P₂: Zimbabwe possesses resource-seeking antecedents that may influence FDI inflow into the country.

Investor motives for efficiency-seeking foreign direct investment: By locating in a certain foreign country, a foreign efficiency-seeking investor may take advantage of government local production incentives such as tax rebates and duty free importation of capital equipment, easing of market entry barriers, and the existence of linkages (Lintunen, 2011; Wilson et al., 2014). The location-specific advantages that appeal to efficiency seeking investors include exploiting an existing favourable business environment in the host country; achieving agglomeration of economies of product or process specialisation and agglomeration of economies of concentration in the production and distribution of products and services to the host market and other external markets (Lintunen, 2011; Muneer et al., 2011; Sikharulidze & Kikutadze, 2013). Achieving agglomeration economies is a significant consideration for foreign investors, as the close proximity of critical resources, such as factors of production or production processes and other foreign investors, allows investors to exploit the positive externalities associated with the streamlining of global value chain integration (Ajayi, 2006; Mabule, 2012; Sichei & Kinyondo, 2012). Foreign investors pursuing efficiency will invest in a host country with lower production costs if their motivation is cost reduction and improved efficacy (Jain, Kundu & Newbury, 2015; Moghaddam et al., 2014).

As a result of the Zimbabwe crisis, the country experienced subdued industrial development, and since 2013, Zimbabwe has been experiencing de-industrialisation (Monyau & Bandara, 2014). Zimbabwe may be considered to have the capacity to be more productive and integrate efficiency-seeking investors in the global value chain, while industrial underutilisation may be considered to be an FDI opportunity for foreign investors to exploit efficiency related infrastructure more effectively (African Development Bank, 2014; Chinamasa, 2014; KPMG, 2012; Monyau & Bandara, 2014). By adopting a multi-currency policy, the Zimbabwean government managed to arrest its hyperinflationary business environment while reducing the currency exchange risk for foreign investors who could use their local currency in investment transactions in Zimbabwe (Bertelsmann Stiftung's Transformation Index, 2014; United States Department of State, 2014). With this in mind the following proposition is put forward:

P₃: Zimbabwe possesses efficiency-seeking antecedents that may influence FDI inflow into the country.

Investor motives for strategic asset-seeking foreign direct investment: Strategic asset-seeking investors engage in FDI in order to achieve a competitive advantage and enhance their core competence by acquiring the strategic assets to boost their strategic position and competitiveness within the foreign market or globally (Cui et al., 2014; Dunning, 2000). Strategic asset-seeking investors will have a vested interest in investing in a

country as long as the host country offers the required technology transfer and/or organisational assets that will benefit the direct investor - particularly, access to unique, intangible and organisationally embedded assets such as corporate governance and brand equity (Lintunen, 2011). Other strategic considerations include cost-effective access to synergetic knowledge-based assets (know-how), as well as access to markets and institutions (Wilson et al., 2014). Vijayakumar, Sridharan and Rao (2010) observe a positive relationship between tax regimes imposed on international transactions and FDI inflows to developing countries. While, Moghaddam et al. (2014) affirm that foreign enterprises pursuing a strategic advantage will invest in host countries possessing distinct strategic assets. Opportunities to access the global value chain are also a consideration for strategic asset-seeking investors (Du & Boateng, 2015).

Zimbabwe offers the discerning strategic asset-seeking investor a myriad of investment opportunities (KPMG, 2012; Deloitte, 2012; Zimbabwe Investment Authority, 2015). As part of Zimbabwe's current Zimbabwe Agenda for Sustainable Socio Economic Transformation (ZIMASSET) economic blueprint, the government of Zimbabwe is seeking strategic partners for projects and partnerships in sectors that include the extraction of natural resources as part of their Private-Public Partnership Program (Zimbabwe Agenda for Sustainable Socio Economic Transformation, 2013). Albeit possessing lucrative investment opportunities, Zimbabwe has a controversial and unclear indigenisation and land ownership and appropriation policy which, to a large extent, serves as an impediment to strategic asset-seeking investment (African Development Bank, 2011; Kramarenko, Engstrom, Verider, Fernandez, Oppers, Huges, McHugh & Coatts, 2010). With this in mind the following proposition is put forward:

P4: Zimbabwe possesses strategic asset-seeking antecedents that may influence FDI inflow into the country.

3. Methodology

A quantitative cross-sectional deductive study was conducted, and employed total population sampling to select the study population from a database of foreign investors – investors who had invested, considered investing and had decided not to invest, or would consider investing in Zimbabwe in the future - during the period 2009 to 2015. This study was conducted in 2016, while the period under review 2009 to 2015 represents the post Zimbabwe crisis period after the protracted socio-political situation in Zimbabwe was addressed thereby arresting the economic crisis that had ensued between 1998 to 2008 (Chiumbu & Musemwa, 2012; Sena, 2012). The total sample population for the study was 1073 foreign investors on the Zimbabwe Investment Authority's database over the period of the study. An effective sample population of 640 foreign investors with valid e-mail contact details was established. From this effective sample $n=305$ investors participated in the online survey, resulting in a response rate of 47.66%. This sample was deemed to be adequate for the purposes of the study based on the empirical guidelines (Krejcie & Morgan, 1970; Sue & Ritter, 2007). An online survey was utilised to generate the data from respondents, with responses being recorded on an ordinal 5-point Likert scale (Toepoel, 2016). The ordinal scale solicited investor responses on the extent to which certain antecedents influenced their investment decision-making process when considering engaging in FDI activity in Zimbabwe. The scalar responses ranged from (1) not at all influential to (5) extremely influential.

Exploratory Factor Analysis (EFA) was applied to extract items (observed variables) from the data that correlate and group them together to constitute distinct factors (Field, 2009). EFA was deemed suitable as it is widely recognised as being appropriate in aiding in the development of new matrices in behavioural and social science related studies (Yong & Pearce, 2013). In this paper, EFA (at Varimax raw) was employed to identify patterns from within the set of data generated by the survey and make the necessary extrapolations (Norris & Lecavalier, 2010; Yong & Pearce, 2013). By doing so, the EFA managed to reduce the items into four discernible factors (Larsen & Warne, 2010). EFA was employed while adhering to the assumptions outlined by Yong and Pearce (2013) that: there is univariate/multivariate normality in the dataset; there is an absence of outliers; and that there is a discernible relationship between the factors and the items.

Principle Component Analysis (PCA) was utilised as a data reduction technique (Reio & Shuck, 2015; Yong & Pearce, 2013). PCA was applied to the data in order to explain the variance-covariance structure of the variables and generated eigenvalues. Eigenvalues are point estimates that are assessed to determine the optimal factors to retain from the EFA (Costello & Osborne, 2005; Larsen & Warne, 2010). Only the factors

that reported an Eigenvalue of more than 1.0 were retained (Costello and Osborne, 2005). A minimum factor loading coefficient of 0.50 was employed based on the conventional guidelines for practical significance (Hair, Black, Babin, Anderson & Tatham, 2006; Williams, Brown & Onsam, 2010), implying that variables with a coefficient less than 0.50 were disregarded. Relatedly, any variables considered to have cross-loaded (loading on more than one factor in the structure matrix) were also disregarded from further analysis (Williams et al., 2010). For factor stability, at least three items were expected to load to be regarded a valid factor (Costello & Osborne, 2005). In-order to establish scale reliability (how closely variables measured are related), the Cronbach's alpha test was employed to calculate the inter-item consistency of the measuring instrument at an acceptable cut off of $\alpha > 0.7$ for reliability (George & Mallery, 2003). In-order to confirm that the factors established by the EFA were cognate, Pearson product-moment correlation coefficients were calculated, with a coefficient of $r > 0.30$ being preferable as it implied that the factor association is not weak (Yong & Pearce, 2013).

4. Results and Discussion

Demographic profile of respondents: The majority (58.36%) of investors surveyed were male. The predominant age group were investors aged between 31-40 (37.05%) and 41-50 (36.06%) years old. Most of the investors (46.56%) possessed a postgraduate degree, while the least number of respondents (2.30%) were in possession of a high school diploma. Entrepreneurs (32.46%) and investors in senior management (30.49%) constituted the bulk of respondents. A significant proportion of the investor's surveyed were in the private (77.06%) and quasi-government sectors (11.80%), and were based in Africa (75.74%) and South-East Asia (7.45%) at the time of the survey - 2016.

Results of the exploratory factor analysis: Table 1 summarises the results of the Exploratory Factor Analysis (EFA) which extracted the items that loaded and their factor loading coefficients, the Eigenvalue of each factor, as well as the Cronbach's alpha (α) of each factor.

Table 1: Summary of the exploratory factor analysis results

Statements	Market seeking	Resource seeking	Efficiency seeking	Strategic asset seeking
There are opportunities for economies of scale for production of one product	0.804			
The input cost of production factors is low	0.738			
There are promising market growth prospects	0.725			
They are a member of the regional trading blocs	0.680			
There are multiple marketing channels to choose from	0.733			
Without much effort products can be distributed to many markets located close by	0.787			
Cost saving can be obtained through production of multiple products	0.554			
There are opportunities for cross-border acquisitions or mergers		0.561		
Government is transparent about technology transfer regulations		0.686		
All factors of production are available		0.699		
There are few restrictions in the local resource market		0.715		
A sustainable supply of production factors is ensured		0.605		
There is potential for joint ventures for natural resource extraction		0.652		
Their logistics networks are cost efficient		0.585		

Statements	Market seeking	Resource seeking	Efficiency seeking	Strategic asset seeking
There is a clear policy dictating the completion for process form prior to export		0.726		
There are many unemployed skilled labour available		0.613		
When leaving the country, foreign owned businesses have the right for repatriation of resources		0.553		
There is access to specialised advanced production-oriented technology		0.598		
Businesses related processes are located close to each other			0.520	
There is an opportunity for value chain integration			0.715	
There is the potential for economies of products/business processes specialisation			0.612	
Capital equipment can be imported for free			0.690	
It is possible to reduce business transaction costs			0.601	
They function on a multi-currency system			0.623	
Their exchange rate is in our country's favour				0.524
There are brand equity opportunities available				0.553
There are government private-public partnerships opportunities				0.525
Their capital gains tax rates are favourable				0.830
Their property tax rates are favourable				0.773
Their research and development (intangible knowledge-based assets) is complementing our country's				0.606
Eigenvalues	10.91	3.52	1.88	2.42
Variance explained	32.09	10.36	5.53	7.12
Cumulative variance	32.09	42.45	47.98	55.10
Cronbach's alpha (α)	0.885	0.884	0.819	0.849

Note: Loadings of < .50 are omitted

The *Market-seeking* factor accounted for 32.09% of the variance in the original data set. Nine of the twelve items measured loaded onto the *Market-seeking* factor, with a loading coefficient above the 0.50. Factor loadings for the *Market-seeking* factor ranged between 0.725 and 0.804. It is apparent that Zimbabwe possesses the location-specific antecedents that may influence the inflow of market-seeking FDI to the country. Thus, P_1 has a truth value. The *Resource-seeking* factor accounted for 10.36% of the variance in the original data set. All ten items measured loaded onto the *Resource-seeking* factor, with a loading coefficient above the 0.50. Factor loadings for the *Resource-seeking* factor ranged between 0.553 and 0.726. It is apparent that Zimbabwe possesses the location-specific antecedents that may influence the inflow of resource-seeking FDI to the country. Thus, P_2 has a truth value. The *Efficiency-seeking* factor accounted for 5.53% of the variance in the original data set. Six of the eight items measured loaded onto the *Efficiency-seeking* factor, with a loading coefficient above the 0.50. Factor loadings for the *Efficiency-seeking* factor ranged between 0.520 and 0.715. It is apparent that Zimbabwe possesses the location-specific antecedents that may influence the inflow of efficiency-seeking FDI to the country. Thus, P_3 has a truth value.

The *Strategic asset-seeking* factor accounted for 7.12% of the variance in the original data set. Five of the seven items measured loaded onto the *Strategic asset-seeking* factor, with a loading coefficient above the 0.50. Factor loadings for the *Strategic asset-seeking* factor ranged between 0.524 and 0.830. It is apparent that Zimbabwe possesses the location-specific antecedents that may influence the inflow of strategic asset-seeking FDI to the country. Thus, P_4 has a truth value. Based on the EFA and PCA, it is evident from Table 1 that all four factors were retained as they returned Eigenvalues of more than 1, *Market-seeking* (10.91), *Resource-seeking* (3.52), *Efficiency-seeking* (1.88) and, *Strategic asset-seeking* (2.42). The location-specific antecedent

factors explained a cumulative 55.11% of the variance in the data. All the location-specific antecedent factors were deemed to be reliable. The *Market-*, *Resource-*, *Efficiency-* and *Strategic asset-seeking* factors returned a Cronbach's alpha coefficients of 0.885, 0.884, 0.819 and 0.849 respectively, indicating that the items to measure the factors were deemed highly reliable.

Descriptive statistics on the location-specific antecedents of FDI inflow to Zimbabwe: A significant proportion of the $n=305$ survey respondents (47%), indicated having invested in Zimbabwe at the time of the survey, while 38% indicated having considered investing in Zimbabwe and ultimately not doing so. The remainder of the surveyed foreign investors (15%) indicated possibly investing in Zimbabwe in the future. In general, Zimbabwe was perceived to be a market-oriented FDI destination by the majority (43%) of the foreign investors surveyed. While, the remainder of foreign investors, 25%, 22% and 10% perceived Zimbabwe to generally be a resource- strategic asset-, or efficiency-oriented FDI destination respectively. Table 2 summarises the descriptive statistics of the location-specific antecedents of FDI inflow to Zimbabwe.

Table 2: Descriptive statistics of the location-specific antecedents of FDI inflow to Zimbabwe

Factor	Number of items	Mean	Standard Deviation
Market-seeking	7	3.50	1.07
Resource-seeking	11	3.43	0.97
Efficiency-seeking	6	3.70	0.91
Strategic asset-seeking	6	3.24	1.06

Source: Author's compilation

As shown in Table 2, foreign investors seemed to view *Market-seeking* antecedents as quite influential (3.50)-mean score tending towards 4 on the 5-point Likert scale - when considering engaging in FDI activity in Zimbabwe. This is cognate with the prevalent (43%) investor perceptions of Zimbabwe as a market-oriented FDI destination. Interestingly, *Efficiency-seeking* antecedents scored the highest mean (3.70), considered as being quite influential (mean score tending towards 4 on the 5-point Likert scale) when considering engaging in FDI activity in Zimbabwe. This is despite Zimbabwe being generally considered to be an efficiency-oriented FDI destination initially by only 10% of the respondents. Foreign investors however, also appeared to be undecided (means tend toward 3 on the 5-point Likert scale) on whether *Resource-* and *Strategic asset-seeking* antecedents influence their consideration of FDI inflow in Zimbabwe. Foreign investors seemed to differ in their opinions (standard deviations that centred near 1 ranging from between 0.91 to 1.07) regarding how influential they perceived each of these factors when considering FDI inflow opportunities in Zimbabwe.

Correlation analysis of the location-specific antecedents of FDI inflow to Zimbabwe: Pearson product-moment correlation coefficients were calculated to establish the strength of the association between the factors identified. Table 3 presents the correlation matrix for the four distinct FDI inflow to Zimbabwe.

Table 3: Correlation matrix for the location-specific antecedents to FDI inflow to Zimbabwe

Factor	MKT	RES	EF	SA
Market-seeking (MKT)	1.000			
Resource-seeking (RES)	0.570	1.000		
Efficiency-seeking (EF)	0.564	0.752	1.000	
Strategic asset-seeking (SA)	0.464	0.650	0.491	1.000

Source: Author's compilation

The *Market-seeking* factor reported a moderate association with the *Strategic asset-seeking* factor ($r = 0.464$), and strong association with the *Resource-seeking* factor ($r = 0.570$), and the *Efficiency-seeking* factor ($r = 0.564$). The *Resource-seeking* factor also reported significant ($p < 0.05$) strong association with the *Strategic asset-seeking* factor ($r = 0.650$), and the *Efficiency-seeking* factor ($r = 0.752$). The *Efficiency-seeking* factor

reported a moderate correlation with the *Strategic asset-seeking* factor ($r = 0.491$). These results suggest that the four factors are cognate and may be considered to be associated measures.

5. Conclusion, Policy Implications and Further Research

The literature provided important insights into the distinct motives of MNEs for engaging in FDI, as well as the various location-specific factors considered prior to engaging in FDI. It appears that within the post-crisis Zimbabwean (2009-2015) context, Propositions one to four (**P₁-P₄**) have a truth value. In the absence of existing empirical evidence to support the novel findings of this paper within the Zimbabwean context, it can therefore, be concluded that, based on the EFA, foreign investors seem to consider Zimbabwe to possess the location-specific antecedents that may influence the inflow of market, resource-, efficiency-, and strategic asset-seeking FDI to the country. This conclusion is significant as it is based on a cross-section of foreign investors, those who had invested in Zimbabwe, those who had considered investing in Zimbabwe but had decided not to, and those who at the time of the survey would have considered investing in Zimbabwe in the future. The findings and conclusions of this paper imply that the Zimbabwean Government and its quasi-government agency responsible for the promotion of FDI to Zimbabwe, the Zimbabwe Investment Authority (ZIA), must take cognisance of the underlying factors influencing the attractiveness of specific FDI typologies in post-crisis Zimbabwe. While, the overarching macro-environmental determinants of FDI such as governance, human capital and infrastructure may be significant to FDI inflow to Zimbabwe, it may be hypothesised that the location-specific antecedents of specific FDI inflow typologies are significant to the distinct nature of FDI that ultimately flows to Zimbabwe.

This paper is a critical first step in the generation of new theory, since hypotheses may be generated from the propositions presented in this paper as part of broader study on the influence of afore-mentioned factors on FDI inflows to Zimbabwe. It is therefore, recommended that Zimbabwean policy-makers in government, quasi-government agencies such as the ZIA management adapt the location-specific antecedents as independent variables in an evaluation framework to establish the relationship between these factors and FDI inflows to Zimbabwe. It is also recommended that the aforementioned principals develop a logical approach to investment promotion that informs and guides investment promotion strategy formulation, implementation and evaluation respectively. This logical approach should be based on the location-specific antecedent factors that investors perceive as influential in decisions related to each FDI inflow typology (market-, resource-, efficiency-, strategic asset-seeking). An explanatory framework based on the factors presented in this paper may be tested further as part of an empirical study to generate data which may then be used to formulate an FDI image-building strategy, as an implementation blueprint, for the attraction of FDI to Zimbabwe. More significantly, this approach may be adapted by other African governments and/or quasi-governmental organisations for the same purpose. More significantly, given the recent political changes in Zimbabwe, a follow-up study on the locational antecedents considered by foreign investors in Zimbabwe is recommended. Such a study would be able to draw comparisons between the momentous shifts in regime against investor perceptions and the period preceding this political change.

Limitations of the study: The results of this paper are only generalizable to the perceptions of foreign investors within the Zimbabwean context, thus a similar study within the context of a different country may result in varying results. With regards to the primary data analysis approach, the authors acknowledge that EFA is exploratory in nature and is not suitable for hypothesis testing. To this end, EFA was only suitable for data reduction and the rationalisation of the latent factors, with no causal inferences being provided. Thus, only propositions were presented.

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Technical Efficiency in Seed Potato Production Systems in Uganda

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Abstract: This study established the level of technical efficiency and its determinants among the informal and formal seed potato producers in the southwestern highlands agro-ecological zone of Uganda. A multi-stage sampling procedure was employed to select 636 households (499 informal seed producers and 137 formal seed producers) from which data was collected for two seasons using a semi-structured questionnaire. Data was analyzed using the stochastic frontier approach with a one-step approach. Maximum likelihood estimates for the efficiency parameters showed that both informal and formal seed potato producers were not fully efficient. The mean technical efficiency for informal and formal seed potato producers was 81.4 and 80.4 percent respectively. In terms of yield loss, informal and formal seed potato producers respectively lost an average of 981 and 1,208 kg/acre of seed potato tubers due to inefficiency factors. Specifically, off-farm income source, scale of production, seasonal variation, access to extension services and seed producer being male positively influenced informal seed producers' technical efficiency while producers' level of education and seed potato variety diversity negatively influenced their efficiency. For formal seed producers, technical efficiency was influenced positively by producers' education and negatively by household size. The study suggests that there is an opportunity to improve technical efficiency of informal and formal seed producers by 19 and 20 percent respectively. Therefore, this calls for increased investment in developing and promoting high yielding varieties, provision of extension services, input intensification and addressing gender issues in seed potato production in the context of limited arable land.

Keywords: *Stochastic frontier, technical efficiency, seed potato system, informal and formal producers*

1. Introduction

Potato (*Solanum tuberosum*, L.) is a crop of major economic importance worldwide (FAO, 2008; Gebremedhin & Getachew, 2016). In terms of global production, the potato is the third most produced food crop after rice and wheat (Haverkort & Struik, 2015). Global total potato production exceeds 380 million metric tons per year (FAOSTAT, 2017). It is estimated that over a billion of people worldwide feed on potatoes (Haverkort & Struik, 2015). In Uganda, the potato is the third most consumed root and tuber crop after cassava and sweet potato (Tatwangire & Nabukeera, 2017). The Uganda National Agricultural Sector Strategic Plan of 2015/16 -2019/20 recognizes potatoes to be among the crops with huge potential to increase incomes and food security (MAAIF, 2016). The contribution of potatoes to income and food security in Uganda is however compromised by low yields at farm level estimated at 7.1 tonnes per hectare (FAOSTAT, 2014) compared to the 20 tonnes per hectare that is reportedly achievable at research stations in Uganda (Byarugaba et al., 2017). A key ingredient in the efforts to increase potato yields is timely access to adequate quantity of good quality seed given that good quality seed can contribute to a yield increase of between 20 and 25 percent (Gildemacher et al., 2009). In Uganda, there are two seed potato production systems (formal and informal seed potato production systems).

In the formal seed system, seed potato producers obtain basic seed from research which they multiply under supervision from research to ensure that quality seed is produced. On another hand, in the informal seed system, seed potato producers use home saved seed of previous season or from markets or neighbors and multiply it under no guidance. The seed produced by formal seed potato producers meets less than 1 percent of the national demand (Thiele et al., 2011; Aheisibwe et al., 2015). This demand can be met through expanding and increasing the productivity of the seed potato sub-sector. Expanding the seed potato sub-sector requires bringing more land under seed potato production which is not sustainable given the increasing arable land scarcity due to population increase. Therefore, increasing production per unit resource also known as technical efficiency provides a more feasible and sustainable strategy to meeting the current

and future demand for seed potato. Technical efficiency focuses on analyzing how farmers combine their inputs to produce a level of output in an efficient way (Coelli et al., 2005).

In a bid to increase productivity of the seed potato sub-sector, the government of Uganda through National Agricultural Research Organization (NARO) has focused on generating and promoting new improved potato varieties and innovations for quality seed potato production. However, despite these efforts, over 95 percent of the seed potato used by farmers in Uganda comes from the informal seed system (Kinyua et al., 2008; Aheisibwe et al., 2015). This is attributed to the limited ability of research and its associated formal seed potato system to meet the existing seed potato demand. Determining whether the seed potato production system is operating at maximum capacity requires evidence about its technical efficiency of the actors given that most of the seed potato produced should ideally be supplied. However, majority of the past studies have focused on the technical efficiency of potatoes without separating seed and ware potatoes and hence with limited attention on the level and determinants of technical efficiency of both formal and informal seed potato producers (Bonabana-Wabbi et al., 2013; Kipkoech et al., 2015; Tiruneh et al., 2017). This study therefore aimed at assessing the level and determinants of technical efficiency of farmers in the formal and informal seed potato production systems in south western highlands agro-ecological zone (SWHAEZ) of Uganda. From a policy perspective, this study is pertinent in steering debate on most feasible policy options to bridge the seed potato supply gap through enhancing technical efficiency of seed potato producers in SWHAEZ region and beyond. The rest of the paper proceeds as follows: the next section presents literature review. This is followed by research methodology, results and discussion and finally conclusions and policy implications.

2. Literature Review

Although literature on efficiency analysis provides many approaches to estimating level of technical efficiency among smallholders, this study employed stochastic production frontier approach with inefficiency variables to examine the level and determinants of technical efficiency among seed potato producers in Uganda. Most common approaches to estimating technical efficiency include; the Data Envelopment Analysis (DEA), Malmquist Index and stochastic production frontier (SPF). Unlike DEA and Malmquist Index, the stochastic production frontier approach allows for deviations from the frontier to be attributed to both inefficiency and the inevitable statistical noise, making it closer to reality (Battese & Coelli, 1988; Sharma et al., 1999; Constantin & Martin, 2009). Therefore, this study adopted a stochastic production frontier to estimate technical efficiency of seed potato producers because it addresses inefficiency and also recognizes the fact that random shocks do exist and may affect seed potato produced. This study further utilized statistical procedures to select the most appropriate model and distribution form so as to deal with the major limitations of SPF approach pointed out by Battese and Coelli (1995). Within the stochastic frontier models, some studies have used either a Cobb-Douglas or Transcendental or both depending on the data. Currently, two stochastic modeling approaches are prevalent: 1) including inefficiency variables in the stochastic frontier model also known as single-step estimation; 2) two-step estimation approach. Nonetheless, various studies have employed both approaches to estimate technical efficiency and its determinants.

For instance, Amadou (2007) used a single-step stochastic frontier approach, a translog stochastic production frontier with technical inefficiency variables and found out that coffee farmers had a mean technical efficiency of 89.6 percent and coffee production was exhibiting increasing returns to scale. The study further indicated that education level of coffee farmers in Cote d'Ivoire among other factors had a negative and significant effect on technical inefficiency. A similar study by Mburu et al. (2014) employed a two-step Cobb-Douglas estimation approach among wheat farmers in Kenya and found out that large scale wheat farmers were more efficient than small scale counterparts with technical efficiency of 85 and 91 percent respectively. The two studies conclude that more educated farmers are able to perceive, interpret and respond to new information and adopt improved technologies such as fertilizers, pesticides and planting materials much faster than their less educated counterparts. On the contrary, a study conducted by Srisompun and Isvilanonda (2012) on Thailand rice farmers found out that formal education had an insignificant effect on technical efficiency improvements in rice production. This is also in agreement with study findings by Okoye et al. (2016) in Central Madagascar. Other studies such as Simonyan et al. (2011) in Nigeria reported a strong competing effect for women in terms of diverting skills to off-farm employment opportunities as their education level increases.

Adeyemo et al. (2010) simultaneously estimated the parameters of the Cobb-Douglas stochastic production frontier model and inefficiency model and found out that technical efficiency of cassava farmers ranged between 88.7-100 percent with mean technical efficiency of 89.4 percent. The study revealed that age of the farmer contributed negatively to technical efficiency in cassava production in Ogun State, Nigeria. Similarly, a study conducted by Srisompun and Isvilanonda (2012) in Thailand using a two-step estimation procedure with Cobb-Douglas production frontier found out that age of the farming household head had a negative and statistically significant effect on technical efficiency. These different studies fronted two arguments to justify the negative influence of age on technical efficiency. First, they argued that older farmers were less able to meet the labor demands associated with uptake of new technologies. Secondly, they also observed that older farmers did not easily adopt improved technologies because they were more conservative and more strongly attached to their traditional practices than the young ones. Contrary to the above, there are other studies such as Kidane et al. (2015) in Tabora region of Tanzania and Tiruneh et al. (2017) in Welmera district, Ethiopia which have reported a positive influence of age on technical efficiency. Such disagreements among different studies about the relationship between age and technical efficiency suggest that the influence of age on technical efficiency varies according to the enterprise and context.

Various studies have also found farming experience to be an influential factor of technical efficiency. A study conducted by Ajibefun et al. (2006) using a one-step estimation approach with translog production frontier revealed that rural farmers were more technically efficient than urban farmers with technical efficiency of 65 and 57 percent respectively. The study found out that years of farming experience among other factors had a negative effect on technical inefficiency. This implies that the more the farming experience, the higher the level of technical efficiency. Similar findings were obtained by Ogundari and Ojo (2007) who found out that farming experience positively affected technical efficiency among small scale food crop farmers in Nigeria. On the contrary, Adeyemo et al. (2010) utilizing a one-step stochastic frontier procedure with Cobb-Douglas production function found out that farming experience contributes negatively to technical efficiency, implying that the more the years spent in farming, the higher the degree of inefficiency. In terms of farm size, Srisompun and Isvilanonda (2012) study among rice farmers in Thailand employing a two-step stochastic frontier approach with Cobb-Douglas model specification demonstrated that technical efficiency in the crop year 1987/88 was higher than that of 2007/08 by 16.2 percent.

The study further showed that farmers with larger farm sizes were more technically efficient than those with smaller farms. Similar study findings were obtained by Kidane et al. (2015) when they used the two-step stochastic frontier estimation with Cobb-Douglas model to determine the technical efficiency of tobacco farmers in Tabora region of Tanzania. These findings suggest that farmers operating on large scale are more likely to enjoy economies of scale that enable them to produce more outputs with low costs. However, in a study done by Trujillo and Iglesias (2013) in Colombia, land acreage and technical efficiency were found to be inversely related, implying that the larger the land acreage under production the lower the level of efficiency. In this present study, scale of production was adopted instead of farm size because most of the seed potato producers are smallholder farmers characterized by limited arable land. In exploring the impact of crop diversification on technical efficiency, various studies have used Herfindahl index and the Ogive index as measures of concentration of output or specialization (Coelli & Fleming, 2004; Manjunatha et al., 2013; Ahmadzai, 2017) while others have used number of crops (Haji, 2007; Ebong et al., 2009; Ogundari, 2013).

In this study however, number of potato varieties was used as a proxy for seed potato variety diversity. Empirical studies examining crop diversification and technical efficiency at farm level have mixed conclusions. For instance, Ebong et al. (2009) using a one-step stochastic frontier approach with Cobb-Douglas model in Nigeria found out that urban farmers had a mean technical efficiency of 81 percent. Their study indicated that crop diversity among other factors had a negative influence on technical efficiency. On the contrary, Ogundari (2013) and Ahmadzai (2017) employed a two-step stochastic approach with a translog production frontier to study small scale cassava farmers in Nigeria and crop farmers in Afghanistan. The two studies found out that cassava farmers and afghan crop farmers had a mean technical efficiency of 81 and 72 percent respectively. These studies reported that crop diversity among other factors had a positive influence on technical efficiency. The rather mixed influence of crop diversity on technical efficiency could be attributed

to contextual differences such as resources available and agricultural practices used which vary from farm to farm.

Household size on the other hand has been reported to positively influence technical efficiency. For example, in the study by Mohammed using a Cobb-Douglas production frontier and inefficiency model simultaneously found out that technical efficiency of sorghum producers in Nigeria varied widely between 15.6 to 92.1 percent with a mean technical efficiency of 72.6 percent. The study findings revealed that bigger households tend to show better technical efficiency. This agrees with the findings by Ayinde et al. (2015) among maize producers in Ogun state of Nigeria and Kidane et al. (2015) among tobacco farmers in Tanzania. The explanation for this behavior is that a bigger household would have more labor for carrying out farming activities in timely fashion, thus making the production process more efficient. Regarding farmers' access to extension services, Asante et al. (2013) jointly estimated a Cobb-Douglas stochastic production frontier with inefficiency model and found out that tomato farmers in Ghana had a mean technical efficiency of 85.4 percent. The study reported that farmers who had accessed extension services were more technically efficient than those that had not received such services. This is in agreement with Julie et al. (2017) whose study employed a one-step stochastic frontier approach with Cobb-Douglas model among specialized and diversified vegetable farmers in Cameroon. These studies demonstrated that access to extension services had a significant negative effect on technical inefficiency.

This suggests that farmers with access to extension services are more technically efficient than those without. Farmers' contact with extension agents is expected to directly or indirectly raise the awareness, sense of objective evaluation and the possibility of use of improved techniques of production. Gender has also been hypothesized in many studies as a significant factor that influences technical efficiency. For instance, in a study conducted among potato farmers in South Western Uganda by Bonabana-Wabbi et al. (2013), potato farmers were found to have a mean technical efficiency of 75 percent. In the study, male headed farming households were found to be less technically efficient than their female counterparts. Similar findings were obtained by Addison et al. (2016) using a one-step stochastic estimation with translog production frontier among rice farmers in Ashanti region of Ghana. However, a study by Kidane et al. (2015) in Tabora region of Tanzania employing a two-step stochastic frontier approach with Cobb-Douglas model found out that male maize farmers were more technically efficient than female farmers. Drawing from the above discussions, this study included the gender aspect to examine technical efficiency differentials among seed potato producers in the study area. Another factor believed to influence the level of technical efficiency is distance to the market. For instance, a study conducted by Chikobola (2016) using a one-step stochastic estimation with translog profit frontier among ground nut producers in Zambia revealed that distance to the market had a negative effect on efficiency. In their study, farmers who were located far from the market often had limited access to input and output markets and market information, eventually leading to inefficient production.

Chikobola further argued that longer distance to the market translated into higher transaction costs which discouraged farmers from participating in market oriented production. These findings by Chikobola (2016) are consistent with those of Abdulai and Huffman (2000) study focusing on rice farmers in Nigeria. From the review, it is also apparent that technical efficiency varies from one commodity to another and across locations and is influenced by various factors. The review however further indicates that there exist contradictions in the estimation procedure and direction of influence of the factors on technical efficiency. For instance, scholars disagree on the direction and level of influence of some of the factors such as level of formal education, age, farming experience, crop diversification, farm size and gender on technical efficiency. This implies that examination and interpretation of technical efficiency and its determinants have to be context specific. This present study therefore focused on technical efficiency of seed potato producers within a resource constrained context in the SWHAEZ so as to contribute to the filling of existing gaps in the knowledge about technical efficiency and its determinants in seed potato sub-sector. This study thus adopted a one-step stochastic frontier approach to investigate the level of technical efficiency among formal and informal seed potato producers, the sources and drivers of (in) efficiencies and how these influence technical efficiency of seed potato producers in Uganda.

3. Methodology

Empirical Model of The Stochastic Production Frontier: This study employed a stochastic production frontier function as proposed by Aigner et al. (1977), Battese and Coelli (1995) to handle cross sectional data. These studies based on the Cobb-Douglas function and transcendental logarithmic (translog) functions that could be specified as production functions. Following Aigner et al. (1977), the general econometric model for a stochastic frontier model is specified as:

$$y_i = f(x_i, \beta) \exp(\varepsilon_i) \quad (1)$$

Where: Y_i = The value of seed potato produced in kg; the suitable functional form such as Cobb Douglas or translog can be employed; X_i = Vector variable inputs (labor, seed, fertilizer and pesticide), β = the parameter of the estimate. In this study, the appropriate functional forms were tested using the log likelihood ratio test (LR) statistic in equation (4). Based on the result, farm-level Cobb-Douglas and translog production frontiers were adopted for formal and informal seed potato producers respectively. According to Aigner et al. (1977), ε_i is an error term derived as;

$$\varepsilon_i = v_i - \mu_i \quad (2)$$

Where v_i = the systematic component which represents random disturbance term due to factors outside the scope of the farmers; μ_i = the one sided disturbance term used to represent technical inefficiency and is independent of v_i . Again v_i is a symmetrical two sided normally distributed error term that captures the stochastic effect outside farmer's/farm's control for example weather, natural disaster, measurement errors and other statistical noise. It is assumed to be independently and identically distributed $N(0, \delta_v^2)$. Thus v_i allows the production function frontier to vary across farms at a given point in time and over time for the same farm and therefore the production frontier is stochastic. The term μ_i is a one sided ($\mu_i > 0$) inefficiency component that captures the technical inefficiency of the i^{th} farmer. The one sided error term can follow different distributions such as exponential (Meeusen & van Den Broeck, 1977), half normal (Aigner et al. (1977), truncated normal distribution (Stevenson, 1980) and the gamma density (Greene, 1980). Both v_i and μ_i cause actual production to deviate from the frontier production function (Xu & Jeffrey, 1998). The inefficiency model is specified as:

$$\mu_{it} = z_{it}\delta + w_{it} \quad (3)$$

Where δ 's are unknown parameters to be estimated, Z_1 = sex of the seed producers (1= male 0=female), Z_2 = producers' education (1 = ≥ 12 years of schooling, 0 otherwise), Z_3 = experience of the producer (years in seed production), Z_4 = Household size (persons), Z_5 = off-farm income source (1=had access, never), Z_6 = variety diversity (1=seed producer grows more than one variety, 0 otherwise), Z_7 = access to extension (1=had access, 0 = never), Z_8 = scale of production (1= ≤ 1.5 acres under seed potato, 0 otherwise), Z_9 = seed source distance (kilometres) and Z_{10} = seasonal preference (1= season 2, 0 = season 1). Whether or not the inefficiency effects existed was verified using log-likelihood ratio (LR) test statistic computed from equation (4).

$$\chi^2 = -2[\log(L(H_0)) - \log(L(H_1))] \quad (4)$$

Where χ^2 has a chi-square distribution; $L(H_0)$ and $L(H_1)$ denote the values of the likelihood function under the null hypothesis (Ordinary Least Squares (OLS) model) and the alternative hypothesis (Stochastic Production Frontier (SPF) model) respectively. Maximum Likelihood Estimates (MLE) for all the parameters of the SPF model in equation (1) for each category of seed potato producer together with the inefficiency variables in equation (3) were jointly estimated with the use of Frontier 4.1 computer program (Coelli, 1996). Following Battese and Coelli (1988), technical efficiency estimation is given by the mean of the conditional distributional of inefficiency term μ_i given ε_i as defined by equation (2). According to Coelli et al. (2005), equation (5) is an alternative predictor for technical efficiency and is shown to be optimal in the sense that it minimizes the mean squared error.

$$TE_i = E[\exp(-\mu_i) | \varepsilon_i] = [\Phi(\frac{\mu_i^*}{\sigma_*}) / \Phi(\frac{\mu_i^*}{\sigma_*})] \exp\{\frac{\sigma_*^2}{2} - \mu_i^*\} \quad (5)$$

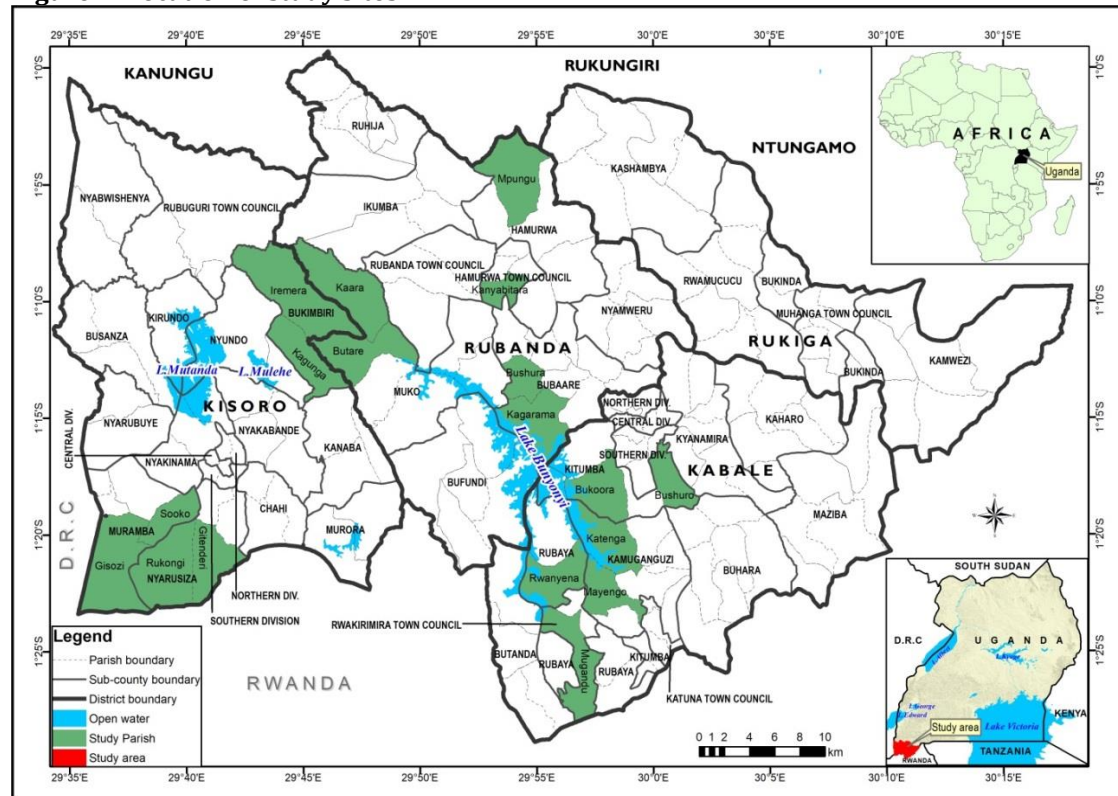
Where $\mu_i^* = -\varepsilon\sigma_\mu^2/\sigma^2 = -\varepsilon\gamma$, $\sigma_*^2 = \sigma_v^2\sigma_\mu^2/\sigma^2 = \sigma^2 \frac{\sigma_\mu^2(\sigma^2 - \sigma_\mu^2)}{\sigma^2\sigma^2} = \sigma^2\gamma(1 - \gamma)$ and $\Phi(x)$ is the pdf of the standard normal variable evaluated at x , $\gamma = \sigma_\mu^2/\sigma^2$ is the fraction of the variance of the inefficiency to total variance (σ^2) and σ_v^2 is the variance parameter that denotes deviation from the frontier due to noise. Thus the farm-specific technical efficiency (TE) can be defined as the ratio of the observed output (y_i) to the corresponding frontier output (y_i^*), conditional on the levels of inputs used by the farm (Battese & Coelli, 1995). Thus the technical efficiency of farm i in the context of the stochastic frontier production function is given as:

$$TE_i = \frac{Y_i}{Y_i^*} = \frac{E(y_i | \mu_i, x_i)}{E(y_i | \mu_i = 0, x_i)} = E[\exp(-\mu_i) | \varepsilon_i] \quad (6)$$

Where Y_i is the observed output and Y_i^* is the frontier output, v_i is the standard error term while μ_i is the measure of the efficiency that follows a truncated normal distribution such that $0 \leq TE \leq 1$. Thus if seed potato producers achieve their maximum output, then they would be technically efficient and this means that $\mu_i = 0$.

Study Area and Data: The data used in the study were collected from the districts of Kabale, Kisoro, Rubanda that constitute part of south western highland agro-ecological zone (SWHAEZ). The SWHAEZ located in south western Uganda has predominantly high altitude ranging from 1200 to 2350 meters above sea level. The zone receives bimodal rainfall pattern ranging from 1000 – 1500 mm per annum and temperature range is 10 – 30°C (Kashaija & Wagoire, 2008). The surveyed three (3) districts of SWHAEZ have been selected because they account for about 50 percent of potato production in Uganda (UBOS, 2017a).

Figure 1: Location of study sites



Sample selection and sampling procedure: Multi-stage sampling technique was used to select the study sites and specific farmers within to participate in the study. In the first stage, purposive selection of three (3)

districts and three (3) sub-counties in south western highland agro-ecological zone (SWHAEZ) was done on the basis of concentration of potato production. In the selection of study districts and sub-counties, preference was given to areas of highest concentration of potato production. Information about the concentration of potato production of the districts and sub-counties was obtained from the respective district's production departments. The second stage involved purposive selection of two (2) parishes from each of the potato producing sub-counties. Selection of the parishes was also based on potato production with preference being given to the highest potato producing parish in each sub-county. The third and final stage involved generating a sampling frame for seed potato producers from which a proportionate random sampling was used to draw the final sample for the study. The sampling frame included all names of seed potato producers in all 18 selected parishes. The names of the seed potato producers in each parish were generated through consultations with the sub-county agricultural officer, the local government parish council chairpersons and parish farmers' fora chairperson for the selected parishes.

Through this procedure the sampling frame generated comprised 411 names of seed potato producers (Table 1). This target population was identified and selected based on intensity of seed potato production activities in the respective parishes. In order to ensure representativeness of the sample, the researcher randomly selected at least 75 percent of seed potato producers from each parish and this gave rise to the total sample of 288 using the formula developed by Cochran (1977) in equation (7). Where s = required sample size, Z^2 = is a constant value of 3.841 (the square of the Z-value of 1.96 for 95 percent confidence level), p = estimated proportion of the population of 0.75 (i. e 75 percent of the seed potato producers), $q = 1-p$, e = desired level of precision (0.05). The calculated sample size of 288 was increased by 10 percent to cater for non-responses making a total of 318 seed potato producers (Table 1).

$$s = \frac{Z^2 pq}{e^2} \quad (7)$$

Table 1: Number of seed potato producers selected from each parish

Districts	Sub counties	Parishes	Total seed producers	Sampled seed producers
Kisoro	Bukimbiri	Kagunga	30	23
		Iremera	31	24
	Nyarusiza	Gitenderi	24	18
		Rukongi	6	5
	Muramba	Gisozi	12	9
		Sooko	12	9
Kabale	Kamuganguzi	Katenga	52	41
		Mayengo	29	22
	Rubaya	Rwanyena	26	20
		Mugandu	33	25
	Kitumba	Bukoora	17	13
		Bushuro	10	8
Rubanda	Bubaare	Kagarama	18	14
		Bushura	20	15
	Muko	Kaara	5	4
		Butare	29	22
	Hamurwa	Mpungu	28	21
		Kanyabitara	29	25
Total			411	318

Data Collection and Analysis: Data were collected on output (seed potato produced), input use, socio-economic, farm specific and institutional variables for two most recent cropping seasons (season 1 and 2).

The data was collected using a semi-structured questionnaire that was pre-tested on 10 farmers from Nyamweru sub-county in Rubanda district) which was later on excluded in the study sites to avoid contamination of the sample. The results of the pre-test helped to further fine-tune the questionnaire in terms of logical flow of the interview. Data was then analyzed with Frontier version 4.1 (Coelli, 1996).

4. Results and Discussion

Farmers Socio-Economic and Demographic Characteristics: Informal and formal seed potato producers were characterized and compared in terms of their sex, producers' education level, household size, off-farm income sources, experience in seed potato production, seasonal preference, scale of seed potato production, seed potato variety diversity and distance to seed potato source (Table 2).

Table 2: Summary statistics for socio-economic and farm specific variables in the study area

Variable	Units	Informal seed producer Percent (%)	Formal seed producer Percent (%)	Chisq. (χ^2)	P-value	
Sex of the producer	1=Male, 0=female	92.2	86.9	3.733*	0.052	
Producers' education	1 $\geq$ 12yrs school, 0 otherwise	63.7	63.5	0.002	0.962	
Off-farm income source	1=had access, 0= never	53.3	52.6	0.024	0.876	
Scale of seed production	1= $\leq$ 1.5 acres, 0 = >1.5 acres	78.8	78.8	0.001	0.985	
Seed variety diversity	1= >1 variety, 0=1 variety	31.3	37.2	1.741	0.187	
Extension services	1=had access, 0= never	24.9	31.4	2.372	0.124	
Seasonal preference	1=season 2, 0 = season 1	50.1	49.6	0.009	0.923	
		Mean	Std. Dev	Mean	Std. Dev	P-value
Household size	Persons	6.00	2.00	6.00	3.00	0.241
Experience	years	9.00	5.00	8.00	5.00	0.179
Distance to seed source	Kilometers	3.70	10.78	3.23	7.11	0.630

Note: *, ** and *** show significance at 10, 5 and 1% level, respectively

Results in Table 2 show that potato seed production in SWHAEZ is dominated by male farmers. Specifically, 92 percent and 87 percent of the informal and formal seed producers respectively were males. The results indicate that there were significantly more males among the informal seed potato producers than in the formal seed potato producers ($p=0.052$). These results generally indicate that males dominate both formal and informal seed potato systems. This could be attributed to males' better access to and control over resources like land and finances that are needed for seed potato production. With regard to seed producers' education, about 64 percent of both formal and informal seed potato producers had completed at least ordinary level of education (12 or more years of schooling). The results further indicate that there was no statistically significant difference between formal and informal seed potato production in terms of years of schooling (Table 2). Table 2 further shows that less than 50 percent of both categories of seed potato producers had one or more off farm income sources. This indicates that the majority of both categories of seed potato producers solely depended on agricultural production for income. About 79 percent of both informal and formal seed potato producers were operating on seed potato farms of 1.5 acres or less. This

shows that the most of formal and informal seed potato producers were operating on a small-scale as indicted by the size of land allocated to seed potato production. This implies that efforts to increase supply of seed potato in SWHAEZ need to focus on increasing productivity in a context of limited arable land.

About 31 percent and 37 percent of the informal and formal seed potato producers respectively produced more than one variety of seed potatoes. This limited seed potato variety diversity among both categories of farmers reduces farmers' capacity to meet the diverse needs of potato farmers in terms of varieties. More still, about 25 and 31 percent of the informal and formal seed producers had received extension services from the extension agent. However, there were no significant differences among informal and formal seed potato producers with regard to access to extension services. In terms of household size, experience in seed potato production and distance to seed potato source, there were no significant differences between the informal and formal seed potato producers. Both categories of seed potato producers had an average of six members in their households. This is slightly higher than the national average of about five (UBOS, 2017b). With regard to experience in seed potato production, the informal and formal seed potato producers had nine and eight years respectively. Both categories of seed potato producers were located between 3-4 kilometers from their sources of basic seed potato. This shows that the seed potato producers had access to the potato seed sources (whether formal or informal).

Agro-Input Use Among Formal and Informal Seed Potato Producers: Seed potato production requires different inputs in varying quantities. An independent samples t-test was used to establish whether significant differences existed between the formal and informal seed potato producers in terms of seed potato output and quantities of input used per acre in the production of seed potato (Table 3).

Table 3: Descriptive statistics for farm output and inputs of seed potato production in the study area

Input	Units	Informal producer Mean	seed Std. Dev	Formal producer Mean	seed Std. Dev	p-value
Yield	Kgs/acre	4293	4372	4957	5378	0.135
Labor	Person days/acre	142.32	88.33	148.48	87.74	0.469
Seed Planted	Kgs/acre	874.72	773.23	846.02	802.18	0.703
Fertilizer	Kgs/acre	81.34	101.79	66.68	80.14	0.120
Pesticide	Litres/acre	5.30	5.44	4.41	3.93	0.075

Results in Table 3 indicate that there are no statistically significant differences between formal and informal seed potato producers in terms of seed potato output. Both categories of farmers obtained slightly more than 4,000 kilograms per acre of seed potato output which is slightly more than half of the 8,000 kilograms per acre (20,000 kilograms per hectare) that is obtainable at research station (Byarugaba et al., 2017). With regard to quantities of inputs used in seed potato production, Table 3 further show that there were no significant differences between the two categories of seed potato producers in terms of quantities of inputs used except for quantities of pesticide. Specifically, the informal seed potato producers used significantly higher amounts of pesticides than their formal counterparts ($p=0.075$). The higher amounts of pesticides used by informal seed potato producers could be attributed to the fact that the seed they plant is normally produced from their last season's harvests or from local markets which may already be diseased and or less resistant to pests and diseases and thus the need for more spraying. The results in Table 3 indicate high standard deviations which depict existence of wide farmer to farmer disparities in terms of seed potato output and quantities of inputs per acre. The results however further indicate that the both categories of seed potato producers use low amounts of inputs compared to what is recommended for optimal productivity. For instance, with regard to quantity of fertilizer applied per acre, both categories of seed potato producers were applying 60-80 kilograms per acre compared to recommended 120 kilograms per acre (Balde et al., 2013; Emmanuel et al., 2016). Application of inputs in rates that are lower than the recommended compromises the productivity as well the profitability.

Choice of Appropriate Functional Form: In order to ensure that inefficiency effects are stochastic, a generalized likelihood ratio (LR) test was conducted to test for presence of inefficiency effects. The null hypothesis was that inefficiency effects are not present ($H_0: \gamma = 0$) against the alternative hypothesis that

inefficiency effects are present ($H_1: \gamma \neq 0$). For all the two models (informal and formal seed potato producers), the null hypothesis of no inefficiency effects was rejected at 5 percent level (Table 4). This implied the existence of inefficiency effects on seed potato farms and hence the traditional OLS was not an adequate representation of the sample data. Furthermore, the second hypothesis which proposed that the explanatory variables in the inefficiency model have no effect was rejected at 5 percent level suggesting that the 10 variables included in the model for both informal and formal seed potato producers significantly contributed to the inefficiency effect in the model. The third hypothesis was set out to test whether Cobb-Douglas production was appropriate specification for the data. Based on the likelihood ratio test, the hypothesis of Cobb-Douglas was rejected at 5 percent level for informal seed potato producers and failed to reject the null hypothesis for formal seed potato producers (Table 4).

Table 4: Tests of hypotheses for parameters of the translogarithmic stochastic frontier production function and technical inefficiency model

Null Hypothesis	Log likelihood	LR Statistic	Critical Value	Decision
$H_0: \gamma = 0$			Mixed $\chi^2_{10,0.05}$	
Informal seed producers	-509.934	24.05	17.670	Reject H_0
Formal seed producers	-124.970	27.78	17.760	Reject H_0
$H_0: \delta_0 = \delta_1 = \dots = \delta_{10} = 0$			$\chi^2_{10,0.05}$	
Informal seed producers	-506.489	25.47	18.31	Reject H_0
Formal seed producers	-106.521	60.93	18.31	Reject H_0
$H_0: d_{ik} = d_{ki} = f_{ik} = f_{ki} = 0; i \leq k = 1, \dots, 10$			$\chi^2_{10,0.05}$	
Informal seed producers	-519.222	20.35	18.31	Reject H_0
Formal seed producers	-136.984	17.79	18.31	Fail to reject H_0

Note: Mixed $\chi^2_{10,0.05}$ values were taken from Kodde and Palm (1986, pp. 1246)

Empirical estimates of the Stochastic Frontier Production and Technical inefficiency: In order to establish the factors that account for the inefficiency, a technical inefficiency model was simultaneously run with the stochastic production frontier using Frontier 4.1 program. A truncated normal distribution of the inefficiency term (μ_i) was assumed and estimated. The overall technical inefficiency effects are evaluated in terms of parameters associated with δ and γ (Table 5). The estimates of the variance parameters δ^2 and γ for both informal and formal seed producers were significantly different from zero at 1 and 10 percent levels. Specifically, the values of variance parameter gamma (γ) of 0.64 and 0.36 for both informal and formal seed potato producers suggest that inefficiency effects are significant in determining the levels and variations of seed potato produced. This further implies that 64 and 36 percent of the variation in seed potato produced by informal and formal seed potato producers respectively is due to the differences in technical efficiency rather than random variability. The results further depict that the systemic variations that were unexplained by the production function are the dominant source of errors (Musaba & Bwacha, 2014). Table 5 reports the results of the frontier model (top panel) and the inefficiency model (bottom panel) for non-neutral specifications for both informal and formal seed potato producers. Before the estimation, all variables in the top panel were normalized by their respective sample means which makes it possible to interpret the first order coefficient estimates of the translog model directly as partial elasticities for the individual inputs (Coelli et al., 2005; Ogundari, 2013; Kahiluoto & Kaseva, 2016; Ahmadzai, 2017; Holtkamp & Brümmer, 2017).

Specifically, with the translog estimation for informal seed producers, quantity of seed planted was found to be significant at 1 percent with elasticity of 0.506, followed by labor and pesticide with elasticities of 0.388 and 0.092 respectively. This means that a unit increase in the amounts of seed, labor and pesticide used per acre respectively resulted into a 0.51 percent, 0.39 percent and 0.10 percent increase in the quantity of seed potato produced per acre. Regarding the interactions, amount of seed and fertilizer used per acre, labor and amount of fertilizer used per acre as well as labor and pesticide per acre had a positive influence on seed potato produced though not statistically significant. This suggests that if seed producers used more of these inputs it would lead to higher seed potato yields. This result further indicates the productivity enhancing

potential of these inputs when they are used jointly. With Cobb-Douglas estimation for formal seed producers, overall all inputs are inelastic. This means that a unit increase in the number of man days results into a 0.53 percent increase in seed potato output per acre. Similarly, unit increases in the amounts of seed potato used per acre also result into a 0.45 percent increase in seed potato output per acre (Table 5).

Table 5: Estimated stochastic production frontier and technical inefficiency models for seed potato producers in SWHAEZ

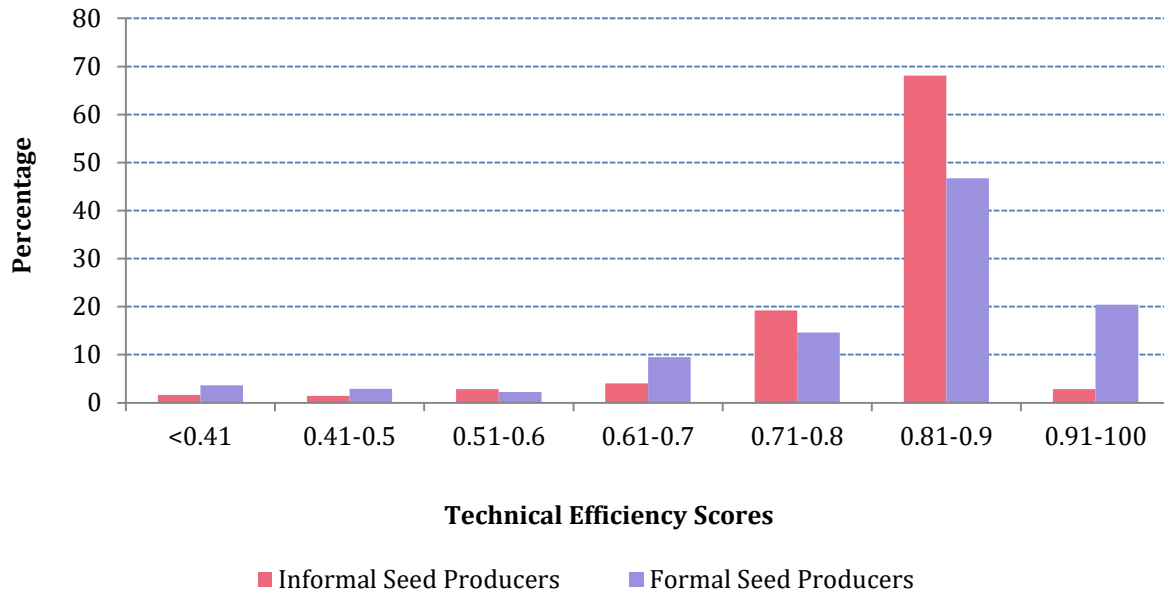
Variables	Parameters	Informal Seed Producers (n=499)		Formal Seed Producers (n=137)	
		Coeff	Std. error	Coeff	Std. error
Production Frontier		Translog		Cobb-Douglas	
Constant	β_0	0.079	0.081	0.188	0.159
InLabor(X_1)	β_1	0.388***	0.071	0.530***	0.123
InSeed(X_2)	β_2	0.506***	0.062	0.451***	0.065
InFertiliser(X_3)	β_3	0.001	0.060	0.035	0.087
InPesticide(X_4)	β_4	0.092**	0.046	0.026	0.087
$\frac{1}{2} (\ln X_1)^2$	d_1	0.031	0.168		
$\frac{1}{2} (\ln X_2)^2$	d_2	0.147**	0.066		
$\frac{1}{2} (\ln X_3)^2$	d_3	-0.132**	0.070		
$\frac{1}{2} (\ln X_4)^2$	d_4	-0.037	0.070		
$\ln(X_1) \times \ln(X_2)$	f_1	-0.033	0.103		
$\ln(X_1) \times \ln(X_3)$	f_2	0.037	0.091		
$\ln(X_1) \times \ln(X_4)$	f_3	0.069	0.078		
$\ln(X_2) \times \ln(X_3)$	f_4	0.007	0.069		
$\ln(X_2) \times \ln(X_4)$	f_5	-0.073	0.061		
$\ln(X_3) \times \ln(X_4)$	f_6	-0.019	0.063		
Inefficiency Model					
Constant	δ_0	0.358	0.531	-0.768	0.898
Sex	δ_1	-1.823**	0.899	-0.841	0.752
Education	δ_2	1.243**	0.460	-1.139**	0.491
Experience	δ_3	-0.034	0.023	-0.039	0.036
Household size	δ_4	0.018	0.039	0.348***	0.094
Off-farm income	δ_5	-0.916**	0.452	-0.077	0.401
Variety diversity	δ_6	1.292**	0.672	-0.347	0.512
Extension services	δ_7	-0.605**	0.357	-1.191	0.745
Scale of production	δ_8	-2.103**	0.972	0.441	0.666
Seed distance	δ_9	0.191	0.012	-0.027	0.030
Seasonal preference	δ_{10}	-1.439**	0.719	0.096	0.389
Variance parameters					
Sigma squared	σ^2	1.107***	0.189	0.498***	0.161
Gamma $\gamma = \sigma_\mu^2 / \sigma^2$	γ	0.635***	0.082	0.357*	0.224
LR test of $\delta_\mu = 0$	χ^2	24.05***		27.77***	

Note: *, ** and *** show significance at 10, 5 and 1% level, respectively

These findings regarding elasticities for different inputs for informal and formal seed potato producers suggest that seed and labor are the core inputs for improved productivity in seed potato production. These results are in agreement with those of Ologbon et al. (2012) study in Nigeria and Kidane et al. (2013) among small scale farmers in Tanzania. The returns to scale (RTS) parameter obtained by summing all the input elasticities was about 0.987 and 1.041 for informal and formal seed potato producers respectively (Table 5). These returns to scale (RTS) estimates are approximately equal to 1, suggesting that seed potato production

in SWHAEZ exhibits constant returns to scale. This implies that an increase in all inputs available to the seed potato producers leads to an equal proportionate increase in seed potato output. This finding further emphasizes the need for seed potato producers to use the recommended rates of the inputs in order to optimize production. However, elasticities and RTS do not offer clear insights about the technical efficiency of informal and formal seed potato producers which relates to how the output they obtain compares with the maximum possible within their circumstances. Therefore, the next section focused on estimation of level technical efficiency of formal and the informal seed potato producers.

Figure 2: Technical efficiency scores for informal and formal seed potato producers



Results in Figure 2 show that about 94 percent of the informal seed producers had a technical efficiency above 60 percent while about 91 percent of the formal seed potato producers had an efficiency score over 60 percent. Similarly, about 6.5 and 3.0 percent of the formal and informal seed potato producers respectively were operating below 50 percent of their efficiency levels. Results further indicate that farmers who produced seed potato from informal sources slightly had a higher technical efficiency than those who produced seed potato from formal sources. Specifically, informal seed producers had an average technical efficiency of 81.4 percent while formal seed producers had 80.4 percent (Table 7). These results compare well with Musaba and Bwacha (2014) study among small scale maize producers in Zambia but are comparatively higher than those of Prasanna and Lakmali (2016) study among smallholder potato producers in Sri Lanka. Although the mean technical efficiency for the informal seed producers was higher than their formal counterparts, there was no significant difference at 5 percent level (Table 6). This result concurs with that of another study in Nigeria conducted by Ogundele and Okoruwa (2006) who found out that there were no differences in technical efficiencies between farmers planting traditional rice varieties and those planting improved rice varieties. The similarity of the informal and formal seed potato producers in terms of technical efficiency could be attributed to the fact that both of categories of farmers are smallholder farmers producing seed potato in the same context (agro-ecological conditions) and using limited amounts of productivity enhancing technologies (Table 3).

Table 6: Two sample t-test for mean difference in technical efficiency between informal and formal seed potato producers

Null hypothesis	Pr(T>t)	T-statistic	Decision
H ₀ : $\mu_1 = \mu_2 = 0$	0.384	0.872	Fail to reject H ₀

Estimated Seed Potato Yield Loss Due to Inefficiency and Potential Output Among Seed Producers: In order to measure the yield loss due to inefficiency for the two categories of seed potato producers, both the actual seed produced and the potential seed production were computed using equation (6). According to Mor and Sharma (2012), the loss due to inefficiency is the difference between potential seed production and the actual seed potato produced. Table 7 provides an account of the potential as well as the yield loss in seed potato production in SWHAEZ.

Table 7: Estimates of potential seed potato production and yield loss among seed potato producers.

Variables	Informal seed producers			Formal seed producers		
	Mean	Min	Max	Mean	Min	Max
Observed seed potato yield (kg/acre)	4,293	320	40,000	4,957	400	40,000
Technical efficiency estimates	0.814	0.225	0.920	0.804	0.118	0.953
Computed Yield Frontier (kg/acre)	5,274	1,422	43,478	6,165	3,390	41,973
Computed Yield loss (kg/acre)	981	1,102	3,478	1,208	2,990	1,973

The mean potential yield was computed to be 5,274 and 6,165 kg/acre for the informal and formal seed potato producers respectively. The potential yield is computed based on the assumption that the average seed producer had an efficiency level of 100 percent without introducing any other improved inputs and management practices. Therefore, on average each informal and formal seed potato producer lost 981 and 1,208 kg/acre of seed potato tubers respectively due to technical inefficiency. This translates into an income loss of 1,373, 400 and 1,691, 200 Uganda shillings (UGX) per acre per season for informal and formal seed potato producers at the current average price of seed potato of 1, 400 UGX per kg. This is in agreement with study findings by Balde et al. (2014) among rice producers in Guinean Coastal area. These results suggest that seed potato productivity can be increased by at least 1,200 and 980 kilograms per acre for the formal and informal seed potato producers respectively without introducing any other improved inputs and management practices. This however requires proper identification and tackling of the factors that influence technical efficiency in seed potato production.

Sources of inefficiency: In the interpretation of the results in inefficiency model (bottom panel) Table 5, positive signs of the coefficients indicate a decrease in technical efficiency since technical inefficiency is the dependent variable. The reverse is true for negative signs of the coefficients. Results in Table 5, indicate that informal seed potato producers' technical efficiency was also positively influenced by the sex of the seed potato producer being male. A male informal seed potato producer was found to be 1.8 times more technically efficient than his female counterpart. This could be due to the fact that male farmers have more access and control over the productive resources such as household land, labor and finance compared to the female seed potato producers. Similar findings regarding males' higher technical efficiency were also reported among bean farmers in North and South Kivu (Ross et al., 2009) and among rice farms in Central Thailand (Taraka et al., 2012). These findings generally suggest a need to address the gender differences between males and females especially with regard to access and control over resources and services in order to enhance technical efficiency.

Regarding off-farm income, having one or more off-farm income sources increased the farmers' technical efficiency by about 92 percent. Off-farm income sources enhance technical efficiency possibly through enabling farmers to acquire the external inputs to improve the productivity of their seed potato enterprises. This concurs with the findings of Abebe (2014) in Ethiopia. However this finding contradicts Onyenekwe and Okorji (2015) who found out that off-farm work negatively affected technical efficiency of rice farmers in Nigeria. This mixed influence of off-farm income sources on farmers' technical efficiency calls for careful analysis of off-farm income sources to optimize synergies and minimize competition between such income sources and farming activities. Results in Table 5 further indicate that the technical efficiency of informal seed potato producers is inversely related to their scale of production. Specifically, farmers engaged in seed potato production on a small scale (up to 1.5 acres of land under seed potato production) were about 2.1 times more technically efficient than those having seed potato farms above 1.5 acres. The inverse relationship between scale of seed potato production and technical efficiency may be attributed to the capital intensive nature of quality seed potato production.

Seed potato production is capital intensive in that it requires strict adherence to various management practices such as; application of fertilizers, use of clean basic seed, proper spacing, timely planting, weeding, disease and pest management. Our results concur with those of Rahman et al. (2012) whose study on rice farmers in Bangladesh found out that small farms attained higher technical efficiency than medium and larger sized farms. Additionally, technical efficiency of an informal seed producer who had access to extension services was 61 percent more than that one who did not have any access to extension services and this result was statistically significant at 5 percent. This positive influence of access to extension services on technical efficiency is attributed to farmers' access to technical support in terms of knowledge and other production related informational materials about the use of inputs. Similar results were also reported among smallholder bean and maize farmers by Sibiko et al. (2013) and Mango et al. (2015) in Eastern Uganda and Zimbabwe respectively. In terms of seasonal preference, informal seed potato producers in season 2 were about 1.4 times more technically efficient compared to season 1 and this was statistically significant at 10 percent. This is attributed to differences between the two seasons in terms of climatic conditions that informs farmers' investment decisions in seed potato production. Season 2 is associated with long rains while season 1 (March to June) has short rains.

As a result, informal seed potato producers invest more in seed potato production in season 2 (September to December) so as to take advantage of the favorable rainfall conditions (Gildemacher, 2012; Kagoda et al., 2013). Results further show that for the informal seed potato producers, level of education had a negative influence on their technical efficiency. Specifically, the technical efficiency of an informal seed potato producer who had completed at least 12 years of formal education was about 1.2 times lower than that of his/her counterpart that had less than 12 years of formal education. This is in agreement with the study findings by Okoye et al. (2016) in central Madagascar and Srisompun and Isvilanonda (2012) in Thailand who found out that formal education had an insignificant effect on technical efficiency improvements. These studies suggest that more educated farmers tend to work part-time on their farms because of other livelihood options. However, these findings are inconsistent with those of Weir and Knight (2000) in rural Ethiopia, and Baruwa and Oke (2012) in Ondo state of Nigeria. Unlike for informal seed potato producers, the technical efficiency of formal seed producers was enhanced by their level of education. Results indicate that the technical efficiency of formal seed potato producers who had at least 12 years of schooling was 1.1 times more than that of their counterparts with less than 12 years of schooling.

The reason for increase in technical efficiency due to education level is partly attributed to the fact that farmers who have more formal education are able to access, analyze and properly use various types of technical information. These findings are consistent with those of Weir and Knight (2000) and Baruwa and Oke (2012) who found out that education enhances the ability of the farmers to acquire and make judicious use of information about production and management of inputs. The differential influence of education on the technical efficiency among informal and formal seed potato producers could be attributed to the differences between these two categories of farmers in terms of access to technical information on seed potato production. More still, results in Table 5 show that informal seed producers who had grown two or more seed potato varieties were 1.3 times less technically efficient than those that had grown one variety and the result was statistically significant at 5 percent. This negative influence of seed potato variety diversity on technical efficiency is attributed to the fact that growing many varieties compromises adherence to various management practices such as application of fertilizers and spraying regime specifications among others. Similar findings were reported by Ebong et al. (2009) in their study among oil palm producers in Akwa Ibom State, Nigeria.

On the contrary, Ahmadzai (2017) reported that crop diversity had a positive influence on technical efficiency among crop farmers in Afghanistan. Nonetheless, studies examining crop diversification and technical efficiency at farm level have mixed conclusions. This could be attributed to contextual differences such as resources available and agricultural practices used which vary from farm to farm. Regarding the influence of household size on technical efficiency, results in Table 5 show that household size had a negative influence on technical efficiency among formal seed producers. The coefficient corresponding to household size indicated that when household size increased by one member, technical efficiency reduced by about 35 percent. This implies that formal seed potato producers with large household sizes were associated with a reduced technical efficiency in seed potato production and this result was statistically significant at 1 percent level.

Similar findings are reported by Danso-Abbeam et al. (2012) in their study in Bekwai district in Ghana and inconsistent with the findings of Mango et al. (2015) among smallholder maize producers in Zimbabwe.

5. Conclusion and Policy Implications

The findings and discussions above show that there is a considerable yield and income loss between actual and potential seed potato production due to inefficiency factors. Although informal potato seed producers have a mean technical efficiency greater than the formal ones, there was no significant difference statistically, and both formal and informal seed potato producers still fall below their full potential seed potato production. This signals presence of barriers to maximization of technical efficiency and productivity growth for both categories of seed potato producers. The findings revealed that seed and labor have a positive and significant effect on seed potato output for both categories of seed potato producers. The study further identified that off-farm income source, small scale of production, access to extension services, seasonal variation and farmers' sex being male were important variables for increased technical efficiency among informal seed potato producers while producers' higher education level was a key factor for enhanced technical efficiency among the formal seed potato producers. However, higher education levels and higher variety diversity compromised technical efficiency of informal seed potato producers and household size for the formal counterparts. Based on the level and analysis of the sources of technical (in) efficiency, the study suggests a number of policy implications.

First, seed potato producers have the potential of improving their performance, on average in terms of input intensification through adoption of productivity enhancing technologies and practices such as quality seed, fertilizers and pesticides so as to optimize the productivity of the available limited land. Secondly, there is need for increased investment in the development and promotion of high yielding farmer preferred varieties that are more customized to biophysical and socio-economic context of farmers. This might also require research and extension to intensively empower seed potato producers to increase their knowledge through various on-farm and on-station demonstrations as well as supporting farmers to access the varieties. The study further advocates for the need to strengthen research and extension linkages to enable smallholder seed potato producers obtain regular customized technical knowledge and other production related informational materials about the use of inputs and the associated management practices. With strong research-extension interface, seed potato producers can be supported to implement their production and productivity decisions in time and this would boost their current levels of efficiency. Lastly, there is need to identify and address gender differences in terms of engagement in seed potato production targeting more females. Therefore, gender responsive programs that recognize women participation as seed potato producers need to be explored as part of the efforts to reduce inefficiency levels in the study area.

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The Impact of Short-Term Interest Rates on Bank Funding Costs

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Abstract: This study examines the impact of short-term interest rates on bank funding costs in South Africa. Literature suggests that rising short-term interest rates may cause similar financial crises experienced in 2007/08 (Bonner & Eijffinger, 2013; Turner, 2013; Saraç & Karagoz, 2016). It is vital to study short-term interest rates and bank funding costs in order to achieve financial stability. The study uses quarterly time series data for the period 2000 to 2014. To estimate the regression, the study uses the Vector Autoregressive model (VAR) and the data is found stationary at first difference. The 3 months Johannesburg Interbank Agreed Rate (JIBAR) is used as a proxy for bank funding costs whilst the prime overdraft rate, 10-year government bonds and capital ratio are used as proxies for short-term, long-term interest rates and bank capital, respectively. The results show a positive and significant long-term relationship between the variables. The results for prime overdraft rate, 10-year government bonds and capital ratio conform to the apriori expectations. For GDP growth the results show a positive relationship which does not conform to apriori expectations. Using the variance decomposition, the study illustrates fluctuations in JIBAR was due to changes in its value and fluctuations in the prime rate are also due to JIBAR. The study presents policy options whereby regulatory efforts need to strengthen the capital buffers of banks to reduce bank funding costs and therefore reduce short-term interest rates imposed on borrowers.

Keywords: *Bank funding costs, short-term interest rates, long-term interest rates*

1. Introduction

Banks are required to fund their business activities. Funding is done by lending at interest rates that are higher than the cost of the money they lend. Banks have a wide variety of funding such as deposits, capital (equity) and debt issuance (short term and long term debts) (Wong, 2012). The costs of funding have a significant impact on the economy because these costs are necessary to the transmission mechanism of monetary policy and growth (Beau et al., 2014). Bank funding costs is important for monetary policy stability as it affects the outlook for growth and inflation. This was not noticed during the recent financial crisis as the bank's funding costs increased relative to risk-free interest rates and implied an upward pressure on lending rates. Bank funding costs are also important for financial stability. When funding costs increase, the bank's profitability will decrease. This occurs when the bank chooses to absorb higher costs and leaving its loans unchanged. When funding costs increase, banks may pass increasing costs to borrowers by increasing rates charged on new loans. When the cost of credit is high, the overall economic activity will be negatively affected, this causes higher costs of servicing debt and increases the number of default payments. This will weigh down the bank's profitability because the credit losses faced by the banks.

When the bank's profitability decreases, its capital may be eroded and create risks to the financial stability and solvency. The bank funding costs are derived from money market yield curves; and via these yield curves the repo rate has an indirect effect on lending rates of banks. Alternatively lending rates are determined by the cost of funding, creditworthiness or credit risk profile of the client (du Plooy et al., 2009). The key drivers of bank funding costs are deposit rates and wholesale funding rates and deposits being the largest source. Before the 2007/08 global financial crisis, wholesale funding was the largest source of bank funding, contributing approximately half of the total funding in the five years leading up to the financial crisis (Wong, 2012). Wholesale funding may be short term or long term. Short-term funding costs include one month or three months Treasury bill rates and interbank rates. Interbank lending is markets where banks make loans to each other. Most of these loans have maturities of one week or less and most of them being overnight. The 2007/08 global financial crisis was caused by low transaction volumes in the interbank markets (Temizsoy et al., 2014).

In order for a bank to manage panics by its clients, it must liquid assets in hand such as cash, and in a case where the bank does not have or does not hold these liquid assets it will have to borrow from the interbank markets (Bonner & Eijffinger, 2013). The bank borrowing a short term loan or asset from another bank will be charged the interbank rate. These rates may depend on the money available in the market, existing rates or on the agreement between the institutions. A rise in these rates may cause financial crisis similar to that experienced in 2007 (Bonner & Eijffinger, 2013; Turner, 2013; Saraç & Karagöz, 2016, Makatjane et al., 2018). The short term interest rates are very important for financial stability. It is important to study how they affect the cost of funding for banks so that we can avoid financial instabilities. The principal objective of this study is to assess the impact of short term interest rates on bank funding costs. The specific objectives include (1) Examining trends in short term interest rates and bank funding costs, (2) econometrically examine the impact of short term interest rates on bank funding costs; and (3) based on the empirical results, articulate policy implications of studies related to this one.

2. Literature Review

Interest Rate Theory: Post Keynesian's believed that the neo classical economists misinterpreted Keynes' views. Although they have maintained the ideologies of Keynes (1936), they differed in the sense that money supply is an exogenous variable. Rogers (1986) believed that Post Keynesians view could be closely related to the present central banking system. The neo classical economists viewed money as an exogenous variable. They believed that interest rates are determined by market demand and supply in the general equilibrium neo classical system. According to Calitz et al. (1999), post Keynesians opposed the view of neo classical economists as they maintained that money supply is endogenous and interest rates are exogenous variables. They argue that interest rates are exogenous variables because the neo classical general equilibrium does not explain interest rates. Moore (1988) maintains that short term interest rates are exogenously determined by the central bank to achieve its policy goals. Central banks can thus establish interest rates on all bank wholesale short term securities, which affect the general market short term interest rates.

The Loanable Funds Theory: Robertson and Ohlin (1930) developed the loanable funds theory, which is an extension of the classical theory, which maintains that savings and investments are the determinants of bank credit. The loanable funds theory is used in determining long term interest rates and is also used to check the causes of interest rates volatility by looking at the demand for and supply of credit. The neoclassical theory maintains that households use their income for either consumption or savings. Savings mean that an individual will defer his/her consumption and this for either option the individual choose there will be an opportunity cost. The interest rate then will be the opportunity cost for consuming. When interest rates are high then individuals will be willing to save because they will be getting high return. This means that supply of credit will increase when interest rates increase. According to this theory the savings function is as follows: $S = S(i)$; where S represent savings and i shows the interest rates. In this theory the demand for loanable funds is represented by investments, thus the investment is a negative function of interest rates. This is because the interest rate in this case will be representing the cost of funding. When interest rates are low then it will be more profitable to invest, so investors will be willing to borrow and invest these borrowed funds in a more profitable project. The investment function is written as: $I = I(i)$; where I show the investments and i show the interest rates. This theory can be used to explain the impact of interest rates of the bank funding costs. When interest rates increase then depositors will receive high returns meaning that the bank is incurring more cost. This shows a positive relationship between bank funding and the cost of funding for banks. So when the monetary authorities increase interest rates the bank funding cost will increase.

Bank Funding Costs, Monetary Stability and Financial Stability: The price that banks pay as a way to replace their liabilities is bank funding costs. To set the interest rate offered to its clients, the bank will need to add its cost of funding and compensation for risk associated with default payment from households or firms, add any operating cost experienced by the bank and add any mark-up over costs (Button et al., 2010). This is an indication that banks manage their balance sheet like any other business to maintain its profits and that will help them to determine their costs of funding which enables them to set interest rate to charge for loans. A bank's profitability is the difference between interest rates and cost of funding. The notion of Net Interest Margin refers to the bank's profitability. According to Beau et al. (2014) the net interest margin

(bank's profitability) declines when cost of funding increase holding interest rates constant. Rising funding costs in relation to cash rates is a reflection of increased competition for term deposits and a high spread of wholesale debt which indicates a rising concern by investors about the banking industry (Deans & Stewart, 2012).

To view the relationship between bank funding costs, profitability and interest rates, let's consider a situation where the bank has experienced a spike in bank funding costs by making a simple example. Let's assume before the shock the cost of funding paid was 4% annually and that this interest rate represents the cost of funding i.e. marginal and average cost of funding. The bank also charges a 6% interest rate to its clients for loans. The shock in funding costs results in the bank increasing interest rates sharply from 4% to 9%. The bank will respond by either absorbing the costs therefore reduce their profits or they might maintain their profits and pass the costs to their clients by increasing the prime interest rates. When the bank absorbs the costs it means that it will continue to charge 6% to its clients and that will result in marginal funding to decrease profitability and thus create financial instability due to the bank's solvency declining. When the banks transfer these costs to its clients and maintain its profits say to 12% for new loans, the monetary instability will be affected as the increase in price of credit reduces aggregate output, household income and investment (Terblanche & De La Rey, 2013).

When economic activities decrease then that will mean that borrower will be unable to repay their loans and lead lower profits for banks and result in financial instability. This is what caused the recent global financial crisis. Many central banks using the inflation targeting framework have the main objective to achieve monetary stability (O' Connell, 2008). The monetary authority sets its inflation target by adjusting the repo rate. The repo rate affects short term market interest rates which also affect prime interest rate set by banks and other financial institutions and thus affects price of financial instruments. This movement in interest rates affects aggregate spending and general prices (Nyawo & van Wyk, 2018). The South African Reserve Bank 's (SARB) major objective is to maintain monetary stability and this is done by targeting inflation and the monetary policy committee is responsible for setting repo rate and other interest rates. SARB has a role to improve stability in the financial system. SARB uses micro prudential supervision which monitors the health and soundness of the financial system (Muneer et al., 2011).

Empirical Studies: A study by Raknerud and Vatne (2012) used quarterly panel set for all Norwegian banks to study the relationship between bank funding cost and interest rates. The cost of funding was estimated using 91 days Norwegian Interbank Offer Rate (NIBOR). The results showed that an increase in NIBOR led to an approximately 0.8 increase in bank's loan rate in the long run. The study found clear evidence showing pass through from the NIBOR to the loan rates. Similarly, Raknerud et al. (2011) examined the impact of bank funding costs on interest margin on Norwegian banks. The study used dynamic factor model and panel data set with quarterly accounts data. Sources of bank funding was categorized into deposit and long term wholesale funding where the cost of funding was represented by the spread of unsecured bonds issued by commercial banks and 3 months NIBOR. The findings were consistent with the view that bank's loans had a downward sloping demand curve and consumer deposit have an upward sloping supply curve. Derviz et al. (2009) examined the relationship between funding costs and lending rates. In their investigation they used the model of loan pricing by banks where they (banks) lent to risky creditors. They investigated the comparative statistic of the lending rate changes to bank funding costs, this depended on imperfect information. The results showed that bank's influence was pronounced in interest rates on loans to small and local clients that had small information. Cube et al. (2012) examined the long term relationship between lending rates and funding rates. The study used monthly data from the South African Reserve Bank for the period of 1992 to 2011. The study used the Engle-Granger two step model and error correction equation to estimate the long-term relationship between lending rates and funding rates. The results of the study showed evidence of a pass-through from lending rates to funding rate changes and it was greater when funding rates increased than when they decreased. The study concluded that longer term maturity funding costs were more volatile than short term funding costs because the premium of a term depended on expectations and economic conditions. The empirical studies show that there is a pass-through from interest rates to bank funding costs. This means that interest rates increase offsets the bank funding costs. The studies also showed that there is a positive relationship between these variables. When interest rates increase the bank funding costs also increase.

3. Methodology

Study Design: A quantitative/econometric approach is used in this study to analyse the impact of short term interest rates on bank funding costs in the case of South Africa. The study will employ the Vector Auto-Regressive (VAR) modelling technique. Empirical evidence has revealed that most studies suggest that interest rates have a positive relationship with bank funding costs.

Data collection: The study utilises annual data for the period 2000 to 2014 to analyse trends in the variables 7 years prior and after the 2007/08 recessions as well as trends after recession. This also allows for the credibility and frequency of the observations. The data used in this study was accessed from the online statistical query of the various websites. The data for the 3 months Johannesburg Interbank Agreed Rate (JIBA) rate, prime interest rates (short term interest rates) and 10-year government bonds (long term interest rates) were sourced from the South African Reserve Bank website. The data for bank capital to asset ratio and GDP growth was obtained from the World Bank website.

Model Specification: The study developed the regression model as follows:

$$FC = f(\text{intS}, \text{intL}, \text{cap}, \text{gdp}) \dots\dots\dots (1)$$

Where FC = bank funding costs (3 months JIBAR);

intS = short term interest rates;

intL = long term interest rates;

cap = capital to asset ratio; and gdp = GDP growth

The empirical model to be used in the study is estimated below:

$$FC_t = \alpha_t + \beta_1 \text{intS}_t + \beta_2 \text{intL}_t + \beta_3 \text{cap}_t + \beta_4 \text{gdp}_t + \mu_t \dots\dots\dots (2)$$

Estimation Techniques: The model above utilises the 3 month JIBAR as the proxy of bank funding cost. JIBAR is the rate that is published by the JSE that used as a reference floating interest rate for transactions denominated in Rand (Botha, 2002). The 3 months JIBAR is for instruments that have a maturity of 3 months. The prime overdraft rate is a proxy for short term interest rates. The prime overdraft rate is the lowest rate at which a commercial bank will lend money to its clients on overdraft (Eatwell et al., 1987). According to the trend analysis and theoretical literature it is expected that the prime overdraft interest rates will have a positive relationship with bank funding costs. Long term interest rates will be represented by 10-year government bonds. 10-year Government bonds are long term securities issued in the capital market or bond market by the central government that have a maturity of 10 years.

Unit Root Testing: It is then important that the data should be tested for stationarity before running regression. The study will commence with unit root analysis. It is important to first test for stationarity to avoid results and regressions that are spurious. The unit root testing uses the Augmented Dickey-Fuller test and Phillips-Peron test. The results of the unit tests, Augmented Dickey Fuller and Phillips Peron tests and are shown in table 1 and 2 below. Table 1 shows the unit root test at level series results. The unit root test results at this point show that JIBAR and Prime rate are not stationary at level series for both ADF and PP tests whilst government bonds and GDP growth are stationary. This means that variables need to be tested at first difference until some stationarity is detected.

Vector Autocorrelation Model (VAR): The study will use the VAR model to analyse the dynamic interaction among the variables. It should be considered that some explanatory variables, bearing the fact that bank funding costs also affects other variables either directly or indirectly so that the VAR model is stable and under specification of the model is avoided. When analysing the results of the vector autoregressive model, the first step is to select the appropriate lag length for the variables. When picking the appropriate lag length, the study makes use of the Akaike Information Criteria and Schwarz Bayesian Criteria. Table 3 represent the two selection criteria. The lag length of both the Akaike Information Criteria and Schwarz Bayesian Criteria is selected at lag 1. The study will select both Akaike Information Criteria and Schwarz Bayesian Criteria and use 1 lag.

Table 1: Unit root Tests-Level series

Variable	ADF			PP		
	Intercept	Intercept and trend	None	Intercept	Intercept and trend	None
JIBAR	-1.547749	-2.574612	-0.824225	-1.644554	-2.793830	-0.824576
Prime rate	-2.328926	-3.642622**	-0.919380	-1.562619	-2.336449	-0.969375
Bonds	-3.892491***	-4.738077***	-1.197272	-3.656661***	-4.738077***	-1.373727
Cap	-2.332969	-2.420765	-0.566231	-2.427609	-2.576793	-0.566231
Gdp	-4.153577***	-4.297686***	-1.686032*	-4.070625***	-4.297686***	-2.087009**

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%

Table 2 shows the unit root test results at first difference. Different from the results of unit root tests at level series, the variables show stationarity at first difference. Both tests reveal that the variables are stationary and though Philips-Perron tests are more consistent from a robustness perspective, the results reveal some similarity in the sense that almost all the variables have some significance at the 1% level. The results are mixed but in the data are stationary at first difference.

Table 2: Unit root tests-1st difference level

Variable	ADF			PP		
	Intercept	Intercept and trend	None	Intercept	Intercept and trend	None
JIBAR	-8.269744***	-8.193927***	-8.303111***	-8.239164***	-8.168465***	-8.270040***
Prime rate	-3.555856***	-3.524298**	-3.552573***	-3.683490***	-3.652962**	-3.678702***
Bonds	-12.46279***	-7.784929***	-12.44367***	-15.90518***	-20.86753***	-14.41021***
Cap	-7.497693***	-7.457418***	-7.549834***	-7.497693***	-7.457418***	-7.549834***
Gdp	-10.54532***	-10.45387***	-10.64034***	-13.61298***	-13.39422***	-5.722492***

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%

4. Findings

Johansen Cointegration Test: Cointegration occurs in time series variables when there is stationarity in the error term in a regression model. Cointegration has been seen as one of the important properties in time series. The test involves finding the number of cointegrated vectors. In this step the Trace and Maximum eigenvalue test are used in table 4 and 5. The trace tests reject the hypothesis at 5% level. As per the cointegration test tables below, there are four cointegration relationships between the time series. Table 6 show the normalised cointegration vector on JIBAR.

Table 3: Selection of the Lag Length

Leg Length	Akaike Information Criteria	Schwarz Bayesian Criteria
0	13.30943	13.49192
1*	9.263649*	10.35856*
2	9.191310	11.19864
3	9.553320	12.47308
4	9.410061	13.24224
5	9.584419	14.32902

Table 4: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.382015	65.38203	69.81889	0.0003
At most 1	0.258548	37.94846	47.85613	0.0002
At most 2	0.201839	20.89720	29.79707	0.0024
At most 3	0.098708	8.046839	15.49471	0.0005
At most 4	0.036562	2.123066	3.841466	0.0051

Table 5: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.382015	27.43357	33.87687	0.0000
At most 1	0.258548	17.05126	27.58434	0.0000
At most 2	0.201839	12.85036	21.13162	0.0000
At most 3	0.098708	5.923773	14.26460	0.0005
At most 4	0.036562	2.123066	3.841466	0.0051

Table 6: The Cointegration Vector of Variables

Variable	JIBAR	Prime Rate	Government Bonds	Capital to Asset Ratio	GDP growth
Coefficient	1.000000	-0.943629	-0.596631	-4.019290	-0.392559
Standard Error		(0.09292)	(0.16964)	(1.25502)	(0.11918)
t-stat		-10.15528	-3.51704	-3.202571	-3.29383

The long run equilibrium equation showing the cointegration relationship between the variables is shown below $FC = 0.943620i_s + 0.596631i_L + 4.019290cap + 0.392559gdp$. The normalised equation indicates that there is a positive long term relationship between short term interest rates (prime rate), long term interest rates (government bonds) and GDP growth with bank funding costs (JIBAR) at 95% level of confidence. There is a positive relationship between all the independent variables and the dependant variable.

Variance Decomposition: Variance decomposition studies the usefulness of each variable in the volatility of other variables. It can also be said that it studies how much information each variable contributes to the other variables in the autoregression. Table 7 illustrates the results of the variance decomposition. The shocks of each variable on other variables is shown for first, fifth and tenth years. On the table the first column shows the variables, the second column shows the years and the third is the standard error. At first, on 1 year the study shows that 100% of the fluctuations on the JIBAR are due to shocks the variable itself. Fluctuations in prime rate, government bonds and GDP growth do not have an influence in the JIBAR after 1 year. After 5 years the study shows that 80% of the fluctuations in the JIBAR are due to shocks in the variable itself whilst 12%, 1%, 1% and 6% of fluctuations are due to shocks from prime rate, government bonds, capital and GDP growth. After 10 years the results show that 73% of the volatility in JIBAR was due to shocks resulting from the variable itself. After 1 year, 37% of changes in the prime rate on are due to shocks on the variable itself, whilst 63% of the fluctuations in the JIBAR. After 5 years, 18% of the volatility in prime rate was due to shocks resulting from the variable itself whilst 75%, 1%, 1% and 5% of fluctuations in the prime rate are due to shocks in JIBAR, government bonds, capital and GDP growth. 11% of volatility in prime rate after 10 years has resulted from the variable itself. 70%, 1%, 13% and 5% of volatility in prime rate is due to JIBAR, government bonds, capital and GDP growth. Finally, after 1 year, 91% of changes in the GDP growth are due to shocks on the variable itself, whilst 7%, 0%, 0% and 1% of the fluctuations in GDP growth are due to JIBAR, prime, government bonds and capital. After 5 years, 60% of the volatility in GDP growth was due to shocks resulting from the variable itself whilst 6%, 17%, 2% and 13% of fluctuations in the GDP growth are due to shocks in JIBAR, prime rate, government bonds and capital. After 10 years 9%, 17%, 2% and 16% of volatility in GDP growth is due to JIBAR, prime rate, government bonds and capital respectively, whilst 56% is due to the variable itself.

Table 7: Variance Decomposition

Variance Decomposition	Year	S.E	JIBAR	Prime Rate	Gvt Bonds	Capital to Asset Ratio	GDP Growth
JIBAR	1	0.990785	100.0000	0.000000	0.000000	0.000000	0.000000
	5	2.189864	79.62399	12.31360	1.145748	1.185633	5.731029
	10	2.710134	72.99257	8.507584	0.960018	11.92370	5.616132
Prime Rate	1	0.520299	63.04647	36.95353	0.000000	0.000000	0.000000
	5	1.955464	75.06336	18.00400	1.260677	1.057011	4.614957
	10	2.523397	69.57650	11.40348	1.083217	13.19951	4.737291
Government Bonds	1	1.134054	25.97897	21.50202	52.51902	0.000000	0.000000
	5	1.344308	23.55547	17.66883	54.84856	3.900795	0.026339
	10	1.443353	25.92807	15.64090	50.07597	8.233261	0.121805
Capital to Asset Ratio	1	0.114884	10.40858	2.115610	0.899485	86.57633	0.000000
	5	0.198727	6.061930	6.149181	0.943266	85.72004	1.125588
	10	0.210976	6.552923	6.501019	2.509902	82.36197	2.074183
GDP growth	1	1.917946	8.623439	0.038489	0.031891	0.733274	90.57291
	5	2.581654	7.538128	16.96674	2.328457	12.96707	60.19961
	10	2.696260	8.547676	17.43769	2.265020	16.16790	55.58171

5. Conclusion and Policy Recommendations

The purpose of this study was to examine the impact of short term interest rates on bank funding costs in the context of South Africa. The results showed that there is a significant positive long term relationship between all the independent variables (short term interest rates, long term interest rates, capital to asset ratio and GDP growth) with the dependent variable (JIBAR). The results conform to the apriori expectations but this was not the case with the GDP growth as it was expected to have a negative relationship with the dependent variable (JIBAR). The variance decomposition test showed that after first, fifth and tenth years, most shocks to the bank funding costs were due to fluctuations from short term interest rates. The study by Raknerud and Vatne (2012), which was studying the relationship between bank funding costs and interest rates also showed a positive relationship between bank funding costs (91 days NIBOR) and interest rates. A study by Ncube et al. (2012) also examined the long-term relationship between lending rate and funding rates. The results of the study showed evidence of a pass-through from lending rate to funding rate changes and it was greater when funding rates increased than they decreased. Both these studies i.e. Raknerud and Vatne (2012) and Ncube et al. (2012) show the same results as this study.

Vector Autoregressive Model Results: From the results obtained from this study, the following policy options can be recommended. Firstly, authorities and regulators should notice that short term interest rates are important in the determination of bank funding cost, as short term interest rates have a significant impact on financing by banks. Regulatory efforts from monetary authorities need to strengthen the capital buffers of banks to reduce bank funding costs and therefore reduce short term interest rates imposed on borrowers. As

countries are normalizing their monetary policies and the implementation of Basel III capital frame works in 2019, these policies will of cause have an effect on the cost of bank funding. This means that monetary authorities and commercial banks should make it important to observe measures of bank funding costs especially the measure which is the short term interest rates.

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Is Marital Status a Strategic Parameter in Implementing HIV/AIDS Campaigns in Kinshasa, Democratic Republic of Congo?

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Abstract: Several researches across the African continent highlight the important role of “marital status” in the magnitude of the HIV/AIDS epidemic because of early marriage for women and peers’ influence to engage in extramarital sex for men. Thus, the present study investigated the existence of significant differences in marital groups regarding their level of HIV/AIDS awareness, attitude towards infected persons, exposure to HIV/AIDS information, accessibility to condoms and sexual behaviour. The results emanating from the statistical analyses of the data collected through a cross-sectional survey revealed that “marital status” is the key to the design and implementation of HIV/AIDS interventions in Kinshasa.

Keywords: *HIV/AIDS Level of knowledge, marital status, Kinshasa, sexual behaviour, and condom use*

1. Introduction and Literature Review

Research projects in the field of human immuno-deficiency virus (HIV)/acquired immuno-deficiency syndrome (AIDS) have suggested education as an appropriate response for decreasing the prevalence of the epidemic in the most afflicted regions (Ayikwa, 2013). This implies equipping communities and the individuals therein with adequate HIV/AIDS knowledge, in order to reduce the misconceptions about the disease, negative attitudes that lead to discrimination and the stigmatisation of infected persons, as well as risky sexual behaviours that encourage the propagation of the virus (Gao et al., 2012). Similarities and disparities between members within communities render it difficult to address all the sub-groups at once, and through the same intervention programme. Thus, tailoring campaigns that address HIV/AIDS is crucial, in order to effect behavioural change; and numerous factors or elements need to be considered during implementation, in addition to the design of interventions, such as age, gender, poverty (socio-economic status), occupation (profession) and level of education (Lafreniere, Deshpande, Hunter, & Bjornlund, 2013). Similarly, several researches in the field of social marketing addressing the HIV/AIDS issue assert that the magnitude of the epidemic is also associated with “marital status” (Siziya, Muula, & Rudatsikira, 2008; Asante, 2013). Indeed, the absence of dialogue on safe sexual behaviour among married couples enhances the risk of acquisition of HIV/AIDS (Marlowa, Tolley, Kohlic, & Mehendale, 2010). A substantial proportion of new HIV/AIDS infections in sub-Saharan Africa occur in cohabiting couples (Guthrie, de Bruyn, & Farquhar, 2007).

Studies from Rwanda and Zambia have revealed that people in stable partnerships constitute 55–93% of new heterosexually acquired HIV/AIDS infections (Dunkle, et al., 2008). In 2008, 43% of new HIV/AIDS infections among adults aged 15 to 49 years in Uganda occurred within monogamous relationships (Wabwire-Mangen, Odiit, Kirungi, Kisitu, & Wanyama, 2009). Inappropriate sexual behaviour and the lifestyle of unmarried people living with HIV/AIDS have been pointed out as factors that are enhancing the spread of the virus (Abasiubong, Udoh, Idung, & Umoiyoho, 2012). Clearly, from the preceding discussion, one may conclude that people who take actions to prevent HIV/AIDS infection are those who are aware of their risk of getting infected; and they perceive themselves as being at risk of contracting the virus. It is thus crucial to address the biased confidence that characterises the marital status, as researches worldwide report risky sexual practices and inadequate HIV/AIDS knowledge of married women in particular. Marital status is one of the acknowledged determinants of sexual behaviour among many other socio-demographic factors that relate to the magnitude of the epidemic. Consequently, it is imperative to consider the marital status in analysing the current HIV/AIDS situation, in an effort to implement adequate prevention campaigns aimed at slowing down the spread of the virus. However, is “marital status” strategic to the context of Kinshasa, as in other cities or provinces around the African continent that have found this to be so?

Statistical Background of Marital Status: Moralists in the terrain of HIV/AIDS emphasise on carrier’s role of individual behaviour regarding the epidemic (Mabala, 2006). However, prevention methodologies for fighting the virus necessitate consideration of the key role played by both physical and social environments in

the propagation of the HIV virus - "The microbe is nothing; the terrain [is] everything" (Louis Pasteur, cited by (Mabala, 2006)). Marital status has proven to be a crucial environmental and structural factor influencing individuals' sexual behaviours, amongst other factors, such as gender, age, religion, socio-economic status, area of residence, occupation, education, etc. (Slaymaker, Walker, Zaba, & Collumbien, 2004). A research conducted in Ghana showed a significant difference in HIV/AIDS knowledge, based on one's marital status [$F(3, 321) = 4.86, p = 0.008$] in the sample (Asante, 2013). Participants who had never married (single) were more likely to have taken an HIV test than the married ones (Asante, 2013). These results seem to demonstrate how seriously the HIV/AIDS issue is taken by single people, compared with those who are married; and why adequate knowledge of HIV/AIDS is negatively associated with being married (Siziya, et al. 2008). Indeed, women who have spent a long time in marriage constitute a more vulnerable group to sexually transmitted diseases (STDs), unplanned pregnancies and HIV/AIDS infections (Mondal, Rahman, Obaidur Rahman, & Akter, 2012). The statistical tools, chi square and binary logistic regression analysis performed to analyse the data collected on 10,996 long-time married women in their reproductive span taken from Bangladesh Demographic and Health Survey (BDHS- 2007) identified husband's education, husband's occupation, age at marriage and marital status among the variables that have a statistically significant effect on HIV/AIDS awareness at $p < 0.01$ (Mondal et al., 2012).

Therefore, preventing long-time married women from the epidemic necessitates an emphasis on the level of influence played by the husbands' social group. This is necessary; because husbands frequently tend to propagate commonly widespread sexual practices within their peer group, including extramarital sexual relationships, especially when these groups comprise dense networks (Coma, 2013). On the other hand, the struggle against adolescent marriage as a factor enhancing the spread of the epidemic in Africa has revealed that more than 80% of young women that engage in unprotected sex are married, more often too much older husbands (mean age difference, 5–14 years); and this presents a high probability of infection (Clark, Bruce, & Dude, 2006). By contrast, a study investigating the association between marital status groups and death from HIV/AIDS conducted by a sociologist, Kposowa (2013), demonstrated that individuals that are either divorced or separated have a tendency to die of HIV/AIDS 4.3 times higher than the married. Likewise, single or never-married individuals were predestined to die a HIV/AIDS-related death 13 times more than their married counterparts (Kposowa, 2013). However, when considering the gender factor in stratifying the sample, the observation made indicated that marital status was associated only with HIV/AIDS mortality among men (Kposowa, 2013). Therefore, the risk factor for mortality from HIV/AIDS involving marital status is not necessarily valid for women. Another study conducted in South Africa concluded that there was a complex relationship between marital status and the risk of HIV/AIDS acquisition.

Indeed, a logistical regression model, including the diagnosis of a sexually transmitted infection (STI) and socio-demographic characteristics, such as age, sex, socio-economic status, race and type of locality demonstrated no statistically significant difference between married and unmarried people, despite the fact that the risk of HIV/AIDS acquisition for unmarried people was higher when compared to that of married people, when only sexual behaviour factors were controlled in the model (Shisana, et al., 2004). The Democratic Republic of Congo (DRC) was one of the pioneering African countries to register the first-ever case of HIV in 1983 (Khonde, 2006). After over three decades of prevention campaigns, HIV/AIDS estimates remain alarmingly high. In 2005, it was found that there were over 1 million people living with the virus countrywide; while only very few HIV-infected people (8.6%) had received antiretroviral treatment. The adult prevalence rate was estimated at 3.2%; while Kinshasa itself recorded an alarming 22.2% prevalence rate in most of the at-risk populations (USAID, 2008). These numbers give a realistic picture of how the epidemic is one of the worst plagues leading to the loss of human life in the DRC, particularly in Kinshasa. This reality stresses the country's need to implement prevention campaigns that can significantly slow down the spread of the virus and save people from HIV/AIDS-related deaths. Successful social marketing campaigns have to target specific groups, in order to draw a conclusion. From the literature above, it emerges that investigating people's level of knowledge of HIV/AIDS is relevant, especially their attitude towards HIV/AIDS, accessibility to HIV/AIDS information, availability of condoms and sexual behaviour, considering the determinant marital status in the context of Kinshasa.

Marital status, as considered by the present study, comprises single, married (people living together), the unmarried (people living as a couple) and the divorced/widowed. Indeed, it is not uncommon to focus on that

specific socio-demographic group, as demonstrated in numerous relevant studies drawn from the literature conducted worldwide. In addition to that already mentioned above, a study conducted in the United Arab Emirates highlights a significant alarming difference between single and married individuals in the context of the discriminative attitude towards people living with HIV/AIDS (mean= -0.20; $p= 0.003$). The results show that married people are less likely to stigmatise infected persons than their single counterparts; although in general, both groups behave in a discriminative way (See Table 1). Far from the Middle East, but closer to the present study's research ground, a call for skills-based education, specially designed for people in stable relationships, was made in Botswana – amid the tougher challenges experienced by individuals who are cohabiting and those in marriages, than their never-married, separated, divorced and widowed counterparts in persuading their partners to use condoms and their ability to refuse sex (Setume, 2016).

Hence, the necessity for culturally sensitive programmes that would empower these people. Furthermore, a study comparing the DRC and Nigeria on the level of HIV/AIDS knowledge and the acceptance attitude towards people living with HIV/AIDS, demonstrated that both the knowledge of HIV/AIDS (28.4% vs. 33.6%, respectively) and the acceptance attitude towards persons living with HIV/AIDS (PLWHA) (3.2% vs. 9.8%, respectively) were low in young women from rural areas of both countries. The results show that marital status is associated with HIV/AIDS knowledge ($r= 7.635$ vs. 52.460 , respectively; $p<0.05$) with a much stronger relationship in Nigeria than in the DRC (See Table 2). Another comparison made by Kuete et al. (2016) between sexually active Chinese and foreign students demonstrated statistically significant differences between both groups with regard to their marital status ($p<0.001$).

Table 1: HIV/AIDS Knowledge and Stigma Score by Marital Groups

Type of score		Single (n = 2058)	Married (n = 213)	Single Vs Married (95% CI)	p-value
Knowledge	Mean	4.3	4.1	0.16 (-0.06 to 0.38)	0.160
	% of Correct answers	61.4%	58.6%	2.8%	
Stigma	Mean	1.5	1.7	-0.20 (-0.34 to -0.07)	0.003
	% of Correct answers	25.0%	28.3%	-3.3%	

Source: (Haroun et al., 2016)

However, despite the various significance emphasised above, more contextual and specific investigation remains relevant; as marital status was also found to be non-significant in some cases, or when considering the different aspects of the HIV/AIDS issue than those pointed out earlier.

Table 2: the association of socio-demographic characteristics of the respondents by HIV/aids knowledge and acceptance attitude towards PLWHA of the two countries.

	HIV/AIDS Knowledge		Nigeria	
	DRC			
Marital Status	Yes (%)	χ^2	Yes (%)	χ^2
Never in Union	29.7		36	
Cohabiting	26.8	7.635*	30.3	52.460*
Married	28.4		37.7	

*P-value<0.05

Source: (Gebremedhin, Youjie, & Tesfamariam, 2017)

In South America, for example, more precisely in Sucre-Bolivia, a study found no need to implement HIV/AIDS policies with special attention to the population's marital status; since the differences in the prevalence of unsafe sex practices, though unfair by gender and age groups, were not statistically significant with regard to marital groups (see Table 3). Similarly, in the study conducted in the United Arab Emirates, no statistically significant difference was found between marital groups in knowledge of transmission and treatment of HIV/AIDS, except for the fact that HIV cannot be transmitted by touching HIV-infected persons.

Likewise, in the study comparing young women of the DRC and their Nigerian counterparts, the acceptance attitude towards PLWHA was not associated with marital status; although that was the case with other socio-demographic groups. Therefore, the present study is pertinent; as it will give a realistic figure on the current situation in Kinshasa with regard to the struggle against HIV/AIDS. It is also important to highlight the fact that the respondents in the present study represented both genders; and they are living in urban areas in contrast to the study comparing the DRC with Nigeria that focuses only on young women living mostly in the rural areas.

Table 3: Prevalence of unsafe sex practices and adjusted OR estimated by multivariate logistic regression in the urban settings.

Marital status	Prevalence n (%)114 (10.7)	Adjusted (95% CI)	p-value ^a
Married	19 (5.2)	1.0	
Divorced-widowed	3 (9.1)	2.3 (0.6–8.2)	0.221
Single	75 (13.4)	1.30 (0.7–2.4)	0.457
Common-law (stable) union	17 (15.0)	2.9 (1.4–6.1)	0.004

^a χ^2 test.

Source: (Calderón et al., 2015)

The present study investigates, with regard to what has been mentioned previously, the differences between the marital groups in HIV/AIDS knowledge, attitude towards HIV-infected persons, exposure to HIV/AIDS information, propensity to access condoms and sexual behaviour, in order to pick out the existence, or none, of disparities. Thus, marital group(s) more at risk of spreading the epidemic can be identified. If these groups show disparities in HIV/AIDS knowledge, attitudes towards HIV-infected persons, exposure to information related to the epidemic, propensity to access condoms and sexual behaviour, then marital status should be considered as a strategic parameter in the design and implementation of HIV/AIDS interventions in Kinshasa, as is elsewhere the case.

2. Methodology

Participants and Sampling Procedures: The study focused on residents of Kinshasa aged ≥ 18 years old, who have been established there for at least six months. A mixed two-stage stratified random sampling and quota sampling method was used to sample the population under investigation. The first stage was stratified random sampling, which involved classification of the 24 Kinshasa suburbs, according to district strata. The four districts of Kinshasa are as follows: Funa (7 suburbs); Lukunga (7 suburbs); Mont-Amba (5 suburbs) and Tshangu (5 suburbs). Then, the list of suburbs served as the sampling frame. The suburbs were stratified, according to their location in those districts, from which three suburbs were randomly selected. Bandalungwa, Barumbu, Gombe, Kasa-Vubu, Kimbanseke, Lemba, Limete, Matete, Masina, N'djili, Ngaliema, Ngiri-Ngiri and Selembao were the selected suburbs. The second stage was cluster-random sampling, whereby the streets containing the houses where the participant would be approached were chosen at random from the list of all the streets located within the limits of a suburb. Lastly, a quota of 30 respondents has been envisaged according to suburb to constitute the sample of 360 participants included in the final analysis. The study's sample size was deemed adequate when considering Tabanick and Fidell's method suggesting a minimum of fifty plus eight times the number of independent variables ($n > 50 + 8m$; where m = number of exogenous variables). Among the people that made up the study's sample, 55.3% were males; while 44.7% were females. 74.2% of the respondents were single; 17.8% were married; 6.7% were living together, but were not yet married; and 1.4% were divorced or widowed.

Measures: A total of 5 instruments were used in this study. The first instrument that comprises three sub-sections, assessed the participants' level of knowledge regarding the meaning of HIV/AIDS (6 items), the different modes of HIV acquisition (13 items); as well as the prevention methods to avoid HIV infection (9 items). The second instrument measured their attitude towards HIV-infected persons, in order to determine how likely that they would be susceptible to adopt behaviours that favour or not stigmatisation and discrimination towards People Living with HIV – PLWH (6 items); the third instrument assessed their level of

exposure to HIV/AIDS information (14 items); while the fourth instrument captured their propensity to access condoms in their area of residence through diverse outlets (5 items). The fifth instrument measured the variables relating to the sexual behaviour of the participants. Although few alterations have been made to adapt to the context of this study, the open-ended questionnaires used are a replica of previously run instruments that have proven to comprise a suitable composite scale in assessing the variables under investigation, originally developed by different authors. Cronbach's alpha, determining the reliability of the questionnaires ranged from 0.69 to 0.95 in previous studies; while it ranged from 0.72 to 0.79 in the current study. In addition to the variables mentioned above, the questionnaires included demographic information, such as area of residence, age, gender, level of education, occupation, socio-economic status, as well as marital status.

Data Collection: The data were collected by means of a cross-sectional survey using anonymous and face-to-face questionnaires that used an assistance-oriented approach. Indeed, the study involved trained interviewers in administering the questionnaires, in order to avoid any misunderstanding of the questions by the respondents, and to eliminate any bias or errors during completion thereof. The training of the interviewers highlighted the necessity for them to avoid influencing the respondents' answers, but rather to bring more clarity to the participants regarding any difficulties that they may incur regarding some wording to ensure that their perception of questions matches that of the researchers. Each participant was given a detailed explanation on the purpose of the study; and s/he was invited to volunteer to take part in the survey. Those respondents who felt uncomfortable providing information deemed too sensitive – after the interview had already commenced – were excluded; and the process of recording information by such individuals was stopped.

Ethics Statement: Permission to carry out the project was granted ethical clearance by the Tshwane University of Technology based in South Africa since the researchers conducting the study belonged to this institution. The study protocol was also approved by the ethics committee of the Protestant University in Congo, given the fact that they are based in the country of the research ground. Furthermore, all the participants gave their consent by signing the designated form. Likewise, trained interviewers who administered the questionnaire consented to respect the confidential aspect of information collected from the respondents. The completed questionnaires were placed in a sealed envelope provided by the interviewers.

Statistical Analysis: Descriptive statistics in percentage were reported to describe participants' level of knowledge regarding the meaning of HIV/AIDS, the level of knowledge regarding the different modes of HIV acquisition, and the level of knowledge regarding the prevention methods to avoid HIV infection, attitude towards HIV-infected persons, level of exposure to HIV/AIDS information, propensity to access condoms as well as their sexual behaviour using SPSS 21. Furthermore, analyses on the significance of the differences in means between marital status categories have been tested through the Analysis of Variance (ANOVA).

3. Findings

Details of the scores describing the participants' HIV/AIDS knowledge, exposure to HIV/AIDS information, propensity to access condoms, attitudes towards HIV-infected persons and sexual behaviour are shown in Table 4. It summarises these by means of descriptive statistics –the distribution of the participants' scores reflecting their current sexual behaviour, level of knowledge related to HIV/AIDS for all 3 dimensions considered in this study that are related to the meaning of the disease, HIV modes of transmission, as well as prevention methods against the acquisition of the virus, attitudes towards HIV-infected persons, frequency of exposure to HIV/AIDS information and ease of access to condoms. The total score of each variable was divided into two categories: positive and negative. The positive category summed the scores that indicated the participants' identification with socially marketed behaviours (abstinence, faithfulness and condom use) with regard to the HIV/AIDS issue, awareness of the epidemic, non-discriminant and non-stigmatising attitudes towards infected persons, good exposure to HIV/AIDS information and accessibility to condoms. On the other hand, the negative category was the summation of scores that showed the participants' rejection of socially marketed behaviours, lack of HIV/AIDS knowledge, discriminant and stigmatising attitudes towards infected persons, poor exposure to HIV/AIDS information and difficulties in accessing condoms.

Table 4: Descriptive statistics of constructs measured

	Total	Positive	Negative
Level of knowledge about the meaning of HIV/AIDS	2 160 100%	1 257 58.19%	903 41.81%
Level of knowledge about the modes of HIV/AIDS transmission	4680 100%	3 455 73.82%	1 225 26.18%
Level of knowledge about the methods of HIV/AIDS prevention	3 240 100%	972 30%	2 268 70%
Attitudes towards HIV-infected persons	2 160 100%	1 808 83.70%	352 16.30%
Exposure to HIV/AIDS information	5 040 100%	1 426 28.29%	3 614 71.71%
Accessibility to condoms	1 800 100%	707 39.28%	1 093 60.72%
Sexual behaviour	2 160 100%	1 064 49.26%	1 096 50.74%

The results of the descriptive statistics presented in Table 4 indicate that the participants reasonably adopt risky sexual behaviours, with a score of 50.74%. They highlight also a fair level of knowledge about the meaning of HIV/AIDS (58.19%) and good level of knowledge about the modes of HIV/AIDS transmission (73.82%); while on the contrary, the results demonstrate that participants lack the necessary knowledge to avoid HIV acquisition (70%). However, it was found that the participants' attitudes do not favour discrimination or stigmatisation of infected persons (83.70%). The results suggest that the participants were poorly exposed to HIV/AIDS-related information (28.29%); and that they have limited access to condoms. Noticeably, no significant difference between the four marital groups was found in scores regarding both the knowledge about the meaning of HIV/AIDS and the knowledge of the mode of transmission of HIV/AIDS, as indicated in Table 5. On the contrary, differences emerge between the four marital groups in scores regarding the knowledge of the prevention methods. The study, therefore, concludes that people's level of knowledge of the prevention methods differs significantly at $p < 0.01$ ($p = 0.00$), based on their marital status. In other words, there are groups that should be considered as the most-at-risk of infection than others, due to the lack of adequate knowledge of the prevention methods. The results in Table 5 also paved the way for the study to argue that people behave, or fail to behave in a discriminatory way towards HIV-infected persons, regardless of their marital status. Likewise, people do not have adequate access to HIV/AIDS information and condoms on the basis of their marital status.

Lastly, the results in Table 5 show that there is a significant difference somewhere between the four marital groups regarding sexual behaviour at $p < 0.01$ ($p = 0.01$). This means that people engage in unsafe/safe sexual behaviour, according to their marital status. In order to detect the statistically significant disparities in all the variables between the four marital groups (Group 1: Single, Group 2: Married, Group 3: People living together, and Group 4: Divorced/Widowed) investigated in this study, a one-way between-groups analysis of the variances was conducted by using SPSS 21. The results from Table 5 demonstrate a statistically significant difference in knowledge of the prevention methods ($F_{(3,356)} = 4.47$; $p = 0.00$) for the four marital groups at the $p < 0.01$ level. The Eta squared value (0.04), obtained by dividing the sum of squares between the groups (39.710) and the total sum of squares (1093.600), indicates quite small differences in the participants' level of knowledge of the prevention methods associated with their marital status, despite reaching statistical significance. Similarly, Table 5 indicates a statistically significant difference in sexual behaviour ($F_{(3,356)} = 4.37$; $p = 0.01$) for the four marital groups at the $p < 0.01$ level. The Eta squared value (0.04), obtained by dividing the sum of squares between the groups (60.502) and the total sum of squares (1705.289), indicates quite small differences in participants' sexual behaviour associated with their marital status, notwithstanding the statistical significance. However, the results in Table 5 do not enable the identification of the marital groups between which the mean differences are statistically significant for both the level of knowledge on the prevention methods and sexual behaviour. Thus, Post Hoc Test comparisons using the Tukey HSD, whose results are presented in Table 6 were performed to make such identification possible.

Table 5: ANOVA/ Marital status

		df	F	Sig.
Knowledge about the meaning of HIV/AIDS	Between Groups	3	0.621	0.602
	Within Groups	356		
	Total	359		
Knowledge about the modes of HIV/AIDS transmission	Between Groups	3	2.881	0.306
	Within Groups	356		
	Total	359		
Knowledge about HIV/AIDS prevention methods	Between Groups	3	4.471	0.004**
	Within Groups	356		
	Total	359		
Attitudes towards HIV-infected persons	Between Groups	3	1.006	0.390
	Within Groups	356		
	Total	359		
Exposure to HIV/AIDS information	Between Groups	3	0.448	0.719
	Within Groups	356		
	Total	359		
Accessibility to condoms	Between Groups	3	1.186	0.315
	Within Groups	356		
	Total	359		
Sexual behavior	Between Groups	3	4.365	0.005**
	Within Groups	356		
	Total	359		

** There is a significant difference among the means scores on the dependent variable for the four groups at the 0.01 level (2-tailed).

Post Hoc Tests: The results in Table 6 indicate that there is a statistically significant difference at $p < 0.01$ and $p < 0.05$ in mean scores of divorced/widowed people; and all the three other marital groups (single $p = 0.00$, married $p = 0.01$ and people living together $p = 0.02$) in knowledge about HIV/AIDS prevention methods. Divorced/widowed individuals' mean score in knowledge about HIV/AIDS prevention methods resulted in the lowest of all the four marital groups. This may indicate that the group comprising divorced/widowed lacks most adequate knowledge of HIV/AIDS prevention methods compared with others. Therefore, it is recommended that social marketers should target with much more attention this particular group, when seeking to raise HIV/AIDS awareness levels. On the other hand, it was found that there is a statistically significant difference at $p < 0.01$ in mean scores of single and married people in sexual behaviour (MD= 1.00240 ranged between 0.2302 and 1.7746, $p = 0.01$). Single persons resulted in higher scores than married people, implying that single people engage less in unsafe sexual practices than married people. For this very reason, the study suggests that social marketing campaigners addressing the HIV/AIDS issue should devote particular interest to the married, when it comes to human sexual behavioural change.

Table 6: Multiple comparisons/ Marital status Tukey HSD

				95% Confidence Interval		
		(I) Marital groups	(J) Marital groups	Mean Difference(IJ)	Sig.	Lower Bound Upper Bound
Knowledge about HIV/AIDS prevention methods	Single	Married		0.09703	0.977	-0.521 0.7151
		Living together		0.33661	0.795	-0.609 1.2830
		Divorced/Widow-er		2.77828**	0.002	0.7736 4.7829
	Married	Single		-0.09703	0.977	-0.715 0.5211
		Living together		0.23958	0.938	-0.823 1.3026
		Divorced/Widower		2.68125**	0.005	0.6190 4.7435
	Living together	Single		-0.33661	0.795	-1.283 0.6098
		Married		-0.23958	0.938	-1.302 0.8234
		Divorced/Widow-er		2.44167*	0.021	0.2584 4.6249
	Divorced/Widow-er	Single		-2.77828**	0.002	-4.782 -0.7736
		Married		-2.68125**	0.005	-4.743 -0.6190
		Living together		-2.44167*	0.021	-4.624 -0.2584
Sexual behaviour	Single	Married		1.00240**	0.005	0.2302 1.7746
		Living together		0.62219	0.526	-0.560 1.8045
		Divorced/Widow-er		1.18052	0.617	-1.323 3.6849
	Married	Single		-1.00240**	0.005	-1.774 -0.2302
		Living together		-0.38021	0.881	-1.708 0.9478
		Divorced/Widow-er		0.17813	0.998	-2.398 2.7545
	Living together	Single		-0.62219	0.526	-1.804 0.5601
		Married		0.38021	0.881	-0.947 1.7082
		Divorced/Widow-er		0.55833	0.952	-2.169 3.2858
	Divorced/Widow-er	Single		-1.18052	0.617	-3.684 1.3238
		Married		-0.17813	0.998	-2.754 2.3982
		Living together		-0.55833	0.952	-3.285 2.1691

* The mean difference is significant at the 0.05 level.

** The mean difference is significant at the 0.01 level.

4. Conclusion

The present study highlights the importance of taking into account the marital status in implementing and designing HIV/AIDS prevention campaigns. The results presented in the study's findings demonstrate that individuals engage in risky sexual behaviour, while lacking adequate knowledge of HIV/AIDS prevention methods due to their poor exposure to HIV/AIDS information and their accessibility to condoms. Indeed, several studies in the field of HIV/AIDS have demonstrated that ignorance (opposed to knowledge) with regard to the HIV/AIDS epidemic leads to dynamic sexual relations and practices both within and outside marital unions, promoting vulnerability to HIV/AIDS (Saddiq, Tolhurst, Laloo, & Theobald, 2010; Cai, et al., 2013; Sacolo, et al., 2013). Furthermore, evidence in the literature asserting that a better exposure to HIV/AIDS information raises HIV/AIDS awareness through knowledge exists; while the ease in accessing condoms influences the consistent use thereof (Moodley, 2007; Asante, 2013). Additionally, the study found that there are significant differences ($p = 0.004$) between the marital groups regarding the level of knowledge about HIV/AIDS prevention methods, as also did the studies conducted by Ama, Shaibu and Burnette (2016) ($p = 0.00$), as well as a study by Asante and Oti-Boadi (2013) ($p = 0.008$). However, if the present study tested the differences for the three different aspects of knowledge that are the meaning of HIV/AIDS, modes of HIV transmission and prevention methods separately, Ama, Shaibu and Burnette (2016) and Asante and Oti-Boadi (2013) summarised them and divided the marital groups into three categories: single, married and in relationship (for Asante and Oti-Boadi, 2013); and single, married and others which included, in addition, widows(ers) and divorced, co-habiting individuals) for Ama, Shaibu and Burnette (2016); while this one integrated the four marital groups.

Also, the Ama, Shaibu and Burnette (2016) study departed from the two others – whose results relied on ANOVA – by using the Mann-Whitney, a non-parametric test. It is noticeably important to highlight that as the findings of the present study established a difference uniquely in knowledge about HIV/AIDS prevention methods only between the divorced/widowed and the three other marital groups including single, married and living together sexual behaviour; while no significant difference was found between the aforementioned other marital groups. This is in line with the results of Haroun et al. (2016) study who found no significant difference in HIV/AIDS knowledge between single and married individuals. Although people demonstrate a lack of adequate knowledge about HIV/AIDS prevention methods, it emerges that divorced/widowed people have the lowest level of knowledge about HIV/AIDS prevention methods. On the other hand, the results of the ANOVA testing differences between the marital groups regarding sexual behaviour confirmed somehow the findings of Hong and Thepthien (2017) study, which found statistically significant differences ($p < 0.05$) between individuals cohabiting and non-cohabiting with their partners in engaging in risky sexual behaviours with those without a cohabiting partner reporting high-risk sexual behaviour. The difference in sexual behaviour for the present study revealed that the married individuals engage more in unsafe sexual practices in comparison with single individuals.

For example, despite the fact that marriage does not guarantee fidelity; as it was found in Africa that men are often engaged in extramarital sexual activities, it was observed that married women do not use condoms with their husbands; and they depend on their husband's role as the protector (Golobof, Weine, Bahromov, & Luo, 2011). It is strongly suggested that social marketers learn and consider the lessons drawn through these investigations. The investigation of the risk of HIV/AIDS for married people is something complex; because demographic variables, such as age, area of location, level of education, socio-economic status and profession negate the relationship between marital status and the importance of the virus. It is important to realise that those socio-demographic variables and sexual behaviour patterns are related to both marital status and the spreading of the disease. Thus, efforts are welcomed to analyse the situation of the virus considering the specifics of marital status. Hence, the answer to the study's research question is "yes" - "marital status" is a strategic parameter in the design and implementation of HIV/AIDS interventions in the context of Kinshasa, like elsewhere on the continent. In the context of this study, social marketing programmes devoted to the HIV/AIDS epidemic should put more effort into targeting marital groups that show significant statistical differences with their counterparts in lacking knowledge about the prevention methods and engaging in risky sexual behaviours or practices, in order to reduce the gaps between all marital categories. However, this does not mean that they should forget about marital groups that demonstrated higher knowledge and lesser risky sexual behaviour; since the fight against the epidemic necessitates continuous efforts in recalling everyone to the right behaviour to adopt, in order to slow down the spreading of the virus and to halt the epidemic.

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The Nexus Between Johannesburg Stock Exchange and the United States Unemployment Rate Announcement: An Impulse Response Analysis

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Abstract: The study explores the relationship between the unemployment rate in the United States and South Africa's stock prices from the beginning of 2013 to the last day 2017. The objective of this paper is to examine the impact of the US unemployment rate announcement on the South African financial market. Results of Impulse Response analysis show that there is a very minimal impact from the US unemployment announcement to South Africa's stock prices which disappears within two days of the announcement. In addition, the Johannesburg stock exchange index marginally responds to own shocks, which marginally fades away within two days. These findings imply that the changes in the US employment policies have a direct ripple effect on the South African macroeconomic environment, its investing public sentiments and corporate confidence on the future prospects of businesses.

Keywords: *US unemployment, the stock market, macroeconomic factors, sentiments, Africa*

1. Introduction

Financial analysts and investors spend long periods of time and effort examining the South African business environment. They constantly monitor various key economic indicators; such as a country's inflation, government policy, unemployment, budget deficit, borrowing rates, national output and balance of payment position, to identify financial market trends. They assume that these macroeconomic indicators determine the intrinsic value of any investment in the economy (Mutize, 2015). The statistics on these macroeconomic factors, which is published periodically by both governmental and private agencies, reflect the present economic situation (Ergun, and Ozlen, 2012). Publishing reports on these macroeconomic indicators usually result in volatility of the financial markets being observed, which has made their announcement important to market participants (Veronesi, 1999). A negative development in these key economic indicators usually results in negative financial market reactions and vice-versa. There has however been a debate on the impact of the United States (US) Employment Report on other world economies. The US Employment Report is amongst some of the most watched economic indicators in the world (Abo-Zaid, 2014), including the housing statistics, exchange rates and retail sales figures. The US Department of Labor through the Bureau of Labor Statistics, every Friday of the beginning of every month, at 0830, it publishes the United States' the previous month's unemployment figures, commonly referred to as the 'Unemployment or Job Report'.

The Job report provides estimations on the fractional unemployed population as well as total hours that the employed have worked. The Employment report announcement is widely anticipated and forecasted by market participants (Hautsch, and Hess, 2002). Financial analysts across the world consistently refer to the US employment situation report when making major economic decisions. Questions have therefore been raised about the nexus between the US employment situation report and the developing financial markets, its effect on investor sentiments, as well as market optimism. Hence, the research examines the short-term reaction of the South African equities market returns to US unemployment rate announcement as macroeconomic news. The stock prices response to public announcements depends on three key factors; the risk-free rate of interest, corporate earnings and dividends growth expectations, a risk premium (Ross, 1976). Thus, if the announcement of the unemployment rate has an impact on stock prices it conveys information about some or all to these factors. Andritzky, Bannister and Tamirisa (2007) observe that the sensitivity of the bond and stock markets in emerging economies to the US employment announcements has significantly increased over the years. However, South African financial markets are considerable anxious to the build-up towards the announcement of the US unemployment rate statistics every month. Furthermore, analysts and investors constantly make reference to the US unemployment situation as a key variable towards general market sentiments in local markets. It has thus become a major input across the country's investment environment for the corporate world when making major economic decisions.

The US hegemony on the world's financial markets and its role in the global financial system creates inherent financial linkages across the world (Pierce, and Schott, 2016). Despite the financial crises that have rocked the United States of America over the last decades, it has maintained its ability to sustain the growing external deficits without major speculative negative sentiments. According to Janacek and Komarek (2012), the use of the US dollar in pricing international goods and commodities extends the dominance of the US and its macroeconomic dynamics. Hence, the changes in the macroeconomic environment of the US have an impact on other countries' currencies relative to the reserve currency. Konings (2008) adds that the main variable that contributes to the sustenance of the US dominance of the global financial system is the US dollar, which plays a dominant role in the settlement of international transactions. Approximately 86 percent of all foreign exchange transactions involve the US dollar and about 66 percent of foreign exchange reserves held by countries across the world are in dollars. Although the literature on the impact of economic fundamentals on financial markets is well established, studies that examine the effects of the US employment report on South African financial markets are rare.

Thus, this study contributes to the fundamental analysis of South Africa's financial markets literature in three ways. First, by being amongst the first to quantify the impact of the US employment reports using South Africa's stock market data. Second, by contributing empirical evidence to literature debate on the US hegemony on the financial markets of developing countries. Hence, the study explores the responsiveness of equities markets in emerging economies to fundamental changes in developed economies; specifically, South Africa's financial markets and the US unemployment announcements. Lastly, by examining the financial linkages between the US economic system and African financial markets, which are perceived to be underdeveloped, illiquid and inefficient. The following is the structure of this research. The following segment gives the theoretical background of the financial market pricing and fundamental economic factors, followed by a review of the literature. The review explores literature on the impact of the US employment situation in both developing and developed countries' financial markets. Section 4 then describes the employment report and South African financial market data, and the methodology used to conduct the analyses is discussed in Section 5. Then after, the research outlines the results and concludes with the implications of results on policy and businesses.

Theoretical Background: Behavioural theories suggest contradictory excerpts on the factors underlying financial market dynamics and movements of the two key contradictory theories, the first set of theories asserts that financial markets reflect all economic macroeconomic fundamentals in the current security prices. The main theory of financial markets fundamental asset pricing is the Efficient Market Hypothesis (EMH), proposed by Eugene Fama in 1965. The theory asserts that it is not possible for market participants to earn abnormal returns from trading securities in financial markets by using relevant information advantage because security markets are efficient in incorporating all relevant information in the current stock prices. Hence, according to the theory, equities are always fairly priced, with neither overvaluation nor undervaluation because security current values reflect all available relevant information. As such, market timing, expert search for undervalued stocks, and fundamental and technical analysis to predict market trends is all pointless. Investors can only earn more returns by assuming additional risk in their current or new investments. In contrast, the second set of theories subsequently provide empirical evidence that there are times when financial markets fail to reflect all macroeconomic fundamentals in the current security prices.

They argue that, based on the behaviour of investors, financial markets efficiency is not realistic because stock prices react to fundamental macroeconomic news announcements. Hence, Malkiel (2003) contend that the market waves created by investors' actions during periods of optimism and pessimism following news announcements leads security prices to depart from their intrinsic prices every now and then. Subsequently, it is argued that the abnormal returns earned by some analysts and investors are a sign that financial markets deviate from efficiency. Hirshleifer et al. (2013) further argue that, if markets were perfect efficient there would be no need for investors to engage specialist market consultants in order to maximise their portfolio returns. In addition, Zuo (2016) point the increase in databases selling information on financial market fundamentals as well as the increase in sophisticated models for analysing financial market movements as evidence that people have confidence in interpreting market performance using fundamental news announcements.

2. Literature Review

Financial markets perceive the United States' employment benchmark as a fairly good macroeconomic variable that indicates the health of the country's economy, especially in key areas such as consumer spending and consumer debt (Haltiwanger, 2012). In addition, Baron (2013) posit that there is a direct positive relationship between employment growth and the growth in consumer spending, which is developed out of positive consumer confidence. These circumstances thus usually generate the bulk of economic activity in most countries. Thus, the release of the employment data is usually followed by frenzied trading that can last for many days, depending on sentiments and expectations of financial markets (Zhang et al., 2017). Zhang et al. further posit that the employment situation announcement is very crucial as it set market sentiments and the overall tone in market trends even weeks after. Therefore, financial market participants refer to the unemployment announcement for clues and nuggets for predicting future market situations. Pierce and Schott (2016) analyse the major components of the employment report that connects directly to financial markets. They point out that the report contains the number of new employment created each month as well as the unemployment rate. In support of Pierce and Schott, Lee and Wolpin (2010), posit that these two components tend to predict the direction of economic strength as high figures in new employments signifies economic growth. And, stronger economic growth would increase the likelihood of high inflation, which the central bank responds to by raising interest rates to curb inflationary pressure. In contrast, a fall in the number of new employments signifies economic slowdown.

A rise in unemployment usually means the United States economy is not operating at maximum capacity. Hence, this could lead the Federal Reserve to lower interest rates to trigger more consumers spending (Sun et al., 2010). Furthermore, Rupasingha and Goetz (2013) add that it also could cause the federal and state governments to promote expansionary policies to boost employment growth and stimulate economic growth. However, Hautsch and Hess (2002) argue that bonds and stocks react differently to rising unemployment in the US unemployment report. To the stock market, positive unemployment report is an indication of business and investor optimism, hence potential for economic growth. Therefore, to the stock markets, interest rates and inflation figures are not very important as compared to bond market. Conversely, Boyd et al. (2005) argue that the country's economic status is the major determinant of the magnitude by which equities price react to unemployment announcements. In support, depending on previous unemployment rates, Veronesi (1999) shows that in equilibrium, the same unemployment announcement can trigger a positive stock market response and sometimes a negative response. Boyd et al. thus argue that the stock market responds positively to increasing unemployment during periods when the economy is expanding and vice versa during periods when the economy is shrinking. However, as most economies in emerging markets are usually in expansion mode, it is therefore logical to argue that equities prices respond positively to increasing unemployment announcements. According to Abo-Zaid (2014), equities respond negatively when unemployment increases during economic contractions mainly because it contains more information about economic growth expectations.

Zoega (2012) adds that, the negative reaction of stock prices during economic expansions is driven by the possibility of interest rate decreases. Thus, rising unemployment causes expected future interest rates to decline as part of monetary policy response a possible decline in economic growth expectations. In a theoretical argument, Galil and Soffer (2011) show that rising unemployment in times of economic expansion and falling unemployment in times of economic contraction is generally associated with increased uncertainty due to inconsistent stock market reactions. However, the most probable response would generally be an increase in the stock risk premium. The employment report has however been criticized that the unemployment rate is considered as a 'lagging indicator' that it is a highly uncertain prediction of economic-related indicators and is not reliable (Aysun et al., 2014). Harris and Zabka (1995) argue that the unemployment figures are often significantly revised over a long period after they are announced, hence the job report does not have the predictive strength to estimate future economic prospects with an average degree of accuracy. Further, the unemployment rate has shown constant spikes due to unexpected deviations from the expected trends over longer periods of time. In addition, Abo-Zaid (2014) argue that the employment report has some major inherent distortions in the data from factors such as the freelance economy, black market, and discouraged prospective workers which makes it grossly inaccurate.

Other studies argue that there are some things that the employment report does not mention. The unemployment announcement is analysed based on its contents with respect to the economic status of a nation (Belgacem, and Lahiani, 2012). Thus, the amount of jobs that are created signifies the direction in which the economy is taking, either growing, shrinking or overheating (Nguyen, and Ngo, 2014). Subsequently, it may thus be argued that the unemployment announcement report does not have any significant predictive strength due to its grow inaccuracy as witnessed by the many times it is revised post its initial release. Furthermore, Hautsch et al. (2011) note the weaknesses in the unemployment data with reference to announcements following the global recession in 2008 where the forecasted employment figures were far below the actual amounts. Alternatively, Hautsch et al further cite several instances when the Federal Reserve raises interest rates in anticipation of accelerating employment rate, only to realise significantly rising unemployment figures instead. In addition, comparing actual outcomes to the information harvested from households and businesses, there is complete divergence which further support the view that these announcements lack the predictive strength to estimate future economic status. Hence, Bardasi and Francesconi (2004) argue that unexpected results from the employment figures usually indicate some anomalies with both the economy and employment environment.

Despite the questionable accuracy of the US unemployment report, global financial markets seem to be closely linked to the US employment figures as the announcement is highly considered by both businesses and investors across the world in making key economic decisions about future opportunities. (Nguyen, and Ngo, 2014). Others argue that, the US employment report announcement has a significant effect on public perceptions and business sentiments concerning future recruitment decisions (Ergun, and Ozlen, 2012). As such, financial markets are nervous in the build-up to the announcement of the US employment report. And, studies have argued that financial markets significantly respond to the employment report announcement (Pierce, and Schott, 2016). Thus, in addition to the uncertainty in other employment and economic indicators, Abo-Zaid (2014) argue that the unemployment report still provides worthwhile information. Ajello (2016) has shown results in several ways in which employment data impact the financial markets. He argues that, the world financial markets significantly response to the employment report announcement impact of given that the United States Dollar is an international currency.

The unexpected increase in the US unemployment leads to a fall in the US currency against other currencies. Ajello also reports that when financial markets unexpectedly react to US unemployment report, the phenomenon is closely linked to short-term interest rates across all international financial markets. In summary, the main theme in the reviewed literature is that due the globalization and financial market liberalization, financial markets have also become increasingly sensitive to America's macroeconomic data announcements. However, other studies argue that the US macroeconomic variables are marred by distortions and inaccuracies. Despite the questionable accuracy of US macroeconomic data, financial markets across the world seem to react to their announcements. This study therefore investigates the impact of the US employment report on the Johannesburg Stock Exchange (JSE) returns.

Description of Data: The analysis of the response of the JSE to the announcements of changes in the US unemployment rate makes use of the US unemployment and the Financial Times-Stock Exchange/Johannesburg Stock Exchange (FTSE/JSE) all-share index 4-year data from January 2013 to December 2017. This period on analysis was preferred because there were no other major exogenous events that could act as confounding factors to influence objectivity in the data selection period. In addition, this is the period when the financial market in South Africa has been performing at par, according to major investment firms. The unemployment report is announced by the US's Department of Labour on a Friday of the beginning of every month. Hence, the unemployment statistics were obtained from the US Bureau of Labor website. The US Bureau of Labor Statistics also publishes data on many other employment variables such as the total number of employed, employment figures distribution across industries, revisions of past 3 months unemployment data, the hourly and weekly employment totals (Rupasingha, and Goetz, 2013).

Although the effects of these other variables may have to be considered, the methodology of this study follows Sullivan et al. (2001) to consider only the unemployment rate as analysts and investors view it as relevant information in security pricing. For the JSE, the FTSE/JSE all-shares index, a market capitalization-weighted index, which accounts for approximately 99 percent of the market capitalisation of all JSE listed

companies, was selected to represent the performance of the South African stock market. It also complies with the recommendations made by the International Organization of Securities Commissions (IOSCO). Thus, the index is designed to represent a fairly accurate of the performance of South African companies, and is comprehensive. The daily index data was obtained from the JSE website. Following Boyd et al. (2005), the monthly data for the US unemployment rate was then converted to daily data using Visual Basic for Applications (VBA) estimation function in order to match the FTSE/JSE all-share index daily data.

3. Methodology

This study makes use of the Impulse Response Function (IRF), an analysis of a shock to a Vector Auto regression (VAR) system. The IRF identifies the responsiveness of the FTSE/JSE all-share index, an endogenous variable in the VAR system model when the US unemployment situation is announced. A unit shock (US unemployment announcement) is applied to the error term (ε_t) to see its effect on the VAR system. If x represents the FTSE/JSE all share index and y represents US unemployment announcement, a VAR system model is specified as follows:

$$x_t = \beta_1 + \sum_{k=1}^n \beta_k y_{t-k} + \sum_{l=1}^n \beta_l x_{t-l} + \varepsilon_t \quad (1)$$

Where is the sufficient number of lags to model the VAR system, ε_t are impulses or shocks, and β_i are constant coefficients. The IRF analysis the response of each individual variable in the VAR model to the external impulses to the model (Koop et al., 1996) and the responses are quantified for each variable at specific intervals following the announcements of the US unemployment report. Hence, the IRF tracks the impact on a unit impulse of the VAR system over different time periods. This analysis thus allows both positive and negative relationships between the impulses and individual variables in the VAR to be specifically identified. It is thus hypothesised that, if there is a response of FTSE/JSE all-share index to an impulse in US unemployment announcement, the later may be called the causal for the former.

4. Findings

Table 1 below present the results of a group unit root test applied to the data of the two series being analysed at the level, the US unemployment rate and the FTSE/JSE all-share index. As shown in the results, the null hypothesis that at level the two series have unit roots may be rejected. This shows that the autocorrelation structure of the errors in the series as well as the mean and variance are stationary, a key underlying requirement for the analysis of time series data.

Table 1: Results of Unit Root Test

(FSTE/JSE all-share index, US unemployment rate)		
	t-stat	Prob.
Null Hypothesis: The series have a unit root.		
Chu, Levin & Lin	-70.1013	0.0000*
Shin, Im & Pesaran	-57.8823	0.0000*
Fisher Chi-squared – DF	184.980	0.0000*
Fisher Chi-squared – PP	181.384	0.0000*

* represents significance at 1% level

After testing for stationarity, the next step is to estimate a sufficient number of lags to model VAR for the two series as specified in the lag selection criteria. Results of the lag selection are presented in Table 2 below determined by the lag length selection criteria. The results of the adequate lags to model the VAR system are shown in Table 2 below, which presents the lag selection criteria that 1 lag adequately model the regression equations. Five criteria prove that the 1 lag is sufficient for parsimony and predictive strength of the VAR model (Ng, and Perron, 2001). Thus, there is no misidentification of the lag structure through over-estimation or underestimation of the adequate number of lags (Howard, 2013). Thus, a 1 lag structure was applied in all the analyses in this paper as suggested by five lag criteria (SC, HQ, AIC, LR & FRE) in contrast to over 5 lags

suggested by the LogL more than.

Table 2: Results of Lag Selection

Lag No.	Log L	LR	FPE	AIC	SC	HQ
0	9159.874	0.9795	0.033	-13.8441	-13.8362	-13.8411
1	9160.365	5.9093*	0.035*	-13.8388*	-13.8152*	-13.8299*
2	9163.331	1.2303	0.035	-13.8372	-13.7980	-13.8225
3	9163.950	8.1054	0.037	-13.8321	-13.7772	-13.8115
4	9168.030	7.8216	0.037	-13.8322	-13.7616	-13.8057
5	9171.974	0.6687	0.039	-13.8321	-13.7458	-13.7998

* represents the adequate number of lags

After selecting the adequate number of lags, the VAR system is then estimated and the results are presented in table 3 below. From the estimates, it can be seen that the US unemployment rate announcement is insignificant in explaining the variation in the FTSE/JSE all-share index. Hence, the US employment rate announcement does not significantly impact the FTSE/JSE all-share index.

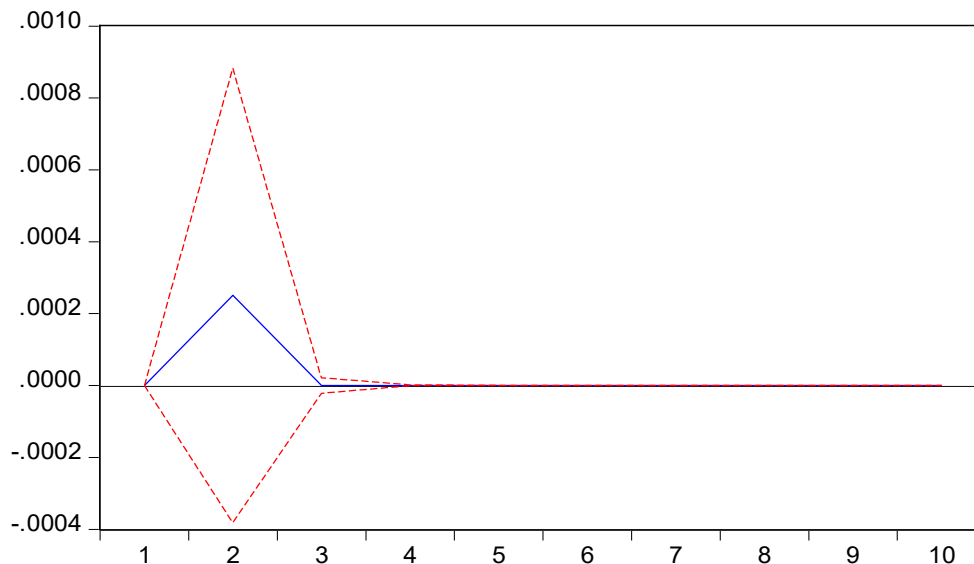
Table 3: Var Estimates with one Lag

	FTSE/JSE all-share index	US unemployment rate	Constant
FTSE/JSE all-share index	0.0063 (0.0302) [0.2111]	0.0433 (0.0545) [0.7940]	0.0003 (0.0003) [1.1761]

Standard errors in () and *t*-statistics in []

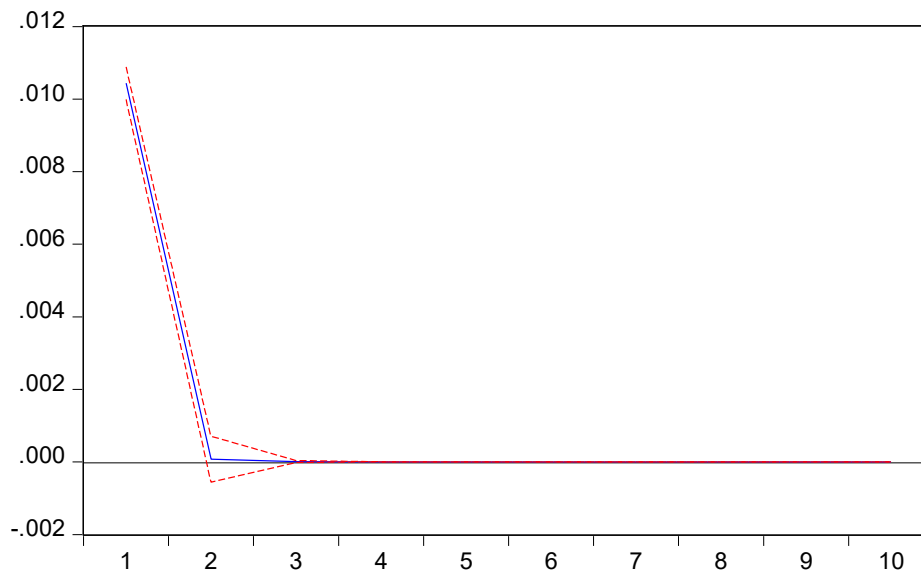
After the VAR system estimations, Figure 1 shows results of the FTSE/JSE all-share index responses to Cholesky's one standard deviation impulse to the US unemployment rate announcement. As can be seen from the graph below, one-unit standard deviation shock in the US unemployment rate results in approximately 0.25 percent positive reaction in the FTSE/JSE all-share index. The results indicate that when the US unemployment announcement is positive, the FTSE/JSE all-shares index generally react positively by one percent, which disappears in three and a half days after the announcement of the US employment situation announcement. Thus, the impact of the US unemployment rate announcement is marginal and it is incorporated into current equities prices immediately after announcements.

Figure 1: Response of FTSE/JSE all-share index to US unemployment rate shock



The responses observed in Figure 1 above could possibly be attributed to a knee-jack reaction from financial market participants. As suggested by Boyd et al. (2005) the reaction does not last for long as investors immediately realize the actual importance of the US unemployment report they adjust overprice stocks downwards and under-priced stocks upwards as the market corrects itself. This result is in line with Ikram and Nugroho (2014) who assert that investors attach too much importance on certain macroeconomic events, an error that leads to uncertain and inconsistent financial markets performance. Hence, the results concur with Malkiel (2003)'s findings that investors behave irrationally when they do not correctly understand or process all the available relevant information while forming their sentiments, perceptions and expectations about the future stock performance. The next graph shows the FTSE/JSE all-share index's response to its own shocks. Figure 1 below shows that the FTSE/JSE all-share index does significantly react positively to its own one standard deviation positive shocks on for only one day. Thereafter, the index's response to own shock marginally decrease and fades away in two days.

Figure 2: Response of FTSE/JSE all-share index to own shocks



To ensure that the VAR system is sufficiently and correctly specified, the serial correlation LM test and the normality tests are performed. These analyses examine if the residuals are not serially correlated and normally distributed, a requirement for time series estimation models (Zivot, and Wang, 2006). The results of the LM test presented suggest that the null hypothesis that there is no autocorrelation may not be rejected. Thus, a VAR with one lag is sufficient to capture the dynamics in the VAR system and the model is correctly specified.

Table 4: Residual Serial Correlation LM test results

Lag	LRE		Rao F-test	
	LM-statistic	Probability	F-statistic	Probability
1	5.4460	0.2445	1.3626	0.2445
2	6.5556	0.1613	1.6407	0.1613

* represents significance at 1% level

The next robustness test is the VAR residual test for normality, which analyses if error terms are normally distributed. Results presented in Table 5 suggest that a null hypothesis that the residuals in the VAR (1) model are normally distributed may not be rejected. Hence, the VAR (1) model is correctly specified since its residuals are multivariate normally distributed. It is thus imperative for monetary and fiscal policy-makers to maintain prudent policies that align with the global best practices to avoid being a weak-link to the world financial markets system.

Table 5: VAR residual normality test

Component	Jargue-Bera	Probability
1	181.8351	0.4235
2	2.4789.6	0.5611
Joint	204971.4	0.5481

* represents significance at 1% level

5. Conclusion

The paper investigated the effect of the announcement of the US unemployment situation on South Africa's stock market during the period of January 2013 to December 2017. Results of the impulse response analysis show that the effect of the US unemployment rate announcement positively impacts South African stock prices. However, the effect is very marginal and is immediately incorporated into current equities prices in less than three days of announcement. The Impulse responses also show that South Africa's stocks significantly respond positively to their own positive shocks, which marginally decrease and fades away in two days. These papers draw five implications from these results. First, changes in the US employment policies have a direct ripple effect on the South African macroeconomic environment, its investing public and corporate confidence in the future prospects of businesses. Second, although there are weakly financial linkages between the US and the South African financial system, the dominance of the US dollar on the macroeconomic dynamics of developing countries is still significant. Thus, emerging stock markets are significantly sensitive to macroeconomic fundamental changes in developed countries. Third, investors evaluate the effect of macroeconomic factors beyond countries' borders. Thus, there are macroeconomic spillover effect of fundamental announcements of significant economic events. Lastly, the South African financial market is inevitably part of the global financial system.

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Demographic Factors as a Catalyst for the Retention of Academic Staff: A Case Study of Three Universities in Sub-Saharan Africa

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Abstract: The aim of the study was to determine the effect that demographic factors such as age, gender, marital status and education, as well as factors such as years of experience, income, academic rank, country of origin and area of specialisation have on academic staff working in the higher education sector in Sub-Saharan Africa. A survey approach was adopted as the main data collection tool and data was collected from three public Universities-University of KwaZulu-Natal (UKZN), Addis Ababa University (AAU) and Haramaya University (HU). The first university is located in South Africa and the last two universities are situated in Ethiopia. The survey was employed as a research design. A self-administered survey questionnaire consisting of both demographic variables (age, tenure, educational level, academic rank, employment status, marital status, average income level, and fields of specialisation) and six item turnover intentions or intentions to stay variables (measured a five-point Likert Scale in which 1= Strongly Disagree; 2= Disagree; 3= Neither Agree Nor Disagree; 4= Agree and 5= Strongly Disagree) were completed by 596 respondents selected by means of the stratified sampling method. The data was analysed using the Statistical Package of the Social Sciences (SPSS) software packages version 24. Both descriptive (frequencies, mean and standard deviation) and inferential (one-way-ANOVA) statistics were applied to examine the effect of the various demographic and other factors on the academic staff members' intentions to depart from or remain at the three universities. The study revealed that the effect of these factors on the academic staff's intention to depart or remain varied across the three universities. The study concluded that age, educational level, rank, employment status, marital status and area of specialisation were significant at HU but not at UKZN, where none of these factors were found to be significant predictors of a staff member's intention to depart from the university. The findings of this study will enable higher education leaders and human resource practitioners in general, but Ethiopian institutions in particular, to design an acceptable human resource strategy and policy, tailored to address diversity and overcome the temptations of "one-size-fits-all" retention strategies.

Keywords: *Intention to depart, demographic factors, academic staff, Ethiopia, South Africa.*

1. Introduction

Institutions of higher learning play a key role in producing and developing skilled manpower and the human capital needed for accelerating a nation's political, social/economic and technological development agendas worldwide (Baker, 2015; Nelson et al., 2017; Puteh, Nor & Zulkifli, 2012; Sawyerr, 2004). The capacity of these institutions to execute their mandate for learning, teaching, research and community service at a sustainable level largely depends on their ability to attract and retain highly qualified academic staff (Nelson et al., 2017). Organisations in the 21st century are largely diversified and the "one-size-fits-all" retention strategy jeopardises the ability of the institutions to attract and retain knowledge workers who usually have highly diversified needs and expectations. Furthermore, having the right mix of academics, in terms of quantity and quality, is paramount to ensure an institution's academic quality and has an impact on the overall performance of the institution.

Based on this presumption, this study examined the effect of demographic factors on the academic staff's intention to depart or remain in the context of the institutions of higher learning in sub-Saharan Africa. Previous studies revealed that employee intention to depart or remain is influenced, among other things, by socio-demographic factors (Agyeman & Ponniah, 2014; Akova, Cetin, & Cifci, 2015; Almalki, Fitzgerald, & Clark, 2012; Chowdhury, 2015; Emiroğlu, Akova, & Tanriverdi, 2015; Ethiopia Demographic and Health Survey, 2011; Hatton & Williamson, 2003; Hundera, 2014; Lee, Dai, Park, & McCreary, 2013; Samad, 2006; Sun, Luo, & Fang, 2013). Other studies, mostly in the context of western countries and to a certain extent Asian countries, hold that there is a significant relationship between demographic factors and turnover intentions. Yet, inconsistent results were produced in this respect.

According to Emiroğlu et al. (2015), there is a significant relationship between demographic factors such as gender, marital status, age, educational level and factors such as tenure, wage, position and working department and turnover intentions in the context of five-star hotels in Istanbul, Turkey. The study concluded that demographic and other factors as mentioned above do influence the turnover intentions of employees (Emiroğlu et al., 2015). This study was later replicated in China and found that only a few demographic factors (age and marital status), and other factors such as employment position, wage level, length of tenure, years of working in the hospitality industry, working hours, work-life balance and job pressure are determinants for the turnover intentions of employees working in five-star hotels in Beijing, China (Wang, 2017: IX). Turnover intention is an important variable to analyse as it provides an estimation of employees' self-assessments about whether they might depart from the organisation in the future. It can be a useful indicator of actual turnover or could provide an opportunity to take action to perhaps prevent the actualisation of the intention (Tettey, 2006). Numerous empirical studies and turnover models have shown that intent has proven to be the strongest and best predictor or indicator of actual departure or turnover (Radzi, Ramley, Salehuddin, Othman & Jalis, 2009). Also see the seminal works of (Smart, 1990) cited in (Tettey, 2006). The term 'turnover intention' refers to "an individual's perceived probability of leaving an organisation or the willingness of an individual to voluntarily withdraw permanently from an organisation" (Radzi et al., 2009:173).

There is a positive relationship between turnover intentions and the actual behaviour, supporting the "attitude-behaviour theory", which holds that an individual's intention to perform a specific behaviour is an immediate determinant of the actual behaviour (Radzi et al., 2009). To determine actual turnover requires a longitudinal research design that surveys and then tracks individuals indefinitely. This is a costly effort involving ethical issues. Certain organisational-level studies use actual turnover rates but most management oriented and individual-level research employs turnover intention (Cho & Lewis, 2012). This study employed a 'proxy' construct 'turnover intention' to measure the extent to which academic staff members at the three universities (UKZN, AAU and HU), are willing to remain there or depart. In the context of sub-Saharan Africa, a limited number of studies have been conducted regarding factors contributing to academic staff's intentions to depart from their institutions (Ibrahim, Kassa, & Tasisa, 2017; Masango & Mpofu, 2013; Onah & Anikwe, 2016). These studies have focused on all factors contributing to the departure of academic staff from higher education sectors in Ethiopia, Nigeria and South Africa. There is a minimal amount of empirical evidence regarding the effect of demographic variables on academic staff's intentions to remain at or depart from universities in sub-Saharan Africa. This study, therefore, aimed to examine the effect of demographic and other factors on the turnover intentions of academic staff at three universities operating in sub-Saharan African countries (South Africa and Ethiopia), using a comparative approach. The two universities selected in Ethiopia are labelled "AAU" and "HU" respectively and the third university was selected from South Africa and labelled "UKZN".

2. Literature Review

Turnover Intention: Employee retention is crucial for the development, survival and prosperity of institutions (Masango & Mpofu, 2013). Studies have shown that there is a strong, positive relationship between turnover intentions and actual turnover (Cho & Lewis, 2012; Radzi et al., 2009; Smart, 1990; Tettey, 2006). The term 'turnover intentions' refers to "an individual's perceived probability of leaving an organisation or the willingness of an individual to voluntarily withdraw from an organisation permanently" (Radzi et al., 2009:173). The success or failure of an organisation is determined, among other things, by its ability to manage workforce turnover. Empirical evidence from Madda Walabu University in Ethiopia indicated that the majority, (71.3%), of the respondents in a study indicated that they intend to depart while the rest prefer to remain in their current job (Ibrahim et al., 2017). The study pinpointed three major reasons for staff wanting to depart. These are an unfavourable work environment, inferior management and leadership and inadequate remuneration (Ibrahim et al., 2017).

Another study involving Nigerian universities identified problems influencing the attraction and retention of quality academic staff as brain-drain, too few female academics, unattractive salary packages and a lack of adequate training and development opportunities (Onah & Anikwe, 2016). A content analysis regarding South African universities confirmed that the voluntary turnover in the selected universities is continuing

despite policy framework aimed at retaining academic staff members (Masango & Mpofu, 2013). This signifies that staff turnover is one of the critical challenges facing the higher education sector and calls for attention to ensure the sustainability of higher learning institutions.

The direct effect of staff turnover is the cost of replacement, whereas the indirect effects include the deterioration of service delivery due to poor job satisfaction, lack of commitment and a low level of engagement among the remaining staff members (Akova et al., 2015). This phenomenon results in a loss of experienced and skilled employees, higher recruitment costs and a greater workload (Melaku, 2014:ii). All this leads to job stress and dissatisfaction, increased temporary or fixed term employment that may compromise the quality of teaching and learning, declining research productivity due to heavy reliance on part time lecturers primarily focusing on teaching-learning, but not on research and community engagement, interruption of course or module delivery, low throughput and a deteriorating quality of education that may have an impact on the reputation of the university and the quality of services delivered to society at large. The main objective of this study was to examine the effects of demographic factors such as age, educational level, marital status, tenure, area/field of specialisation, gender and other related factors on employee's intentions to depart from their institutions. The next sub-section examines the relationship between selected demographic factors and turnover intentions.

Demographic Factors And Turnover Intentions: Several studies have shown a relationship between socio-demographic factors and the intention to depart from the institution in different settings (Agyeman & Ponniah, 2014; Akova et al., 2015; Almalki et al., 2012; Ethiopia Demographic and Health Survey, 2011; Chowdhury, 2015; Emiroğlu et al., 2015; Hatton & Williamson, 2003; Hundera, 2014; Lee et al., 2013; Samad, 2006; Sun et al., 2013), while other researchers have argued that there is no significant association between these variables and turnover intentions (Almalki et al., 2012). This study examined the extent to which these variables predict turnover intentions in the context of higher learning institutions operating in two African countries namely South Africa, which is relatively viable economically and environmentally conducive and Ethiopia, which is relatively weak economically with poor working conditions. Studies have shown that employees' turnover intentions differ based on gender (Carbery, Garavan, O'Brien, & McDonnell, 2003; Cotton & Tuttle, 1986; Emiroğlu et al., 2015; Hundera, 2014; Karatepe, Uludag, Menevis, Hadzimehmedagic, & Baddar, 2006; Momani, 2017; Tufail et al., 2017). The reviewed studies indicated that females have higher turnover intentions than males (Emiroğlu et al., 2015), although the data obtained from China failed to support this (Wang, 2017).

A study in the context of Science, Technology, Engineering and Mathematics (STEM) disciplines, showed that women's stronger turnover intentions highly correlate to dissatisfaction with research support, advancement opportunities and free expression of ideas (Xu, 2008). With regard to marital status there is a monumental amount of evidence indicating that marital status is a significant predictor of employees' intention to depart from an institution (Carbery et al., 2003; Cho & Lewis, 2012; Cotton & Tuttle, 1986; Emiroğlu et al., 2015; Wang, 2017). It has been argued that single or unmarried people have higher turnover intentions than married people. A reason for this is that married people often have other family responsibilities making a job change much more disruptive (Cho & Lewis, 2012). Few studies have shown a significant effect of educational level on employees' intentions to depart from their organisation in the context of the hospitality industry in Asia (Karatepe et al., 2006). The relationship between age and turnover intentions has been examined by various researchers (Al-Hussami, Darawad, Saleh & Hayajneh, 2014; Cotton & Tuttle, 1986; Emiroğlu et al., 2015; Karatepe et al., 2006; Lambert, Hogan & Barton, 2001). The literature on whether age has any effect on an employee's intention to depart from their place of employment has been inconsistent with certain studies showing that young employees are more inclined to depart than older people (Cotton & Tuttle, 1986; Emiroğlu et al., 2015; Karatepe et al., 2006; Lambert et al., 2001), and others arguing that there is no significant relationship between age and employees' turnover intentions (Al-Hussami et al., 2014).

Those who argue that there is a difference in the tendency of people to depart vis-à-vis their age attribute different reasons for the phenomenon. According to Cotton & Tuttle (1986), older people have a lower tendency to withdraw from their employment for two major reasons. One is familiarity with the job and their work environment when they get older and the other is that older people usually have lower expectations

compared to younger people (Wang, 2017:22). Others attribute the tendency to intergenerational differences, between baby boomers, generation X and generation Y (Latkovikj, Popovska & Popovski, 2016; Wang, 2017). Studies in the context of the hospitality industry have shown that previous generations (baby boomers and generation X), differ considerably from generation Y in terms of work-related values, characteristics and attitudes (Solnet & Hood, 2008). In terms of career aspirations, generation Y is apparently self-centred and demanding (Maxwell, Ogden, & Broadbridge, 2010), and have relatively lower commitment and higher turnover rates than generation X (born between 1965 and 1980), in the work place. The weak psychological contract with the organisation could be the reason for the high turnover rate of generation Y employees and their lower levels of organisational loyalty and commitment (Blomme, van Rheede, & Tromp, 2010). Studies have found that members of generation Y have higher expectations of pay raises, promotion and flexibility compared to older generations and they are ready to depart from their current job when they decide that a change is more beneficial to them (Blomme et al., 2010; Gursoy, Maier, & Chi, 2008; Wang, 2017). This study is meant to examine the extent to which turnover intentions in the higher education sector differ with age across the three universities in the sub-Saharan African context. Several studies have also pronounced that tenure, among other demographic factors, yielded significant associations with turnover intentions (Momani, 2017). Studies further propound that people with high tenure generally have lower turnover intentions (Karatepe et al., 2006; Nadiri & Tanova, 2010; Uludağ, Khan, & Güden, 2011). Part of the explanation is that less experienced employees tend to depart from their job because they are being paid lower salaries, have invested less in their pension funds and are highly likely to make a change in favour of a better paying position (Cho & Lewis, 2012). New employees are also less likely to be married or to have children, making geographic moves less disruptive (Cho & Lewis, 2012).

Previous studies have shown that turnover intentions differ based on educational levels (Emiroğlu et al., 2015). They have concluded that employees with a relatively lower level of education have a lower level of turnover intentions compared to those that have higher levels of education (Carbery et al., 2003; Emiroğlu et al., 2015; Karatepe et al., 2006). Earlier studies supported the notion that people with higher levels of education have higher expectations in terms of "financial rights, benefits and audit" (Chen, Wang, & Cheng, 2010), "towards their current employers, which means that the fulfilment of their needs is much more difficult" (Iqbal, 2010), compared to those with low educational levels (Emiroğlu et al., 2015). Another researcher supported the idea that more educated people desire to obtain more job opportunities and have a wider view/understanding compared to uneducated people (Lambert, 2006). Previous studies have suggested that turnover or turnover intentions in African universities vary depending on the field of expertise/discipline (Mitiku, 2010; Tettey, 2006).

A study conducted in five African universities, had the objective of designing retention strategies focused on disciplines such as health sciences, engineering, business, economics and computer/information science with the presumption that these are areas most vulnerable to brain drain or turnover (Tettey, 2006). Empirical evidence based on four years of turnover data, (from 2005 to 2008), revealed that of the 226 academic staff members who left AAU during this period, the faculty of education and social science constituted the highest %age (27%) followed by the medical faculty (19%), technology (18.6%), science (16.4%), the college of business and economics (14.16%), law (3.1%), veterinary medicine and the music school, both accounting for (0.9%) (Mitiku, 2010). This shows that the magnitude of turnover varies from one discipline to the next. In this particular study the researchers tested if areas of specialisation significantly differ in predicting turnover intentions across the three universities. With respect to academic rank, the data obtained from AAU shows that the majority of the staff members who left the higher education sector are lecturers (Mitiku, 2010). In this respect, there is a paucity of empirical evidence regarding the turnover intentions of academic staff vis-à-vis their academic rank. This study examined the notion that turnover intentions differ according to academic rank across the three universities.

Findings regarding the relationship between remuneration and turnover intentions are inconsistent within different settings. Emiroğlu et al. (2015), argue that turnover intentions differ based on wage groups, but Al-Hussami et al. (2014) claim that remuneration is not a significant predictor of turnover intentions. Most of the studies regarding the relationship between remuneration and turnover intentions were conducted in the context of the health sector, focusing on nurses working in Asian countries. This study is unique in that it relies on data obtained from African universities operating in relatively different contexts using a

comparative approach. A limited number of studies have been undertaken to assess the effect of demographic factors on academic staff's intention to depart from their employment in the sub-Saharan African context in general and the higher education sector in particular. The main purpose of this study was to examine the effect of demographic factors such as age, educational level, marital status, tenure, areas/fields of specialisation, gender and other related factors on employees' turnover intentions at three universities. The following hypotheses, based on the existing literature, were formulated for testing.

Table 1: Research hypotheses based on the review of existing literature.

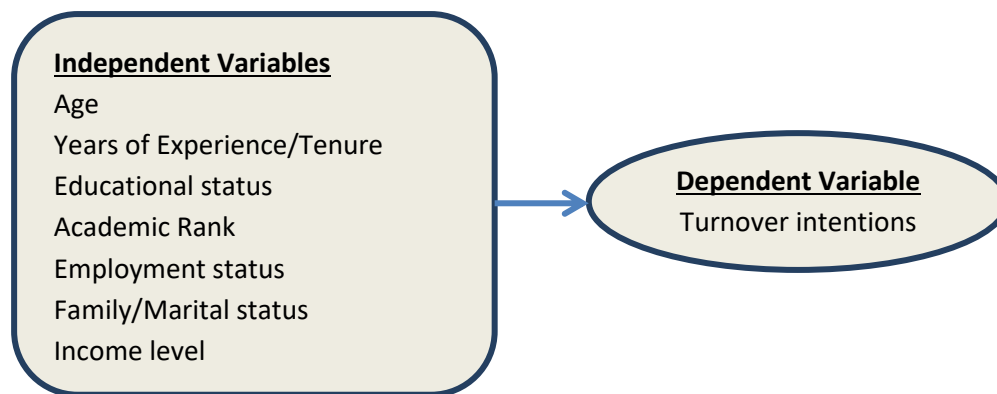
Intention to stay (IS)

No	Hypothesis
H1:	Age has no significant influence on academic staff IS at the three universities H1a: Age has no significant influence on academic staff IS at UKZN H1b: Age has no significant influence on academic staff IS at AAU H1c: Age has no significant influence on academic staff IS at HU
H2:	Tenure has no significant influence on academic staff IS at the three universities. H2a: Tenure has no significant influence on academic staff IS at UKZN H2b: Tenure has no significant influence on academic staff IS at AAU H2c: Tenure has no significant influence on academic staff IS at HU
H3:	Level of education has no significant influence on academic staff IS at the three universities. H3a: Levels of education have no significant influence on academic staff IS at UKZN H3b: Levels of education have no significant influence on academic staff IS at AAU H3c: Levels of education have no significant influence on academic staff IS at HU
H4:	Academic rank has no significant influence on academic staff IS at the three universities. H4a: Academic rank has no significant influence on academic staff IS at UKZN H4b: Academic rank has no significant influence on academic staff IS at AAU H4c: Academic rank has no significant influence on academic staff IS at HU
H5:	Employment status has no significant influence on academic staff IS at the three universities. H5a: Employment status has no significant influence on academic staff IS at UKZN H5b: Employment status has no significant influence on academic staff IS at AAU H5c: Employment status has no significant influence on academic staff IS at HU
H6:	Marital status has no significant influence on academic staff IS at the three universities. H6a: Marital status has no significant influence on academic staff IS at UKZN H6b: Marital status has no significant influence on academic staff IS at AAU H6c: Marital status has no significant influence on academic staff IS at HU
H7:	Income level has no significant influence on academic staff IS at the three universities. H7a: Income level has no significant influence on academic staff IS at UKZN H7b: Income level has no significant influence on academic staff IS at AAU H7c: Income level has no significant influence on academic staff IS at HU
H8:	Area of specialisation has no significant influence on academic staff IS at the three universities. H8a: Area of specialisation has no significant influence on academic staff IS at UKZN H8b: Area of specialisation has no significant influence on academic staff IS at AAU H8c: Area of specialisation has no significant influence on academic staff IS at HU

Source: Researcher's own construction

In addition, based on the hypothesis above, the conceptual model is shown in Figure 1 as a guide to the study.

Figure 1: Proposed conceptual framework/model



3. Methodology

This study employed a survey approach. The data was collected from 596 academic staff members from three selected universities in Ethiopia and South Africa using structured questionnaires. The sampling strategy was stratified, random sampling. The data was collected from the last week of December, 2016 to the second week of May, 2017. The questionnaire consisted of both the independent variables or socio-demographic factors such as age, years of experience (tenure), educational qualification, academic rank, employment status, income, marital status and specialisation whereas the dependent variable is the intention to stay or turnover intention. Among the socio-demographic factors, age was measured using five categories: < 30 years, 30-39 years, 40-49 years, 50-59 years and 60+ years. Years of experience (tenure) was measured using six categories: Less than 1 year, 1 - <6 years, 6 - <10 years, 10 - <15 years, 15 - <20 years and 20 years and above. Level of education was measured using five categories: Bachelor's degree, Master's degree, Doctorate, Post-doctoral degree and others. Academic rank was measured using six categories: Full Professor, Associate Professor, Senior Lecturer/Assistant Professor, Lecturer, Junior/Developmental Lecturer/Assistant Lecturer and others. Employment status was measured using three categories: Temporary, permanent and difficult to define/specify. Average monthly income was measured using equivalent South African Rand and it was categorised into six categories: Up to R6745, R6746 - R13,490, R13,491 - R20,230, R20,231 - R26,980, R26,981 - R33,730, and above R33,730. Marital status was measured using four categories: Single, married, widowed and divorced/separated. Finally, area of specialisation was categorised into five groups: Science, Technology and Engineering (SET), Business and Economics, Social Science and Humanities and others.

On the other hand, the dependent variable was measured using a five point Likert Scale consisting of six items where 1=Strongly Disagree; 2= Disagree; 3= Neither Agree nor Disagree; 4= Agree and 5= Strongly Disagree. Cronbach's alpha was computed for the dependent variable to test whether the items were consistently measuring the same thing and could be combined to give a reliable measure for the intention to depart or remain variables. The alpha value of 0.983 indicates that the 6 items measuring intention to remain, such as "I desire and intend to remain at my university, I would like to continue working at this university for the rest of my career until retirement, etc." is a reliable measure. The data was analysed using SPSS software packages version 24. Both descriptive (%ages, mean and standard deviation) and inferential statistics (such as ANOVA) were applied to examine the effect of the various demographic variables on academic staff turnover intentions or intentions to stay at the three selected universities.

4. Results

Demographic Characteristics of the Respondents: The demographic characteristics of the respondents' show that the majority of the respondents were from AAU (44.1 %), followed by HU (34.9 %). Only 21% were from the UKZN. From a gender point of view, the majority of the respondents were male (84.1 %), female (14.8 %) and 1.2% did not specify their gender. The age distribution of the respondents across the three universities shows that 38.3 %, 29.7 %, 20.8 % and slightly above 10 % of them lies between the age ranges of 30-39, younger than 30, 40-49 and older than 50 respectively. In terms of nationality, 79.4 % of the respondents are Ethiopian whereas 13.9 % are South African. The rest are foreign nationals from all three

institutions. From a tenure perspective, the majority of the respondents have worked between 1 and 6 years (40.6 %) followed by 6-10 years (27.2 %), 10-15 years (11.9 %), less than a year (8.6 %), and slightly less than 10 % of them have served in the university for more than 15 years. In terms of educational qualifications, the majority of the respondents hold a master's degree (53.4 %) followed by doctorate degree holders (31.0 %), bachelor's degree holders (11.1 %) and post-doctoral research fellows (2.9 %). Other groups constitute slightly less than 2 %.

The academic profile of the respondents shows that almost half of the respondents are working as lecturers with the next highest percentage being senior lecturers or assistant professors (24.2 %), followed by junior/developmental/assistant lecturers (11.1 %), with senior academics having the rank of associate professor and full professor constituting slightly less than 10 %. The remainder in the groups form less than 5 %. Lastly, the majority of the respondents are permanent employees (88.4 %), married (60.6%) and Sciences, Technology and Engineering as their areas of specialisation (41.6 %) followed by Business and Economics (18.8 %), Health and Medical Sciences (17.3 %), Social Sciences and Humanities (11.7 %) and other (10.4 %).

Table 2: Average intentions to stay across the three universities

Institutions	N	M	SD
UKZN	125	3.3787	.92078
AAU	263	3.3621	.99757
HU	208	2.8083	.95514
Total	596	3.1723	1.00173

Source: Survey (2017)

As can be seen from Table 2, the mean values at HU are below average indicating that an above average number of academic staff members at HU disagree with the statement that they intend to remain at their university. This indicates more of a vulnerability to academic brain drain at HU compared to the other two universities (For item level mean values see Figure 2). The location of HU could be a reason for the lower intention to remain at the university as it is located in a more rural part of the country compared to the other two universities (UKZN and AAU), which are in metropolitan areas.

Table 3: ANOVA result showing the effect of age differences on academic staff intentions to stay or leave at UKZN, AAU and HU

Universities		Sum of Squares	df	Mean Square	F	Sig.
UKZN	Between Groups	3.938	4	.985	1.217	.307
	Within Groups	96.262	119	.809		
	Total	100.200	123			
AAU	Between Groups	18.475	4	4.619	4.919	.001
	Within Groups	242.255	258	.939		
	Total	260.730	262			
HU	Between Groups	11.344	4	2.836	3.243	.013
	Within Groups	177.499	203	.874		
	Total	188.843	207			

Source: Primary data

Hypothesis Testing: A one-way analysis of variance (ANOVA) was used to examine the effect of demographic factors on the academic staff turnover intentions at universities. Accordingly, the next sub-sections are aimed at testing the already developed hypothesis. The effect of demographic factors on the academic staff's intentions to stay across the three universities, a one-way between groups analysis of variance was employed to examine the effects of demographic and related variables on the academic staff's intentions to either remain at, or depart from, the three universities. Among others age, educational status, academic rank, employment status, family/marital status, areas of specialisation and income were found to be partially and

statistically influential in the academic staff members' intentions to either remain at, or depart from, the two Ethiopian universities. At AAU only three demographic variables, namely age, educational attainment and employment status have significantly predicted turnover intentions. Similarly, a relatively large number of demographic variables including age, educational attainment, academic rank, marital status and field of specialisation have significantly and statistically predicted the academic staff's intention to either remain at, or depart from HU. Contrary to the first two universities under consideration, the findings from UKZN show that none of the demographic variables statistically and significantly predicted academic staff turnover intentions.

The following tables (Tables 3-10) show the one-way between groups' analysis of variance results regarding demographic variables such as age, educational attainment, academic rank, employment status, marital status and areas of specialisation and their effect on turnover intentions at selected universities. As can be seen in Table 3, a one-way between groups analysis of variance was conducted to explore the effect of age on academic staff's intention to either remain at, or depart from across the three universities. Participants were divided into five groups according to their age: Group 1: Younger than 30 years; Group 2: 30 to 39 years; Group 3: 40 to 49 years; Group 4: 50 to 59 years; Group 5: 60 years and older. At UKZN, there is no statistically significant difference between the age groups in this university ($P=0.307$). A similar analysis of the group was made at AAU and the result shows that there was a statistically significant difference at the $p<.05$ level in the turnover intentions for the five age groups: $F(4, 258) = 4.919, p=.001$.

At this level, age accounts for 7.1% ($R^2=0.071$) of the variance in the intention to either remain at, or depart from, the institution. Post-hoc comparisons using the Tukey HSD test indicated the mean score for the 60+ years age group ($M=4.0417, SD=.669887$) was significantly different from the 40-49 years' age group ($M=3.2019, SD=0.94413$), 30-39 years' age group ($M=2.6723, SD=0.91852$) and the younger than 30 years' age group ($M=3.4462, SD=.97722$). The 50-59 years' age group ($M=3.5530, SD=.99757$) did not differ significantly from either of the other groups. This result implies that older academics are not as comfortable with changing jobs as those who are younger. In a similar fashion the age group variable was tested to examine its effect on the academic staff's intention to either remain at, or depart from HU and it was found that there was a statistically significant difference at the $p<.05$ level in the turnover intentions for the five age groups: $F(4, 258) = 4.919, p=.013$.

The effect size was medium (partial $\eta^2=.060$). Post-hoc comparisons using the Tukey HSD test indicated that the mean score for the 60+ years age group ($M=4.0417, SD=.669887$) was significantly different from the 30-39 years' age group ($M=2.6723, SD=0.91852$). The younger than 30 years ($M=2.7855, SD=.95340$), 40-49 years ($M=3.0435, SD=1.00531$) and 50-59 years ($M=3.5833, SD=.69887$) age groups did not differ significantly from any of the other groups. This result reaffirms that the older academic staff members prefer to remain with their institutions while the younger academics are more likely to depart. Hence, H8a was accepted whereas H8b and H8c were rejected.

Table 4: ANOVA result showing the effect of differences of years of experience (tenure) on academic staff intentions to stay or leave at the UKZN, AAU and HU

Universities		Sum of Squares	df	Mean Square	F	Sig.
UKZN	Between Groups	4.832	5	.966	1.192	.317
	Within Groups	94.831	117	.811		
	Total	99.663	122			
AAU	Between Groups	10.258	5	2.052	2.105	.065
	Within Groups	250.472	257	.975		
	Total	260.730	262			
HU	Between Groups	7.326	5	1.465	1.631	.153
	Within Groups	181.517	202	.899		
	Total	188.843	207			

Source: Primary data

As can be seen in Table 4 a one-way between groups analysis of variance was conducted to explore the effect of income level on academic staff's intention to either depart from, or remain at, three universities namely UKZN, AAU and HU. The variable was grouped into six categories: less than 1 year, 1-<6 years, 6-<10 years, 10-<15 years, 15-<20 years and 20+ years against the dependent variable (intentions to either depart from, or remain at, the university). When compared across the three universities at $p < .05$, it was found that years of experience (tenure) was not significant predictor of academic staffs' turnover intentions (See Table 4). Hence, H8a, H8b and H8c were accepted.

Table 5: ANOVA result showing the effect of differences of educational level on academic staff intentions to stay or leave at the UKZN, AAU and HU

Universities		Sum of Squares	df	Mean Square	F	Sig.
UKZN	Between Groups	2.334	3	.778	.954	.417
	Within Groups	97.866	120	.816		
	Total	100.200	123			
AAU	Between Groups	9.622	4	2.405	2.471	.045
	Within Groups	251.108	258	.973		
	Total	260.730	262			
HU	Between Groups	13.100	4	3.275	3.783	.005
	Within Groups	175.744	203	.866		
	Total	188.843	207			

Source: Primary data

As can be seen in Table 5, a one-way between groups analysis of variance was conducted to explore the effect of educational qualifications on academic staff turnover intentions at three universities, namely UKZN, AAU and HU. The variable was grouped into five categories: Bachelor's degree, Master's degree, Doctorate, Post-doctoral degree and others for the three universities against the dependent variable (intention to either remain at, or depart from, the university), which was measured using six Likert Scale items. When compared across the three universities, it was proved that only two universities (AAU and HU) were found to be statistically significant at the $p < .05$ level in the turnover intentions or intentions to remain for the five categories: $F(4,258) = 2.471$, $P = .045$ and $F(4,203) = 3.783$, $p = .005$ respectively. A post hoc comparison using the Tukey HSD test indicated that the mean score for the Doctorate group ($M = 3.6105$, $SD = .98915$) was significantly different from the Bachelor's group ($M = 3.1212$, $SD = 1.07297$), the Masters group ($M = 3.2869$, $SD = 1.00063$) and others ($M = 2.6944$, $SD = .97420$) at AAU. Using the same test, it was seen that the mean score for the Bachelors group ($M = 3.0992$, $SD = .92251$) and Doctorates ($M = 3.1086$, $SD = .98791$) was significantly different from Master's degree holders ($M = 2.6253$, $SD = .91715$) at HU. Qualification is not a significant predictor of intention to either remain at, or depart from, UKZN (see Table 5). Hence, H8a was accepted whereas H8b and H8c were rejected.

Table 6: ANOVA result showing the effect of differences in academic rank on academic staff intentions to stay or leave at the UKZN, AAU and HU

Universities		Sum of Squares	df	Mean Square	F	Sig.
UKZN	Between Groups	5.171	5	1.034	1.284	.275
	Within Groups	95.029	118	.805		
	Total	100.200	123			
AAU	Between Groups	5.588	5	1.118	1.126	.347
	Within Groups	255.142	257	.993		
	Total	260.730	262			
HU	Between Groups	13.132	4	3.283	3.793	.005
	Within Groups	175.711	203	.866		
	Total	188.843	207			

Source: Primary data

Table 7: ANOVA result showing the effect of differences of employment status on academic staff intentions to stay or leave at the UKZN, AAU and HU

Universities		Sum of Squares	df	Mean Square	F	Sig.
UKZN	Between Groups	1.836	2	.918	1.113	.332
	Within Groups	96.530	117	.825		
	Total	98.367	119			
AAU	Between Groups	7.296	2	3.648	3.716	.026
	Within Groups	253.284	258	.982		
	Total	260.580	260			
HU	Between Groups	1.905	2	.953	1.058	.349
	Within Groups	183.652	204	.900		
	Total	185.557	206			

Source: Primary data

As can be seen in Table 6, a one-way between groups analysis of variance was conducted to explore the effect of educational qualifications on academic staff turnover intentions at three universities, namely UKZN, AAU and HU. The variable was grouped into six categories: Full Professor, Associate Professor, Senior Lecturer/Assistant Professor, Lecturer, Junior/Developmental/Assistant Lecturer and others and was tested against the dependent variable (either remain at, or depart from, the university), which was measured using six Likert Scale items. When compared across the three universities it was proved that academic rank is a significant predictor of academic staff turnover intentions only for HU at the $p < .05$ level for the five categories: $F(4,203) = 3.793$, $p = .005$. A post-hoc comparison using the Tukey HSD test indicated that the mean score for associate professors ($M = 3.4792$, $SD = .60515$) was significantly different from senior lecturer/assistant professor ($M = 2.6701$, $SD = .97955$) and lecturer ($M = 2.6696$, $SD = .93892$). Academic rank was not a significant predictor of turnover intentions at the other two universities (see Table 6). Hence, H8a and H8b were accepted whereas H8c was rejected.

As can be seen in Table 7, a one-way between groups analysis of variance was conducted to explore the effect of employment status on academic staff's intention to either remain at, or depart from, the three universities, namely UKZN, AAU and HU. The variable was grouped into three categories: Temporary, Permanent and Difficult to Define against the dependent variable (intention to either remain at, or depart from, the university) and was measured using six Likert Scale items. When compared across the three universities it was proved that academic rank is a significant predictor of academic staff turnover intentions only for AAU at the $p < .05$ level for the three categories: $F(2,258) = 3.716$, $p = .026$. The effect size was small (partial $\eta^2 = .028$),

indicating that employment status explains 2.8% of the variance in the academic staff's intention to remain or depart. A post-hoc comparison using the Tukey HSD test indicated that the mean score of those 'difficult to define' their employment status ($M=3.7639$, $SD=.47915$) was significantly different from those whose employment status is temporary ($M=2.6667$, $SD=.92195$).

The intention to remain or depart for those employees whose employment status is 'difficult to define' is significantly greater than those academic staff members whose employment status is temporary. In the other two universities employment status is not a significant predictor of turnover intentions (see Table 7). Hence, H8a and H8c were accepted whereas H8b was rejected. As can be seen in table 8, a one-way between groups analysis of variance was conducted to explore the effect of marital status on academic staff's intention to either remain at, or depart from, three universities, namely UKZN, AAU and HU. The variable was grouped into four categories: Single, Married, Widowed and Divorced against the dependent variable (intentions to either remain at, or depart from, the university), which was measured using six Likert Scale items. When compared across the three universities at $p<.05$, it was proved that marital status is a significant predictor of academic staff members' intentions to depart or remain only for HU for the four categories: $F(3,204) = 2.663$, $p=.049$.

The effect size was close to medium (partial $\eta^2 = .038$), indicating that marital status explains 3.8% ($R^2 = .038$) of the variance in the academic staff's intentions to remain at HU. Although it was not possible to undertake a post-hoc test for comparing the means scores using the Tukey HSD test due to the fact that two of the groups, namely divorced and widowed, each had fewer than two cases making it difficult to determine the standard deviation (SD), which is an important input for undertaking the post-hoc test. Despite looking at the mean scores of both married ($M=2.9542$, $SD=.96342$) and single ($M=2.6250$, $SD=.92084$) groups, it is apparent that the intention to remain at the university was significantly greater for married academic staff than for those staff members who are single. At the other two universities marital status was not found to be a significant predictor of turnover intentions (see Table 8). Hence, H8a and H8b were accepted whereas H8c was rejected.

Table 8: ANOVA result showing the effect of differences in marital status on academic staff intentions to stay or leave at the UKZN, AAU and HU

Universities		Sum of Squares	Df	Mean Square	F	Sig.
UKZN	Between Groups	1.689	3	.563	.686	.562
	Within Groups	98.511	120	.821		
	Total	100.200	123			
AAU	Between Groups	5.835	2	2.917	2.968	.053
	Within Groups	254.615	259	.983		
	Total	260.449	261			
HU	Between Groups	7.117	3	2.372	2.663	.049
	Within Groups	181.726	204	.891		
	Total	188.843	207			

Source: Primary data

Table 9: ANOVA result showing the effect of differences in income level on academic staff intentions to stay or leave at the UKZN, AAU and HU

Universities		Sum of Squares	df	Mean Square	F	Sig.
UKZN	Between Groups	4.443	5	.889	1.051	.392
	Within Groups	93.026	110	.846		
	Total	97.468	115			
AAU	Between Groups	4.993	5	.999	1.001	.418
	Within Groups	255.456	256	.998		
	Total	260.449	261			
HU	Between Groups	1.529	2	.764	.836	.435
	Within Groups	187.315	205	.914		
	Total	188.843	207			

Source: Primary data

Table 10: ANOVA result showing the effect of differences of areas of specialisation on academic staff intentions to stay or leave at the UKZN, AAU and HU

Universities		Sum of Squares	df	Mean Square	F	Sig.
UKZN	Between Groups	2.503	4	.626	.762	.552
	Within Groups	97.697	119	.821		
	Total	100.200	123			
AAU	Between Groups	5.009	4	1.252	1.263	.285
	Within Groups	255.721	258	.991		
	Total	260.730	262			
HU	Between Groups	16.750	4	4.187	4.940	.001
	Within Groups	172.093	203	.848		
	Total	188.843	207			

Source: Primary data

As can be seen in Table 9, a one-way between groups analysis of variance was conducted to explore the effect of income level on academic staff's intention to either depart from, or remain at, three universities namely UKZN, AAU and HU. The variable was grouped into five categories: up to R6745, R 6746-R13,490, R13,941-R20,230, R20,231-R26,980, R26,981-R33,730 and above R33,730 against the dependent variable (intentions to either depart from, or remain at, the university). When compared across the three universities at $p < .05$, it was found that income level was not significant predictor of academic staffs' turnover intentions (See Table 9). Hence, H8a, H8b and H8c were accepted. As can be seen in Table 10a one-way between groups analysis of variance was conducted to explore the effect of area of specialisation on academic staff's intention to either depart from, or remain at, three universities namely UKZN, AAU and HU. The variable was grouped into five categories: Sciences, Technology and Engineering, Business and Economics, Health and Medical Sciences, Social Sciences and Humanities and Other against the dependent variable (intentions to either depart from, or remain at, the university), and was measured using six Likert Scale items.

When compared across the three universities at $p < .05$ it was proved that area of specialisation is a significant predictor of academic staff turnover intentions only for HU for the five categories: $F(4,203) = 4.940$, $p = .001$. The effect size was medium (partial $\eta^2 = .089$) indicating that area of specialisation explains 8.9% ($R^2 = .089$) of the variance in the academic staff members' intentions to either remain at, or depart from, HU. A post-hoc comparison using the Tukey HSD test indicated that the mean score of Sciences, Technology and Engineering ($M = 3.1350$, $SD = .95968$) was statistically significantly different from staff members in the Business and Economics ($M = 2.4063$, $SD = .93989$) and Health and Medical Sciences ($M = 2.5111$, $SD = 1.09766$). The intention

to remain or depart for Sciences, Technology and Engineering faculty members is significantly greater than those of Business and Economics and Health and Medical Sciences. Area of specialisation was not found to be a significant predictor of turnover intentions at either UKZN or AAU (see Table 10). Hence, H8a and H8b were accepted whereas H8c was rejected.

Discussion: The study examined the effect of demographic variables such as gender, age, educational status, academic rank, employment status, family/marital status, nationality, income and areas of specialisation on the academic staff's intention to either depart from, or remain at, three public universities (two in Ethiopia and one in South Africa). The study revealed that the intention to remain differs significantly across the institutions, $F(2,593) = 22.638$, $p < 0.0005$. Employees at AAU and UKZN indicate more agreement than those at HU that they intend to remain in their jobs. The extent of influence of demographic variables on the academic staff's intention to depart varies across the three universities. None of the demographic variables were proved to predict academic staff members' turnover intentions at UKZN whereas a limited number of variables (age, educational attainment and employment status), significantly predicted turnover intentions of academic staff at AAU. A relatively large number of demographic variables including age, educational attainment, academic rank, marital status and field of specialisation have significantly and statistically predicted the academic staff's intention to either depart from, or remain at, HU (see Tables 3-10).

The following part excludes those demographic variables such as gender, nationality and income from the discussions and primarily focuses on those demographic variables such as age, educational level, academic rank, employment status, marital status and areas of specialisation that were found to statistically and significantly predict academic staff's intention to either depart from, or remain at, the three universities. Age significantly predicted turnover intentions at two universities, AAU and HU. The results showed that the tendency to want to depart in the academic staff group older than 60 years of age differs significantly from academics younger than 50 years of age. This study is consistent with previous studies in that older people tend to remain in their workplace while younger people are more inclined to move (Cotton & Tuttle, 1986; Emiroğlu et al., 2015; Karatepe et al., 2006; Lambert et al., 2001). A few reasons for older people preferring to remain in their current workplace are: familiarity with the job and their work environment and older people usually have lower expectations compared to younger people regarding their prospects (Wang, 2017:22). Other researchers have attributed this phenomenon to intergenerational differences between generation Y and generation X (Latkovikj et al., 2016; Wang, 2017). Generation Y employees generally have higher turnover rates than generation X employees in the workplace (Blomme, van Rheede & Tromp, 2010). They have a lower level of organisational loyalty and commitment, a weak psychological contract with the organisation and are apparently self-centred and demanding by nature (Blomme et al., 2010; Maxwell et al., 2010).

Members of Generation Y have higher expectations of pay raises, promotion and flexibility compared to older generations and they are ready to depart from their current job when they decide the change is more beneficial to them (Blomme et al., 2010; Gursoy et al., 2008; Wang, 2017). Apart from intergenerational differences, the reason for the tendency of younger academic staff to depart from their institutions at the two universities in Ethiopia is attributed to economic forces. In the past, academics at Ethiopian universities were highly privileged in that they had access to resources such as loans to buy property, cars and houses, which is largely impossible for today's academics due to the unprecedented expansion of the higher education sector in the country. As a result, older people are relatively economically established in the sense that most of them have got basic facilities such as housing, cars and other basic necessities that younger academics are mostly lacking in the current Ethiopian higher education sector.

Turnover intentions were found to differ based on educational status at the two Ethiopian universities (AAU and HU). This finding revealed that academic staff with higher education levels prefer to remain in their positions at the two Ethiopian universities. This result is inconsistent with previous studies (Carbery et al., 2003; Chen et al., 2010; Emiroğlu et al., 2015; Iqbal, 2010; Karatepe et al., 2006; Lambert, 2006), which concluded that employees with a relatively lower level of education have a lower level of turnover intention. They argued that people with higher levels of education have higher and more expectations, desire to obtain more job opportunities and have a broader view compared to uneducated people (Emiroğlu et al., 2015;

Lambert, 2006). Empirical evidence has shown that academic staff with lower educational levels are more vulnerable to academic brain drain or turnover intentions at AAU.

The evidence from HU revealed that academic staff members with Master's degrees are more vulnerable to academic brain drain compared to those with Bachelor's and Doctoral degrees, putting the long-term sustainability of the university in jeopardy. This phenomenon, if not curbed, will drain the cadre of academics who are expected to succeed in the academic structure in the future. Educational qualification is not a significant predictor of the intention to either depart from, or remain at, UKZN. Academic staff's intention to depart was found to differ when looking at academic rank in HU compared to UKZN and AAU. This finding is consistent with the age and educational status variables that are largely related to academic rank. Despite the paucity of empirical evidence with regard to the higher education sector, one of the studies conducted in the context of AAU revealed that lecturers make up the larger portion of departures (Mitiku, 2010).

The current finding is consistent with this result in that associate professors significantly differ from assistant professors and lecturers at HU in their intention to either depart from, or remain at, their university. Associate professors are more likely to remain compared to assistant professors and lecturers. Familiarity with the job, strong social, research and career networks and relatively stable financial standing could be reasons that influence the senior academics' decisions to NOT depart from their current institution. Academic staff's turnover intentions differed based on employment status at AAU as opposed to the other two universities (UKZN and HU). The intention to either depart from, or remain at, the institution for those employees whose employment status is 'difficult to define', is significantly greater than those academic staff members whose employment status is temporary. Employment status is not a significant predictor of intention to either depart from, or remain at, AAU. When examining the frequency, about 91.20% of the academics at AAU have the next highest mean value of intentions to depart ($M=3.3749$, $SD=1.01103$). This implies that permanent academic staff have a higher tendency to remain. This could be because their employment situation offers them better job security. Academic staff members' turnover intentions differed based on marital status at HU when compared to UKZN and AAU.

Previous studies indicated that marital status significantly predicts employees' intentions to depart (Carbery et al., 2003; Cho & Lewis, 2012; Cotton & Tuttle, 1986; Emiroğlu et al., 2015; Wang, 2017). They argued that single people are more vulnerable to staff turnover than married people are. A change of job is less disruptive for singles than married people who have more family responsibilities such as children, which influences them to remain in the organisation (Cho & Lewis, 2012). This finding is consistent with earlier studies showing that marital status is a significant predictor of academic staff's turnover intentions only at HU. Thus, married academic staff members have a lower tendency to depart from the institution. Academic staff members' intentions to either depart from, or remain at their university differs significantly based on their areas of specialisation. Previous studies indicated that turnover intentions vary depending on the fields of expertise/disciplines/specialisations (Mitiku, 2010; Tettey, 2006). According to Tettey (2006), health sciences, engineering, business, economics and computer/information science are areas that are vulnerable to brain drain or turnover. Another study conducted in the context of AAU in Ethiopia revealed that out of 226 academics who left AAU between 2005 and 2008, the majority (27%) of them were from the faculty of education and social science followed by the medical faculty (19%), technology (18.6%), science (16.4%), college of business and economics (14.16%), law 3.1% and veterinary medicine and the music school, both accounting for 0.9% (Mitiku, 2010).

Evidence showed that area of specialisation is a significant predictor of academic staff's intention to either depart from, or remain at, HU only. Faculty members in the discipline of the sciences, technology and engineering are more vulnerable to academic turnover than other disciplines. This finding is consistent with the findings of previous researchers in that employees with scarce skills are vulnerable to brain drain as they have ample employment opportunities elsewhere. This implies that HU needs to devise special policies on how to attract and retain faculty members in the fields of science and technology vis-à-vis the existing higher education policy of 70:30, which forces the universities to enrol 70% of the student population in the fields of science, engineering and technology.

Recommendations: In order attract and retain academics of diversified backgrounds with the right mix of qualifications for the achievement of institutional goals, it is imperative to develop appropriate human resource management policies and strategies. It is therefore recommended that higher education leaders, human resources managers, operational managers and other stakeholders should have an understanding of diversity in the workplace and its paramount importance for designing sound retention policies and strategies that overcome the tendency of the leaders' behaviour in terms of the "one-size-fits-all" retention strategies in the 21st century workplace where employees have divergent needs and aspirations. Failure to address such diversified demands in the workplace could lead to conflict in the workplace, misunderstanding and miscommunication, lower employee productivity, poor employee well-being and reduced organisational citizenship behaviour. Concisely, a number of demographic factors were found to be predictors of academic staff members' turnover intentions at two Ethiopian universities. This study recommends that HU establishes a sound human resource management policy that addresses these demographic factors (age, marital status, educational level, rank and area of specialisation), in order to effectively retain the right mix of human capital at the institution.

The intention of young academics to depart from HU will have serious repercussions on the long-term sustainability and competitiveness of the university. As suggested, a mechanism to retain young academics would be to establish a sound system in which senior academics would be provided with the necessary resources, including time, to mentor the junior members by involving them in research activities at various levels. In order to undertake this job effectively, the university would be required to create an enabling environment for the senior academics to devote their time to writing research proposals to compete for funds both locally and internationally as part of a staff retention programme. This may require the university to relieve them of their undergraduate and graduate teaching load, allowing them to devote more time to research activities. Above all the young academics need to be made aware of the significance of aspiring to higher-level academic positions and being driven to pursue academic careers and to remain where they are currently employed. With respect to marital status, the university needs to improve the working environment, not only for the academics but also for their family members. The institution could consider schooling, recreation centres and other opportunities for the children of their staff members. HU also needs to devise an adaptive HR policy to address the unique challenges it is facing with regard to retention of scarce skills in the science, engineering and technology faculties in order to achieve the outcomes of the national policy of producing more graduates in those fields.

5. Conclusion

The study concludes that selected demographic factors such as age, tenure, educational status, academic rank, employment status, marital status, average income and areas of specialisation partially and significantly influenced intentions to remain at the two Ethiopian universities. However, at AAU only three demographic variables, namely age, educational attainment and employment status significantly predicted the turnover intentions of academic staff. A relatively large number of demographic variables including age, educational attainment, academic rank, marital status and field of specialisation significantly and statistically predicted the academic staff's intentions to either depart from, or remain at, HU. Contrary to the first two universities under consideration, the findings from UKZN showed that none of the demographic variables statistically and significantly predicted intentions to remain. More specifically, the findings have shown that age significantly predicted turnover intentions at two Ethiopian universities, AAU and HU as opposed to their South African counterparts. In addition, the finding at the two Ethiopian universities consistently proved that older people are more likely to remain in their workplace compared to younger people owing to reasons such as familiarity with the job and work environment, lower expectations compared to young people and intergenerational differences in their commitment to their institutions. In a similar manner, turnover intentions differ based on educational status at these two universities (AAU and HU). Academic rank was found to be significant only at HU. Employment status predicted intention to depart only at AAU. Marital status and areas of specialisation were found to be significant predictors of turnover intentions at HU but not at AAU and UKZN.

Limitations of the Study and Future Research Directions: Firstly, this study is limited in that it employed cross-sectional data at three universities and used “turnover intentions” instead of “actual turnover” to examine the effect of certain demographic factors in the context of three public universities (one in South Africa and the other two in Ethiopia), in broader terms. It would have been better to focus on specific socio-demographic factors in depth and examine how that influences the academic staff’s intention to either remain at, or depart from, their university. Secondly, it would have been much more representative if the study covered the wider population of higher learning institutions in both countries. It is suggested that further studies be undertaken using one specific demographic factor such as gender or age to see how that influences the academic staff’s intention to either remain at, or depart from, their institution in the broader contexts of the higher learning institutions in the specific countries in the future.

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The Relationship between Psychological Contract Breach and Engagement: Job Satisfaction and Organisational Support as Moderators

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Abstract: The purpose of this study was to investigate the moderating effect of job satisfaction and organisational support on the relationship between psychological contract breach and work engagement. An experimental design involving quantitative research methodology was used, conducting a survey of 1029 respondents. The relationship between psychological contract breach and work engagement is more complex than previous studies suggest: This research concludes that job satisfaction moderates the relationship between psychological contract breach and work engagement. Organisational support, however, does not have a significant moderating effect on this relationship. It was also limited to South African organisations; comparative studies in other African countries and other emerging markets would be useful. Psychological contract breach has an adverse effect on work engagement. This finding is particularly important for organisations going through economic difficulties with resultant resource losses - that are perceived by employees as a breach of psychological contract. This study suggests that organisations ought to commit their limited resources to increase job satisfaction during periods of change. It will lead to employees having a buffer between this breach and the risk of potentially lower engagement levels. Increased levels of employee job satisfaction would moderate the effect of psychological contract breach on work engagement – thus reducing the probability of poor work engagement. Surprisingly, organisational support did not have a significant moderating effect on the relationship between psychological contract breach and work engagement.

Keywords: *Moderating effect; job satisfaction; organisational support; psychological contract breach; work engagement*

1. Introduction

During times of economic pressure organisational performance declines and subsequent turnaround interventions regularly involve restructuring or downsizing (Boyne, 2004). Downsizing, in turn, leads to a lack of job security and trust in the organisation (Mishra, Mishra & Spreitzer, 2009), for both those employees leaving as well as those who survive the process (Noer, 2009). The retrenchment rate in South Africa is at a ten-year high and 4.6 million people are unemployed (Maswanganyi, 2014; Sapa, 2015). The country has a deep-seated history of struggle relating to power and values (Seneque & Bond, 2012). The post-apartheid South African environment is also characterised by large-scale transformational societal change. The introduction of the Broad-Based Black Economic Empowerment Act (Act 46 of 2013), for example, led to even more intense feelings of insecurity for white people in South Africa and a lack of psychological safety, which negatively influences work engagement (Simpson, 2009). It is important for organisations to understand how victims of retrenchment processes experience and comprehend these changes, to ensure their remaining employees continue to be a key source of competitive advantage (Chaundhry & Song, 2014; Noor, 2009). Modern organisations need healthy and motivated employees to survive and prosper during changing times (Salanova, Llorens, Cifre & Martinez, 2012).

The consequential cost associated with disengagement has been well researched. Studies have found, for example, that employee engagement is paramount for organisational performance, because it ensures sustainability, customer satisfaction (Harter, Schmidt & Keyes, 2002), positive perceptions of organisational change (Leiter & Maslach, 2004) and, ultimately, profitability (Scrima, Lorito, Parry & Falgares, 2014). Scholarly research has also identified a number of antecedents to engagement, including psychological safety (May, Gilson & Harter, 2004) and authentic leadership (Scheepers & Elstob, 2016). Asiwe, Rothmann, Jorgensen and Hill (2017) also highlight relationships at work to foster engagement, since these relationships can create psychological safety. The psychological contract as an antecedent to engagement has received only limited attention, however, and the influence of a contract breach during times of economic pressure even

less (Rayton & Yalabik, 2014). Employee engagement is both physical and mental and should be nourished for performance (Simpson, 2009) and to enable employees to face the challenges of uncertain economic environments. However, work engagement is dwindling the world over (Gallup Inc., 2013) and further research into this area is therefore required.

Furthermore, organisations would benefit from understanding what might lessen the impact of the breach of the psychological contract on engagement. This study argues that the relationship between employer and employee may be strengthened by the support offered by an organisation during these times. The study investigated another moderator, the level of job satisfaction in this relationship, as it was hypothesised that intrinsic motivation could provide a buffer against the negative influence of a contract breach. This study therefore focused on investigating the moderating effect of both organisational support and job satisfaction on the relationship between psychological contract breach and engagement. The enhanced understanding of the relationship between psychological contract breach, job satisfaction, organisational support and work engagement, could help employers to proactively increase work engagement levels when there is a possibility of psychological contract breach and employees to develop mechanisms to remain engaged during trying times. Increased engagement would in turn increase organisational performance.¹

2. Literature Review

Engagement: Employee engagement depends on the perceived commitment of employers to meet their obligations (Rayton & Yalabik, 2014). It also follows that once these obligations are met, employees are content with their jobs (Kahn, 1990; Rayton & Yalabik, 2014). With the increasing economic hardship amid tight competition across the globe, resources are getting scarce and thus organisations are shifting from extrinsic benefits (pay) to intrinsic motivation, such as job satisfaction. Kahn's seminal work describes engagement as "the employing or expressing of oneself physically, cognitively, and emotionally during work role performances" (Kahn, 1990: .694). When an employee is engaged, he/she is understood to be involved physically, is cognitively vigilant and connected emotionally (Simpson, 2009). The study of engagement has become very active, with more than 1 800 citations, mostly in the last five years (Saks & Gruman, 2014). Work engagement has been defined as a positive, fulfilling, work-related state of mind, characterised by vigour, dedication and absorption (Schaufeli, Bakker & Salanova, 2006; Schaufeli, Salanova, Gonzalez-Roma & Bakker, 2002). Vigour, in the motivational model, speaks to the ability of the individual to display "high levels of energy and mental resilience while working, it also underlines the willingness to invest effort in one's work, and be persistent even in the face of difficulties" (Schaufeli et al., 2006:702). "Dedication refers to an individual who is strongly involved in their work and someone who is experiencing a sense of significance, enthusiasm, inspiration, pride, and challenge" (Schaufeli et al., 2006: 702). "Absorption is described as being fully focused and happily engrossed in one's work, where time passes too quickly and one has difficulty detaching oneself from the work" (Schaufeli et al., 2006:702).

In times of economic difficulty and uncertainty, such as is currently being experienced in South Africa and globally, it becomes even more important for organisations to have an engaged, and thus focused and committed, workforce. When organisations are in distress, it impacts on the employees, whether as a result of unexpected reductions in staff, management replacements, loss of talent or union unrest (Yakola, 2014). Scholars have uncovered a number of antecedents to engagement, for example, job resources (Schaufeli & Bakker, 2004), autonomy (Bakker, Tims & Derks, 2012), job demands (Bakker & Demerouti, 2007) and job control (Mauno, Kinnunen & Ruokolainen, 2007; Tufail et al., 2016). Human resources management can introduce interventions to assist both the individual and the organisation (Bakker & Demerouti, 2008), such as workplace behavioural health practices that address job design, supervisory communication, corporate culture, working conditions and leadership style (Attridge, 2009). The consequences of engagement include customer loyalty (Salanova, Agut & Peiro, 2005), business unit performance (Blackwell 2014), organisational citizenship behaviour (Bakker, Demerouti & Verbeke, 2004) and proactive behaviour (Bakker, Tims & Derks, 2012).

¹ The paper is based on the report of Tjaart van der Westhuizen's research towards fulfilling the requirements of his Masters in Business Administration (MBA) research.

Breach of Psychological Contract: Today's organisational workplaces have become increasingly complex due to new and flexible forms of engagement (Cullinane & Dundon, 2006). This has increased the need for psychological contracts between employers and employees. Joubert and Feldman (2017) contend that leadership and followership are interrelated events with a focus on interactions, connections, dependences and exchanges. These associations can be explained as psychological contracts (Rousseau, 1989) that refer to an individual's system of beliefs grounded in commitments articulated or implied. Joubert and Feldman (2017) go on to say that leaders play a prominent role in the creation of the views followers have of leadership. The psychological contract is thus a social exchange theory (SET) process (Blau, 1964) that compels reciprocal engagement from employees when the organisation meets their expectations (Rousseau, 1989). From the social exchange point of view, individuals remain satisfied when there is a balanced exchange between employers and employees. If the balance is not maintained, a psychological contract breach occurs (Bashir & Nasir, 2013). Failure to comply with the obligations by either party has a negative effect on the relationship between the employee and the organisation and is perceived as a violation. This adversely affects the belief of the affected party with regard to the reciprocal obligations of the two parties (Robinson, Kraatz & Rousseau, 1994). Psychological contracts are stable unless information is not shared transparently about the changes experienced (Chaundhry & Song, 2014). Past experiences, as well as the context in which employees find themselves, contribute to creating employee perceptions of what the organisation is owed and what the employee owes in return (Rousseau, 1989). Psychological contracts are influenced by the different human resource practices imposed by organisations which can result in different types of contracts being established. These include relational, balanced, transitional and transactional contracts (Scheepers & Shuping, 2011).

The concept of psychological contract involves an employee's expectation of an employer fulfilling promises, while psychological contract breach is the belief that the other party has failed to fulfil the promise (Rousseau, 1989; Tibaingana, 2014). The compromise of any of these obligations of either of the parties, constitutes a psychological contract breach. Zhao, Wayne, Glibkowski and Bravo (2007) declare that a psychological contract breach is an employee's perception of the extent to which the organisation has failed to fulfil its promises or obligations. Tomprou, Rousseau and Hansen (2015) call this a violation of the psychological contract and say it may generate a strong negative emotional response such as distress and anger. This can be expressed in a variety of ways including absenteeism, job neglect or resignation. Delivering on each party's promise is therefore important in enhancing workplace harmony (Tomprou et al., 2015). The psychological contract breach not only has a harmful impact on employees, but also negatively affects the performance of the organisation (Mallah, Syed & Memon, 2016). Proactively learning one another's concerns and needs before disruptions take place can enable employees to improve their ability to handle these changes before they take place (Tomprou et al., 2015). Although psychological contract breach is not a new phenomenon in the field of human resource management, too many organisations do not recognise its importance and there is continued organisational distress, turnover and talent loss, which slow down operations (Yakola, 2014).

In South Africa, some companies are experiencing the impact of psychological contract breaches and finding it difficult to keep staff engaged (ITWeb Africa, 2015). In an era of turnarounds and retrenchments it is important to understand what processes could lessen the impact of, or increase support to 'soften', breaches in psychological contracts and structure post-violation psychological contracts to ensure work engagement (Tomprou et al., 2015). Bakker, Albrecht and Leiter (2011) suggest that future research should look at the impact of moderators on work engagement. Disruption is different to a perceived breach in that it occurs when a partner is willing, but simply not able, to follow through on promises made (Rousseau, 1995, as cited by Eckerd et al., 2013). It was also found that psychological contract breach is experienced when organisations are performing poorly; performance from employees is reported to be low; there is a lack of socialisation through a formal process; and prior to their being hired, employees had little experience with the members of the organisation (Robinson & Morrison, 2000). "Psychological contract breach and violation are two conceptually distinct constructs, wherein breach relates to the cognitive aspect and violation relates to the emotional aspect of a failure in the psychological contract" (Eckerd et al., 2013:569). Psychological contracts, and particularly their breach on the part of the organisation, play a role in employees' experience of stress (Gakovic & Tetrick, 2003). Psychological contract fulfilment increases commitment and decreases psychological distress (Rodwell & Ellershaw, 2015). The importance of attending to psychological contract

breach is evident from the literature showing the negative impact it has on important organisational outcomes, such as citizenship behaviour; commitment and employee intention to remain with the organisation (Ahmad & Khan, 2015; Robinson et al., 1994). "When employers do not fulfil their promises and obligations, the employee reciprocates by altering his or her contributions to the organization" (Bal, Chiaburu, & Jansen, 2010: 253). Employees may arrive at a verdict of breaches as a result of continuous minor events that alone are insufficient to trigger breach perceptions; however, the accumulation may lead to perceptions of breach (Parzefall & Coyle-Shapiro, 2011).

Job satisfaction: "Job satisfaction is the pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating the achievement of one's job values" (Locke, 1969: 316). Satisfaction, dissatisfaction and other emotional reactions are value responses. "When the employee sees that his expectations are not met in the job environment, job dissatisfaction emerges" (Adenike, 2011: 154). In times of economic contraction, for instance, job security increases worker job satisfaction more than in times of economic expansion, as job losses are feared more when job openings are fewer (Artz & Kaya, 2014). Job satisfaction plays a critical role since it affects the behaviour of employees, which, in turn, influences the performance and functioning of the organisation (Rowden, 2002). "A positive emotional and cognitive evaluation of their jobs is expected to push employees into being engaged with their jobs as reciprocation for the job satisfaction enabled by the organisation" (Rayton & Yalabik, 2014: 2386-2387).

Wulandari, Mangundjaya and Utoyo (2015) explore job satisfaction as a moderator or mediator in the relationship between change leadership and commitment to change. Those employees with a 'good job' tend to have the highest wellbeing of those in the workforce (Clifton & Marlar, 2011). Employees who are satisfied with their jobs are more productive, show higher levels of organisational commitment and are less likely to leave the organisation (Adenike, 2011). These factors influence the performance and functioning of the organisation positively. A positive relationship has been found between engagement and new ways of working (Ten Brummelhuis, Bakker, Hetland & Keulemans, 2012). The impact of psychological contract breach on turnover intention and job satisfaction has been researched by Ahmad and Khan (2015). Their findings show that employees are happy to work for an organisation while there are no other job opportunities. Scholars have found a positive correlation between job satisfaction and motivation, and the correlation is stronger with older, more experienced employees (Van Scheers & Botha, 2014). Other researchers have found that job satisfaction is a consequence of work engagement (Mache, Vitzhum, Klapp & Danzer, 2014). There is an ongoing debate about job satisfaction and the role it plays in complex relationships (Thabane, Radebe & Dhurup, 2017; Wulandri, Mangundjaya & Utoyo, 2015).

Perceived organisational support: "Employees develop global beliefs concerning the extent to which their organisation values their contributions and cares about their well-being. This is known as perceived organisational support" (Eisenberger, Huntington, Hutchison & Sowa, 1986: 500). Employees offer work engagement to the organisation in return for receiving perceived organisational obligations (Rayton & Yalabik, 2014). Such perceived organisational support reduces absenteeism and is assumed to increase the employee's affective attachment to the organisation with the expectancy that greater work effort will be rewarded (Botha & Mostert, 2014; Eisenberger et al., 1986). Perceived organisational support predicts both job engagement and organisation engagement (Saks 2006). Higher engagement was found to be a result of a work environment with higher support (Laschinger & Leiter, 2006). Rich, Lepine and Crawford (2010) believe that one of the antecedents of engagement is perceived organisational support (if the organisation is, for example, trustworthy, secure, predictable, fair, and offers supervisor support, organisational rewards and favourable job conditions) (Rhoades & Eisenberger, 2002).

Pomirleanu and Mariadoss (2015) have explored the impact of organisational and functional support on the development of a salesperson's job satisfaction. Their findings indicate that higher levels of organisational support positively relate to higher levels of trust by the employee in both the supervisor and organisation. They found that, building on the social exchange theory, trust mediates the relationship between organisational support and job satisfaction (Pomirleanu & Mariadoss, 2015). Job resources support individuals with regard to achieving their goals and encourage learning; personal growth; and development (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004). Favourable working conditions positively related to perceived organisational support, include quality of training offered (Leppel, 2012) as well as visibility to and

recognition from upper-level management (Aselage & Eisenberger, 2003). Open communication between management and employees is an effective way to increase employee performance, because it signals that the organisation cares about the wellbeing and values the contributions of its employees (Neves & Eisenberger, 2012). The more employees experience support from their organisation the more they become absorbed in their roles and jobs and willing to take risks. This translates into doing their jobs with dedication and vigour (Caesens & Stinglhamber, 2014). If employees are unable to make sense of environmental changes, they are likely to hold the organisation responsible and this leads to them believing that there is not adequate organisational support (Cullen, Edwards, Casper & Gue, 2014). Caesens and Stinglhamber (2014) found that organisational support has a direct positive effect on work engagement, and through mechanisms like self-efficacy, leads to higher job satisfaction and extra-role performance, with less psychological stress.

Relationship between variables: Hallberg and Schaufeli (2006) found that work engagement, job involvement and organisational commitment are three distinct constructs. This was an important finding and directed future research to focus on these constructs separately. Some researchers argue that job satisfaction is an outcome of work engagement while others believe job satisfaction is an antecedent of work engagement (Maleka, 2018; Rayton & Yalabik, 2014; Saks, 2006). Rayton and Yalabik (2014) confirm that the relationship between psychological contract breach and work engagement is more complex than previous research had suggested. They established that psychological contract breach indeed impacts engagement, but that job satisfaction mediates this relationship. When employees perceive that their organisation meets its obligations they are content in their jobs and their work engagement is more probable (Kahn, 1990; Rayton & Yalabik, 2014). Rayton and Yalabik (2014) surveyed 191 employees at one company in the United Kingdom and recommended that future research involve other antecedents of work engagement, like organisational support. In addition, it has been recommended by previous researchers that future research be extended to other organisations with different jobs, and across industries. This study focuses on a larger sample size across various corporate, occupational and industrial contexts in South Africa. Given the literature review above, the study formulated specific objectives.

- Objective 1: Determine the relationship between psychological contract breach and work engagement.
- Objective 2: Determine the moderating effect of job satisfaction on the relationship between psychological contract breach and work engagement.
- Objective 3: Determine the moderating effect of organisational support on the relationship between psychological contract breach and work engagement.

3. Methodology

Research Design: As this study followed a deductive approach, in which existing theories were used in their entirety or in part, the positivism philosophy was adopted (Saunders, Lewis & Thornhill, 2009). The study tested observable social realities to aid in the generalization of the findings. Also, as the positivist paradigm posits, the study adopted a highly-structured methodology to enable possible future replication (Gill & Johnson, 2002; Remenyi, Williams, Money & Swartz, 1998). The researchers thus used quantifiable observations with advanced statistical techniques in their analysis. Therefore, given the chosen philosophy, the study used a quantitative design. As Saunders and Lewis (2012) argue, positivism seems like a law of cause and effect, thus corroborating the route taken in this study. Given the above literature and objectives the researchers suggest the following hypotheses:

Hypothesis 1: There is a linear relationship between psychological contract breach and work engagement.

Hypothesis 2: There is a linear relationship between job satisfaction and work engagement.

Hypothesis 3: There is a linear relationship between organisational support and work engagement.

Hypothesis 4: Job satisfaction has a moderating effect on the relationship between psychological contract breach and work engagement.

Hypothesis 5: Organisational support has a moderating effect on the relationship between psychological contract breach and work engagement.

The researchers thus examined the causal relationship between the independent variable, psychological contract breach, and dependent variable, work engagement, and the impact of organisational support and job satisfaction as moderators on this relationship. The researchers collected data by means of questionnaires

distributed through an online platform and conducted a pilot test of the questionnaires using 20 conveniently selected members. The researchers received positive feedback in which respondents mentioned that; the flow was satisfactory, questions were easy to understand and the survey tool was easy to use.

Participants: The study focused on employees who were members of a national service provider that provides services to individuals from different sectors of the South African economy. Notably, these employee members are not organisations, but individuals, employed by companies throughout South Africa. The researchers targeted a population of about 139 000 employee members. A written request to distribute the questionnaires was forwarded to the Managing Director of the service provider organisation. Researchers received formal written permission from the service provider allowing access to its member database, including e-mail addresses. In addition, the service provider enabled the researchers to distribute the questionnaires to the population of employees via its platform. Thus, the researchers were able to obtain the complete list of these members of the population with e-mail addresses and targeted this group for the study. Although many researchers collect their data by selecting a sample, rather than targeting a population, for logistical and practical reasons (Saunders & Lewis 2012), in this case the researchers had a complete list of members which allowed them to target a population as a whole. The researchers divided members into two groups, those with e-mail addresses and those without. Then 8 000 members were randomly chosen from those with e-mail addresses, which was reduced to 7 932 members, once members with incomplete e-mail addresses had been eliminated. A total of 1 029 (approximately 12.9%) fully-completed questionnaires were received and processed for analysis. Of the 1 029 respondents, who represented employees in organisations in South Africa, there were 551 females (53.5%) and 478 males (46.5%). Figure 1 below shows the distribution of respondents with regards to age. The majority of respondents were between the ages of 36 and 55, making up 62.3 percent of the total respondents.

Figure 1: Age of respondents

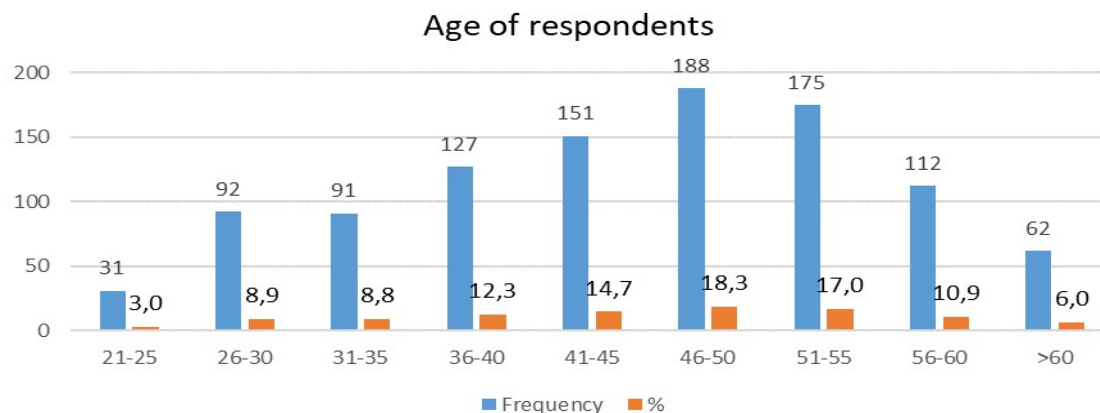
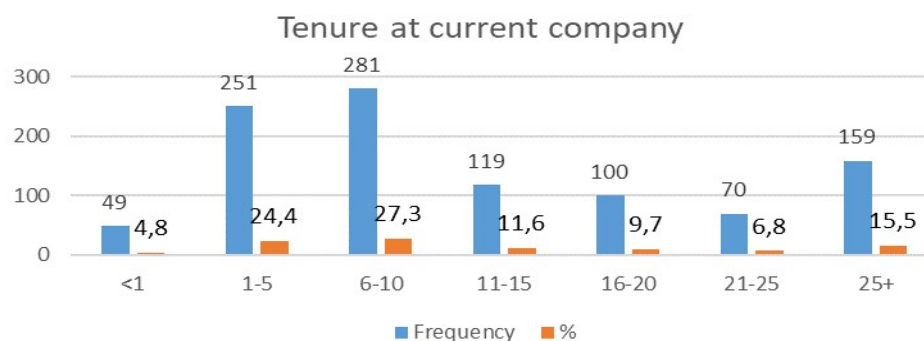


Figure 2 below shows the tenure of the respondents to have been mainly between 6 and 10 years, accounting for 27.3% of the respondents. Those with tenure of 1 to 5 years accounted for 24.4% of respondents.

Figure 2: Tenure at current company



Questionnaire Design: The survey instrument consisted of three main sections: (a) introduction, (b) biographical data and (c) survey questions. Section b) consisted of six categorical questions; age, gender, academic qualification, tenure at the company, working experience and industry. Section c) comprised questions to measure the variables of interest. A Likert-type scale with six possible outcomes was used. Following an extensive literature review, the researchers developed a questionnaire based on the four variables to be measured:

Work engagement (UWES-9): The researchers adopted the measures from Schaufeli et al. (2006) to gauge work engagement. The scale measures a) vigour, b) dedication and c) absorption, following the conceptualisation of engagement as suggested by Rayton and Yalabik (2014). They posited that the UWES-9 scale consisted of acceptable psychological elements and could be used to study positive organisational behaviour (Schaufeli et al., 2006). Thus, the items were tested for reliability and validity and deemed suitable for this study. A Likert scale was designed, consisting of options ranging from (1) strongly disagree to (6) strongly agree.

Job satisfaction: For this variable, the researchers used the Michigan Organizational Assessment Questionnaire, which consists of only three items to reduce the likelihood of attrition. The questionnaire has been meta-analysed and found to have acceptable reliability measures across different sectors (Bowling & Hammond 2008). Since this study was conducted at the national level, the instrument was relevant. For this construct the researchers also used a Likert scale with options ranging from (1) strongly disagree to (6) strongly agree.

Psychological contract breach: The researchers used the five-item scale by Robinson and Morrison (2000) to measure this construct. The scale is regarded as a global measure of breach and replaced the use of multiple questions from other instruments which measured specific domains of breach (Rayton & Yalabik, 2014). The researchers thus considered the scale suitable for capturing perceptions of whether the organisation fulfilled its promises holistically. The scale included both positive and negative questions about psychological contract breach. A six-point Likert scale was used, with anchors from (1) strongly disagree to (6) strongly agree.

Organisational support: To gauge this variable, the researchers adopted the scale by Eisenberger et al. (1986), which has eight items measuring Perceived Organisational Support. Again, the scale was Likert with options ranging from (1) strongly disagree to (6) strongly agree. Although the research questionnaires used in this study had been used and tested in many previous studies, the researchers piloted the questionnaire with 20 selected participants, following the advice of Saunders, Lewis and Thornhill (2012) that piloting is crucial for good study design.

4. Analysis and Results

First, the Kaiser-Meyer-Olkin (KMO) was calculated to measure the adequacy of the sample. Table 1 below shows that three factors had eigenvalues greater than 1. As Kaiser (1974) recommends, factors with the eigenvalue greater than 1 should be viewed as common factors. The researchers thus retained the first three factors.

Table 1: Factor analysis - Principle factor analysis (Unrotated)

Factor	Eigenvalue	Difference	Proportion	Cumulative
1	11.96261	9.62477	0.7424	0.7424
2	2.33785	1.30069	0.1451	0.8875
3	1.03716	0.36982	0.0644	0.9518
4	0.66734	0.14491	0.0414	0.9932
5	0.52242	0.21162	0.0324	1.0257

Note: N = 1029

Retained factors = 3 (> 1)

To further the calculations above, the researchers included the factor loadings of the three factors. Table 2 below shows these loadings. Additionally, researchers calculated the mean scores across gender. Table 3 below reflects the mean scores across gender for work engagement (WE), job satisfaction (JS), organisational support (OS), and psychological contract breach (PCB). The lower the mean score the higher the perceived level of WE, JS and OS. However, it should be noted that the higher the mean score for PCB, the higher the level of breach experienced. Higher levels of job satisfaction and organisational support were found among women than among men, and lower levels of PCB were perceived by female respondents than by male respondents. Men, however, show a higher level of work engagement than women - as found on the Utrecht Work Engagement Scale - in line with previous findings (Schaufeli & Bakker 2004).

Table 2: Factor loadings

Variable	Factor 1	Factor 2	Factor 3	Uniqueness
All in all, I am satisfied with my job	0.7406			0.4311
In general I don't like my job	0.5685			0.6497
In general I like working here	0.7112			0.4778
Almost all the promises made by my employer during recruitment have been kept so far	0.7509	-0.3327	0.4166	0.1519
I feel that my employer has come through in fulfilling the promises made to me when I was hired	0.7177	-0.3296	0.4301	0.1912
So far my employer has done an excellent job of fulfilling its promises to me	0.7754	-0.3335	0.3959	0.1308
I have not received everything promised to me in exchange for my contributions	0.4544	-0.3125		0.6849
My employer has broken many of its promises to me even though I've upheld my side of the deal	0.6653	-0.3574		0.4068
At my work I feel like I am bursting with energy	0.7450	0.3744		0.3040
At my job I feel strong and vigorous	0.7835	0.3817		0.2387
I am enthusiastic about my job	0.7785	0.4261		0.2119
My job inspires me	0.7784	0.3832		0.2467
When I get up in the morning I feel like going to work	0.8153			0.2555
I feel happy when I am working intensely	0.4684	0.3108		0.6784
I am proud of the work that I do	0.4454	0.3918		0.6466
I am immersed in my work	0.4659	0.4346		0.5912
I get carried away when I am working	0.4688	0.3883		0.6253
The organisation values my contribution to its well-being	0.7925			0.3377
The organisation fails to appreciate any extra effort from me	0.6129	-0.3187		0.4402
The organisation would ignore any complaint from me	0.6845	-0.3179		0.3782
The organisation really cares about my well-being	0.7740			0.3612
Even if I did the best job possible, the organisation would fail to notice	0.7126	-0.3410	-0.3135	0.2776
The organisation cares about my general satisfaction at work	0.7946			0.3466
The organisation shows very little concern for me	0.7349		-0.3229	0.2748
The organisation takes pride in my accomplishments at work	0.7778			0.3237

(Blank spaces represent loadings <0.3)

Table 3: Mean scores across gender

	Number of respondents	Work engagement	Job Satisfaction	Organisational Support	Psychological contract breach
Male	478	11.79	4.12	18.73	10.08
Female	551	12.23	3.68	18.28	8.42

Note: N = 1029

Second, the researchers calculated the descriptive statistics to determine the inter-correlations between variables for the summated scales. The results are shown in Table 4 below and are significant at $p < 0.0001$.

Table 4: Correlations between constructed variables

	[1]	[2]	[3]	[4]
[1] Job satisfaction	1			
[2] Psychological contract breach	0.5941*	1		
[3] Work engagement	0.7215*	0.4956*	1	
[4] Organisational support	0.6488*	0.7054*	0.6202*	1

Notes: Pearson correlation coefficients between variables constructed using summated scales * $p < 0.0001$

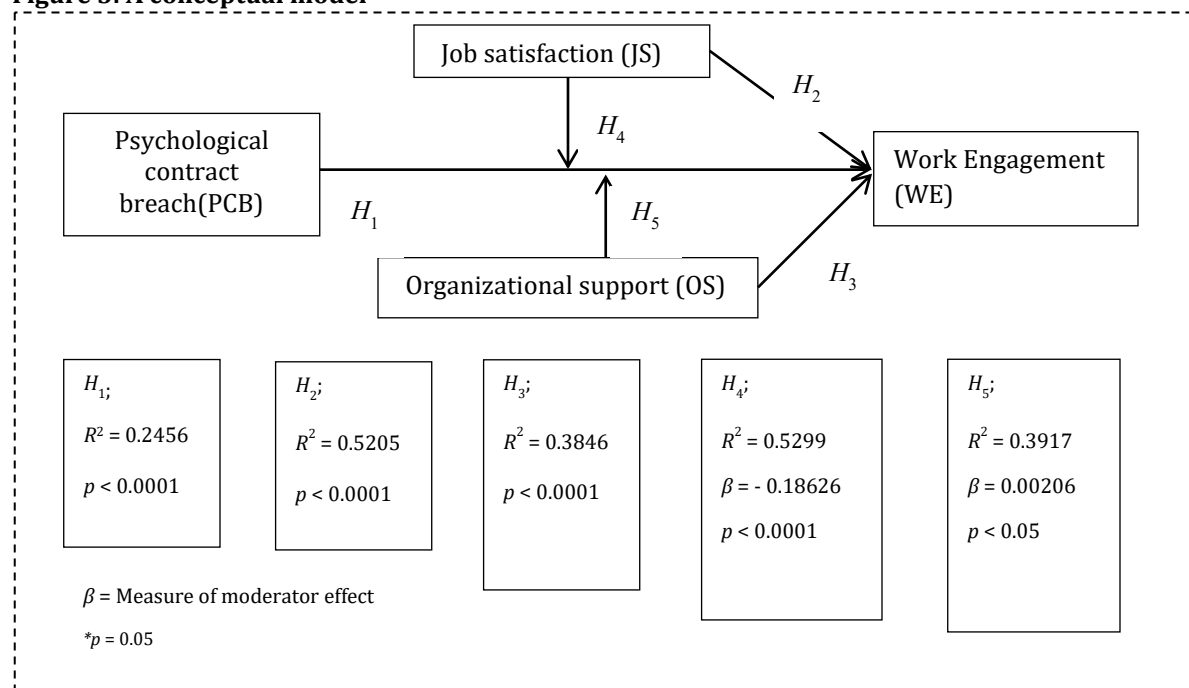
The researchers then calculated the Cronbach's alpha to gauge the reliability of the instruments used. They followed Nunnally's (1978) guidelines that scores above 0.60 to 0.70 should be regarded as acceptable whereas those above 0.8 are good. Table 5 below shows how excellent the questionnaires were in terms of reliability of the constructs measured. No items were removed from the questionnaire to improve the scores.

Table 5: Cronbach alpha scores

	Job satisfaction (JS)	Psychological contract breach (PCB)	Work engagement (WE)	Organizational support (OS)
Cronbach Alpha	0.7048	0.8811	0.9052	0.9249

To test the hypothesis statements, researchers adopted simple linear regression to measure the relationship between two constructs (hypothesis 1 (H_1), as shown in Figure 3 below). Then, multiple regression techniques were used to measure the relationship between JS and WE (H_2), between OS and WE (H_3), the moderation of JS between PCB and WE (H_4), and finally the moderation of OS between PCB and WE (H_5).

Figure 3: A conceptual model



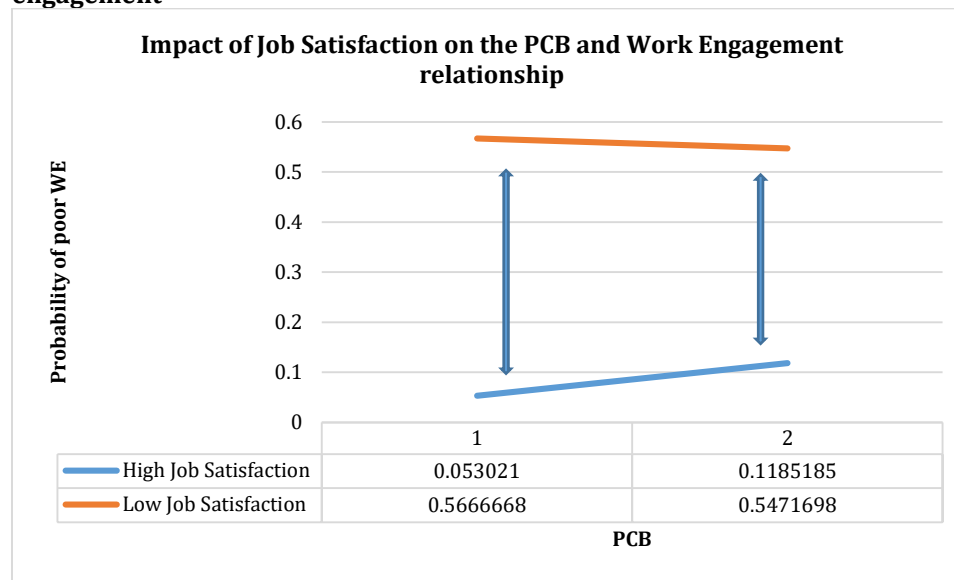
The results show that there was indeed a relationship between PCB and WE ($R^2 = 0.2456$, $p < 0.0001$), thus the researchers accept H_1 . 24.56% of the variation in WE can be explained by the variation in PCB. Significantly, these results negate those of Rayton and Yalabik (2014) who found no relationship between PCB and WE. Also, the researchers found a significant relationship between JS and WE ($R^2 = 0.5205$, $p < 0.0001$). These results show that 52.05% of the variation in WE is explained by that in JS. The researchers thus accepted H_2 . These results further support the empirical findings by Rayton and Yalabik (2014) that there is indeed a relationship between JS and WE. However, their study focused on the mediation of JS on the relationship between PCB and WE. Furthermore, the results show that there was a statistically significant relationship between OS and WE ($R^2 = 0.3846$, $p < 0.0001$). This implies that the 38.46% variation in WE can be explained by the variation in OS. Thus, H_3 was accepted. The results further confirm the findings by Ceasens and Stinglhamber (2014) whose study also focused on the effect of OS on WE. The researchers then turned to the moderation calculation of OS and JS on WE. The multiple regression calculations performed on the interaction between PCB and JS on WE found this interaction to be significant ($p < 0.020$). H_4 was therefore accepted. The β was negative, - 0.18626, indicating a weakening of the relationship due to the moderation effect. This shows that JS is a moderator of the relationship between PCB and WE. The researchers then ran a logistic regression to check the predictive margins and assess the extent of the effect that job satisfaction has on the relationship as a moderator between OS and WE. Table 6 illustrates the moderation effect that had been significant:

Table 6: Moderating effect

Dependent variable:	Work engagement	
	Analysis P value	
Model	<.0001*	
R-Squared	0.5299	
	Effect	of
	explanatory	
Independent & moderator variables:	variable	P value of variable
Psychological contract breach	0.21498	<.0001*
Job satisfaction	2.07514	<.0001*
PCBJS (measure of the moderator effect)	-0.18626	0.020*
* p -values < 0.05		

Figure 4 below depicts the strength of the moderator effect.

Figure 4: Impact of job satisfaction as moderator on the relationship between PCB and work engagement



The top horizontal line in Figure 4 shows the significant effect of JS compared to the difference of the probability of poor WE, represented by the bottom horizontal line. These differences are shown by the two vertical lines. When good JS was introduced to a tolerable (low) level (1) of PCB, it was found to reduce the probability of poor WE more than 10.6 times. However, when good JS was introduced to an intolerable (high) level (2) of PCB, it was found to reduce the probability of poor WE more than 4.6 times. This confirms the extent to which JS moderates the relationship between PCB and WE. And lastly, the multiple regression results on the interaction between PCB and OS on WE show that there is no statistically significant relationship ($p < 0.483$). H_5 was thus rejected. This shows that OS does not moderate the relationship between PCB and WE.

Limitations of research: The research was conducted as a cross-sectional study, which does not provide the depth of analysis of a longitudinal study. It also investigated the causal relationship between psychological contract breach, organisational support, job satisfaction and work engagement, but did not examine other factors that influence work engagement. Finally, the study was conducted within the boundaries of South Africa and did not include respondents from other African countries.

Discussion of research objectives: The first research objective was to determine the relationship between psychological contract breach and work engagement. A significant correlation between psychological contract breach and work engagement was confirmed. The coefficient of the correlation was calculated at r equals to 0.2456 with a p value of <0.0001 . The R-Square value of 0.2456, if expressed as a percentage (24.56%), confirms that 24.56% of the variation in the dependent variable, work engagement, is explained by the variation in the explanatory variable, psychological contract breach. Some of the existing literature shows no significant direct linear relationship between psychological contract breach and work engagement (Rayton & Yalabik, 2014). These findings differ, however, and confirm a significant direct linear relationship between psychological contract breach and work engagement, which indicates that psychological contract breach negatively affects work engagement. It is clear from the findings of this study that it is beneficial for both the employee and the organisation to lessen the relationship between psychological contract breach and work engagement because it is significant and, if not managed, destructive.

Considering the consequences of improved work engagement, organisations could improve their chances of success by reducing the frequency and severity of psychological contract breach. These findings are based on how employees perceive the level of contract breach they experience - albeit subjective. It would, therefore, be advantageous to the organisation to understand the type of psychological contracts it has with its

employees (their expectations and experiences of the development of its violation) to enable the organisation to proactively manage these perceptions of psychological contract breach, reduce psychological distress and improve work engagement (Rodwell & Ellershaw, 2015). The findings of this study add further empirical evidence to support a significant relationship between job satisfaction and work engagement (Rayton & Yalabik, 2014) as well as a significant relationship between organisational support and work engagement (Caesens & Stinglhamber, 2014) engagement. Caesens and Stinglhamber (2014) focused on the effect that organisational support has on work engagement by looking at the direct relationship as well as the mechanics through which organisational support has this effect. The interaction between psychological contract breach and job satisfaction on work engagement is found to be significant ($p = 0.020$). The null-hypothesis, H04, is rejected. It is concluded that the overall fit of the model is significant and the alternate hypothesis is confirmed; job satisfaction is a moderator for the relationship between psychological contract breach and work engagement. The effect of job satisfaction is to reduce the negative impact that psychological contract breach has on work engagement. The relationship between psychological contract breach and work engagement is thus more complex than suggested by previous research.

Studies have reported job satisfaction as a mediator in the relationship between change leadership and commitment to change (Wulandari, Mangundjaya & Utoyo, 2015) and, in 2014, Rayton and Yalibik's study on the relationship between psychological contract breach and work engagement pointed to job satisfaction as mediator in this relationship. This study, by contrast, points to job satisfaction not as a factor through which influence is exerted, but rather as a variable that weakens the relationship. The conclusion that job satisfaction moderates the relationship between psychological contract breach and work engagement is one both employees and organisations should consider. Whether it is employees who assess their jobs, or organisations that assess the environment they create for their employees - including job fit, both stand to gain from the understanding of this relationship. It is important for organisations to comprehend the impact of job satisfaction as previous research has confirmed a significant relationship between work engagement and the performance and success of organisations. Organisations gain competitive advantage as a result of employees being engaged in their work (Scrima et al., 2014).

The finding is particularly important for organisations going through adverse changes (such as resource losses) that are seen by employees as a breach of the psychological contract. This study has shown that organisations ought to commit their limited resources to increasing job satisfaction during these periods of change. Increased employee job satisfaction will impact on the perceived psychological breach by moderating the effect of psychological contract breach on work engagement – and thus reducing the probability of poor work engagement. This understanding would ensure that organisations focus on the areas with the most impact for competitive advantage when they have limited resources in times of change (Chaundhry & Song, 2014; Scrima et al., 2014). This study found that organisational support does not have a significant moderating effect on the relationship between psychological contract breach and work engagement. By contrast, previous literature, regarding the JD-R model, indicates that job resources, including organisational support, reduce job demands (including mental and emotional demands) (Bakker & Demerouti, 2007). This study, however, does not support this finding, suggesting that it is important for organisations to understand exactly where they should focus limited resources to maximise impact. Organisations must ensure that money and effort spent on organisational support is done in a way that has the desired effect.

5. Conclusion and Recommendations for Future Research

Improved levels of work engagement are possible if organisations understand the relationship and effect that other variables, like job satisfaction, organisational support and psychological contract breach, have with work engagement. While several studies confirm the importance of cultivating higher levels of work engagement, the current research demonstrates that work engagement is unfortunately negatively affected by psychological contract breach. Organisations should therefore take note of the impact that breach of the contract with their employees would have on these employees' engagement with their work. Fortunately, this current study found that job satisfaction moderates this negative impact of the psychological contract breach on engagement. It appears that the intrinsic motivation derived from job satisfaction in effect forms a buffer to the negative impact of the psychological breach. Employees would thus benefit from focusing on their actual jobs in times of increased uncertainty and ensure to derive satisfaction from their jobs. The fit between

employees and their jobs must therefore be an important management and particularly human resources' focus area to lessen the risks of the potential psychological contract breach in times of economic pressure. This would enable organisations to focus limited resources and management capacity on these risks to ultimately have the highest possible impact on work engagement.

The study was limited to one country, and it is recommended that future research is conducted across borders to explore differences and similarities. It is recommended that a longitudinal study be conducted to add more depth. As this study focuses on psychological contract breach and the impact of moderators, it is suggested that future research look at the different psychological contracts and breaches in the different contract categories (Rousseau 2009) to determine if job satisfaction and organisational support have different effects across the different contracts when breached. Organisations need to understand the severity of the psychological contract breach across different contracts by evaluating the following three factors: attribution, severity and time of breach (Eckerd et al, 2013). The study endeavoured to contribute to understanding the relationships between work engagement and other constructs to improve the level of work engagement to the benefit of the organisation and employees.

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Shifts in Herd Mentality of Investors in Uncertain Market Conditions: New Evidence in the Context of a Frontier Stock Market

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Abstract: This paper examines the herding phenomenon in the context of a frontier stock market, the Colombo Stock Exchange of Sri Lanka, employing the cross-sectional absolute deviation methodology to daily frequencies of data for the period from April, 2000 to September, 2016. The results show significant changes in magnitude and pattern of herding over different episodes of the market. The herd behavior is strongly presence irrespective of the direction of the market movement in the 2000-2008 period, during which investments in the stock market is affected by the country's political instability resulting from the civil war. The evidence also shows herd behavior during the period of market bubble whereas negative herding in the market crash period. However, it becomes less likely to occur during the period after the market crash. The lower tendency to herd during the post-market crash period supports the Adaptive Market Hypothesis, implying that investors are likely to realize the irrationality of herding and learn to be more rational as a consequence of significant losses experienced during the period of the market crash. Accordingly, these findings suggest that period-specific characteristics of the market and the associated psychological effects to investors such as overconfidence and panics would cause changes to their beliefs and behavior, the experiences of which would subsequently produce learning effect to minimize their irrationality in decision making.

Keywords: *Time-varying herd behavior; negative herding; adaptive market hypothesis; investor learning; quantile regression.*

1. Introduction

The herding is one's tendency to behave by imitating the actions of others while neglecting his/her private information and beliefs. It can be concerned as a rational or an irrational one depending on whether it occurs intentionally or unintentionally². However, many studies claim herding as an intentional act, since market characteristics such as uncertainties, asymmetric flow of information and structural limitations (for example, lower transparency of informational environment, illiquidity and low number of stocks actively traded) would affect to investors' psychological state, encouraging them to imitate others' behaviors when trading their financial assets. For instance, when the market is uncertain and information becomes less available, investors may fear of using their own judgments, thus they would tend to follow others in trading stocks. Such behavior is regarded as irrational due to its unfavorable consequences to a financial market such as turmoil, crashes, increased volatility, and information cascades³, which decrease its efficiency and hinder its development.

The herd behavior is also considered to be a time-varying phenomenon (that is, nature and magnitude of this irrational tendency would change over time) since market environment is subject to continuous changes, for example, with rise or decline in market uncertainties, and developments, for example, with policy initiatives by regulators to control market's structural limitations. Apart from the time-varying nature of herding, a different view of this herding phenomenon can be hypothesized based on the Adaptive Market Hypothesis (AMH), a new framework on market behavior introduced by Lo (2004, 2005, 2012). The AMH implies investors are not completely rational or irrational, but are intelligent and forward-looking so that they are

²For detailed discussion on intentional and unintentional herding, see Dang and Lin (2016); Galariotis, Rong, and Spyrou (2015); Gavrilidis, Kallinterakis, and Ferreira (2013); Guney, Kallinterakis, and Komba (2017); Holmes, Kallinterakis, and Ferreira (2013); Tan, Chiang, Mason, and Nelling (2008).

³Since herd behavior results in suppressing market participants' private information and beliefs, market prices are determined through a limited amount of information (Banerjee, 1992; Bikhchandani, Hirshleifer, & Welch, 1992).

capable of learning their irrational behaviors for adapting to dynamic market conditions. Considering the insights of the AMH and based on the learning literature⁴, it could be expected that investors would realize the irrationality of herding and tend to control such behaviors when they get experience over time in stock trading⁵. Accordingly, while the herding is predicted to be a time-varying behavior, it would characterize a declining trend over time with the investor's mistake-learning process. Accordingly, the objective of this study is to examine whether the investors' herd behavior change over time, depending on the context in which trading takes place, and tend to minimize it with their trading experiences.

This study examines the herd behavior in a frontier stock market; the Colombo Stock Exchange (CSE)⁶ of Sri Lanka, which is worthwhile in the following respect. First, as discussed above, the herding is predicted to be more prominent in a frontier market due to its structural limitations at the pre-emerging stage. Second, over the last two decades, the CSE passed by different market episodes such as uncertain market period resulting from unstable political conditions of the country, rising the market to a speculative bubble and market crash (see Figure 1), during which investors would have experienced significant psychological shocks and changed their irrational behaviors so that, consistent with the AMH and the learning theories, herding would have disappeared or, at least, declined over these time periods. Thus, the CSE appears to be an appropriate setting for the examination of this shift in herd mentality of investors, which is a novel attempt for contributing towards the time-variation of the herd behavior, hypothesized in the literature. Third, there is a very limited volume of empirical studies currently available in the context of frontier stock markets, with some mix evidence on the occurrence of such behavior. Finally, the previous studies have mostly employed the ordinary least square (OLS) regression procedure, however revealed no information on whether its underlying error distribution assumptions are fulfilled. Since inaccurate estimates may result if those assumptions are not fulfilled, the validity of the evidence reported in the current literature appears to be doubtful. Therefore, the literature on herd behavior in the context of frontier markets is limited not only in terms of the quantity of studies, but also in the form of the quality of reported findings.

Accordingly, while attempting to fill these gaps in the literature, this study intends to contribute towards the time-variation of herd behavior in the context of frontier market as follows. Unlike the previous studies, it does not limit analysis to the total sample period. The analysis is also extended to the two eight-year and four four-year sub-periods as a robustness check of the results reported and to study the time-varying herding phenomenon. Further, the analysis is conducted separating the 2008-2016 high volatile period into market bubble, crash, and post-crash periods in order to examining whether investors' herding attitudes tend to shift away over these episodes of the CSE. In addition to applying customary used OLS approach, this study employs the quantile regression (QR) procedure which provides deeper analysis of herding and robust evidence even when the parametric assumptions of error distribution are not fulfilled, so that validity and reliability of the results will be improved. The remainder of the paper is organized as follow. Section 2 provides a review of literature mainly focusing on the evidence relating to frontier stock markets. Section 3 and 4 explain respectively data and methodology employed in detecting the herding behavior. The evidence on the herd behavior for the total sample period and during different episodes of the market and its time-varying nature are discussed in section 5. Section 6 concludes the paper.

⁴Such as those concern on cognitive aspect (for example, transformative learning theory) and behavioral aspect (for example, reinforcement learning theory) of learning, which suggest that experiencing a shock to an individual's psyche such as "disorienting dilemma" is the starting point for learning to occur within the individual. Disorienting dilemma is a psychological discrepancy between what an individual expected to happen and what is actually experienced.

⁵ There is a plenty of evidence for the support of the hypothesis that trading experience could reduce irrational behaviors and thereby, improve investment performance. See, for example, Barber and Odean (2011); Bradbury, Hens, and Zeisberger (2014); Dhar and Zhu (2006); Feng and Seasholes (2005); Gervais and Odean (2001); Itzkowitz and Itzkowitz (2017); List (2011); Nicolosi, Peng, and Zhu (2009); Seru, Shumway, and Stoffman (2009).

⁶Refer to the Morgan Stanley Capital International (MSCI) frontier market index which recognizes the CSE as a frontier market.

2. Literature Review

The behavioral finance literature provides an ample of evidence on the existence of herding in the context of both developed and emerging equity markets through variety of studies, focusing mainly, among other, the herd behavior among different groups⁷, different nature of herding⁸, and its determinants⁹. The literature has also recognized this behavioral pattern as a time-varying phenomenon and its occurrence in different episodes of a stock market such as bubbles and crashes, and during specific economic events such as financial crises¹⁰. However, in spite of a plenty of evidence in the contexts of developed and emerging equity markets, the evidence relating to frontier stock markets is currently limited (Balcilar, Demirer, & Hammoudeh, 2014; Economou, Gavrilidis, Kallinterakis, & Yordanov, 2015; Guney et al., 2017).

The herding literature on frontier markets has limited in terms of both volume and consistency of results reported on the occurrence of such behavior. To this respect, Balcilar, Demirer, and Hammoudeh (2013) found herding in frontier stock markets of Middle East countries, namely Saudi Arabia, Dubai and Qatar, but not for Kuwait and Abu Dhabi. Similarly, the study conducted by Guney et al. (2017) revealed herd trading patterns in the markets of Botswana, BRVM¹¹, Ghana, Kenya, Namibia, Nigeria, Tanzania and Zambia. In addition, Vo and Phan (2016) showed herding patterns in Vietnam stock market. However, studies of Ahsan and Sarkar (2013), applying a methodology similar to those of other studies¹², found no evidence of herding on the Bangladesh stock market. When the determinants of herding in frontier markets are concerned, Vo and Phan (2016) revealed significant differences of herd behavior between up-market days and down-market days, and pre-crisis and post-crisis periods. However, Guney et al. (2017) found no such strong evidence on the herding asymmetries between up and down market movements. The study conducted by Ahsan and Sarkar (2013) also revealed no evidence of herding in both of these market movements. Further, Balcilar et al. (2013) and Guney et al. (2017) find asymmetries with respect to high and low volatility days, suggesting the market volatility as a determinant of herd evolution in frontier markets.

Similar to the other frontier stock markets, the empirical studies in the context of the CSE are currently limited and provide in conclusive evidence on the occurrence of herding behavior. According to my knowledge, Sewwandi (2016) was the first to examine whether the investors of the CSE exhibit herd behavior in stock trading. It estimated the herd behavior for the aggregate market and separately for raising and falling market days, following the approach proposed by Chang et al (2000) with OLS regression. The results show no evidence of herd formation over the period from 2001 to 2015, indicating that investors behave rationally in trading stocks. Subsequently, Xiaofang and Shantha (2017) investigated on this phenomenon, employing both OLS and QR procedures for the non-financial firms listed during the period from 2007 to 2016. They found presence of herd behavior based on the QR procedure, however no evidence under the OLS procedure. Taken together, due to the limitations in the current literature, in terms of its volume and consistency of results, it is inconclusive as to whether the investors of the CSE tend to herd, or shift away from such irrational behavior in stock trading.

Data: Sample period of the study spans from 1st April 2000 to 30th September 2016 and covers different episodes of the CSE (See figure 1). The first half of the sample period, 2000-2008 characterizes a period of

⁷For example, herding by institutional investors, herding on analyst's recommendations, and market-wide herding (that is, market participants' collective behavior towards a consensus).

⁸For example, intentional herding, unintentional herding (spurious herding), herding on macro-economic fundamentals, and cross-country effect on herd behavior.

⁹For example, size (small stock vs. large stocks), industry, market performance (up-market days vs. down-market days), volatility, market sentiments, and trading volume. The previous studies also identified herding asymmetry with respect to these determinants.

¹⁰See, for example, Bekiros, Jlassi, Lucey, Naoui, and Uddin (2017); Clements, Hurn, and Shi (2017); Klein (2013); Zhou and Anderson (2013).

¹¹BRVM is abbreviated for "Bourse Régionale des Valeurs Mobilières", a regional stock exchange of West Africa.

¹² All the studies discussed here have examined herding using the cross-sectional absolute deviation (CSAD) model of Chang, Cheng, and Khorana (2000).

unstable political conditions of the country due to civil war, which could impact on trading and investment on the CSE. Since the end of the civil war in May 2009, the market experienced a rapid growth, rising to a speculative bubble which burst over the period from March, 2011 to July, 2012. It is expected that such a longer period with different episodes of the CSE assists in examining time-varying herding attitudes of investors with these period specific characteristics of the market. All the common stocks listed on the CSE during the sample period are considered, extracting the required stock prices from the Data Library (CD ROM) published by the CSE. As herd behavior is more evident with daily frequencies of data, the analysis is based on the same over the sample period which consist a total of 3955 daily observations.

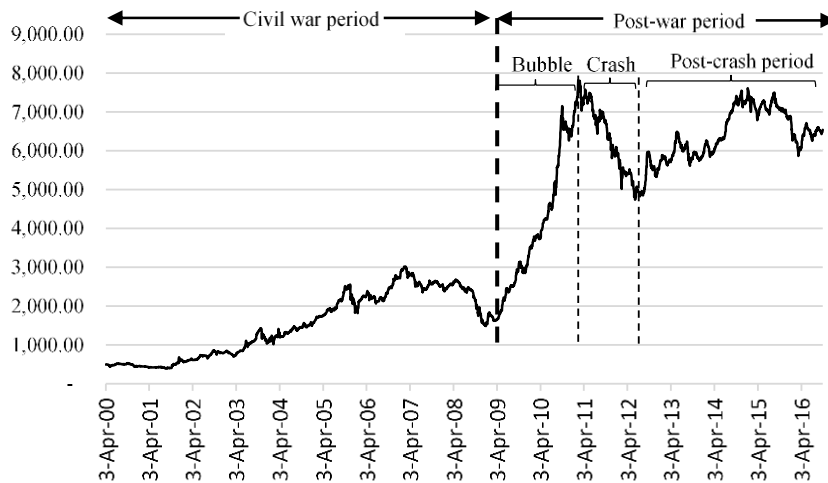


Figure 1: Movement of Stock Market Index of CSE

3. Methodology

The CSAD Model: This study employs the cross-sectional absolute deviation (CSAD) model of Chang et al. (2000), as shown in equation (1).

$$CSAD_t = \alpha + \gamma_1 |R_{mt}| + \gamma_2 R_{mt}^2 + \varepsilon_t \dots \dots \dots (1)$$

where R_{mt} is the equally-weighted average return of all stocks on day t , and $|R_{mt}|$ is the absolute value of R_{mt} , and $CSAD_t$ is the equally weighted cross-sectional absolute deviation of stock return on day t , determined as in equation (2).

$$CSAD_t = (1/N) \sum_{i=1}^N |R_{it} - R_{mt}| \dots \dots \dots (2)$$

where R_{it} is return of stock i on day t , calculated as the first logarithmic difference of daily closing prices and N is the number of firms in the market portfolio on day t .

The CSAD model is, among other, the most widely applied empirical specification for detecting market-wide herding¹³. Since investors are expected to trade stocks based on their diverse information and beliefs, as the capital assets pricing model (CAPM) predicts, the CSAD model assumes stock returns are linear and

¹³Christie and Huang (1995) was first to test market-wide herding, examining cross-sectional standard deviation (CSSD) of security returns at the extreme lower and upper tails of the return distribution. This method suffers drawbacks such as biased CSSD in the presence of outliers (Economou, Kostakis, & Philippas, 2011), ignoring the possibility of non-linear return dynamics associated with herding (Focardi, Cincotti, & Marchesi, 2002; Lux, 1995), difficulties in defining the extreme returns (Chiang, Li, & Tan, 2010), and disregarding the possibility of herding during stable time periods (Bekiros et al., 2017). Since CSAD model overcomes these drawbacks, it has been widely used in herding studies. However, both models predict herding when stock returns converge to overall market return.

increasing function of portfolio of market returns. This assumption implies a positive relationship between CSAD of returns and absolute market return (a significant positive value for γ_1 and insignificant γ_2 in equation 1). However, in case of herding, investors disregard their private information and beliefs, and follow market consensus (market-wide price movements). Then, stock returns tend to cluster around the market average, decreasing the CSAD of returns so that the positive relationship between CSAD of returns and market return turns to be negative and non-linear, which is captured through γ_2 , the coefficient of R_{mt}^2 term in equation (1). Accordingly, the coefficient γ_2 would be significantly negative in the presence of herding behavior. On the other hand, as reported by number of previous studies¹⁴, it is possible to occur “negative herding” (also called as “reverse herding”) where investors tend to resort to a particular dominant view, ignoring information conveyed by market-wide price movements. As noted by Gębka and Wohar (2013), the negative herding behavior may be caused by localized herding (correlated actions of group of investors who irrationally move into/(out of) a position of a particular subset of stocks, resulting excessive increase/(decrease) in stock prices), irrational fears in periods of uncertain market conditions (which motivate investors to be more risk-averse so that they rebalance their portfolios to more secure positions by selling risky and buying less risky stocks), or overconfidence of investors. These result in trading a subset of assets excessive and exaggerate way, increasing the price dispersions above the level predicted by the CAPM. Accordingly, the negative herding is evident from a significant positive value of γ_2 in equation (1).

Test of Herding Conditional on Market Performance: In addition to the test of herding behavior in relation to the aggregate market as in equation (1), the empirical tests are carried out using the CSAD model to detect herding conditional on the direction of market movement (that is, herd behavior during up-market days vs. down-market days), as depicted in equation (3).

$$CSAD_t = \alpha + \gamma_1 D_t^{up} |R_{mt}| + \gamma_2 D_t^{up} R_{mt}^2 + \gamma_3 (1 - D_t^{up}) |R_{mt}| + \gamma_4 (1 - D_t^{up}) R_{mt}^2 + \varepsilon_t \dots \dots (3)$$

where, D_t^{up} is the dummy variable representing the value of unity for up-market days (days with $R_{mt} > 0$) and zero for down-market days (days with $R_{mt} < 0$). The Wald test is employed to test whether the herding during the up-market days is asymmetry from that in the down-market days (In other words, whether γ_2 is significantly different from γ_4).

Ordinary least squares vs. Quantile regressions: The coefficients of the models shown in equation (1) and (3) are estimated using the OLS regression method, where the conditional mean of the dependent variable, $CSAD_t$, is regressed with respect to the set of independent variables in each model. However, the OLS suffers from serious statistical weaknesses such as sensitiveness of estimates to outliers, inappropriate to account for non-linearity, and inaccurate results when error distributional assumptions are not fulfilled¹⁵. Therefore, in order to improve the reliability of the results, the models are also estimated applying a more robust method, the QR procedure¹⁶. Since the QR estimates are semi-parametric, they are less sensitive to outliers in data and do not require fulfilling the parametric assumptions of the error distribution such as normality and Heteroskedasticity¹⁷. Thus, when compared with the OLS, the QR is a more powerful method in modeling the relationship between the CSAD of returns and portfolio of market returns for detecting the herd behavior. Further, with the application to herding analysis, the QR provides complete description on how herding estimates vary over the entire distribution of the CSAD, thus reveals the evidence on herding under extreme market conditions (extreme upper and lower quantile intervals). The QR models for estimating herding on the aggregate market and separately for up and down market days are given in equation (4) and (5) respectively.

$$Q_\tau(\tau|CSAD_t) = \theta_\tau + \gamma_{1,\tau} |R_{mt}| + \gamma_{2,\tau} R_{mt}^2 \dots \dots \dots (4)$$

¹⁴See, for example, Bekiros et al. (2017); Chiang and Zheng (2010); Economou et al. (2011); Gębka and Wohar (2013); Klein (2013) for the discussion on the negative herding.

¹⁵ See Barnes and Hughes (2002); Wilcox (2010); Zhou and Anderson (2013).

¹⁶ The QR, introduced by Koenker and Bassett (1978), has been profoundly used with econometric analysis and financial research over the past decades (Allen et al., 2012). Despite this, a very limited number of empirical studies applied this method to examine herding behavior (Bekiros et al., 2017).

¹⁷ See Alexander (2008); Allen et al. (2012); Barnes and Hughes (2002); Cade and Noon (2003); Xiao (2012).

$$Q_{\tau}(\tau|CSAD_t) = \theta_{\tau} + \gamma_{1,\tau}D_t^{up}|R_{mt}| + \gamma_{2,\tau}D_t^{up}R_{mt}^2 + \gamma_{3,\tau}(1 - D_t^{up})|R_{mt}| + \gamma_{4,\tau}(1 - D_t^{up})R_{mt}^2 \dots (5)$$

where τ represents for quantiles. For any $\tau \in \{0, \dots, 1\}$, the coefficients of R_{mt}^2 capture the increase or decrease in CSAD of return beyond its rational level predicted by the CAPM. The coefficients are estimated minimizing the weighted sum of absolute errors, where weights directly depend on quantiles¹⁸. For computing the confidence intervals of the regression quantiles, the bootstrap technique¹⁹ is employed with xy-pair design²⁰ and 600 replications²¹.

Test of Time-Varying Herd Behavior: In order to examine changes in herd behavior over time, the total sample period is split into two eight-year sub-periods and four four-year sub-periods. The first eight-year period, 2000-2008 characterizes a period of political instability of the country due to civil war. The second eight-year period, 2008-2016 which is more volatile than first eight-year period (see figure 1) is further investigated, separating into three sub-periods, namely market bubble (February 2009 to February 2011), market crash (March 2011 to July 2012) and post-crash (August 2012 to September 2016) periods. All the tests, as given in equations (1), (3), (4) and (5) above are repeated for those sub-sample periods as a robustness check of the results and to test time-varying nature of herd behavior.

Table 1 provides descriptive statistics for $CSAD_t$ and R_{mt} over the total sample period and different sub-periods considered for the analysis. Except for the market crash period, the mean value of R_{mt} is positive during the sample period, showing positive market performance. Further, the magnitude of the volatility (as reflected by the standard deviation) of $CSAD_t$ is consistently lower than that of R_{mt} , indicating tendency of stock returns to cluster around the market return. Interestingly, the standard deviations of both R_{mt} and $CSAD_t$ are lower during the high-volatile period, 2008-2016 than those of 2000-2008 period. The Augmented Dickey-Fuller (ADF) test statistics of both variables are statistically significant, rejecting the null hypothesis of the unit root, thus the variable series are stationary. R_{mt} and $CSAD_t$ series seem to deviate from normal distribution as their Jarque-Bera statistics are statistically significant. The distribution of $CSAD_t$ is also skewed to the right as reflected by higher positive skewness statistics. Thus, the QR results are important to discuss how herd tendency varies along the tail of the distribution of $CSAD_t$. The non-normality of $CSAD_t$ further highlights the importance of the QR analysis to provide robust evidence and to check the validity of the OLS results reported in this study.

Table 1: Descriptive statistics

		Mean	Standard Deviation	Skewness	Jarque-Bera statistic	ADF statistic
Panel A: Total Sample;						
	$CSAD_t$	1.068	0.405	2.148	11038.11***	-11.736***
	R_{mt}	0.059	0.740	0.269	44121.50***	-43.813***
Panel B: 8-year sub-periods;						
2000 - 2008	$CSAD_t$	1.176	0.487	1.847	2612.72***	-10.984***
	R_{mt}	0.078	0.872	0.185	18879.09***	-31.910***
2008 - 2016	$CSAD_t$	0.968	0.272	1.324	1538.64***	-7.469***
	R_{mt}	0.041	0.590	0.363	5120.70***	-22.101***

¹⁸ The quantile regression estimates are obtained by using views® (Version 8, 2013).

¹⁹ Refer Chen and Wei (2005); Kocherginsky, He, and Mu (2005); Koenker (1994); Koenker and Hallock (2000) for different methods of computing confidence intervals under the QR and their comparisons. According to their results, differences between these methods are slight, and the bootstrap technique appears to be suitable for a study with a small sample (<5,000) and small number of covariates (<20).

²⁰ Based on the simulation results reported by Buchinsky (1995) and Machado and Silva (2013), xy-pair bootstrap estimator provides valid standard errors, compared to other bootstrap estimators.

²¹ Consistent with the guidelines provided by Andrews and Buchinsky (2000) and Koenker and Hallock (2000).

Table 1: Descriptive statistics (continued)

		Mean	Standard Deviation	Skewness	Jarque-Bera statistic	ADF statistic
Panel C: 4-year sub-periods;						
2000 - 2004	$CSAD_t$	1.128	0.449	1.677	1488.37***	-9.232***
	R_{mt}	0.082	0.920	0.915	15282.93***	-22.324***
2004 - 2008	$CSAD_t$	1.223	0.517	1.912	1089.71***	-7.590***
	R_{mt}	0.074	0.821	-0.843	2854.23***	-29.420***
2008 - 2012	$CSAD_t$	1.024	0.288	1.505	1088.44***	-6.743***
	R_{mt}	0.063	0.724	0.294	1559.03***	-25.717***
2012-2016	$CSAD_t$	0.918	0.248	1.023	241.88***	-7.733***
	R_{mt}	0.022	0.439	0.268	323.08***	-12.511***
Panel D: Volatile period 2008-2016;						
Bubble period	$CSAD_t$	1.008	0.248	1.096	189.20***	-5.011***
	R_{mt}	0.161	0.571	-0.168	206.25***	-18.616***
Crash period	$CSAD_t$	1.080	0.289	1.842	824.79***	-6.298***
	R_{mt}	-0.059	0.766	0.678	624.59***	-15.496***
Post-crash period	$CSAD_t$	0.899	0.237	1.065	260.95***	-8.057***
	R_{mt}	0.028	0.412	0.201	195.66***	-12.075***

This table reports summary statistics, tests of normality and test of non-stationary of the cross-sectional absolute deviation of returns ($CSAD_t$) and the market return (R_{mt}) series over the sample period from 3/4/2000 to 30/9/2016. All sub-periods in panel B and C start from 1st April and end 31st March of the given year, except the last sub-period which ends 30th September 2016. Panel D shows further analysis of 2008-2016 period, classifying into periods of market bubble (February, 2009 to February, 2011), market crash (March, 2011 to July, 2012) and post-crash (August, 2012 to September, 2016). ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

4. Results and Discussion

The coefficient - γ_2 in equation (1) and (4) represents respectively the OLS and the QR estimates of herding at the aggregate market, while coefficients - γ_2 and γ_4 in equation (3) and (5) reflect respectively the OLS and the QR estimates of herding in days of up-market and down-market movements. These estimates, where a significant negative/ (positive) value indicates herd behavior/ (negative herding), are presented separately for the total sample period, eight-year sub-periods, four-year sub-periods, and periods of market bubble, crash and post-crash respectively in Panel A, B, C and D of Table 2, 3, 4 and 5. The empirical results are discussed in the following manner. First, the results of the total sample period are discussed in order to compare them with those of the previous studies on the CSE. After that, the analysis is performed across different sub-periods to examine whether herding is time-varying phenomenon. The coefficients of the absolute market return, γ_1 in equation (1) and (4) and γ_1 and γ_3 in equation (3) and (5), are significantly positive in both total sample period and sub-sample periods, supporting the hypothesis on the positive relationship between the CSAD of returns and absolute market returns.

Herd Behavior over the Entire Sample Period: Both the OLS and the QR herding estimates for the total sample period (2000-2016) reveal a tendency to herd at both the aggregate market and up and down market days, as reflected by significantly negative values for γ_2 in panel A of Table 2 and 3 and for γ_2 and γ_4 in panel A of Table 4 and 5. These findings are in contrast to the study undertaken by Sewwandi (2016), which, applying the OLS procedure, found no evidence of herd behavior at the aggregate market and up and down market days during the 2001-2015 period. On the other hand, the evidence reveals no asymmetry of herding between up and down market days of the total sample period, since both the OLS and the QR analyses find an insignificant difference between γ_2 and γ_4 (as shown by insignificant F statistic), which suggests, consistent with Klein (2013), Bekiros et al. (2017) and Xiaofang and Shantha (2017), that the herding is unconditional

occurrence, therefore arising independently from the direction of the market movement. Further, the QR estimates indicate that herding appears to be stronger during extreme market movements, as reflected by increases of γ_2 and γ_4 from median quantile (0.50) to highest (0.95) and lowest (0.05) quantile intervals.

Time-Variation of Herd Behavior: The empirical results are compared across different episodes of the CSE such as periods of uncertain political conditions, market bubble and crash, and post-crash to examine whether herding is a time-varying phenomenon and shifts in investors' herding attitudes occur with these period specific characteristics of the market, as follows.

Herd behavior during the period of political uncertainty: The first half of the sample period, 2000-2008 characterizes a period of unstable political conditions of the country due to civil war, which would cause uncertainties in the mind of investors when investing and trading of stocks. Thus, the analysis of the results relating to this time period reveals evidence as to whether market uncertainties would trigger investors to exhibit a strong tendency to herd²². With respect to both the OLS and the QR results of the aggregate market, as reported in panel B of Table 2 and 3 respectively, γ_2 is significantly negative for the 2000-2008 period, revealing the presence of herding attitudes among investors. In addition, both the OLS and the QR estimates of γ_2 and γ_4 , shown in panel B of Table 4 and 5 respectively, find herding in both directions of the market movement.

These results are also consistently evident for the two four-year sub-periods from 2000 to 2008, as given in panel C of Table 2 and 4. Notably, the QR results further highlight an increase of γ_2 and γ_4 from median quantile (0.50) to the extreme upper (0.95) and the extreme lower (0.05) quantile intervals, indicating stronger tendency to herd during the extreme market conditions. With respect to the asymmetry of herd behavior, the OLS evidence reveals a stronger tendency to herd towards down market direction since Table 4 shows greater γ_4 than γ_2 with significant F statistics for the sub-periods of 2000-2008 (panel B) and 2000-2004 (panel C). However, the QR evidence which is more robust than that of the OLS, provides no support for such herd asymmetry. Accordingly, the evidence infers that the direction of market movement has not been a determinant for herd evolution. Therefore, when the results are taken together, it appears that market uncertainties would trigger investors to herd in both up and down market movement days, disregarding their private information and belief.

Herd behavior during the market bubble and market crash periods: It is interesting to compare the herding estimates obtained separately for the periods of market bubble and crash, as provided in panel D of Table 2, 3, 4 and 5. When the OLS results for the aggregate market, as shown in panel D of Table 2 are concerned, the coefficient γ_2 is significantly negative during the period of market bubble whereas it is significantly positive in the subsequent crash period. Since a significant positive value reveals negative herding patterns, the directionality of the herd behavior seems to have changed during the period of the market crash. The evidence obtained using the QR approach, as shown in panel D of Table 3, also suggests herd behavior during the bubble period (as coefficient γ_2 is significantly negative at lower and middle quantiles) and negative herding during the market crash period (as reflected by significantly positive γ_2 at lower quantiles).

In addition, the OLS results (panel D of Table 4) and the QR results (panel D of Table 5) obtained separately for up and down market days show this change in herding patterns, where herd behavior towards up-market direction in the bubble period shifts to negative herding in down-market direction during the market crash period. Accordingly, investors appeared to disregard fundamentals and follow considerably market-wide price movements such as positive price signals emitted in the market from the end of civil war, which resulted to a speculative bubble in the market (Bekiros et al., 2017). Then, investors who realized significant gains in the market bubble period may become overconfident and those who were fear of the uncertainty associated with the market bubble may become risk averse and rebalance their portfolios to more secure

²²The analysis has also been performed by separating the sample period into pre and post war periods, using the date on which the end of the civil war officially declared in the parliament - 19th May 2009 as the cut-off point. The results of this analysis have not been reported here since they provide no contradictory evidence to those of the eight-year sub-periods reported in the paper.

positions, leading to negative herding which ends up in crash of the market (Gębka, & Wohar, 2013). Therefore, as evidence suggests, herd behavior and its shift to negative herding appear to cause a higher volatility in the market with a speculative bubble and its subsequent crash.

Herd behavior during the post-crash period: Another interesting result here is that, consistent with the findings of Zhou and Anderson (2013) and Gębka and Wohar (2013), the magnitude of herding appears to reduce in the period after market crash, revealing a tendency to decrease investors' herding attitudes in response to unfavorable market experiences. As shown in panel D of Table 2, the absolute value of the coefficient of γ_2 which is 0.104 and highly significant at 1% level during the period of bubble, reduces to 0.079 and 10% significance level in the post-crash period. Panel D of Table 4 also demonstrates this decreasing tendency of the magnitude of herding, where the coefficient of γ_2 in absolute terms during the bubble period is 0.127 and significant at 1% level whereas same in the post-crash period is 0.089 and significance at 10% level.

A similar behavior is revealed from the QR results presented in panel D of Table 3 and 5. The herd behavior being evident from lower to upper quantiles during the bubble period appears to limit to 0.05th quantile (Panel D of Table 3) and 0.75th quantile (Panel D of Table 5) in the period after the market crash. Supporting the prediction of the AMH and the learning theories, the lower tendency to herd during the post-crash period may be attributed to the learning effect resulting from significant experiences gained by investors during the periods of market bubble and crash. This implies that investors may have learnt the irrationality of herding and changed to a more rational trading behavior with significant losses and the associated psychological shocks occurred during the market crash period.

Table 2: Herding estimations for the aggregate market based on the OLS regression

	α	γ_1	γ_2	Adjusted R^2
Panel A: Total Sample	0.800 (64.470)***	0.599 (16.881)***	-0.038 (-4.157)***	0.454
Panel B: 8-year sub-periods;				
2000 – 2008	0.825 (43.558)***	0.681 (13.731)***	-0.049 (-3.986)***	0.484
2008 – 2016	0.806 (66.304)***	0.421 (13.431)***	-0.018 (-1.232)	0.370
Panel C: 4-year sub-periods;				
2000 – 2004	0.795 (36.453)***	0.623 (15.103)***	-0.035 (-5.266)***	0.587
2004 – 2008	0.819 (32.315)***	0.856 (10.891)***	-0.108 (-7.067)***	0.437
2008 – 2012	0.869 (48.036)***	0.304 (7.985)***	0.010 (0.652)	0.369
2012 – 2016	0.753 (50.798)***	0.544 (10.172)***	-0.043 (-1.243)	0.356
Panel D: Analysis of 2008-2016 sub-period;				
Bubble period	0.846 (35.361)***	0.447 (6.654)***	-0.104 (-3.037)***	0.200
Crash period	0.945 (41.341)***	0.205 (4.320)***	0.048 (3.900)***	0.426
Post-crash Period	0.739 (50.053)***	0.567 (9.932)***	-0.079 (-1.715)*	0.316

This table presents estimates of equation (1). All sub-periods in panel B and C start from 1st April and end 31st March of the given year, except the last sub-period which ends 30th September 2016. Panel D shows further analysis of 2008-2016 period, classifying into periods of market bubble (February, 2009 to February, 2011), market crash (March, 2011 to July, 2012) and post-crash (August, 2012 to September, 2016). The numbers in parentheses are *t*-statistics based on the Newey and West (1987) test for Heteroskedasticity and autocorrelation consistent standard errors. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

Table 3: Herding estimations for the aggregate market based on the QR (*continued*)

Quantile	θ_τ	γ_1	γ_2	Adj. R^2	θ_τ	γ_1	γ_2	Adj. R^2
Panel A: Total Sample					Panel C: 4-year sub-periods <i>cont'd...</i>			
					(ii) 2012-2016			
0.05	0.533 (50.747)***	0.440 (11.985)***	-0.046 (-2.215)**	0.191	0.523 (27.918)***	0.464 (4.914)***	-0.065 (-0.749)	0.175
0.25	0.666 (104.513)***	0.463 (21.834)***	-0.027 (-3.286)***	0.217	0.646 (59.643)***	0.420 (6.522)***	0.025 (0.498)	0.181
0.50	0.776 (82.348)***	0.539 (18.538)***	-0.027 (-2.535)**	0.240	0.716 (54.318)***	0.517 (9.093)***	-0.014 (-0.358)	0.207
0.75	0.912 (79.816)***	0.627 (18.948)***	-0.031 (-2.687)***	0.275	0.825 (50.268)***	0.674 (8.130)***	-0.091 (-1.888)*	0.213
0.95	1.109 (62.498)***	1.146 (13.443)***	-0.086 (-2.414)**	0.374	1.096 (29.402)***	0.677 (5.445)***	-0.124 (-1.529)	0.202
Panel B: 8-year sub-periods; (i) 2000 – 2008					Panel D: Analysis of 2008-2016 sub-period;			
					(i) Bubble period;			
0.05	0.500 (28.849)***	0.572 (10.809)***	-0.081 (-3.209)***	0.238	0.601 (27.732)***	0.287 (3.838)***	-0.035 (-0.837)	0.111
0.25	0.689 (58.823)***	0.517 (15.301)***	-0.038 (-3.359)***	0.241	0.714 (55.145)***	0.360 (8.136)***	-0.078 (-3.458)***	0.114
0.50	0.802 (63.903)***	0.601 (17.553)***	-0.037 (-2.872)***	0.272	0.816 (32.529)***	0.469 (6.054)***	-0.132 (-2.871)***	0.095
0.75	0.937 (47.362)***	0.736 (12.099)***	-0.043 (-2.281)**	0.309	0.958 (37.166)***	0.469 (5.053)***	-0.072 (-1.130)	0.107
0.95	1.153 (42.918)***	1.259 (12.248)***	-0.098 (-2.408)**	0.396	1.196 (18.924)***	0.551 (2.366)**	-0.141 (-0.761)	0.130
(ii) 2008 – 2016					(ii) Crash period;			
0.05	0.547 (59.501)***	0.400 (12.338)***	-0.069 (-3.370)***	0.169	0.696 (28.304)***	0.076 (1.637)	0.087 (4.635)***	0.129
0.25	0.670 (89.062)***	0.381 (9.593)***	-0.025 (-0.796)	0.176	0.834 (32.599)***	0.090 (1.477)	0.076 (2.933)***	0.138
0.50	0.762 (91.050)***	0.450 (14.274)***	-0.027 (-1.585)	0.195	0.935 (39.384)***	0.189 (3.085)***	0.048 1.609	0.171
0.75	0.903 (64.083)***	0.483 (10.328)***	-0.017 (-0.854)	0.204	1.069 (37.311)***	0.216 (2.307)**	0.048 1.333	0.219
0.95	1.152 (37.926)***	0.541 (6.247)***	-0.034 (-1.302)	0.244	1.207 (20.862)***	0.433 (2.750)***	-0.011 -0.215	0.364
Panel C: 4-year sub-periods; (i) 2008-2012					(iii) Post-crash Period			
0.05	0.585 (32.252)***	0.313 (5.688)***	-0.042 (-1.420)	0.141	0.506 (28.902)***	0.544 (6.253)***	-0.155 (-1.971)**	0.173
0.25	0.724 (59.077)***	0.242 (5.654)***	0.023 (0.844)	0.160	0.641 (48.882)***	0.419 (5.523)***	-0.002 (-0.023)	0.167
0.50	0.831 (60.091)***	0.332 (7.707)***	0.001 (0.031)	0.169	0.703 (60.550)***	0.542 (8.604)***	-0.052 (-0.875)	0.193
0.75	0.979 (52.583)***	0.358 (5.959)***	0.007 (0.348)	0.194	0.806 (43.939)***	0.679 (5.915)***	-0.089 (-1.069)	0.188
0.95	1.204 (28.063)***	0.485 (3.901)***	-0.023 (-0.708)	0.275	1.095 (27.236)***	0.652 (4.070)***	-0.143 (-1.114)	0.156

This table presents estimates of equation (4) at different quantile levels for the total sample period, eight-

Table 3: Herding estimations for the aggregate market based on the QR (*continued*)

Quantile	θ_τ	γ_1	γ_2	Adj. R^2	θ_τ	γ_1	γ_2	Adj. R^2
year sub-periods, four-year sub-periods, and analyzing 2008-2016 sub-period into market bubble (February 2009 to February 2011), market crash (March 2011 to July 2012) and post-crash (August 2012 to September 2016) periods. All sub-periods in panel B and C start from 1 st April and end 31 st March of the given year, except the last sub-period which ends 30 th September 2016. The results relating to the 2000-2004 and 2004-2008 sub-periods are not reported under panel C since their results are not significantly different from those reported under the 2000-2008 sub-period in panel B. The numbers in parentheses are t-statistics based on bootstrap standard errors. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.								

Table 4: Herding estimations conditional on market performance based on the OLS

	α	Up-market days		Down-market days			F statistic
		γ_1	γ_2	γ_3	γ_4		
Panel A: Total Sample							
	0.799 (66.993)***	0.642 (20.819)***	-0.037 (-5.527)***	0.554 (13.494)***	-0.041 (-4.934)***	0.462	0.220
Panel B: 8-year sub-periods;							
2000-2008	0.817 (46.420)***	0.720 (17.761)***	-0.045 (-6.289)***	0.676 (11.971)***	-0.066 (-5.839)***	0.494	3.630*
2008-2016	0.809 (65.935)***	0.492 (16.155)***	-0.037 (-3.050)***	0.313 (7.241)***	0.011 (0.450)	0.386	5.685**
Panel C: 4-year sub-periods;							
2000-2004	0.790 (35.796)***	0.658 (16.093)***	-0.034 (-8.045)***	0.614 (11.643)***	-0.048 (-5.399)***	0.594	3.101*
2004-2008	0.818 (33.004)***	0.896 (12.818)***	-0.110 (-7.117)***	0.791 (8.307)***	-0.097 (-5.114)***	0.440	0.610
2008-2012	0.873 (48.564)***	0.391 (10.356)***	-0.015 (-1.205)	0.162 (3.279)***	0.054 (2.507)**	0.395	12.957***
2012-2016	0.753 (51.249)***	0.595 (10.785)***	-0.054 (-1.540)	0.502 (7.778)***	-0.054 (-1.028)	0.361	0.000
Panel D: Analysis of 2008-2016 sub-period;							
	0.856 (35.527)***	0.533 (7.624)***	-0.127 (-3.275)***	0.152 (1.751)*	-0.004 (-0.107)	0.272	10.739***
Bubble period							
Crash period	0.951 (41.042)***	0.278 (5.163)***	0.018 (1.285)	0.124 (2.233)**	0.081 (5.833)***	0.436	14.249***
Post-crash Period	0.739 (50.536)***	0.628 (10.470)***	-0.089 (-1.898)*	0.511 (7.268)***	-0.096 (-1.409)	0.326	0.009

This table presents estimates of equation (3). All sub-periods in panel B and C start from 1st April and end 31st March of the given year, except the last sub-period which ends 30th September 2016. Panel D shows further analysis of 2008-2016 period, classifying into periods of market bubble (February, 2009 to February, 2011), market crash (March, 2011 to July, 2012) and post-crash (August, 2012 to September, 2016). The numbers in parentheses are *t*-statistics based on the Newey and West (1987) test for Heteroskedasticity and autocorrelation consistent standard errors. The *F* statistic tests the null hypothesis

Table 4: Herding estimations conditional on market performance based on the OLS (*continued*)

α	Up-market days		Down-market days		Adj.R ²	F statistic
	γ_1	γ_2	γ_3	γ_4		

that $\gamma_2 = \gamma_4$. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

Table 5: Herding estimations conditional on market performance based on the QR(

Quantile	θ_τ	Up-market days		Down-market days		F Statistic	Adj. R ²
		γ_1	γ_2	γ_3	γ_4		
Panel A: Total sample period;							
0.05	0.539 (57.082)***	0.533 (12.087)***	-0.073 (-2.457)**	0.369 (11.124)***	-0.035 (-1.899)*	1.654	0.207
0.25	0.670 (104.470)***	0.553 (17.707)***	-0.045 (-2.384)**	0.371 (19.014)***	-0.011 (-1.324)	2.998*	0.231
0.50	0.778 (102.914)***	0.595 (20.125)***	-0.033 (-2.332)**	0.424 (17.779)***	-0.019 (-1.908)**	0.809	0.253
0.75	0.906 (78.386)***	0.698 (17.114)***	-0.038 (-2.593)***	0.573 (14.053)***	-0.037 (-3.216)***	0.006	0.279
0.95	1.109 (55.026)***	1.137 (9.100)***	-0.085 (-1.640)	1.250 (9.823)***	-0.148 (-2.515)**	0.705	0.375
Panel B: 8-year sub-periods;							
(i) 2000-2008 sub-period							
0.05	0.507 (29.766)***	0.639 (10.928)***	-0.102 (-3.172)***	0.500 (10.322)***	-0.059 (-2.405)**	1.547	0.249
0.25	0.683 (57.424)***	0.617 (12.903)***	-0.057 (-2.139)**	0.436 (15.162)***	-0.029 (-2.904)***	1.155	0.256
0.50	0.808 (68.483)***	0.636 (18.349)***	-0.031 (-2.112)**	0.502 (11.843)***	-0.033 (-2.844)***	0.014	0.281
0.75	0.932 (52.512)***	0.792 (15.127)***	-0.048 (-2.438)**	0.678 (10.423)***	-0.057 (-3.570)***	0.134	0.315
0.95	1.147 (49.013)***	1.179 (10.729)***	-0.090 (-2.051)**	1.481 (12.855)***	-0.184 (-5.100)***	2.803*	0.406
(ii) 2008-2016 sub-period							
0.05	0.546 (56.901)***	0.524 (9.111)***	-0.116 (-3.239)***	0.355 (9.485)***	-0.053 (-2.328)**	2.909*	0.182
0.25	0.669 (84.037)***	0.467 (10.446)***	-0.030 (-0.781)	0.301 (6.716)***	-0.013 (-0.404)	0.164	0.196
0.50	0.767 (74.486)***	0.510 (13.704)***	-0.036 (-1.637)	0.323 (6.112)***	0.010 (0.249)	1.269	0.207
0.75	0.910 (68.756)***	0.554 (13.261)***	-0.046 (-2.385)**	0.313 (5.419)***	0.034 (0.937)	5.023**	0.215
0.95	1.146 (37.022)***	0.599 (6.459)***	-0.057 (-1.829)*	0.543 (4.542)***	-0.034 (-0.510)	0.112	0.244
Panel C: 4-year sub-periods;							
(i) 2008-2012 sub-period							
0.05	0.596 (32.490)***	0.434 (5.512)***	-0.090 (-1.836)*	0.235 (3.440)***	-0.015 (-0.449)	1.968	0.160
0.25	0.718 (53.272)***	0.365 (5.842)***	-0.003 (-0.058)	0.168 (3.132)***	0.033 (0.937)	0.519	0.187
0.50	0.840	0.394	-0.014	0.112	0.068	5.445**	0.197

Table 5: Herding estimations conditional on market performance based on the QR(continued)

Quantile	θ_τ	Up-market days		Down-market days		F Statistic	Adj. R^2
		γ_1	γ_2	γ_3	γ_4		
0.75	(54.358)***	(8.949)***	(-0.681)	(2.111)**	(2.053)**	4.983**	0.214
	0.980	0.428	-0.012	0.165	0.066		
0.95	(62.481)***	(9.026)***	(-0.654)	(2.582)***	(1.963)**	0.421	0.277
	1.195	0.602	-0.060	0.390	0.000		
	(29.265)***	(4.751)***	(-1.572)	(2.160)**	(-0.003)		
(ii) 2012-2016 sub-period							
0.05	0.526	0.555	-0.064	0.431	-0.091	0.088	0.192
	(33.730)***	(5.981)***	(-0.896)	(4.659)***	(-1.075)		
0.25	0.646	0.492	0.015	0.335	0.053	0.169	0.191
	(66.231)***	(8.558)***	(0.268)	(4.564)***	(0.606)		
0.50	0.712	0.585	-0.025	0.480	-0.029	0.004	0.212
	(61.785)***	(11.520)***	(-0.618)	(8.021)***	(-0.487)		
0.75	0.830	0.719	-0.114	0.575	-0.080	0.128	0.216
	(50.311)***	(9.447)***	(-2.338)**	(4.820)***	(-0.851)		
0.95	1.098	0.643	-0.104	0.638	-0.058	0.047	0.201
	(29.287)***	(5.235)***	(-1.480)	(2.961)***	(-0.271)		
Panel D: Analysis of 2008-2016 period;							
(i) Bubble period							
0.05	0.620	0.414	-0.106	0.127	0.022	1.233	0.141
	(23.729)***	(3.152)***	(-0.904)	(1.136)	(0.346)		
0.25	0.713	0.487	-0.126	0.154	-0.001	3.031*	0.160
	(40.465)***	(6.533)***	(-2.185)**	(2.100)**	(-0.026)		
0.50	0.819	0.537	-0.113	0.146	-0.004	1.968	0.146
	(28.078)***	(5.947)***	(-1.717)*	(1.636)	(-0.067)		
0.75	0.969	0.540	-0.102	0.107	-0.015	0.582	0.158
	(48.257)***	(6.574)***	(-1.813)*	(1.006)	(-0.140)		
0.95	1.226	0.548	-0.144	-0.372	0.515	2.161	0.167
	(22.389)***	(2.498)***	(-0.744)	(-1.004)	(1.167)		
(ii) Crash period							
0.05	0.705	0.089	0.083	0.003	0.120	0.141	0.141
	(32.182)***	(1.125)	(2.052)**	(0.048)	(2.240)**		
0.25	0.840	0.198	0.039	0.001	0.113	0.623	0.147
	(29.893)***	(1.677)*	(0.636)	(0.009)	(1.334)		
0.50	0.945	0.261	0.031	0.074	0.089	0.472	0.188
	(35.769)***	(3.009)***	(0.627)	(0.668)	(1.116)		
0.75	1.059	0.351	0.005	0.150	0.077	0.790	0.225
	(34.913)***	(3.543)***	(0.114)	(1.189)	(0.968)		
0.95	1.207	0.439	-0.023	0.457	-0.017	0.001	0.363
	(20.336)***	(2.256)**	(-0.298)	(1.815)*	(-0.088)		
(iii) Post-crash period							
0.05	0.514	0.592	-0.086	0.456	-0.102	0.025	0.188
	(33.998)***	(5.983)***	(-0.963)	(5.068)***	(-1.250)		
0.25	0.633	0.583	-0.101	0.420	-0.090	0.013	0.182
	(58.451)***	(8.539)***	(-1.452)	(5.198)***	(-0.978)		
0.50	0.704	0.591	-0.022	0.472	-0.030	0.006	0.199
	(66.369)***	(8.846)***	(-0.303)	(5.898)***	(-0.319)		
0.75	0.810	0.752	-0.125	0.532	-0.089	0.063	0.196
	(45.864)***	(7.588)***	(-1.755)*	(3.997)***	(-0.624)		

Table 5: Herding estimations conditional on market performance based on the QR(continued)

Quantile	θ_τ	Up-market days		Down-market days		F Statistic	Adj. R^2
		γ_1	γ_2	γ_3	γ_4		
0.95	1.097 (26.349)***	0.633 (4.129)***	-0.134 (-1.318)	0.580 (2.154)**	0.038 (0.124)	0.327	0.157

This table presents estimates of equation (5) at different quantile levels for the total sample period, eight-year sub-periods, four-year sub-periods, and analyzing 2008-2016 sub-period into market bubble (February 2009 to February 2011), market crash (March 2011 to July 2012) and post-crash (August 2012 to September 2016) periods. All sub-periods in panel B and C start from 1stApril and end 31stMarch of the given year, except the last sub-period which ends 30thSeptember 2016. The results relating to the 2000-2004 and 2004-2008 sub-periods are not reported under panel C since their results are not significantly different from those reported under the 2000-2008 sub-period in panel B. The F statistic tests the null hypothesis that $\gamma_2=\gamma_4$. The numbers in parentheses are t-statistics based on bootstrap standard errors. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

5. Conclusion

The study focuses on examining time-varying nature of investors' herding attitudes in a frontier stock market, the CSE of Sri Lanka. In the presence of structural limitations of frontier markets, compared to developed and emerging stock exchanges, such as lower transparency of informational environment, illiquidity and relatively low number of stocks actively traded, it would be expected that investors are more likely to imitate others, discarding their beliefs, information and fundamentals in stock trading. Supporting this general prediction, both the OLS and the QR evidence find a strong tendency to herd at the aggregate market level as well as both raising and falling market days of the total sample period. However, it is interesting to note the results of the sub-period analyses which reveal changes of herding attitudes to negative herding and its tendency to shift away over different episodes of the market. The herding is strongly evident during the period of political uncertainty, resulting from the civil war. It appears to continue even after this uncertain time period, raising the market to a speculative bubble which busts subsequently as a consequence of investors' negative herding attitudes.

The negative herding behavior may be attributed to investors' overconfidence as a result of significant gains realized in the period of market bubble, and/or increased risk-averseness of investors resulting from irrational fears due to uncertain market conditions, both of which cause trading of stocks excessive and exaggerated way, increasing the price dispersions above the rational level. Therefore, this evidence infers that herd behavior would result to a market bubble whereas negative herding would cause to burst of the bubble, leading to market crash. The evidence on herd behavior is mostly absent during the period after the market crash; therefore, investors appear to have learnt the irrationality of herding with significant losses experienced during the period of market crash. When the results are taken together, they suggest that period-specific characteristics of the market and the associated psychological effects to investors such as overconfidence and panics would cause changes to their beliefs and behaviors, the experiences of which would subsequently produce a learning effect to minimize irrational behaviors such as herding. Further, the results indicate that the absence of herding in the previous studies conducted by Sewwandi (2016) and Xiaofang and Shantha (2017)²³ may be primarily due to limiting the analysis to the total sample period, which results in aggregation of herding, negative herding and anti-herding behaviors occurred at different times over their sample periods.

The major implications from the findings of this study are as follows. First, consistent with Bekiros et al. (2017), Klein (2013), Zhou and Anderson (2013) and Clements et al. (2017), the evidence suggests that herd behavior is a dynamic phenomenon, thus, varying over time depending on period-specific characteristics of the market. Second, as a novel evidence to the herding literature, the findings support the AMH, implying that investors are likely to realize the irrationality of herding and control such behaviors when they get

²³Here, concern on the OLS results, not the QR results of the study conducted by Xiaofang and Shantha (2017).

experience in stock trading over time. Third, since the evidence highlights that, apart from the structural limitations of a frontier market, external environmental events would affect investors' psychological state, causing irrational behaviors in trading financial assets, educational initiatives such as workshops and training programs should be undertaken continuously, in addition to implementing policy reforms to improve market's stability and efficiency status. Such educational initiatives would facilitate the investors to obtain sufficient knowledge, which, along with their trading experiences, would improve their sophistication, thereby, reduce irrationality in making investment decisions. Fourth, it should also be noted that this study attempts to detect a particular form of irrationality of investors in trading financial assets. Investors would exhibit other types of irrational behaviors in their investment decision making process. Further research covering other types of behavioral biases will provide greater insights into the nature of investors' behavior, based on which educational initiatives could be effectively planned in order to minimize their irrational behaviors.

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Fiscal Policy and Macroeconomic Shocks in Nigeria: A Structural Vector Auto-Regression SVAR Approach

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Abstract: The paper investigates fiscal policy and macroeconomic shocks in Nigeria. It was motivated by the non-existence of consensus on the nature and levels of interactions between fiscal policy variables and macroeconomic variables. The study utilizes quarterly data from 1980 Q1 to 2015 Q4 which are analyzed using Structural Vector Auto-Regression (SVAR) to examine the responses of fiscal policy to some macroeconomic shocks and vice versa. The results indicate that exchange rate is the major macroeconomic medium through which external shocks influence fiscal policy variables in Nigeria. The level of interaction between fiscal policy variables and exchange rate, among other macroeconomic variables in the model, appears to be the most significant. Also, among all other macroeconomic variables the contributions of the exchange rate to the behavior of Nigeria's economic growth is the highest. All these are pointers to the significant role played by exchange rate in transmission of macroeconomic and external shocks to fiscal policy behavior with the resultant effect on the domestic economy.

Keywords: *Fiscal Policy, Macroeconomic shocks, Nigerian economic growth*

1. Introduction

Fiscal policy in Nigeria has been largely determined by oil revenue and oil windfalls. Nigeria is an oil-rich country and her fiscal revenues largely coincide with oil revenue. Oil revenue accounts for nearly 80 % of government revenue, which implies that the economy is highly exposed to price fluctuations in the world oil markets (CBN, 2016). Naturally, oil revenue is very volatile due to oscillation in world oil prices and to unpredictable changes in OPEC assigned oil quota of which Nigeria has been a member since 1958 (Obinyelauku, 2009). It has been observed that despite the huge fiscal deficit that characterizes fiscal behavior in Nigeria, the overall economy appears not to have performed well during these periods and this has constituted a major concern to the policy makers (Olasunkanmi, and Babatunde, 2013). For instance, domestic fiscal deficit worsened from an average of 2.6 % of the GDP in 1980s to 6.2 % in the 1990s. In 2010 alone, domestic deficit increased to 5 % of the GDP from 2 % in 2009. This increase in deficits results in a mounting stock of debt, ranging from 88 % of GDP in 1980s to 96 % in 2009. Around the same periods precisely in 2007 the real GDP growth rate fell from -3.1% to -7.6% in 2009 (World Bank 2010). The implication of this is that the accumulated fiscal deficit has not reflected in the growth of the Nigerian economy during these periods. Despite the Nigerian's government efforts to instil discipline on the fiscal behaviors by way of economic diversification policies and implementation of other fiscal variables like taxation, the economy still remains in comatose due to the consequences of fiscal irresponsibility.

However, the effectiveness of fiscal policy in a naturally endowed country like Nigeria has been strongly linked with influences of some external and internal factors which constitute shocks to macroeconomic policies (Obinyelauku, 2009). The severity of the influence is largely dependent on the level of diversification of the revenue base of the government. Nigeria is widely known to be practicing mono-economy, that is, oil remains the major driver of the economy contributing more than 80% to the foreign exchange earnings of the country. This, on its own exposes macroeconomic policy like fiscal policy to external shocks. The effectiveness of fiscal policy in achieving the set macroeconomic objectives in Nigeria has been largely dependent on the revenue from oil. However, oil being an international commodity, is highly susceptible to both external and cyclical changes in the world oil market. This, among others has caused unprecedented instability in the recent times in the oil revenue accruing to Nigeria as an oil-dependent country. Administration of fiscal policy in Nigeria is largely anchored by government revenue which is seriously affected by the fluctuations in the oil revenue. The government has attempted over the years to shift her revenue base from oil so as to reduce the vulnerability of government revenue to oil price fluctuations. All these efforts appear not to have yielded any positive results. However, apart from oil-related variables, some other factors which are mostly

macroeconomic variables have been identified by researchers as shocks that might cause perturbation of the fiscal policy variables and which can affect fiscal policy effectiveness in a particular country (Muneer et al., 2011; Kinnunen, Sulla, & Merotto, 2013; Gosse Guillamin, 2012).

They observe that some of these variables such as exchange rate, interest rate, public debt, among others, can be termed internal that is controllable by the Nigerian government while some variables such as oil price volatility, commodity price volatility, exchange rate volatility, among others, are purely external, that is outside the control of the Nigerian government. Moreover, the medium and the mode through which these macroeconomic shocks and external shocks affect the effectiveness of fiscal policy remains a subject of debate in Nigeria (See, Olasunkanmi, & Babatunde, (2013); Obinyeluaku, 2009). This study hopes to contribute to knowledge by identifying these shocks and examining the relationship between them and fiscal policy with a view to ascertaining the medium through which these shocks influence fiscal policy and eventually transferred to the domestic economy. Consequently, the major objective of this study is to investigate the interactions between macroeconomic shocks and fiscal policy behavior in Nigeria.

2. Literature Review

Over the years some researchers have been conducted around the effectiveness of fiscal policy and the influence of some macroeconomic variables in Nigeria. Some of these past studies are reviewed in chronological order as follows: Obinyeluaku and Viegi (2009) focused on oil revenue shocks and fiscal policy in Nigeria. They examined fiscal policy rule as a tool for managing oil revenue in Nigeria and observed that Nigeria is heavily dependent on oil revenue to finance over 80 % of its total expenditure, making its budget vulnerable to fiscal shocks. This poses a serious threat both to the sustainability of the country's budget and to its macroeconomic stability. Oil windfall induces government spending that is difficult to retrench when the oil revenue falls. This distorts government budget allocation pattern, cohesion and stability and increases deficits and debt stock that has often created an unfavorable environment for monetary policy. The question then is: what form of fiscal policy rules will perform better in reducing debt accumulation and promote the necessary medium-term budget deficit stability? The results show that the fixed surplus rule performs better than the simple variable surplus rule when real interest rate is relatively high and the ability to adjust government expenditure is limited.

Aremo, Orisadare and Ekperiware (2012) investigated oil price shock and fiscal policy management in Nigeria. They observed that high oil price fluctuations have been a common feature in Nigeria and these have considerably constituted a major source of fiscal policy disturbance to the Nigerian economy as well as the economies of other oil producing countries of the world. The over-reliance on oil production for income generation combined with local undiversified revenue and export bases is an issue for concern. This has policy implications for economic policy and in particular fiscal policy management. Their motivation for the study was to examine the effect of oil price shock on fiscal policy in the country. Using structural vector auto regression (SVAR) methodology, the effects of crude oil price fluctuations on two major key fiscal policy variables (government expenditure (GEXP) and government revenue (GREV)), money supply (MS2) and GDP were examined. The results showed that oil prices have a significant effect on fiscal policy in Nigeria within the study period of 1980 to 2009. The study also revealed that oil price shock affects GREV and GDP first before reflecting on fiscal expenditure. The study suggested strongly that diversification of the economy is necessary in order to minimize the consequences of oil price fluctuations on government revenue, by implication government expenditure planning in the country.

Olasunkanmi and Babatunde (2013) examined the effects of fiscal policy shocks on the current account as well as the dynamic interactions among fiscal policy shocks and current account with the other macroeconomic variables: real output, real interest rate and exchange rate for Nigeria over the periods 1980:1-2010:4. The identification of fiscal policy shocks is achieved via structural VAR approach proposed by Blanchard-Perotti (2002). The results of this study indicated that the expansionary fiscal policy shock has a positive effect on output, exchange rate and a negative impact on current account balance and interest rate. This study implied that fiscal policy can stimulate economic activity through expenditure expansions at a cost of lower interest rate and exchange rate appreciation in the medium term and a sustained current account balance will enhance output via fiscal consolidation.

3. Methodology

The structure of the SVAR is premised basically on the major sub divisions according to the variables in the model. The first variables are oil price volatility and commodity price volatility. This is a clear departure from what is common in the past empirical studies where prices are used instead of their behaviors (fluctuations) which has been identified as very germane to fiscal policy dynamics relationship with growth (Ojo, and Alege, 2014). The next sets of variables are the fiscal policy variables and other policy variables such as exchange rate, interest rate and inflation rate. The output variable is the last set of variables in the SVAR and it comprises GDP growth rate. Construction of our VAR model follows the conventional method where the primitive/structural model is specified thus:

$$y_t = A_1 y_{t-1} + A_2 y_{t-2} + \dots + A_p y_{t-p} + \mu_t \quad \dots\dots\dots(1)$$

Where:

y_t represent an $(n \times 1)$ vector containing n endogenous variables,

$A_i \forall (i=\{1, 2, \dots, p\})$ are $(n \times n)$ matrices coefficients,

And μ_t is an $(n \times 1)$ vector containing error terms. Though the error is $\mu_t \sim iidN(0, \Omega)$ but errors possess a tendency of correlating contemporaneously in all the equations. There are pn^2 parameters in the A matrices. Equation 1 can be rewritten using the lag operator L which is selected through $L^k x_t = x_{t-k}$. where x is a group of exogenous variable and k is the lag length. The equation becomes:

$$A(L)y_t = \mu_t. \quad \dots\dots\dots(2)$$

Where:

$$A(L) = A_0 L^0 - A_1 L^1 - A_2 L^2 - \dots - A_p L^p \quad \dots\dots\dots(3)$$

$A_0 = I$ (identity matrix). It is required that $A(L)$ lies outside the unit circle for stationary to be ensured.

Variance Decomposition and Impulse Response Functions: Analysis of the SVAR is carried out using variance decomposition and impulse response functions. Both variance decomposition and impulse response functions are computed by re-specifying our autoregressive (AR) function. The two of them evolve through the process described as follows:

$$A(L)\mu_t = y_t \quad \dots\dots\dots(4)$$

y_t represent a stationary stochastic process in the system and the lag operator is L, μ_t is a white noise error term. The theory also requires that root dot $(1-A(z))=0$ should have a modular greater than 1. In this case, dot $(1-A(z))$ is invertible. The interpretation of our VAR is based on the vector moving average (MA) presented in the following form:

$$y_t = \phi_t + \sigma(L)\mu_t E(\mu_t) = 0 \quad \dots\dots\dots(5)$$

$$E(\mu_t \mu_{t-k}) = Q, |k| = 0 \quad \dots\dots\dots(6)$$

$$E(\mu_t \mu_{t-k}) = Q, |k| \neq 0 \quad \dots\dots\dots(7)$$

Where Q represents the covariance matrix sample, ϕ_t is predictable perfectly while the matrix of coefficients $\sigma(L)$ using lag 0 is the identity matrix. Equation 7 can be normalized to generate the impulse response functions and at the same time forecast the error decomposition. Nonetheless the variance decomposition adopted is equal to the MA.

Model Identification: The nature of SVAR requires imposition of enough restrictions so as to identify the orthogonal structural components of the error terms that are present in the shocks. Note that this is at variance to the standard recursive Cheeky orthogonalisation. The non-recursive orthogonalisation of the error terms produced through this process is used for the impulse response functions and variance decomposition. For clarity, assume that y_t comprised vector of endogenous variables. For example, say kith element of endogenous variables in our model where $\sum E[v_t \hat{v}_t]$ is the residual of the covariance matrix. Therefore, our identification procedure follows:

$$A v_t = B \mu_t \quad \dots\dots\dots(8)$$

Where v_t and μ_t are vectors with lag length k, v_t is the observed residual and μ_t represents the unobservable structural innovations. A & B are $k \times k$ matrices which are to be estimated. However, innovation μ_t is assumed to be orthogonal in nature. Hence the covariance is an identity matrix $E[\mu_t \mu_t^t] = I$. Imposition of restrictions on A and B is made possible due to the orthogonal assumption of μ_t . hence we have:

$$A \sum \hat{A} = B \hat{B} \quad \dots\dots\dots(9)$$

The link between the reduced form and the structural form of the VAR model is presented as follows:

$$B(L) = B_0 + B^+(L) \quad \dots\dots\dots(10)$$

$$A(L) = -B_0^{-1}B^+(L) \quad \dots\dots\dots(11)$$

$$\Sigma \doteq B_0^{-1}AB_0^{-1} \quad \dots\dots\dots(12)$$

Equation 9 is the structural form divided into contemporaneous correlations i.e. B_0 and $B^+(L)$. The former represents correlations at lag zero while the later represents correlations at all strictly positive lags. Equation 12 separates each reduced form coefficient into its structural counterpart B_0 , identified through the reduced form, $\Sigma \doteq E[\mu_t\mu_t']$, and the diagonal covariance matrix of the structural form, $A = E[v_t\hat{v}_t']$ as shown in 13. Furthermore, due to the vulnerability of long run restrictions to serious misspecification problems, we use a contemporaneous restriction on the B_0 matrix to identify the shocks as shown in Equation 12 since this study is interested in short-run and medium term responses (see Leeper, Sims and Zha, 1996; Elbourne, 2007).

$$\begin{bmatrix} v_t^{oilpv} \\ v_t^{compv} \\ v_t^{ge} \\ v_t^{gr} \\ v_t^{infr} \\ v_t^{intr} \\ v_t^{exr} \\ v_t^{gdpgr} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ B_{21}^0 & 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ B_{31}^0 & 0 & 1 & 0 & 0 & 0 & 0 & 0 \\ B_{41}^0 & 0 & B_{43}^0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & B_{53}^0 & B_{54}^0 & 1 & B_{56}^0 & 0 & 0 \\ B_{61}^0 & B_{62}^0 & 0 & 0 & B_{65}^0 & 1 & B_{67}^0 & 0 \\ B_{71}^0 & B_{72}^0 & B_{73}^0 & B_{74}^0 & B_{75}^0 & B_{76}^0 & 1 & 0 \\ 0 & 0 & 0 & 0 & B_{85}^0 & B_{86}^0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \mu_t^{oilpv} \\ \mu_t^{compv} \\ \mu_t^{ge} \\ \mu_t^{gr} \\ \mu_t^{infr} \\ \mu_t^{intr} \\ \mu_t^{exr} \\ \mu_t^{gdpgr} \end{bmatrix} \quad \dots\dots\dots(13)$$

There are eight variables in the SVAR model namely oil price volatility (OILPV), commodity price volatility (COMPV), government expenditure, government revenue, inflation, interest rate, exchange rate and GDP growth rate which are the exogenous variable. The oil price volatility and commodity price volatility both put external pressure on the economy which is predominantly dominated by import dependent and primary goods production countries (Demachi, 2012). In the matrix described in Equation 13, they both occupied rows 1 and 2 respectively. According to Becklemans (2005), the transmission of the international shock to the domestic economy can be very rapid. Consequently, oil price volatility shock is the one driving itself while commodity price depends on oil price volatility and its fluctuations are captured by commodity price volatility. The position of the variables in the model describes the way they influence themselves in the identification scheme. For instance, the non-zero element B_{ji}^0 in the matrices shows that variable influences variable contemporaneously. The zero elements show that variables exercise some restrictions before responding. The remaining restrictions in the SVAR model are carried out following Ravnik and Zilic (2010) & Unai (2011). However, it should be noted that the volatilities of oil price and commodity price is used and they are developed through an Exponential Generalized Autoregressive Conditional Heteroskedaticity Eparch. The process is discussed as follows.

Derivation of Oil Price and Commodity Price Volatilities: Literature has confirmed both oil price fluctuations and commodity price movement as important factors affecting fiscal policy framework in the many of the resource endowed countries which are producers of primary products. In addition, Demachi (2012), Wagithunu, Muthee & Thinguri (2014) & Ayodeji (2015), among others, argued that the nature of the volatility of these two commodities has important implications for fiscal policy dynamics in developing economies due to their reliance majorly on primary commodity export and being largely import dependent. The nature of the volatility can either be symmetric or asymmetric. Either of the two cases has its own implication on fiscal policy framework of Nigeria. Consequently, Exponential Generalized Autoregressive Conditional Heteroskedaticity EGARCH was adopted. Firstly, volatilities for the commodity and oil prices used in the study are developed via the exponential generalize autoregressive conditional Heteroskedaticity EGARCH [1, 1]. The EGARCH process described as follows:

$$comp_t = \varphi + comp_{t-1} + \mu_t \quad \dots\dots(14)$$

$$oilp_t = \varphi + oilp_{t-1} + \mu_t \quad \dots\dots(15)$$

The AR [1] approach is followed. The following EGARCH model is estimated for each of the commodities prices used.

$$\ln \sigma^2 = \omega + \ln \sigma_{t-1}^2 + \alpha \left| \frac{\mu_{t-1}}{\sigma_{t-1}} \right| + \gamma \left| \frac{\mu_{t-1}}{\sigma_{t-1}} \right| \quad \dots\dots(16)$$

In Equation 16 above, γ is residual, and σ denotes the conditional variance obtained from the EGARCH equations. Here, if $\gamma < 0$, it indicates the asymmetric character of commodity price and oil price movements on volatility. This means that a negative price shock has a larger influence on volatility than a positive price shock. The estimates of the conditional variance for each of the commodity prices are used as their volatility components and are used as in Demachi (2012). This is capable of allowing us to know which of the prices has asymmetric effects. The a priori expectation is that the commodity and oil price volatility will impact negatively on Growth due to the fact that both are direct consequence of macroeconomic mismanagement which will likely have negative feedback effect on the economy. However, from Table 1 variables like oil price volatility, commodity price volatility, External Debt and government expenditure are all stationary at levels hence we can apply SVAR.

Data Source: Data used for this study were collected from both the World Bank Tables 2016 edition and the IFS (international Financial Statistics). Quarterly data for the period 1980Q1 to 2015Q4 were chosen because they coincided with the periods when many macroeconomic variables in Nigeria witnessed many reforms.

4. Results and Discussion

Unit Root Test: In this study, two types of unit root test were implemented, that is, the Augmented Dickey test (Dickey and Fuller, 1979) (ADF) and Philip-Perron (PP) test. The two tests assume unit root in their null hypothesis. Table 1 reports the result of the unit tests. The results of the unit root test indicate that the variables are either stationary at levels or at the first difference. The implication is that Johansen type of co integration techniques cannot be applied since it emphasizes the need for all the variables in the model to be stationary at first difference.

Table 1: Unit Root Test

Variable	ADF Statistic	Alpha Level	Decision	PP- Statistics	Alpha Level	Decision
FB	-3.937	0.01	I(1)	-3.937	0.01	I(1)
GR	-8.707	0.01	I(1)	-8.707	0.01	I(1)
GE	-3.096	0.01	I(0)	-3.096	0.01	I(0)
ER	-3.568	0.01	I(1)	-3.568	0.01	I(1)
ED	-5.244	0.01	I(1)	-5.244	0.05	I(0)
EXR	-5.516	0.01	I(1)	-5.516	0.01	I(1)
DUMR	-5.831	0.01	I(1)	-5.831	0.01	I(1)
OILPVOL	-3.988	0.01	I(0)	-3.988	0.01	I(0)
COMPVOL	-3.600	0.01	I(0)	-3.600	0.01	I(0)
INF	-5.515	0.01	I(1)	-5.515	0.01	I(1)
K	-5.500	0.01	I(1)	-5.500	0.01	I(1)
GDPGR	-4.514	0.05	I(1)	-4.514	0.05	I(1)

Source: Author's Computation

EGARCH Process for Both Commodity and Oil Prices: The process begins with verification of ARCH effect. The two series are tested for ARCH affects both the residual plot and ARCH tests are used. The result is presented as follows:

Figure 1: Residual Plot for Both Commodity and Oil Prices

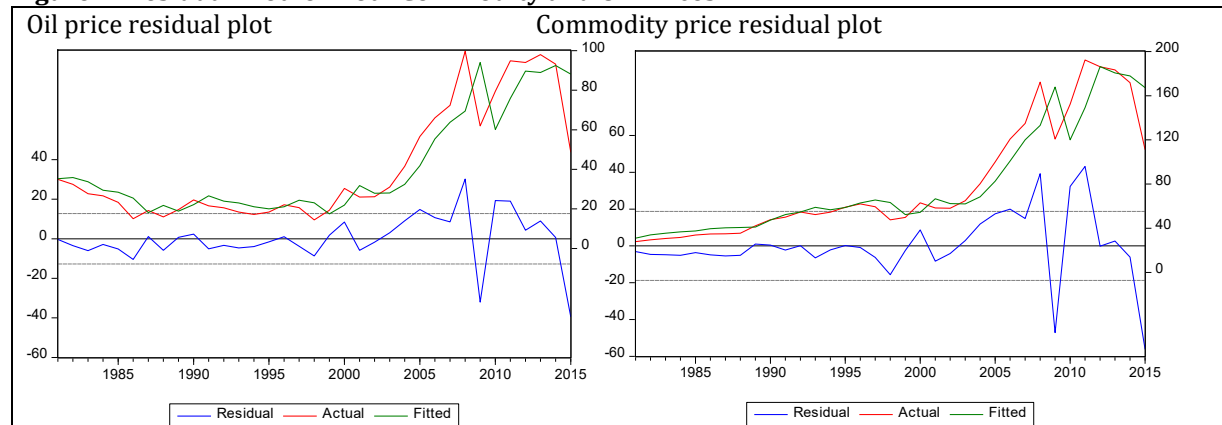


Table 2: Arch Tests for Oil and Commodity Prices

Oil prices			
F-statistic	5.192702	Prob. F(1,32)	0.0295
Obs*R-squared	4.746949	Prob. Chi-Square(1)	0.0294
Commodity Prices			
F-statistic	6.315168	Prob. F(1,32)	0.0172
Obs*R-squared	5.603935	Prob. Chi-Square(1)	0.0179

Both graphs in Figure 1 show the likelihood of ARCH effect. Both commodity and oil price residual plot indicates undulating shapes that confirms the presence of ARCH effect. Notwithstanding, the ARCH analysis has provided an avenue for double checking the results presented in Figures 1 through the ARCH test. The results of the ARCH test for oil and commodity prices are presented in Table 2. The results from Table 2 shows that the Null hypothesis of no ARCH effect is rejected at 5% level for both prices. The implication of this is that the results from the table confirm that there is ARCH effect. Therefore, we are justified to run any of the ARCH families' analysis. The EGARCH is applied here in order to verify if oil price has asymmetric effect. The estimated EGARCH equations for both oil and commodity prices are presented as follows: EGARCH or conditional variance equation for oil price

$$\ln\sigma^2 = 1.351934^{***} - 1.169635^{***} \ln\sigma_{t-1}^2 + 0.821859^{***} \left| \frac{\mu_{t-1}}{\sigma_{t-1}} \right| + 0.882097^{***} \left| \frac{\mu_{t-1}}{\sigma_{t-1}} \right| \quad \dots(17)$$

(3.94E-06) (0.024807) (0.151661) (1.6E-103)

EGARCH or conditional variance equation for commodity price

$$\ln\sigma^2 = 0.319702 - 0.442090 \ln\sigma_{t-1}^2 - 0.034851 \left| \frac{\mu_{t-1}}{\sigma_{t-1}} \right| + 1.067861^{***} \left| \frac{\mu_{t-1}}{\sigma_{t-1}} \right| \quad \dots\dots(18)$$

(0.221492) (0.323958) (0.394033) (0.002111)

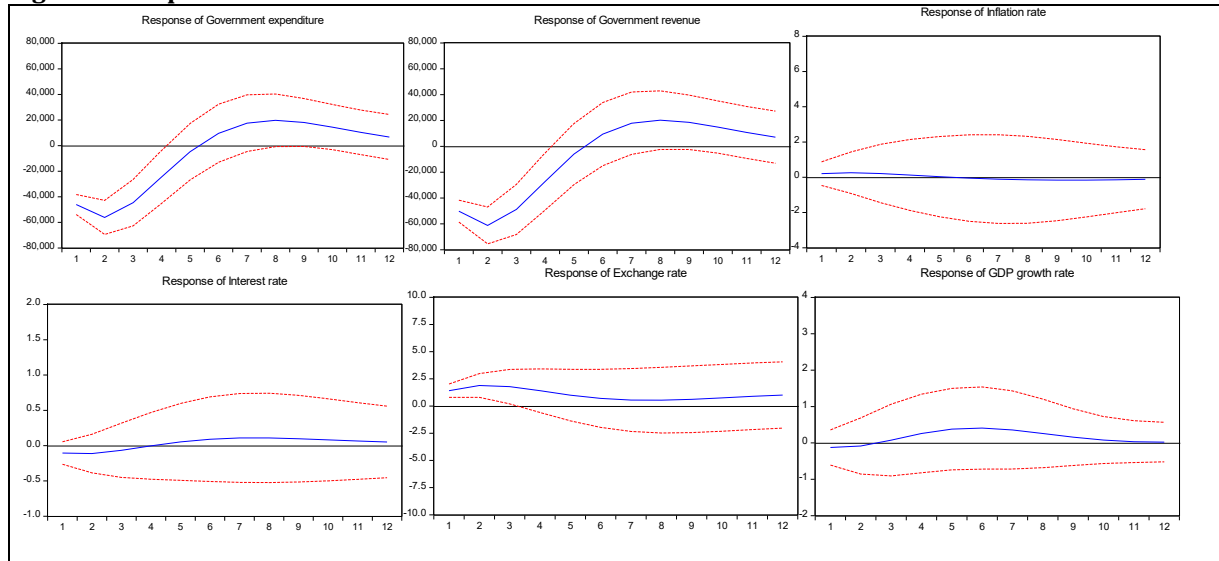
*, **, ***: significance at 10%, 5% and 1% respectively us

Equations 17 and 18 are the estimated EGARCH models for both oil and commodity price respectively. The results show that both prices do not have asymmetric effect but rather a significant symmetric effect during the period under review. This can be attributed to the fact that the coefficients 0.882097 and 1.067861 are greater than zero and they are statistically significantly. This indicates that a positive price shock will have more pronounced effect than negative price shock. Consequently, the residuals of the conditional variance equations that is $\ln\sigma^2$ in Equations 1 and 2 for both oil and commodity prices are used as oil price volatility (OILPVOL) and commodity price volatility (COMPV) respectively as stated in Equation 13 under the SVAR model. The impulse response functions that explain the behavior of a particular variable to 1% standard deviation in another variable called shock are presented as follows:

Impulse Response Functions: The discussion of the impulse response function begins with the exogenous variables that are oil price shocks and commodity price shocks followed by other variables. The responses of the fiscal variables as well other fiscal policy shocks to 1% standard deviation in oil price are described in Figure 2. The results show that both government revenue and government expenditure showed an upward

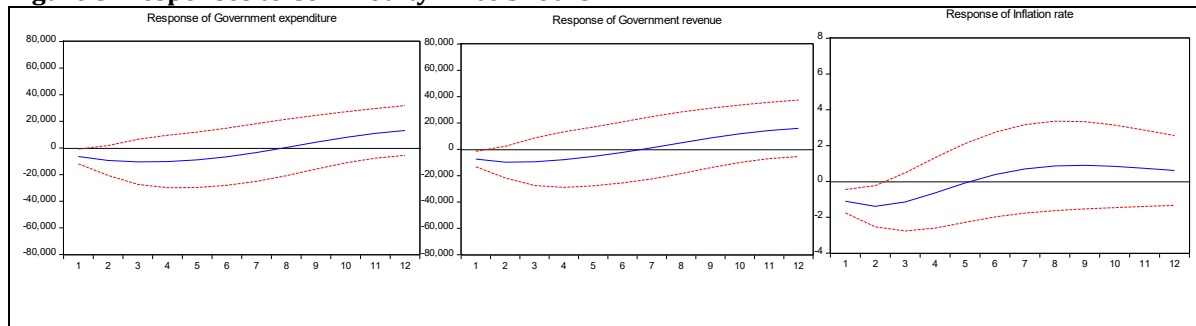
reaction to the shock. The pattern of responses by the two core fiscal variables is an indication that oil price volatility is very germane to behavior of fiscal policy in Nigeria. The responses of the two fiscal variables are apart from being positive, also significant. Another variable that shows significant response to the oil price shock is exchange rate.

Figure 2: Response to Oil Price Shock



The responses of the variables to commodity price shocks are explained in Figure 2. The results show some slight differences between the responses to oil price shocks and commodity price shocks. The two core fiscal variables namely; government revenue and expenditure, do not react significantly to the shock from commodity price for the largest part of the period. Significant reactions are only noticed at the earliest beginning of the periods. This is an indication that oil price volatility appears to have more significant impact on fiscal behavior in Nigeria than commodity price volatility. Exchange rate appears to be the most affected variable in the impulse function of commodity price. It causes the local currency to depreciate significantly. Another variable that demonstrates a relative significant response to commodity price shock is inflation rate. The shock from commodity price causes the inflation rate in Nigeria to rise significantly at least for the first 2 periods; however, this response becomes insignificant as the period progresses. The same situation is noticed in interest rate. The implication is that commodity prices appear to affect more macroeconomic variables than oil prices. After the exogenous variables, the next shocks studied are the core fiscal policy variables which comprise the government expenditure shocks and government revenue shocks. We start with government expenditure shocks.

Figure 3: Responses to Commodity Price Shocks



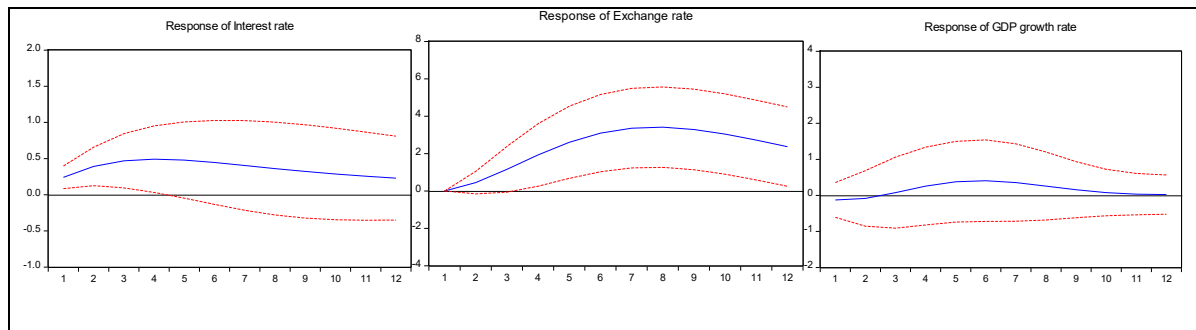
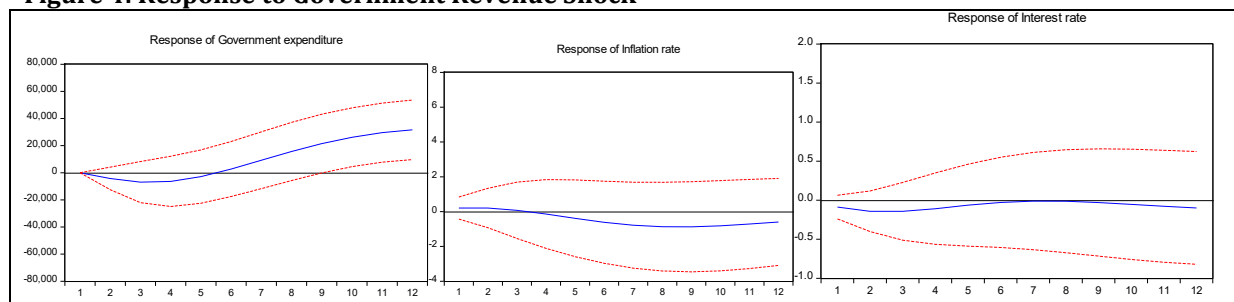


Figure 3 shows the responses of all the endogenous variables to 1% standard deviation in government expenditure in Nigeria. The result is a clear indication that the two core fiscal policy variables are significantly correlated or have strong association. The result shows that government revenue falls significantly as government expenditure rises suddenly. The reaction conforms to reality in that government expenditure is financed through government revenue therefore a positive shock to government expenditure is bound to have a reverse effect on government revenue. Not with standing, the responses of other variables to government expenditure shocks are also examined. Figure 3 further shows that none of the other variables in the model react significantly to the shock from government expenditure except the government revenue. It is important to note that the GDP growth rate also fails to react significantly to the shock from government expenditure. However, the result shows that GDP growth rate rises but the reaction is not significant. This reason raises many questions about the judicious use of the government revenue in Nigeria since a sudden upsurge in government expenditure fails to affect the GDP growth rate significantly. The next core fiscal variable considered is government revenue shock.

The result is presented in Figure 4. The strong relationship between government expenditure and government revenue is further confirmed from the reactions of government expenditure to government revenue shock. Figure 5 shows that government expenditure responds positively to the shock from government revenue. The reaction is also significant. The implication is that a positive shock to government revenue in Nigeria will produce a corresponding positive reaction from government revenue. This implies that the finance of government activities in Nigeria is solely dependent on the revenue of the government. Apart from government expenditure that reacts significantly to government revenue shock, the result also indicates that the GDP growth rate is significantly affected by government revenue. The GDP growth rate reacts positively and significantly at the beginning of the period but as the period progresses the GDP growth rate begins to fall. This shows that the positive impact is not sustained throughout the period length. The reason for this might be connected with the government expenditure that is financed from the government revenue that fails to have significant impact on GDP growth rate.

Figure 4: Response to Government Revenue Shock



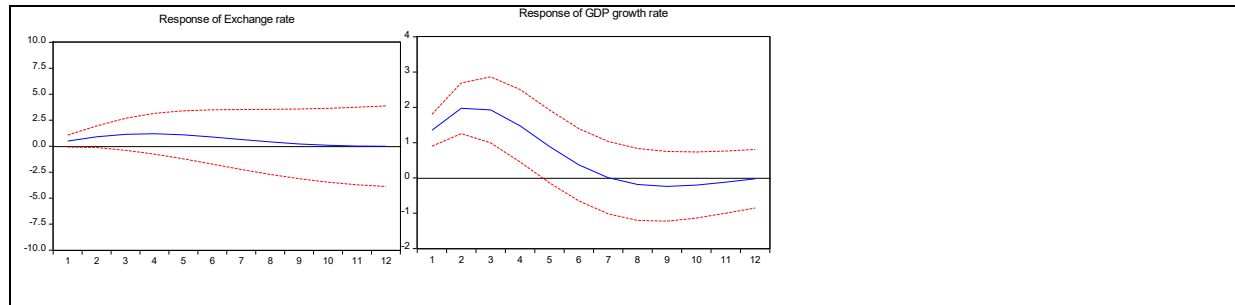


Figure 5: Responses to Government Expenditure Shocks

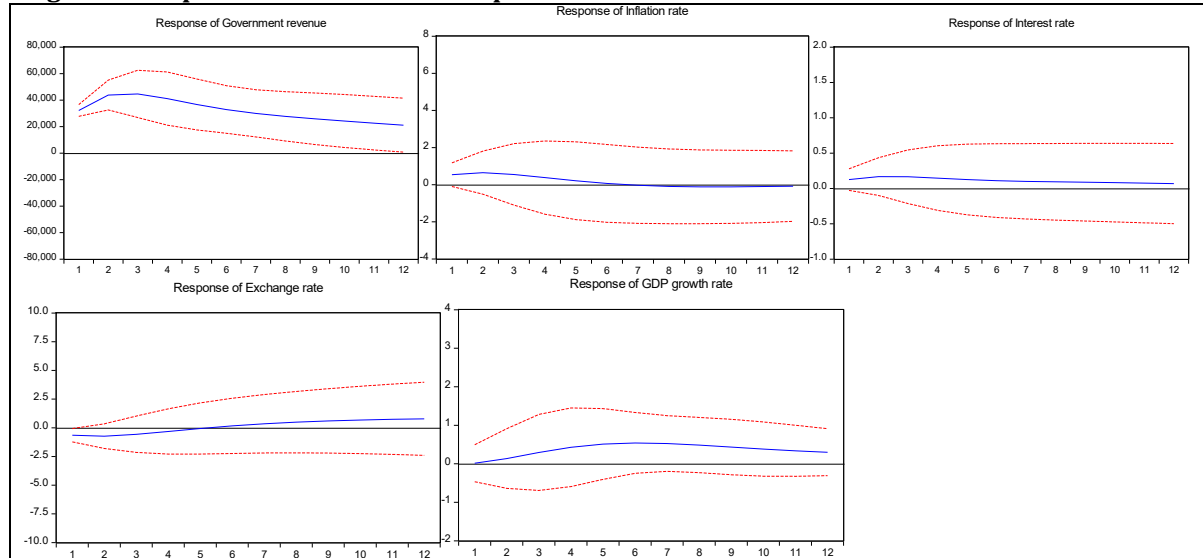
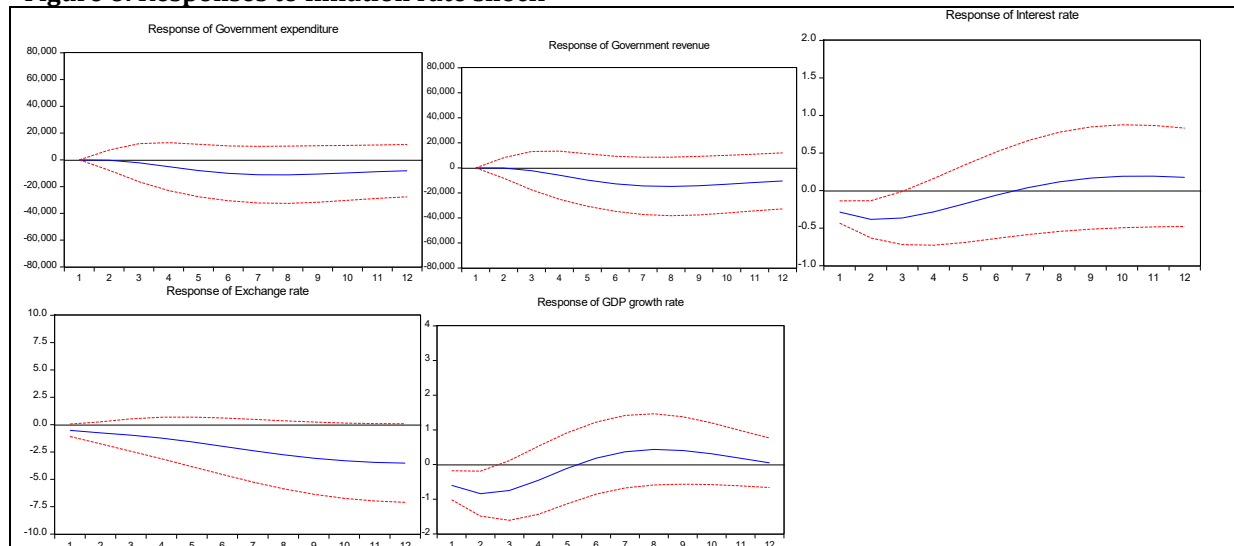
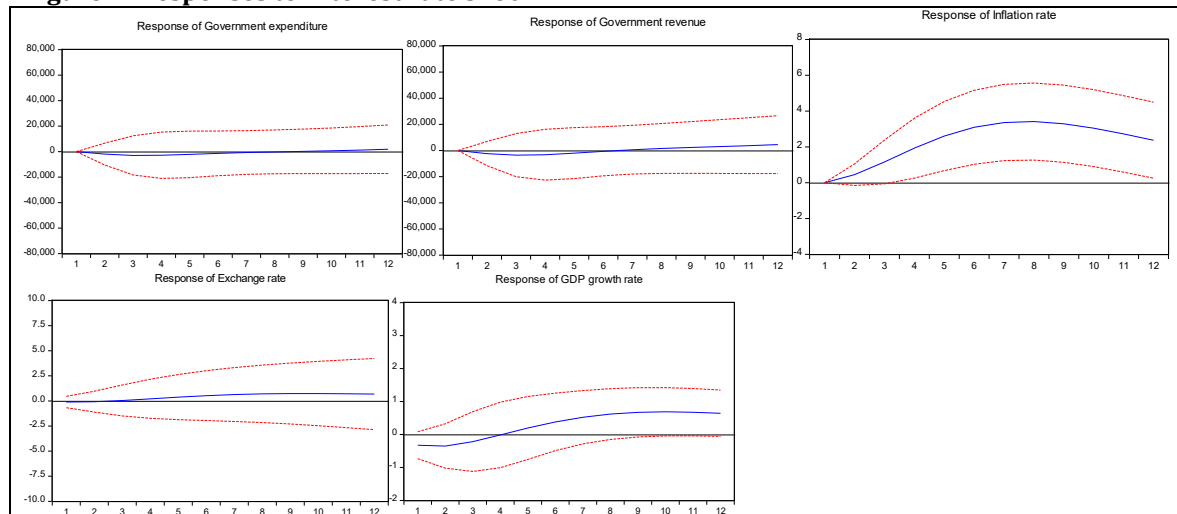


Figure 6: Responses to Inflation rate shock



The results shown in Figure 6 indicates that virtually all the variables in the impulse response functions fail to react significantly to inflation shock. Notwithstanding, interest rate and GDP growth rate react significantly at the first two periods but, for the remaining ten periods of the investigation their reactions are not significant.

Figure 7: Responses to Interest rate shock



The only variable that represents monetary policy in the model is interest rate. The responses to its shocks are described in Figure 7. The results show that exchange rate is highly connected with interest rate being the only variable that responds significantly to interest rate shock in the impulse response function of interest rate. A positive shock to interest rate causes the currency to depreciate significantly. The implication is that rise in interest rate in Nigeria might cause the naira to depreciate in value. Again, the shock fails to have significant impact on the core fiscal policy variables that is government expenditure and revenue. The implication is that the core fiscal policy variables namely; government revenue and expenditure might not be affected significantly by the inflation shock. Although the shock causes the two of them to fall, the effect is not significant.

Figure 8: Responses to Exchange rate shock

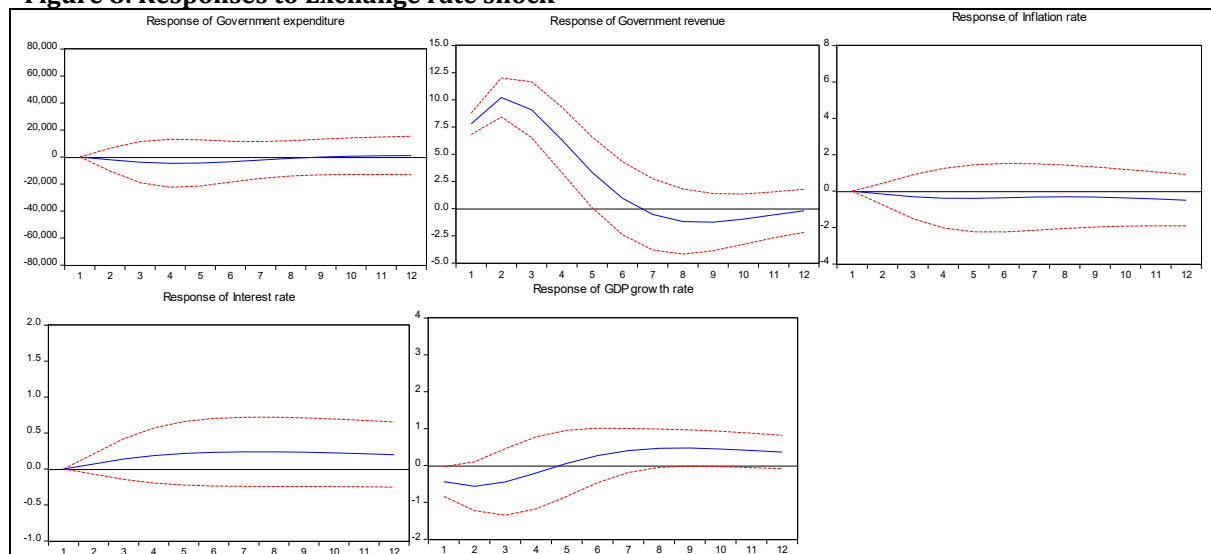


Figure 8 describes the responses of the fiscal policy variables and other variables in the model to the shock from exchange rate. The results show that exchange rate shock produces significant responses from both the GDP growth rate and government revenue. The implication is that exchange rate is an important shock that affects fiscal policy in Nigeria. Firstly, the shock causes government revenue to rise initially and later falls significantly. This is an indication that government revenue in Nigeria is highly susceptible to exchange rate shocks. The meaning of this result is that currency depreciation or devaluation of naira might not have a sustainable rising effect on government revenue. However, the vulnerability of the Nigerian economy to

exchange rate shock is further confirmed through the reaction of the GDP growth rate to the shock. Results show that GDP growth rate rises steadily but not significantly at the beginning of the periods but as the period progresses it starts falling significantly. The result further justifies what we discussed in the previous paragraph that it appears that currency devaluation might not have a sustainable positive impact on the growth of the Nigerian economy. After the impulse response function, the contributions of each shock to the behavior of each variable in the model are also investigated. This is done through the variance decomposition. The result of the variance decomposition is explained as follows:

Variance Decomposition: The variance decomposition is one of the important outputs of the SVAR model that describes the relative contributions of each of the shocks examined in the SVAR model to the behavior of each of the variables in the model as well. We focused on the core fiscal variables and other macroeconomic variables that constitute shocks to fiscal policy.

Table 3: Variance decomposition of government expenditure

PERIOD	OILPVOL	COMPVOL	GE	GR	INF	INTR	EXR	GDPGR
3	57.60039	1.890445	39.57435	0.523067	0.037103	0.101456	0.148096	0.125094
6	44.65527	2.599965	50.12489	0.685877	1.099438	0.155388	0.402753	0.276422
9	40.65480	2.233604	49.73509	4.128206	2.516385	0.128141	0.351559	0.252216
12	34.76793	3.158683	45.51602	12.89042	2.959482	0.124761	0.298495	0.284197

The results in Table 3 show that oil price volatility contributes the highest volume of shocks to the behavior of government expenditure in Nigeria. This further confirms that the finance of the Nigerian economy is highly susceptible to oil price fluctuations. Again, apart from the own shock, commodity price volatility appears to contribute the next high volume of shock to the behavior of government expenditure. It is an indication that the two exogenous variables, that is, oil prices and commodity prices are very important determinants of the behavior of fiscal policy in Nigeria. It should be noted that the contributions of oil price and commodity price volatility to the behavior of government revenue is more than the contributions of government revenue which is a fiscal policy variable.

Table 4: Variance Decomposition of Government Revenue

Period	OILPVOL	COMPVOL	GE	GR	INF	INTR	EXR	GDPGR
3	59.58922	1.639899	34.10732	4.308808	0.154368	0.126245	0.034706	0.039437
6	45.71855	1.606273	43.61878	6.942436	0.421145	0.158878	1.424085	0.109849
9	41.17506	1.446791	43.19774	10.65090	0.379611	0.143882	2.911929	0.094083
12	32.74235	3.075409	38.67087	20.86061	0.305913	0.251036	4.009924	0.083889

The dominance of oil price shocks in determination of fiscal policy behavior continues with its contributions to the behavior of government revenue. The results on Table 4 indicate that oil price volatility contributes the highest shocks to the behavior of government revenue in Nigeria. Not with standing, government revenue takes the second position here contributing the second highest shocks to the behavior of government revenue thus confirming the extent to which expenditure of the government in Nigeria rests on government revenue. Apart from the two, commodity prices and exchange rates are other variables that contribute relatively high shocks to the behavior of government revenue in Nigeria. It is important to note from Table 4 that the contributions of oil price volatility and government expenditure to the behavior of government revenue in the variance decomposition analysis are also greater than the own shock contributions. Government revenue itself fails to contribute higher shock to its own behavior when compared to the contributions of oil price volatility. The behavior of other macroeconomic variables that are also treated as fiscal policy shocks are investigated via the variance decomposition analysis as follows:

Table 5: Variance decomposition of inflation rate

Period	OILPVOL	COMPVOL	GE	GR	INF	INTR	EXR	GDPGR
3	0.159170	4.647728	1.055890	0.092467	92.00109	1.601646	0.125259	0.316748
6	0.086401	2.518142	0.605968	0.317692	84.90418	10.82284	0.278668	0.466114
9	0.091928	2.797559	0.486979	1.090066	72.90867	21.88707	0.342415	0.395309
12	0.104454	3.111041	0.451244	1.532769	66.12798	27.76829	0.513437	0.390788

Result in Table 5 shows that the behavior of inflation in Nigeria is more affected by interest rate and commodity price volatility than oil price. Commodity price shocks make the highest contributions to the behavior of inflation rate in Nigeria after the own shock and interest rate shock. This is an indication that inflation rate in Nigeria might be structural. However, the two fiscal policy core variables do not have much role to play in the behavior of inflation in Nigeria.

Table 6: Variance decomposition of interest rate

Period	OILPVOL	COMPVOL	GE	GR	INF	INTR	EXR	GDPGR
3	0.540790	8.288890	1.375122	0.929927	6.961002	80.71727	0.461317	0.725676
6	0.325962	9.168180	1.010322	0.541604	3.966068	80.61537	1.331746	3.040748
9	0.420508	8.723302	0.862633	0.385613	3.021005	80.73679	1.909010	3.941143
12	0.409456	8.111589	0.790283	0.405761	2.973717	81.19708	2.213360	3.898758

Table 6 explains the contribution of shock to the monetary policy variable in the model which is the interest rate. The results show that commodity price volatility contributes the largest percentage of shock to the behavior of interest rate GDP growth rate and inflation rate are other variables that constitute significant shocks to the behavior of interest rate. Again, none of the two core fiscal policy variables have significant contribution to the behavior of interest rate.

Table 7: Variance Decomposition of Exchange Rate

Period	OILPVOL	COMPVOL	GE	GR	INF	INTR	EXR	GDPGR
3	9.761012	0.016992	1.432321	2.661426	1.952815	0.021914	84.12368	0.029838
6	5.128530	0.107842	0.593480	2.434704	4.041584	0.201473	87.36054	0.131846
9	3.316648	0.510615	0.535164	1.617682	8.118492	0.479798	85.16649	0.255113
12	2.751656	0.936954	0.661611	1.137436	11.90178	0.602293	81.63457	0.373703

The behavior of exchange rate in Nigeria appears to be mostly affected by oil price volatility. Inflation rate is another variable that constitute some shocks that are noticeable to the behavior of exchange rate. The implication is that exchange rate appears to be the medium through which oil price volatility affects the fiscal policy behavior since government revenue also contributes some shocks to the behavior of exchange rate. The result further affirms the strong association between government revenue and exchange rate in Nigeria. Notwithstanding, oil price fluctuations is a factor to reckon with in the analysis of the behavior of exchange rate.

Table 8: Variance Decomposition of GDP Growth Rate

Period	OILPVOL	COMPVOL	GE	GR	INF	INTR	EXR	GDPGR
3	0.084919	2.132805	0.304226	27.57173	2.061691	0.802694	4.741564	62.30038
6	0.917789	4.069285	1.911594	28.48838	1.867873	1.041984	4.258468	57.44463
9	1.305665	4.536551	3.231568	26.51426	2.997802	3.289803	4.963561	53.16079
12	1.256631	4.461709	3.766278	25.32022	3.845190	5.803421	4.980823	50.56572

Table 8 explains the behavior of the GDP growth rate which is the proxy for Nigeria's economic growth. The result shows that government revenue mostly affects the behavior of Nigeria's economic growth. Again, in support of our findings under impulse response function, government expenditure does not contribute much to the behavior of output growth in Nigeria. Commodity prices appear to have greater influence on the behavior of Nigeria's economic growth than oil price. Again, among the remaining macroeconomic variables, exchange rate is the most influential to the behavior of output growth rate in Nigeria. The results indicate that the behavior of the GDP is strongly affected by exchange rate thereby further confirming exchange rate as an important medium through which exchange rate affects fiscal policy variables in Nigeria

5. Conclusion and Recommendations

Both the oil price and commodity price shocks have varying degrees of effects on the Nigerian economy. Oil price shocks produce a significant response from both government revenue and government expenditure

thus further confirming the importance of oil price in determining the fiscal policy behavior in Nigeria. The findings conform to the conclusions from Aremo, Orisadare and Ekperiware (2012) that oil price shocks have significant effect on fiscal policy variables in Nigeria. But commodity price fails to produce the same kinds of responses as the responses of the fiscal variables to commodity price shocks are not significant. Notwithstanding, commodity price shocks appear to have impact on more macroeconomic variables than oil price. Inflation rate, interest rate and exchange rate all responded significantly to commodity price shocks to some extent but oil price shocks only attract significant response from exchange rate. An important inference from the impulse response function of commodity price shocks is that it causes the local currency to depreciate significantly. The result shows that exchange rate is the macroeconomic variable that shows the most significant response to commodity price shocks; this is followed by inflation rate and interest rate. The reason for this might be connected with high inflation pressure that usually accompanies positive commodity price shocks in import dependent economy like Nigeria. Domestic prices rise sharply and naira slumps against other major currencies in the world. All these have ripple effects on the overall economic growth of Nigeria.

The extent of the influence of commodity price shocks on macroeconomic stability of Nigeria than oil price shocks lies in the fact that commodity prices affects more commodities than oil price. And most of these commodities are included in the import bills of Nigeria that is rising on a daily basis. In addition, the impulse response functions have shown a very strong association between government expenditure and government revenue which are the core fiscal variables in the study. Results from the study indicate that government expenditure shock produces a reverse and significant response from government revenue that is a sharp fall in government revenue. The inferences that are drawn from this tally with the position of Demachi (2012) that finance of government expenditure in Nigeria is highly dependent on government revenue and that of Official Development Assistance (ODA) or foreign aid to Nigeria which should serve as another source of finance of government expenditure is too little to have any significant impact on government expenditure. It is very important to know that despite the positive shock to government expenditure, GDP growth rate which measures the economic growth of Nigeria fails to respond significantly to the shock. The implication is that government expenditure though might improve the economic well-being of the country but the effect appears not to be significant. The position above is further supported by the response of government expenditure to government revenue shock which is significant especially towards the end of the period. The strong link between the two core fiscal variables is further affirmed.

But the difference is that government revenue shock produces a significant response from economic growth unlike government expenditure. The significant response of Nigerian economic growth to government revenue is the fact that economic prosperity of Nigeria is more tied to her revenue due to the direct effect on national income which is a measure of economic growth. According to Demachi (2012), national income growth as a measure of economic growth might be misleading for a country like Nigeria which suffers low domestic outputs which could have been propelled by judicious use of government expenditure in promoting the growth of the real sector of the economy. Out of the three macroeconomic shocks, that is, interest rate, inflation rate and exchange rate shocks, only exchange rate shocks attract the most significant response from fiscal policy variables especially government expenditure. Exchange rate shock produces sharp decline in government expenditure as a result of devaluation. Currency depreciation affects the domestic prices and causes cost on investment to rise and hence a fell in government finance (Olasunkanmi & Babatunde, 2013). The position of these authors has been supported by the findings from this study. Again, from another perspective Usenobong & Johnson (2015) concluded from their study that attendant effect of currency depreciation is a fall in government revenue for a country which heavily depends on single primary export and with large import bill.

This situation describes Nigeria's scenario where the government revenue has been on a decline since the naira has been on a free fall against the US dollar and other currencies. The situation has affected government expenditure seriously with a lot of wage bills unsettled at both state and federal levels. The variance decomposition results indicate that government expenditure does not contribute much to the economic growth behavior of Nigeria like government revenue. This raises questions about the prudence in management of government finance. This further supports our earlier position that the Nigerian economy is suffering from low productive capacity as a result of ineffectiveness of government expenditure. Finally,

exchange rate has been shown to be the major macroeconomic medium through which external shocks influence fiscal policy variables in Nigeria. The level of interaction between fiscal policy variables and exchange rate among other macroeconomic variables in the model appears to be the most significant. Also, among all other macroeconomic variables, the contributions of exchange rate to the behavior of Nigeria's economic growth are the highest. All these are pointers to the significant role played by exchange rate in transmission of fiscal policy shocks especially the external shocks to the domestic economy. It is recommended that fiscal authorities in Nigeria should endeavor to factor in exchange rate behavior whenever fiscal documents are being drafted for the purpose of policy formulation.

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Growth Constraints of Formal and Informal Micro and Small-Scale Enterprises and Their Impact on Policy Formulation in Zimbabwe

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Abstract: The new view on MSEs in the informal sector perceives them as being permanent, stable activities comprised of dynamic businesses that affect most economic activities. As such, they need to be considered in economic policies to ensure that they can grow and contribute to the national economy. In Zimbabwe, policies for entrepreneurial development are mainly informed by formal-sector enterprises. This study analysed the similarities and differences in the growth constraints of MSEs operating in the formal and informal sectors in Harare, Zimbabwe. Using descriptive statistics and principal component analysis, the study analysed 21 internal and external growth constraints. The findings were that formal-sector MSEs perceive internal factors as constraining them the most, while informal MSEs perceive external factors as constraining them the most. The study concludes that a common policy approach cannot work in addressing the needs of the two sectors. Sector-specific policies need to be formulated in order for the enterprises in both sectors to fully contribute to the national economy.

Keywords: *MSEs, growth constraints, informal sector*

1. Introduction

Entrepreneurship continues to be viewed as a pertinent vehicle for economic growth and development through its role in employment creation and income generation (Carree & Thurik, 2010; Mayer-Haug, Read, Brinckmann, Dew, & Grichnik, 2013). However, the perceived benefits are yet to be realised in many African countries – mainly because micro and small-scale enterprises (MSEs) are the dominant entrepreneurial activity in Africa and less than 1% of these MSEs grow to ten or more employees (Urban, 2010). Secondly, most of these MSEs are housed in the non-regulated informal sector, where they easily evade paying tax, which is the main source of revenue for the government. The old view on the informal sector regarded it as dominated by survival activities with a minimal survival rate, and hence the sector was usually not a subject for economic policy (Chen, 2005). This view has since been replaced by the new view of classifying the informal activities as stable, dynamic growing businesses that affect most economic policies (Chen, 2005). However, Zimbabwe is yet to fully embrace the new view as it uses a common policy approach in addressing the needs (constraints for growth) of the MSEs, without considering that the formal and informal sectors are structured differently and have different requirements.

Zimbabwean Policies on MSE development have always been based on the needs of formalised entities and are more focused on fostering formalisation of the informal enterprises instead of embracing the informal as an important sector of the economy. According to (Chidoko, Makuyana, Matungamire, & Bemani, 2011), the informal sector in Zimbabwe has much to offer the country's main development objectives, but the current MSE policies fail to cater for their needs. The permanency of the informal sector makes it crucial for policy-makers to promote inclusive policies that can foster the growth and expansion of enterprises in both the formal and informal sectors – as their needs might not necessarily be similar. Targeted policies have a higher probability of effecting change and producing intended results. The objective of this study was to establish if the common policy is the best for Zimbabwean MSEs by analysing the similarities and differences in the growth constraints of MSEs operating in the formal and informal sectors of Zimbabwe.

2. Literature Review

The informal sector: The term 'informal sector' has been used for decades, but a universally agreed definition is yet to be established. The recent literature generally defines it in terms of its characteristics and also in the context of the study being carried out (Gerxhani, 2004; Williams, 2014). Hart (1973) first introduced the term as referring to self-employment, small-scale industries or retail trades, or all forms of economic activities not recorded in the official statistics or which do not comply with government

regulations. Over the years, the definition has expanded to include: scale of ownership, firm size (with an undefined degree of 'smallness' of the firm), capital base or average income (Mboma, 2008). Despite the various approaches to the definition, most scholars agree on the characteristics of the informal sector, which include family ownership, ease of entry, labour intensive operations, and operating in unregulated but competitive markets – among other things (Ubogu, Laah, Udemezue, & Bako, 2011). Recent studies have shown that the informal sector has migrated from a traditional view to a modern view that acknowledges its permanency in the economy – as well as its contribution to reducing poverty and promoting growth. Table 1, below, adopted from (Chen, 2005) summarises the old and new views of the informal sector:

Table 1: Old and new views of the informal sector

The old view	The new view
The informal sector is the traditional economy that will wither away and die with modern, industrialized growth.	The informal economy is 'here to stay' and is expanding with modern, industrial growth.
It exists separately from the formal economy.	It is linked to the <i>formal</i> economy – it produces for, trades with, distributes for, and provides services to the <i>formal</i> economy.
It is only marginally productive.	It is a major provider of employment, goods and services for lower-income groups. It contributes a significant share to the GDP.
It represents a reserve pool of surplus labor.	Much of the recent rise in informal employment is due to the decline in <i>formal</i> employment or to the normalization of previously <i>formal</i> employment relationships.
The informal sector comprises street traders and very small-scale producers.	The informal sector is made up of a wide range of <i>formal</i> occupations.
Most of those in the sector are entrepreneurs who run illegal and unregistered enterprises, in order to avoid regulation and taxation.	It comprises non-standard wage workers as well as entrepreneurs and self-employed persons producing legal goods and services.
Work in the informal economy comprises mostly survival activities, and thus is not a subject for economic policy	Informal enterprises include not only survival activities but also stable, dynamic growing businesses and wage employment. All forms of informal employment are affected by most economic policies

Source: Adopted from (Chen, 2005).

There is growing consensus in the literature that the informal sector can contribute positively to the economy through employment creation, increased production, increased investment, reduced criminal activity, and reduced poverty levels – among other things (Chidoko et al., 2011; Ndiweni & Verhoeven, 2013). On the negative side, if not managed, the informal sector deprives the government of revenue, can create lawlessness, can promote theft, misallocation of resources and corruption activities, among other things (Ndiweni & Verhoeven, 2013). The informal sector in Zimbabwe had long existed prior to independence in 1980, but was closely monitored by strict laws and legislation (The Town and Country Planning Act (1946), the Vagrancy Act (1960), the Urban Councils Act (1973), and the Vendors and Hawkers by-laws (1973): in (Dhemba, 1999)). With independence, this sector has been growing, mainly due to urban migration as people move from rural poverty to urban areas in search of work and as a way of alleviating poverty (Dhemba, 1999). Further growth in this sector also came as an aftermath to the introduction of the Economic Structural Adjustment Programme (ESAP) in 1991, and more recently as an aftermath to the effects of the economic meltdown of 2000. During the meltdown period, the growth in formal labour markets was close to zero and the informal sector was the main survival platform for retrenched people and school leavers (Kappel & Ishengoma, 2006). The job market continued to shrink, absorbing less than a fifth of new graduates each year. In previous years, emphasis has been placed on the eradication of the informal sector in Zimbabwe. Alternatively, emphasis needs to be placed on utilising the labour markets present in the informal sector, as well as promoting the growth of MSEs in this sector. The informal sector has become part of the economic chain providing goods and services to the formal sector. The link between the two sectors improves the competitiveness of the formal sector, as money generated in the informal sector is spent in the formal sector.

Secondly, the permanency of the informal sector makes it crucial for the policy-makers to promote inclusive policies that can foster the growth and expansion of enterprises in both sectors.

Growth constraints for MSEs: Business growth is commonly identified as the change in profit margin, sales, employment or assets (Olawale & Garwe, 2010). Lewis (1983) provide a more theoretical definition that identifies five stages of business growth: existence, survival, success, take-off and resource maturity. Many small business fail to progress from existence to survival – let alone to success and take-off (Deakins & Freel, 2009; Olawale & Garwe, 2010). In addition to this, a huge problem for MSEs worldwide has been the time taken or the failure to grow from a small business into a medium or large business (Deakins & Freel, 2009). The literature identifies the key internal growth constraint for MSEs in formal and informal sectors, as being access to finance (Irjayanti & Azis, 2012; Olawale & Garwe, 2010). Financing a business is ranked among the top five constraints to business development in sub-Saharan Africa, and most financial institutions do not finance them in the foundation stage –as they lack collateral and a sound track record (Clover & Darroch, 2005; Kebaili, Al-Subyae, Al-Qahtani, & Belkhamza, 2015).

Other internal growth constraints include access to market information or advice on how to start/run an enterprise, absence of access to business networks, lack of entrepreneurial training, lack of access to business premises, lack of access to technology/equipment, difficulty in finding the right employees, and lack of management skills (Amwele, 2013; Chidoko et al., 2011; Kaburi, Omari, Sewe, Mobegi, & Kombo, 2017; Mahadea & Pillay, 2008; Shifidi, 2010). Human resource development and adaptation of modern technology are necessary for business growth, and possessing the skill to initiate a business does not necessarily mean that one will be a good manager or entrepreneur (Mahadea & Pillay, 2008). 21st century technology utilises the internet in marketing; however, most of the enterprises surveyed in this study were still using cash boxes and old fashioned door signage which does not help with the marketing of their businesses. (Von Broembsen, Wood, & Herrington, 2005) believe that adoption of the latest technology can trigger enormous growth, but many businesses fall short because the technology is inaccessible and expensive. Sometimes entrepreneurs are not knowledgeable about modern technological approaches suitable for small businesses and how to use them (Zamberi Ahmad, 2012).

External growth constraints include problems with authorities, gender discrimination, late payment by creditors, lack of profitable markets, steep taxes, high interest rates, the bureaucracy of the business registration process, crime, political instability, corruption, dollarization, lack of clients and excessive competition (Chukuezi, 2010; Khalique, Isa, Shaari, Abdul, & Ageel, 2011; Mahadea & Pillay, 2008; Saleh & Ndubisi, 2006). The government and its institutions are usually blamed for these external factors, which hinder the growth of MSEs in both the formal and informal sectors. Strict government regulations are the biggest external factor commonly blamed for expensive skilled labour as well as the bureaucratic business registration process, which, in turn, is believed to promote the growth of the informal sector. To the contrary, (Herrington, Kew, & Kew, 2010) believe that the informal MSEs are just not aware of government ventures that are available to their service, hence these strict government regulations could just be perceptions and not necessarily the truth. However, the problem in Zimbabwe has been that the available government ventures were informed by the needs of formal enterprises neglecting the needs of informal enterprises. The current study tried to fill this gap by analysing the internal and external factors faced by the two sectors, in a bid to establish if common policy formulation will solve the problems of the two sectors.

3. Methodology

Research instrument: This study was based on survey research using primary data collected by a pre-coded questionnaire. The respondents were asked to indicate with a tick their level of agreement or disagreement with each of the listed internal and external growth-inhibiting factors, in terms of contributing toward lack/slow growth of their enterprise. The responses were Likert-scaled from 1 to 5 – with lower values indicating greater disagreement and higher values indicating greater agreement. The list of growth-inhibiting factors was drawn from the literature and narrowed down to a set of 20 (internal and external) that are listed below:

Table 1: List of internal and external growth constraints

Internal factors	External factors
- Access to technology	- Problems with authority
- Access to market information	- High taxes
- Lack of entrepreneurial skills	- High interest rates
- Lack of management skills	- Crime
- Access to finance	- Late payment by debtors
- Access to business networks	- Excessive competition
- Finding the right employees	- Lack of clients
	- Corruption
	- Bureaucratic business registration process
	- Access to business premises
	- Lack of profitable markets
	- Gender discrimination
	- Political instability

Study area: The targeted participants were MSEs, restricted to urban dwellers in different suburbs of the capital city of Harare, which operated in both the formal and informal sectors. Harare is divided into 4 zones: high density areas, low density areas, industrial areas and the central business district (CBD) area. The low density areas house the rich few who own large houses on big pieces of land and are situated in north eastern Harare. The high density areas have a higher population density with many houses clustered together on smaller pieces of land. The high density areas are in southern Harare. The CBD and industrial areas are in the middle of Harare. Most of the formal entrepreneurial activity is done in the low density, industrial and CBD areas. Entrepreneurial activity in the high density areas is mostly informal.

Sampling technique: A judgmental and purposive sampling technique combined with stratified random sampling was used to select MSEs from the formal and informal sectors. This sampling technique was the most appropriate, mainly because of the absence of an updated register of MSEs operating in Harare – which posed some limitations in terms of drawing up a representative sample for the study. Secondly, the technique has been used in other informal entrepreneurship studies and hence was considered appropriate for this study (Ncwadi & Pietersen, 2008). The sample was divided into 3 strata based on the location of the business (high density area, industrial area, CBD/low density area). CBD and low density areas were clustered together because of the similarity in the profile of these two areas. From each stratum, 50 MSEs were sampled whose business ventures were either in services, retail or manufacturing and construction. Another selection criterion was that the enterprise should have been operational for longer than five years – an indication of permanency of the business. Both female and male entrepreneurs were interviewed. As a result, a total of 88 enterprises were interviewed from the informal sector and 62 from the formal sector. The collected data were then analysed using SPSS.

Data analysis: The analytical method of choice was Principal Component Analysis (PCA), mainly because of its ability to extract linear composites without prior assumptions from variables believed to be correlated to each other (Lam, 1998; O'Rourke & Hatcher, 2013). A Pearson Correlation test of association was done and the results showed that most of the variables had strong relationships that were statistically significant at the 5% level of significance, and hence justified the use of PCA (see appendices 1 and 2). The growth hindering factors were analyzed separately for the formal sector and informal sector MSEs. Separate analysis of the formal and informal sectors provides policy-makers with better information on how to boost entrepreneurial growth –without using the blanket or 'one-size-fits-all' approach for the two sectors. This approach combined with the meltdown scenario makes the present study unique in certain respects.

Prior to undertaking the Principal Component Analysis, the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy was applied to determine the suitability of the data for Principal Component Analysis. As a rule of thumb, if the KMO test result is 0.5 or higher, then the data are suitable for Principal Component Analysis (Field, 2013). The KMO measure of sampling adequacy for formal enterprise data was found to be 0.5820, and 0.548 for informal enterprise data. The Bartlett test of sphericity was also applied to investigate whether there are relationships between the variables affecting the growth of the firms. The Bartlett test

needs to be statistically significant at a p-value less than 0.05 (Pallant, 2013). For both data sets, the Bartlett test values were statistically significant with a p-value of 0.000. This indicated that the data were suitable for Principal Component Analysis. Cronbach's alpha was used to confirm the reliability of the measuring instrument. According to (Field, 2013), an alpha score above 0.75 is generally taken to be a good measure of reliability. In this study, the Cronbach's alpha values were 0.7 to 0.933 for almost all factors (more detail provided under results section).

Hypothesis Testing

NH₁: There are no differences between internal and external factors with respect to their influence on formal sector businesses.

AH₁: Internal factors have a greater influence on the growth of formal businesses than external factors.

NH₂: There are no differences between internal and external factors with respect to their influence on informal sector businesses.

AH₂: External factors have a greater influence on the growth of informal businesses than internal factors.

4. Results

Descriptive analysis of internal factors hindering growth of MSEs: The internal growth-inhibiting factors considered in the study were: access to finance, lack of management skills, access to market information, lack of entrepreneurial skills, access to technology, finding the right employees, and access to business networks. In the literature external factors outweigh internal factors, and hence the decision to use 7 internal factors in this study was not seen as compromising the analysis. All of the surveyed enterprises acknowledged that the economic meltdown had impacted badly on the growth of their businesses.

Access to finance is a key internal growth constraint (Iriyanti & Azis, 2012; Olawale & Garwe, 2010). Contrary to that, more than 80% of the surveyed formal enterprises either agreed or strongly agreed that the main internal factors hindering their growth are access to technology, access to marketing information, lack of entrepreneurial skills, and lack of management skills. Most of the surveyed businesses were formed without any prior entrepreneurial training, and the owners felt this could be the reason for the lack of growth in their businesses. This finding is consistent with other earlier studies that identified human resource development and adaptation of modern technology as crucial elements for business growth (Mahadea & Pillay, 2008; Von Broembsen et al., 2005; Zamberi Ahmad, 2012). Access to finance and business premises were perceived as the least influencing constraint by formal sector entrepreneurs. From the informal sector enterprises, about 50% of respondents strongly agreed that access to finance and business premises are the main internal factors hindering the growth of their businesses, and this is consistent with initial findings by (Clover & Darroch, 2005; Iriyanti & Azis, 2012; Olawale & Garwe, 2010). Of the respondents, 20% were neutral about access to finance as a constraint, while 12% strongly disagreed. The surveyed informal enterprises lacked proper recordings of their daily transactions, which also indicated poor financial management skills. With regard to business premises, some of the enterprises were operating from informal structures and a few rented premises outside the CBD area. Unlike the formal entrepreneurs, more than 70% of the informal entrepreneurs disagreed or strongly disagreed that lack of entrepreneurial skills, lack of management skills and lack of access to technology are constraints to the growth of their businesses – which differs from previous literature which regard them being major growth constraints. This finding suggests that most of the studies in the literature focused on formal sector MSEs, as their findings are consistent with the formal sector results of this study.

Descriptive analysis of external factors hindering growth of MSEs: The following external factors were considered for analysis: excessive competition, lack of profitable markets, access to business premises, high taxes, high interest rates, crime, lack of clients, business registration process, problems with the authorities, gender discrimination, political instability, and corruption. Some 80% of the surveyed respondents from the formal sector strongly agreed that problems with the authorities was a major external constraint to the growth of their business, and this is consistent with previous findings (Mahadea & Pillay, 2008). Several documents are required for a formally registered business to operate – like a shop licence, which involves an expensive, time consuming and cumbersome process to acquire. Another 75% agreed or strongly agreed that high taxes and interest rates impact adversely on the growth of their businesses. Crime, political instability,

excessive competition and late payment from debtors are also top possible reasons impeding the growth of MSEs in the formal sector, and about 50% of the respondents agreed with this. Lack of clients (42% strongly disagree) and business registration (50% strongly disagree) seem not to be much of a problem for the surveyed registered formal enterprises.

Contrary to the entrepreneurs in the formal sector, informal sector entrepreneurs indicated excessive competition and lack of clients as the two main external factors hindering the growth of their MSEs. This is consistent with initial findings by (Chukuezi, 2010; Khaliq et al., 2011). About 70% of the surveyed informal entrepreneurs strongly agreed or agreed that excessive competition was encumbering the growth of their business. As informal sector entrepreneurs do not pay taxes, 90% agreed that taxes and interest rates are the least of their problems. Table 2 (below) summarises the most influencing and least influencing growth constraints for both sectors from the descriptive statistics:

Table 2: Most and least influencing internal and external constraints

		Most influencing		Least influencing	
Internal factors	Formal MSEs	•	Access to technology	•	Access to business premises
		•	Access to market information	•	Access to finance
		•	Lack of entrepreneurial skills		
		•	Lack of management skills		
	Informal MSEs	•	Access to finance	•	Finding the right employees
		•	Access to business networks	•	Access to technology
External factors	Formal MSEs			•	Lack of management skills
				•	Access to market information
				•	Business registration problems
				•	Lack of clients
	Informal MSEs	•	Problems with authority	•	Gender discrimination
		•	High taxes and interest rates	•	Corruption
		•	Crime	•	High taxes and interest rates
		•	Late payment from debtors	•	Gender discrimination
		•	Excessive competition	•	Crime
		•	Lack of clients	•	Business registration problems
		•	Corruption		

Source: Author's own compilation

Principal Component Analysis of the formal sector data: From the descriptive analysis above, the factors that mostly influence business growth in the formal sector are different from those in the informal sector. Also, within each sector, the internal and external factors do not impact with the same magnitude. Principal Component Analysis was thus used to reduce these factors into smaller manageable clusters – to help make policy formulation easier and to show whether internal or external factors have a greater bearing. The results of the total variance in growth inhibitors in the formal sector and the component matrix are reported in table 3(below). Using Kaiser's criterion, only factors with an Eigenvalue of 1 or more are retained in the analysis. According to (Coakes & Steed, 2009), a factor loading of 0.3 or greater makes a significant contribution to the component factor. In this study, a cut off of 0.4 was used as the sample was small. A set of 6 components emerged for the formal sector data:

The results in table 3(below) show that there are 6 clusters which jointly explain 82.8% of the variation in growth constraints in the formal sector. The first cluster accounts for 39.7% of the total variation, while the second and third clusters explain 13.0% and 11.5% respectively. All 6 clusters have Eigen values greater than 1. The first component is labelled "Entrepreneurial and Managerial skills" (see table 5) and comprises seven internal constraints with loadings from 0.897 to 0.577. This cluster accounts for 39.7% of the variance in growth constraints. The factors in this classification are: lack of management skills with a loading of 0.897; lack of entrepreneurial skills (0.894 loading); lack of marketing information (0.876 loading); finding the right employees (0.846 loading); business registration process (0.816 loading); and access to business networks (0.577 loading).

Table 3: Growth inhibitors of formal sector MSEs: Rotated Factor Loadings

<i>Variables</i>	Principal Components (Eigen Values and loading)					
	1 (8.330)	2 (2.722)	3 (2.405)	4 (1.603)	5 (1.258)	6 (1.063)
Lack of management skills	0.897	0.039	0.091	0.102	0.046	-0.123
Lack of entrepreneurial skills	0.894	0.168	0.046	0.058	0.206	0.182
Access to market information	0.876	0.176	-0.07	0.021	0.104	0.009
Access to technology	0.868	0.194	0.031	0.312	0.143	0.056
Finding the right employees	0.846	0.12	0.067	-0.035	0.032	0.195
Bureaucratic business registration process	0.816	0.301	-0.012	0.208	0.218	0.180
Access to business networks	0.577	0.272	0.105	0.337	0.367	0.039
Political instability	0.065	0.84	0.31	0.031	-0.036	-0.062
Interest rates	0.372	0.773	-0.182	0.063	0.312	0.096
Taxes	0.495	0.717	-0.107	0.155	0.191	0.125
Corruption	0.005	0.643	0.32	-0.176	-0.312	0.466
Crime	0.493	0.618	0.107	0.073	-0.182	-0.253
Lack of clients	0.086	0.105	0.854	0.246	0.028	-0.074
Excess competition	-0.189	-0.023	0.829	0.02	-0.02	0.304
Lack of profitable markets	0.35	0.195	0.715	0.167	0.235	-0.234
Late payments by debtors	0.122	0.035	0.118	0.895	0.058	0.02
Gender discrimination	0.529	-0.03	0.111	0.592	-0.404	-0.158
Access to finance	0.366	0.15	0.141	-0.026	0.719	0.086
Access to business premises	0.165	-0.229	0.052	0.516	0.7	0.056
Problems with authorities	0.277	0.022	0.016	0.11	0.151	0.894
Variance Explained (Total=82.78%)	39.7%	13.0%	11.5%	7.6%	6.0%	5.1%

Extraction Method: Principal Component Analysis

Source: Compiled by author based on results of Principal Component Analysis

This cluster was tested for reliability and yielded a Cronbach's alpha value of 0.933. The second set is labelled "Macroeconomic and Governance factors" and comprises five external constraints: political instability, high interest rates, high taxes, corruption, and crime. Political instability had the highest loading (0.84) in this cluster. Interest rates and taxes are more of economic variables, but the fluctuations in taxes and the interest rate can also be politically motivated, especially where the fiscal budget is used to finance political activities – as was the case in Zimbabwe during the meltdown. This cluster accounts for 13.0% of the variance. Cronbach's alpha value for this cluster is 0.836. The third cluster is labelled "Market factors" and comprises lack of clients (0.854 loading); excessive competition (0.829 loading); and lack of profitable markets (0.715 loading). This cluster accounts for 11.5% of the variance. The Cronbach's alpha for this cluster is 0.778, making it a reliable instrument. This cluster is made up of external constraints only. Cluster 4 comprises 2

factors that jointly explained 7.6% of the variance in the growth constraints. Late payment by debtors had the largest loading (0.895) in this cluster. The other factor in this cluster was gender discrimination.

Table 4: Growth inhibitors of the informal sector MSEs: Rotated Factor Loadings

Variables	Principal Components (Eigen Values and loading)					
	1 (4.707)	2 (3.395)	3 (2.516)	4 (1.825)	5 (1.477)	6 (1.299)
Lack of clients	0.869	0.113	-0.016	-0.017	-0.097	-0.070
Excessive competition	0.831	-0.251	0.112	0.069	-0.015	0.135
Lack of profitable markets	0.646	-0.065	0.147	0.296	0.063	0.079
Access to business premises	0.578	-0.067	0.027	0.168	0.393	0.289
Access to finance	0.566	-0.234	0.290	0.175	0.174	0.081
High tax rates	-0.186	0.850	0.195	0.028	0.050	0.061
High interest rates	-0.207	0.816	0.276	0.107	0.082	0.169
Crime	0.061	0.747	-0.091	0.012	-0.054	0.106
Finding the right employees	-0.247	0.517	0.415	0.354	0.288	0.123
Late payments by debtors	0.250	0.416	0.096	0.329	0.371	-0.270
Access to market information	0.189	0.004	0.847	0.057	0.049	0.066
Lack of entrepreneurial skills	0.327	0.195	0.761	-0.146	0.015	-0.074
Lack of management skills	-0.006	0.227	0.721	0.183	-0.013	0.118
Access to business network	0.162	0.039	-0.024	0.863	0.291	0.028
Bureaucratic Business registration process	0.115	0.150	-0.039	0.843	0.363	-0.072
Problems with authorities	0.217	0.021	0.189	0.678	-0.353	0.091
Gender discrimination	0.056	0.105	-0.017	0.124	0.866	-0.162
Access to technology	0.046	-0.028	0.037	0.143	0.856	0.289
Corruption	0.264	0.141	-0.049	-0.187	0.035	0.836
Political instability	0.004	0.190	0.186	0.175	0.020	0.820
Variance Explained (Total=72.47%)	22.4%	16.2%	12.0%	8.7%	7.0%	6.2%

Extraction Method: Principal Component Analysis

Source: Compiled by author based on results of Principal Component Analysis

The fourth cluster is labelled “Money Supply factors” since the two factors have an influence on cash at hand. Gender discrimination is not directly linked to money supply; however, some of the interviewed entrepreneurs indicated they felt discriminated against when they were trying to access financial assistance, as men were given preference over women. The Cronbach’s alpha for this cluster is 0.735. The fifth cluster is labelled “Financial factors” and has two external factors: access to finance with a loading of 0.719; and access to business premises with a loading of 0.7. Access to business premises is closely linked to the ability to either rent or buy premises, and this ability is measured in monetary or financial terms. This cluster explains 6.0% of the variation. The Cronbach’s alpha coefficient for this cluster is 0.638 – making it not a strongly reliable instrument. However, according to (Coakes & Steed, 2009), an alpha value lower than 0.7 is still acceptable. Cluster 6 is labelled “Regulation Factor”, and it has one external factor: problems with authorities with a

0.894 loading. This cluster is also not strongly reliable, with a Cronbach's alpha coefficient of 0.611. Nevertheless, the factors in this set were relevant to business development and hence were retained in the analysis. Principal Component Analysis of the informal sector data: This section looks at the growth-inhibiting constraints in the informal sector. The results of total variance in growth constraints are summarised in table 4(below). Like the formal sector, the results show that there are also 6 clusters which jointly explain 72.5% of the variation in growth constraints in the informal sector. All 6 clusters have Eigen values greater than 1. The rotated component matrix was again used to eliminate the growth-inhibiting questions that were not loading on each of the 6 components. The grey boxes in table 4(below) show the constraints that were loading under each component:

The components for the informal sector are slightly different from those for the formal sector. The first set combined two clusters from the formal sector analysis and this component is labelled "Market and Financial Factors". It comprises five external questions with loadings of 0.566 to 0.869. This cluster accounts for 22.4% of the variation in growth constraints. The factors in this classification are: lack of clients, excessive competition, lack of profitable markets, access to business premises, and access to finance. This cluster was tested for reliability and yielded a Cronbach's alpha value of 0.810. The second set is labelled "Macroeconomic Factors" and comprises three external factors and two internal factors. These factors are: high taxes, high interest rates, crime, finding the right employees and late payment by debtors. Taxes have the highest loading (0.84) in this cluster, while late payment by debtors has the least loading of 0.416. This cluster accounts for 16.2% of the variance. The Cronbach's alpha value for this cluster was 0.807 – indicating it is a reliable component. The third cluster is labelled "Entrepreneurial and Managerial skills" and comprises lack of marketing information (0.847 loading); lack of entrepreneurial skills (0.761 loading); and lack of management skills (0.721 loading). This cluster of internal factors accounted for 11.980% of the variance. The Cronbach's alpha for this cluster is 0.78 – making it a reliable instrument.

Cluster 4 is labelled "Regulation", with a combination of external factors and an internal factor, and explained 8.688% of the variation. Access to business networks has the largest loading (0.863) in this cluster. The other two factors in this cluster are: business registration problems, and problems with authorities. Since most of the informal enterprises could possibly not have all the necessary documentation required when formalising their business, they might need a connection through the business network to facilitate this process. The Cronbach's alpha for this cluster was 0.787, showing reliability. The fifth cluster labelled "Hybrid net", consists of one internal factor and one external factor. The factors are: gender discrimination (0.866 loading) and access to technology (0.856 loading). Since these factors are not linked, technology and gender discrimination were called a hybrid net. This component is reliable, with a Cronbach's alpha of 0.806. The two factors explain 7.035% of the variation. Cluster six, labelled as "Governance", is made up of two external factors: political instability and corruption. The two explain 6.2% of the variation. Political instability has a loading of 0.836, while corruption has a loading of 0.820. This component is reliable, as shown by the Cronbach's alpha coefficient of 0.695. Table 5(below) summarises the principal component analysis results:

Discussion: From the analysis above, we reject both null hypotheses and conclude for the alternatives. It is apparent that the key growth-inhibiting factors in the informal sector are different from those in the formal sector. Access to finance has always been seen as the key constraint for business growth of formal enterprises and most policy reforms have centred on creating institutions that reduce the stringent requirements for loans stipulated by commercial banks. From the findings of this study, access to finance is not the main issue for formal MSEs. On the contrary, formal MSEs perceive the following internal factors -lack of management skills, lack of entrepreneurial skills, access to technology, finding the right employees, and access to business networks- as the main growth constraints. In the informal sector the main factors are the following external factors - excessive competition, lack of clients, lack of profitable markets, access to business premises, and access to finance. The results from the Principal Component Analysis are consistent with the initial findings in the earlier section on descriptive analysis on this analysis.

Table 5: Classification of the Principal Component clusters for formal and informal MSEs

Formal Sector		Informal Sector	
Entrepreneurial and Managerial skills		Market and Financial factors	
Lack of management skills	Internal	Lack of clients	External
Lack of entrepreneurial skills	Internal	Excessive competition	External
Access to market information	Internal	Lack of profitable markets	External
Access to technology	Internal	Access to business premises	External
Finding the right employees	Internal	Access to finance	Internal
Bureaucratic business registration process	External	Macroeconomic Factors	
Access to business networks	Internal	High taxes	External
Macroeconomic and Governance factors		High interest rates	External
Political instability	External	Crime	External
High interest rates	External	Finding the right employees	Internal
High taxes	External	Late payment by debtors	External
Corruption	External	Entrepreneurial and Managerial skills	
Crime	External	Access to market information	Internal
Marketing Factors		Lack of entrepreneurial skills	Internal
Lack of clients	External	Lack of management skills	Internal
Excessive competition	External	Regulation	
Lack of profitable markets	External	Access to business networks	Internal
Money Supply factors		Bureaucratic business registration process	External
Late payment by debtors	External	Problems with authorities	External
Gender discrimination	External	Hybrid Net	
Financial factors		Gender discrimination	External
Access to finance	Internal	Access to technology	Internal
Access to business premises	External	Governance	
Regulatory factors		Political instability	External
Problems with authorities	External	Corruption	External

Source: Compiled by author based on results of the Principal Component Analysis

In the formal sector, the 'Entrepreneurial and Managerial skills' cluster is perceived as being the most growth-impeding factors, as shown by its loading, while the 'Market and Financial factors' and Regulatory factors' clusters are the least impeding. The result for the formal sector enterprises are consistent with findings by Amwele (2013) and Shifidi (2010) who found that non-financial factors influence growth of construction and retail MSEs more than financial factors. In the informal sector, the most impeding factors are perceived as being 'Market and Financial factors', while the least impeding are 'Governance and Technology factors'. The results for the informal sector are consistent with findings by Khalique et al. (2011) and Saleh & Ndubisi (2006) who found that MSE growth in the informal sector of Malaysia was mostly impeded by external factors like high levels of competition. From the analysis, it is apparent that formal MSEs can benefit more from policies that target them as individuals and improve internal factors. To the contrary, informal MSEs can benefit more from macro policies that target external factors. The external factors pointed out by informal MSEs as being key constraints (access to finance and access to business premises) are the least concern for formal MSEs. This could be possibly being a result of these factors being automatically covered by formalisation. For example, a registered enterprise can easily access financial support and hence can afford to rent favourable business premises in profitable areas, because they have the official documents of operation (Kappel & Ishengoma, 2006).

5. Conclusion and Recommendations

The aim of this study was to conduct a comparative analysis between the growth constraints of MSEs in the formal and the informal sectors in Harare, Zimbabwe. The main findings were that business growth in the formal sector is mainly constrained by internal factors relating to entrepreneurial and management skills' development, and is least constrained by financial and regulatory factors. Informal sector business growth is mainly constrained by external factors, which are a combination of market and financial factors and are least constrained by governance factors like corruption. Addressing both internal and external growth constraints is likely to boost business growth in both sectors– but a 'one-size-fits-all' policy formulation approach will not meet the needs of MSEs from both sectors. The study recommends that the government and policy-makers in Zimbabwe need to first embrace the existence of the two sectors and then introduce sector-specific policies. Formal MSEs need micro policies that target improvement in entrepreneurial and managerial skills. On the other hand, informal MSEs need macro policies that target improvement in market and financial factors. Alternatively, the policy-makers can remove the bureaucracy surrounding the business registration process – so as to encourage the informal MSEs to formalise their businesses. This will enable them to have access to productive resources and also utilise the public services and infrastructure available to formal enterprises. While the results reported in this paper are significant, the study can be improved upon by increasing the number of internal and external factors in the analysis and by targeting a bigger sample.

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Appendix 1: Correlation Matrix for Informal Sector Data

	AccFinac	LackInfo	AccsBizNe	LakEntres	LakProfM	GendDiscr	AccsBizPre	AccsTech	RitEmpl	LakClients	LakMngtSk	BizRegPro	ProbAuth	ExComp	LatPayCre	Taxes	IntRates	Crime	PollInstab	Corruptn	
Correlation	AccFinac	1.000																			
	LackInfo	.364	1.000																		
	AccsBizNe	.440	.586	1.000																	
	LakEntres	.500	.780	.670	1.000																
	LakProfM	.333	.250	.444	.427	1.000															
	GendDiscr	.016	.370	.282	.398	.294	1.000														
	AccsBizPre	.471	.173	.454	.271	.291	.136	1.000													
	AccsTech	.385	.790	.722	.871	.442	.558	.407	1.000												
	RitEmpl	.385	.669	.521	.839	.357	.357	.141	.799	1.000											
	LakClients	.136	.037	.221	.170	.654	.260	.142	.224	.162	1.000										
	LakMngtSk	.392	.852	.609	.762	.382	.523	.203	.796	.611	.169	1.000									
	BizRegPro	.444	.836	.667	.867	.409	.403	.362	.863	.684	.110	.781	1.000								
	ProbAuth	.322	.254	.257	.443	-.027	.044	.235	.326	.387	.043	.159	.448	1.000							
	ExComp	.090	-.143	-.003	-.141	.379	-.017	.056	-.148	-.111	.582	-.092	-.114	.188	1.000						
	LatPayCre	.162	.129	.442	.192	.287	.512	.478	.378	.153	.301	.220	.283	.131	.111	1.000					
	Taxes	.399	.609	.531	.602	.267	.216	.096	.627	.510	.074	.491	.734	.303	-.104	.178	1.000				
	IntRates	.441	.499	.500	.566	.237	.093	.132	.564	.453	.018	.299	.590	.256	-.214	.108	.829	1.000			
	Crime	.262	.476	.371	.420	.378	.452	-.128	.473	.477	.182	.472	.471	-.035	-.019	.174	.644	.541	1.000		
	PollInstab	.134	.218	.307	.203	.369	.076	-.146	.255	.111	.407	.173	.346	.000	.152	.085	.507	.550	.503	1.000	
	Corruptn	-.025	.025	.122	.141	.180	-.036	-.354	.087	.203	.169	-.011	.165	.307	.387	-.061	.334	.358	.334	.613	1.000
Sig. (1-tail)	AccFinac																				
	LackInfo	.002																			
	AccsBizNe	.000	.000																		
	LakEntres	.000	.000	.000																	
	LakProfM	.004	.025	.000	.000																
	GendDiscr	.450	.002	.013	.001	.010															
	AccsBizPre	.000	.089	.000	.017	.011	.145														
	AccsTech	.001	.000	.000	.000	.000	.001														
	RitEmpl	.001	.000	.000	.000	.002	.137	.000													
	LakClients	.146	.388	.042	.093	.000	.020	.136	.040	.105											
	LakMngtSk	.001	.000	.000	.000	.001	.000	.056	.000	.000	.095										
	BizRegPro	.000	.000	.000	.000	.000	.001	.002	.000	.000	.198	.000									
	ProbAuth	.005	.023	.022	.000	.419	.368	.033	.005	.001	.370	.109	.000								
	ExComp	.243	.134	.491	.138	.001	.447	.332	.125	.195	.000	.237	.189	.072							
	LatPayCre	.104	.159	.000	.068	.012	.000	.000	.001	.117	.009	.043	.013	.155	.196						
	Taxes	.001	.000	.000	.000	.018	.046	.230	.000	.000	.284	.000	.000	.008	.211	.084					
	IntRates	.000	.000	.000	.000	.032	.235	.152	.000	.000	.446	.009	.000	.022	.047	.201	.000				
	Crime	.020	.000	.001	.000	.001	.000	.160	.000	.000	.078	.000	.000	.393	.443	.088	.000	.000			
	PollInstab	.149	.044	.008	.057	.002	.279	.129	.023	.195	.001	.089	.003	.500	.119	.255	.000	.000	.000		
	Corruptn	.424	.424	.172	.138	.081	.390	.002	.251	.057	.094	.465	.100	.008	.001	.319	.004	.002	.004	.000	

Appendix 2: Correlation Matrix for Formal Sector Data

	AccFinac	LackInfo	AcssBizNe	LakEntreTr	LakProfMk	GendDiscr	AcssBizPre	AcssTech	RitEmpl	LakClients	LakMngtSk	BizRegPro	ProbAuth	ExComp	LatPayCre	Taxes	IntRates	Crime	PollInstab	Corruptn	
Correlation	AccFinac	1.000																			
	LackInfo	.364	1.000																		
	AcssBizNe	.440	.586	1.000																	
	LakEntreTr	.500	.780	.670	1.000																
	LakProfMk	.333	.250	.444	.427	1.000															
	GendDiscr	.016	.370	.282	.398	.294	1.000														
	AcssBizPre	.471	.173	.454	.271	.291	.136	1.000													
	AcssTech	.385	.790	.722	.871	.442	.558	.407	1.000												
	RitEmpl	.385	.669	.521	.839	.357	.357	.141	.799	1.000											
	LakClients	.136	.037	.221	.170	.654	.260	.142	.224	.162	1.000										
	LakMngtSk	.392	.852	.609	.762	.382	.523	.203	.796	.611	.169	1.000									
	BizRegPro	.444	.836	.667	.867	.409	.403	.362	.863	.684	.110	.781	1.000								
	ProbAuth	.322	.254	.257	.443	-.027	.044	.235	.326	.387	.043	.159	.448	1.000							
	ExComp	.090	-.143	-.003	-.141	.379	-.017	.056	-.148	-.111	.582	-.092	-.114	.188	1.000						
	LatPayCre	.162	.129	.442	.192	.287	.512	.478	.378	.153	.301	.220	.283	.131	.111	1.000					
	Taxes	.399	.609	.531	.602	.267	.216	.096	.627	.510	.074	.491	.734	.303	-.104	.178	1.000				
	IntRates	.441	.499	.500	.566	.237	.093	.132	.564	.453	.018	.299	.590	.256	-.214	.108	.829	1.000			
	Crime	.262	.476	.371	.420	.378	.452	-.128	.473	.477	.182	.472	.471	-.035	-.019	.174	.644	.541	1.000		
	PollInstab	.134	.218	.307	.203	.369	.076	-.146	.255	.111	.407	.173	.346	.000	.152	.085	.507	.550	.503	1.000	
	Corruptn	-.025	.025	.122	.141	.180	-.036	-.354	.087	.203	.169	-.011	.165	.307	.387	-.061	.334	.358	.334	.613	1.000
Sig. (1-tail)	AccFinac																				
	LackInfo	.002																			
	AcssBizNe	.000	.000																		
	LakEntreTr	.000	.000	.000																	
	LakProfMk	.004	.025	.000	.000																
	GendDiscr	.002	.002	.013	.001	.010															
	AcssBizPre	.000	.089	.000	.017	.011	.145														
	AcssTech	.001	.000	.000	.000	.000	.001														
	RitEmpl	.001	.000	.000	.000	.002	.137	.000													
	LakClients	.146	.388	.042	.093	.000	.020	.136	.040	.105											
	LakMngtSk	.001	.000	.000	.000	.001	.000	.056	.000	.000	.095										
	BizRegPro	.000	.000	.000	.000	.000	.001	.002	.000	.000	.198	.000									
	ProbAuth	.005	.023	.022	.000	.419	.368	.033	.005	.001	.370	.109	.000								
	ExComp	.243	.134	.491	.138	.001	.447	.332	.125	.195	.000	.237	.189	.072							
	LatPayCre	.104	.159	.000	.068	.012	.000	.000	.001	.117	.009	.043	.013	.155	.196						
	Taxes	.001	.000	.000	.000	.018	.046	.230	.000	.000	.284	.000	.000	.008	.211	.084					
	IntRates	.000	.000	.000	.000	.032	.235	.152	.000	.000	.446	.009	.000	.022	.047	.201	.000				
	Crime	.020	.000	.001	.000	.001	.000	.160	.000	.000	.078	.000	.000	.393	.443	.088	.000	.000			
	PollInstab	.149	.044	.008	.057	.002	.279	.129	.023	.195	.001	.089	.003	.500	.119	.255	.000	.000	.000		
	Corruptn	.424	.424	.172	.138	.081	.390	.002	.251	.057	.094	.465	.100	.008	.001	.319	.004	.002	.004	.000	

Sustainable Marketing Practices and Sustainable Consumer Behaviour of Tertiary Students in South Africa

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Abstract: The study at hand is an investigation of consumer behavior pertaining to sustainable marketing practices amongst tertiary students at selected universities in South Africa. A total of 202 questionnaires were used in data collection. The quantitative research method was used and data was collected using convenience sampling. Data analysis included descriptive and inferential analysis and SPSS version 24 and AMOS version 24 were utilised, respectively. For hypothesis testing structural equation modelling (SEM) was conducted using the partial least square method in path analysis. The major findings of this study show that customer awareness of sustainability matters and sustainable marketing efforts are linked to sustainability behaviour. However, the level of knowledge and perceived sustainability benefits were neither positively nor significantly related to sustainability behaviour. The results have also shown that even though customers regard the knowledge of sustainability as important they have shown that they lack information because they still consume products which are regarded as harmful to the environment. Thus, the major recommendations are that marketers, policymakers, universities and all other institutions of education should support consumers with guidance and support regarding the knowledge on sustainable marketing practices while enhancing customers' knowledge on sustainability and its associated benefits.

Keywords: *Sustainable marketing; sustainable marketing practices; consumer behavior; tertiary students; structural equation modelling; South African universities*

1. Introduction

Traditionally, marketing emphasised on selling more ignoring sustainability concerns in a world of limited resources. According to Kotler (2011), this classical approach has become vintage and poised to be non-functional as consumers are now considering social responsibility issues when purchasing products and services. Sustainability focuses on environmentally non-harmful production and consumption with much considerations of the future (Pomeroy, 2017). Marketing is deemed as the backbone or pillar of the concept of sustainability (Quoquab & Mohammad, 2016). According to Kumar, Rahman, Kazmi, and Goyal (2012), marketing is a principal bridge between production and consumption enabling consumers to satisfy their basic needs whilst leading a life of enhanced quality. Contemporary marketing studies suggest that customers purchasing behavior seems aligned towards organisations behaving environmentally responsible (Ottman, 2011). Thus, sustainability is potentially beneficial for firms as customers' perceptions are switching towards firms that they adjudge as being environmentally and socially responsible (Igor, 2016). Consequently, this has increasingly encouraged firms to adopt sustainable production and marketing standards. Unfortunately, most businesses regard sustainability as a marketing strategy without necessarily considering consumers behaviour towards their sustainable marketing practice (Quoquab & Mohammad, 2016). According to Jones, Clarke-Hill, Comfort, and Hillier (2008), marketers inhabit a principal role in promotional campaigns although that is not the same as the business strategy is concerned. This suggests that contemporary marketing presently occupies a tributary instead of a principal role in steering sustainability agendas within many firms (Baldassarre & Campo, 2016). Thus, it is imperative to recognise that there is an emergent mandate for "sustainable marketing", thus aligning marketers with customers' sustainable demands. More specifically, between marketing and sustainability, firms are increasingly emphasising commitment towards sustainability with the aspiration to become unique and different from their competitors and to improve their overall corporate brand as well as image. To pursue such a strategy, it is essential that firms must consider all the contact points between the brand and the consumer (Belz & Peattie, 2009).

However, there is still a juxtaposition between sustainable marketing efforts and the characteristics that would ensure participation of customers into sustainability issues. Therefore, this research focuses on customers' perspectives on sustainable marketing practices amongst students at tertiary institutions. Thus, there is a suspected misfit between sustainable marketing strategy promises made by firms and the

consumer awareness and opinions of sustainable marketing, thereof (Baldassarre & Campo, 2016; Pomeroy, 2017). Also, sustainable marketing is perceived as a strategy to attract socially and environmentally mindful consumers while disregarding significant environmental and social issues (Quoquab & Mohammad, 2016). Considering that consumption is deemed as one of the primary underpinning causes to environmental damages, sustainable marketing is therefore perceived as an approach to heighten sustainable consumption behaviour in the markets (Fuller, 2005). The research sought to investigate the level of awareness of consumers, customer perceptions as well as knowledge on sustainable marketing practices and their relationship with sustainable purchasing behavioural patterns of consumers. It is essential for research to consider antecedents to sustainable behavior and the influence of sustainable marketing practices, thereof, in order to substantiate efforts by marketing practices.

Hypotheses

H1: Sustainable knowledge is positively and significantly related to consumers' sustainable purchasing patterns amongst tertiary students.

H2: Customers' sustainable awareness is positively and significantly related to consumer sustainable purchasing patterns amongst tertiary students.

H3: Sustainable marketing efforts are positively and significantly related to consumers' sustainable purchasing patterns amongst tertiary students.

H4: Perceived sustainability benefits are positively and significantly related to consumer sustainable purchasing patterns amongst tertiary students.

2. Literature Review

Sustainable Marketing Practices: Noticeably, sustainable marketing has received heightened attention in the contemporary literature. Herein, sustainable marketing is deemed as producing and offering sustainable products of increased disposable sustainable worth whilst incessantly satisfying customers as well as other stakeholders (Charter, Peattie, Oattman & Polonsky, 2006; Baldassarre & Campo, 2016). Preferably, systematically entrenching sustainability in all the strategies of a firm throughout the supply chain beginning with new product or service development to consumption is the zenith of sustainable marketing (Papadas, Avlonitis, & Garrigan, 2017). Climate change and global warming are posited as universal global concerns in various parts of markets and societies, worldwide. To the extent, numerous definitions of sustainability in latent literature have common elements encapsulating economic, social and environmental aspects of sustainable marketing and consumers (Lim, 2016). According to the World Wide Funds, South Africa has been consuming more than its fair share of the earth's resources. Firms in South Africa continue to seek techniques to manufacture and sell products that are highly compliant with the natural environment (Komarasamy & Hoque, 2015). Accordingly, the impact of climate change is the major driver towards sustainable marketing practices in South Africa. The Brundtland Report (1987) highlights the importance of sustainable development as the attainment of contemporary requirements, devoid of demising the capability of future generations to fulfil their own needs (WCED, 1987).

According to the UN-IPCC Fourth Assessment Report (2007), austere indications pertaining to climate change are postulated calling for obligatory and deliberate initiatives to improvise and implement sustainable business practices, globally. Charter et al. (2006) contend that firms should be prepared for an amplified sustainable period and re-examine the social and environmental consequences of their marketing strategies. In the sustainable marketing mix, price is the most critical factor and the challenge is to convert social and environmental enhancements into a worthwhile value proposition for contemporary customers (Pomeroy, 2017). Becker (2004) depicts this dilemma as two-thronged, namely, firstly "integrating the additional costs into the marketing mix" and secondly "concerns the consumer's main interest in price and quality". Furthermore, sustainable marketing is regarded as going beyond the prevalent, pretentious and contemptuous gimmicks of attracting socially and environmentally inclined consumers while disregarding pressing ecological and societal concerns (Baldassarre, & Campo, 2016). Sustainable business organisations are those that take sustainable marketing as a panorama for attaining their business objectives (Quoquab, & Mohammad, 2016; Muneer et al., 2017). This requires that sustainable marketing should be encapsulated in a firm's mission and vision, and subsequently expressed through its core values (Emery, 2012).

Thus, for genuinely sustainable firms, conceiving, creating and providing a sustainable product offering ceases to be the sole responsibility of the marketing function but rather joint responsibility of all organisational functions of a business. Over and above, the aim of sustainable marketing is still value addition and satisfaction of customers' wants and needs in a manner that is consistent with the values and ethos of sustainable development (Belz, & Peattie, 2009; Martin, & Schouten, 2014). Sheth and Parvatiyar, (2005) are postulated as the frontrunners to the notion of a sustainable marketing, which fosters sustainable development. While classical marketing is primarily accredited for incessantly enhancing consumption, the aspiration of sustainable marketing is to enhance sustainable consumer behaviour and provide appropriate products (Quoquab, & Mohammad, 2016). Sustainable marketing practices add a new criterion to the process of information search by customers during the buying process behaviour. Information search is poised more and more to encapsulate the sustainability criterion over and above the normal dimensions such as product, price and place (Belz, & Peattie, 2009). Becker (2004) wrote that when assessing alternative products, known as the evoked set of products, consumers consider the benefits, product attributes as well as the differences embedded in the products offered. Of which, increasingly sustainability is regarded as part of the features and although not all the consumers reckon it as a benefit.

Sustainable Knowledge: Latent literature posits that contemporary consumers and business clients are being progressively more apprehensive about the environment, subsequently, shifting their purchasing behaviour. Thus, there is an evolution of markets for sustainable and socially competent products and services (Moravcikova, Krizanova, Klietkova, & Rypakova, 2017). For instance, Peattie, and Crane, (2005) highlight that retailers' pressure on their suppliers to improve their upstream sustainable marketing performance is increasing since retailers are probably first in experiencing the effects from any sustainable consumer reaction. Downstream, the primary predicament for sustainable marketing is to simplify customers' adaptation towards being sustainable themselves. Sustainable consumption pertains to people's aptitude to fulfil their needs without demising the potential of other people to do so in the future (WCED, 1987). Customers are increasingly acknowledging the obligation to sustain the social and environmental systems over and above the need for basics, such as food and clean water (Emery, 2012). Sustainable awareness enhances the responsibility by customers to decrease ecological degeneration by patronising ecologically safe products (Connolly, & Prothero, 2008). However, Kotler (2011) and Moravcikova et al. (2017) argue that a severe marketing challenge which most firms in South Africa face is that most customers are not aware of pertinent concerns such as global warming and climate change and they continue to use products that are very harmful to the environment. Subsequently, green marketing strategy (GMS) has emerged in latent literature (Ashby, Leat, & Hudson-Smith, 2012) depicting the firm's ability to simultaneously align objectives (corporate and marketing), environmental protection, and considering customers' perceptions on sustainable marketing (Moravcikova et al., 2017).

Benefits for Sustainable Marketing: For marketers, various benefits emanate from utilising sustainable marketing. Conspicuously, sustainable products and services augment the differentiation strategy that firms use to distinguish their offerings from that of counterparts (Cox, 2007). Also, sustainable marketing has a huge potential of nurturing a positive corporate reputation (Kumar, & Kumar, 2013). Businesses that promulgate and encapsulate environmental criterions create greater efficiency (Robinson, 2004), boost profits (Menon, & Menon, 2007) and minimise product life cycle costs (Ottman, 2011). According to Charter et al. (2006) effectiveness, superior profits and cost reductions can emanate from superior waste management techniques, namely, recycling, re-use or sale of original or modified waste material. Emery, (2012) also wrote that the other features that customers look at when purchasing a product include benefits, price, influence from family members, performance and status which can relate to sustainability. The benefits for sustainable marketing practices include enhanced health and safety of workers during manufacturing of products (Quoquab, & Mohammad, 2016). Thus, consumers tend to enjoy products that do not pose health threats or any form of pollution and other negative consequences during the use in their communities. Furthermore, preservation of the environment especially for younger generations is of importance to the wellbeing of consumers who are spending a lot on sustainable products (Oattman, 2011). As such, even though firms regard sustainable marketing as an impetus that can be utilised to achieve their corporate goals, further government environmental regulations and competitors' environmental activities threatens business survival and success if not properly handled. Thus, penalties associated with non-sustainable adherence are avoided when firms modify their behaviour towards sustainable marketing (Belz, & Peattie, 2009).

Customer Awareness on Sustainable Products: Sophisticated customer expectations in the contemporary environments are amongst the chief contributors towards the proliferation of sustainable marketing in the business world where customers' quest for better value is definitive (Saha, & Kuruppuge, 2016). Customers' expectations when contrasted with perceived performance of the purchased product as certain customer satisfaction (Nykamp, 2001). According to Kotler (2011), the experiences and activities of people that are engaged in buying, using and disposing of goods and services constitute consumer behaviour. Consumer behaviour is embedded by different social and psychological needs. Thus, Emery (2012) also argues that consumer behaviour plays a vital role in sustainable marketing. Kotler (2011) wrote that marketers need to be cautious of their communication activities such as labelling which can have a huge impact on the expectations of customers. For example, with eco labelling businesses need to ensure that they promise what they are capable of delivering. Customer satisfaction is essential for building and maintaining beneficial relationships with customers, since when customers are satisfied they make return purchases as well as advocate on behalf of the product thereby shifting their awareness from other products and brands (Kotler, 2011). According to Saha and Kuruppuge (2016), it is essential to understand the transformations and empowerment that emanate from customers awareness due to them having information about product offerings on the market. Thus, firms are expected to quickly adjust to these transitions as customers' awareness on sustainability is on the rise (Quoquab, & Mohammad, 2016). However, firms seldom transform unless customers change and heightened customer expectations pushes marketers towards improvising on marketing initiatives, such as green marketing strategy (Nykamp, 2001).

Consumer Sustainable Purchasing Patterns: Belz, and Peattie, (2009) wrote that although sustainability interests are high nowadays compared to the 1990's, there is a discrepancy between expressed concerns and action in sustainability. Often, customers' sustainability expressions are exposed in purchasing actions, with outright rejection exhibited on products that do not match their desired sustainability status (Saha, & Kuruppuge, 2016). As such, one of the most crucial choices and decisions that firms are faced with pertains to who to target with many firms opting to focus on niche markets. However, research suggests that for firms to exclusively focus on green consumers' niche markets an ineffective strategy. Emery (2012) and Belz, and Peattie (2009) opine that the most effective approach is endeavouring to serve their entire market with a sustainability strategy. In this regard, contemporary segmentation strategies need to drift away from utilising traditional dimensions, such as geographic and demographics. Thus, segmentation nowadays should be based on deeper issues such as customers' attitudes pertaining to sustainability. Becker, (2004) argues that while consumers may be exposed to sustainable products, their buying behaviour is subject to attributes such as price, brand and product availability. Moravcikova et al. (2017) opine that in order to enhance sustainable consumption it is paramount for marketers to conceive the purchasing decision-making process by consumers.

Furthermore, the entire supply chain is increasingly being expected to be sustainable by the consumers (Belz, & Peattie, 2009). However, global consumer purchasing patterns revealed a progression in the approval and patronising of sustainable marketing, which is not the case with South Africa (Komarasamy, & Hoque, 2015). Komarasamy, & Hoque (2015) opine that most of the consumers in South Africa are not aware of sustainable marketing practices because of factors such as rising crime and poverty where they resort to other means of survival. A study by Mintel in USA reviewed that at least one third of US consumers indicated that they were prepared to pay high prices on products that were environmentally sustainable. Consumer services such as dry cleaning are getting more prevalent in the sustainable marketplace. The survey established that at least a third of the consumers regard environmental consequence when selecting service providers. Igor (2016) also agreed that sometimes it depends on where the customers are located because consumers in developing countries like, Brazil and China are also aware of sustainable consumption and are also starting to enjoy the benefits of sustainable marketing.

3. Methodology

The study was undertaken with various tertiary students at South African institutions (University of Limpopo, University of Venda and Tshwane University of Technology) utilising the quantitative research methodology. The institutions were chosen because of their proximity to the researchers and being located in proximity to each other. The convenience sampling technique was used and the sample included both

undergraduate and postgraduate students registered at the universities in the year 2018. These university students are a vital segment of consumers as they are potentially active and conscious pertaining to sustainable development. Furthermore, limited studies have been conducted pertaining to university students' despite of them being vital for shoppers (Muniady Al-Mamun Permarupan & Zainol, 2014). A survey in a form of paper based self-administered questionnaires constituting closed-ended questions. Data was analysed through both descriptive and inferential statistics. Exploratory factor analysis (EFA) was conducted for factor analysis because the questionnaire constituted mostly new items. To conduct EFA, the principal component analysis (PCA) through varimax rotation was utilised due to the data being deemed to be orthogonal. Reliability was measured using the Cronbach alpha test and composite reliability (CR) while validity was ascertained through average variance extracted (AVE) and inter-construct correlations. For hypothesis testing, the two staged structural equation modelling (SEM) constituting the measurement and structural model. SPSS version 24 and AMOs version 24 were the statistical software used to conduct descriptive analysis and SEM, respectively.

4. Result and Data Analysis

Biographical information: The first section of the questionnaire addressed the demographic information of the respondents. The sample was comprised of 43% males and 57% females. In terms of age, the majority of the respondents (70%) were aged between 21 and 30 years, followed by those below 21 years (24%), while 4% were between 31-40 years and the remaining (2%) were between 41-50 years. The ethnicity of the respondents was comprised of 2% Whites, 5% were Indians and 7% were Coloureds and the majority (86%) were Blacks. In terms of educational qualification registered for, 42% were postgraduate whilst 58% were undergraduate students. Table 1 below outlines this information.

Table 1: Respondents demographics

Variables	Category	Freq	(%)	Variables	Category	Freq	(%)
Gender	Male	86	42.6	Education	Undergraduate	85	42.3
	Female	116	57.4		Postgraduate	117	57.7
Age (Years)	Below 21	48	23.8	Ethnicity	Black	173	85.7
	21-30	142	70.3		White	5	2.4
	31-40	9	4.5		Indian	9	4.6
	41-50	3	1.5		Coloured	15	7.3

Table 2: Validity and Reliability Assessments

Construct	Item	SFLs	CRa	CR	AVE
Sustainable Knowledge	Kno3	.723	0.692	0.731	0.576
	Kno4	.794			
Sustainable Awareness	Awa1	.595	0.722	0.833	0.555
	Awa2	.821			
	Awa3	.794			
	Awa4	.758			
Marketing Efforts	Eff2	.511	0.732	0.777	0.471
	Eff3	.744			
	Eff4	.724			
	Eff5	.740			
Sustainable benefits	Ben3	.746	0.804	0.814	0.688
	Ben5	.905			
Purchasing patterns	Pat1	.713	0.745	0.822	0.536
	Pat2	.782			

Pat3	.708
Pat4	.723

Reliability and Validity: In EFA, some of the items from the questionnaire that seldom loaded perfectly on one construct were dropped in further analysis. The remaining items which were finally included in the model are shown in Table 2 and Figure 1. The standardised loadings (SFLs) for all the items on their respective constructs reflect on adequacy of the measures (see Table 2). All the SFLs are above 0.50 and the majority of them were above 0.70 which signify satisfactory internal consistency, as they were above the recommended cut-off value of 0.50 (Hair, Black, Babin, & Anderson, 2010). Reliability was also ascertained through the use of Cronbach's alpha (CRA) test and all the constructs had alpha values of above the threshold except only one (sustainable knowledge) which was also closer to 0.70. Furthermore, the composite reliability (CR) values were all above the recommended 0.70 threshold value (Chinomona, & Pretorius, 2011) to substantiate the reliability of the data in the study. In terms of construct validity, convergent validity was ascertained through AVE values. Accordingly, all the AVEs were above the recommended 0.5 (Chin, 1988) required for convergent validity.

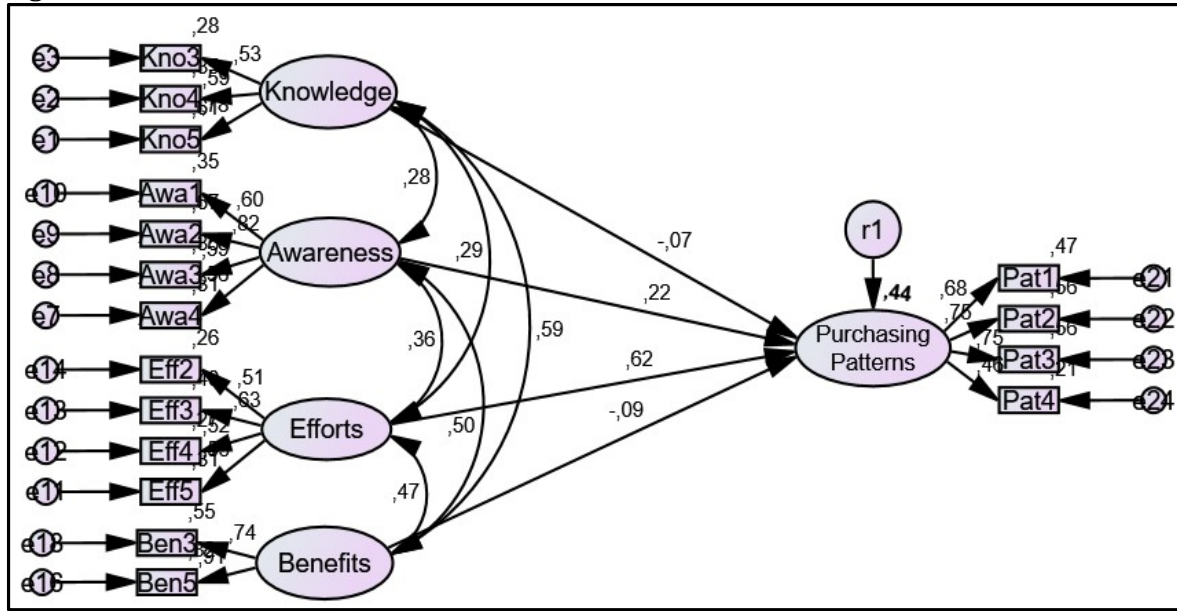
Discriminant validity was ascertained through inter-construct correlations. Herein, for discriminant validity to exist, all the inter-construct correlation values there should be below 0.8 (Ghauri, & Grønhaug, 2010). Thus, discriminant validity is achieved by the absence of high correlation amongst unique or distinctive theoretical operationalisations (Zikmund, Babin, Carr, & Griffin, 2010). As shown in Table 3, all the values in the correlation matrix satisfied the requirements for discriminant validity. Furthermore, discriminant validity was ascertained using the square root of AVEs that are presented in the boldfaced figures in the diagonal of the correlation matrix. For satisfactory discriminant validity, the boldfaced values in each row and column should be above the figures in that row or column (see Table 3).

Table 3: Mean, SD, Inter-Construct Correlation Matrix & Square root AVE

Construct	Mean	SD	1	2	3	4	5
Sustainable Knowledge (1)	4.21	0.76	0.759				
Sustainable Awareness (2)	4.01	0.88	0.276	0.747			
Marketing Efforts (3)	3.66	1.03	0.284	0.362	0.687		
Sustainable benefits (4)	3.89	1.07	0.591	0.501	0.473	0.829	
Purchasing patterns (5)	3.41	1.06	0.114	0.324	0.598	0.210	0.732

Structural Equation Modelling: Firstly, the preliminary assessments for normality, outliers and missing values which normally affect model fitness were satisfactory. The measurement model through confirmatory factor analysis resulted in satisfactory goodness of fit which enabled the conduct of structural model. The R-squared value for the dependent variable purchasing patterns is 0.44 (see Figure 1) which reflects model adequacy. This indicates that the structural model explains 44% variance in the purchasing patterns variable. The goodness-of-fit indices indicate acceptable model fitness regardless of a significant chi-square ($X^2=223.719$, $df=78$, $P=.000$, $N=202$). The other fit indices, thus, Normed Chi-square ($X^2/df=2.86$), Tucker Lewis Index ($TLI=0.896$), Comparative Fit Index ($CFI=0.916$), and Root Mean Square Error of Approximation ($RMSEA=0.079$) were all acceptable.

Figure 1: Structural Model with Path Coefficients



Hypotheses Interpretation: Having established acceptable model fitness, it was now appropriate to test the hypotheses. The hypotheses were tested at 0.05 alpha significance level was used and Table 4 below, illustrates the SEM path analysis results. From examining the path regression weights or path coefficients, the results of SEM indicate that there was a negative and insignificant relationship between sustainability knowledge and sustainability purchasing patterns (-0.067; $p=0.531$) as well as perceived sustainability benefits and sustainability purchasing patterns (-0.087; $p=0.487$). Thus, hypotheses (H1 and H2) in this case were not supported. However, a positive and significant relationship was established between sustainability awareness and sustainability purchasing patterns (0.221; $p=0.041$) as well as sustainable marketing efforts and sustainability purchasing patterns (0.620; $p<0.000$). This means that H2 and H3 were supported in this research.

Table 4: Results of hypotheses testing

Hypothesised Relationships		Estimate	S.E.	C.R.	P	Decision
Purchasing_Patterns	<--- Knowledge	-,067	,155	-,627	,531	Not supported
Purchasing_Patterns	<--- Awareness	,221	,152	2,048	,041	Supported
Purchasing_Patterns	<--- Efforts	,620	,181	4,245	***	Supported
Purchasing_Patterns	<--- Benefits	-,087	,111	-,695	,487	Not supported

5. Conclusion

The research established that major findings in this research are that customer awareness is positively and significantly related to consumer sustainable purchasing patterns amongst tertiary students. This means that there is need to ensure that awareness amongst the consumers on sustainability is high. Most of the respondents' level of awareness of the impacts of purchasing environmental friendly products was found to be on the positive. Consistently, the study established that sustainable marketing efforts were positively and significantly related to consumers' sustainable purchasing patterns amongst tertiary students. Thus, the high path coefficient value of 0.62 indicate that the majority of students indicated that sustainable marketing efforts by marketers was the main factor which influence them to behave in a sustainable manner. There is a significant potential of this awareness driving their sustainability behavior. This is consistent with past studies (Joshi, & Rahman, 2016; Good, 2006) which established that sustainable awareness and the sustainable marketing efforts are directly essential in the sustainable behavior of consumers. On the contrary, the research found out that sustainable knowledge was not positively and significantly related to consumers'

sustainable purchasing patterns amongst tertiary students. Overall, this means that the level of sustainable knowledge amongst tertiary students was not at par with their sustainable purchasing patterns. Thus, even though they would want to behave in the positive, the absence of adequate knowledge was a limiting factor. Consistently, the study also established that perceived benefits for sustainable marketing were not positively and significantly related to consumer sustainable purchasing patterns amongst tertiary students. This substantiates the fact that the level of knowledge is on the negative hence, the perceived benefits derived from sustainable practices are also on the negative.

The implications of this finding are that marketers need to establish consistence between their sustainable practices and the knowledge on sustainability as well as the benefits of behaving in sustainable manner. Thus, the desired levels of sustainability cannot be achieved if the knowledge and benefits that consumers perceive from sustainable marketing practice is still very low (Armeanu, Vintilă, & Gherghina, 2018). Thus, even though sustainability and sustainable development maybe a buzzword, for customers this is still a blurred concept. For marketers to derive optimum value from their marketing efforts, consumer knowledge is needed. As such, marketers who consider sustainable marketing a competitive advantage tool should ensure that their marketing promotions are informative and not just persuasive. These findings are consistent with the results established in previous studies (Joshi, & Rahman, 2016; Wolsink, 2007; Armeanu et al., 2018) which stated that there is no adequate knowledge about sustainable products to influence the behavior of consumers. Consistently, the study supports the findings of the same previous studies as the results established that there is no link between purchasing patterns and the benefits of sustainable marketing. In this regards, the study contributes towards sustainable theory by ensuring that sustainable marketing strategies need to encapsulate the elements of education and persuasiveness to make an impact. These findings are vindictive and follow-up of the earlier sentiments that has been shared that sustainability is not being really regarded with the required level of austerity (UN-IPCC, 2007).

Furthermore, universities and all other institutions of education should support consumers with guidance and support regarding the knowledge on sustainable marketing practices and enhance students' sustainability knowledge. As universities which are situated in rural areas they can have social responsibility as part of their community engagement activity. Thus, apart from educating students, they can also include members of the community in extending knowledge of sustainability because it is a serious issue which has implications towards climate change and global warming. In addition, the government also has a significant responsibility in controlling standards and measures to regulate sustainable marketing practices. As outlined in a study conducted by Charter et al. (2006), businesses barely transformed their products but proclaimed them to be green or non-polluting besides expert verification, which stood the possibility of being criticised of green washing. Greenwashing occurs when firms make uncorroborated or misrepresentative assertions about the environmental worthiness of a product, service, and technology or firm practice (Moravcikova et al., 2017). Greenwashing is a possible reason why until now knowledge on sustainable practices and the associated benefits is still very low amongst the customers. So if the government intervenes and regulates sustainable marketing practices it would also reduce the claims made by companies and firms who claim that their products are green products.

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Free Cash Flow and Firms' Growth: An Empirical Investigation of Nigerian Quoted Non-Financial Firms

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Abstract: This study analyzes the effect of free cash flow on the growth of non-financial quoted firms in Nigeria. Specifically, the impact of free cash flow on the percentage change in a total asset of selected quoted firms (Dangote Flour Mills, Honeywell Nig. Plc, Dangote Sugar Refinery, Flour Mills of Nig. Plc, and PZ Cussons Plc) over a period of five years (2012-2016) was analysed. Data used in the study were sourced from the annual reports of the selected quoted firms. Correlation analysis, restricted F-test, Hausman test, and some panel estimation methods (pooled OLS estimation, fixed effect estimation, and random effect estimation) were employed to analyse the data. Results revealed that free cash flow exerts a negative impact on firms' growth rate, to the tune of -0.000391 ($p=0.179 > 0.05$). The study, therefore, established that rising free cash flow has the capacity to erode the growth prospect of firms quoted on the Nigeria stock exchange. Based on this result, the study recommends that quoted firms in the country decrease their free cash flow, leverage increased turnover, explore viable/positive net present value projects, and reduce operational costs so as to be positioned for better growth in terms of percentage change in total asset.

Keywords: *Free Cash Flow; Firms' Growth; Quoted Firms; Non-financial firm; Nigeria Stock Exchange*

1. Introduction

This paper examines the stake of firms' growth in the presence of free cash flow in the light of the numerous empirical literature which support a positive finance-growth nexus across the world. Growth is one of the most valued characteristics of any successful firm irrespective of its size. It is an accepted fact that a firm's growth cannot be divorced from its cash flow, be it free or otherwise, because firms that have high free cash flow easily attract investors looking for effective opportunities to invest their excess resources. The willingness of investors to invest in a firm stems from their confidence in its ability to kickback debt, as well as its financial flexibility observed over time. The free cash flow theories were introduced in 1986 for the first time by Jensen, and have gradually developed till today, forming a part of the new topics in the financial literature which explain the behaviour of firms that are not justifiable with previous economic theories (Carroll & Griffith, 2001). Jensen (1986) critically examined free cash flow from the agency perspective. He first tried to institute a better understanding of the concept, where he defined free cash flow as the "excess of cash flow required to fund all projects that have positive net present values (NPV) when discounted at all relevant cost of capital".

In other words, free cash flow is the cash balance left over after a firm has paid all expenses incurred in generating the cash, and deducted the sum required for its short and long-term investments which will enable it to maintain its current operations. Hence, free cash flow, if not paid out as dividend or interest, will end up serving as agency cost to the firm. Free cash flow is one of the crucial tools used for measuring the financial performance of a business unit, as it shows the amount of cash in a firm's custody after performing the asset maintenance necessary for the smooth operation of the firm (Habib, 2011). It is also used by shareholders as a tool for assessing the financial capacity of any business entity. However, academics have long ago posited that free cash flow can lead to managers' expropriation of owners' wealth because of the agency problem that exists between managers and shareholders in a firm. The Nigerian government, together with firms and individuals in the private sector, has put strong efforts into ensuring the existence of a favourable business environment in the country.

Despite these efforts geared towards sustaining a high level of corporate performance in the country, firms across different sectors of the country find it difficult to sustain a high and stable level of performance. Notably, a large number of identified challenges to improved performance among quoted firms in the country is often attributed to finance (Chebii, Kipchumba, & Wasike, 2011). On the other hand, scholars such as

Omondi and Muturi (2013), Almajali, Alamro, and Al-Soub (2012), and Liargovas and Skandalis (2015) have affirmed that factors affecting the financial performance of firms especially in developed countries are both internal and external, and that the performance of a quoted firm answers not only to finance. At the moment, the effect of free cash flow for Nigerian firms is still uncertain, even though some of them are folding up because of the huge economic hardship. The relevance of free cash flow in firms to great growth prospect and the ability to possess huge market power cannot be overemphasised. This is premised on the fact that free cash flow, if properly monitored, can be used for the expansion of the business, payment of shareholder dividends, and debt reduction, among many others. It can also be used for reinvestment after the requirements of the entity have been fulfilled, serving as a cheap source of equity. However, free cash flow has been highlighted as one of the issues that demand balancing when it comes to the discourse of managers and shareholders finding equilibrium.

This discourse is inevitable because firms practise agency relationships which allow managers who are motivated by personal interests to, at some point, opt for 'more investment' which might be vague, and might yield negative or zero NPV. At other times, such managers may distribute firms' earnings for their personal/selfish gain. With the advent of the free cash flow hypothesis, the traditional belief is that for any firm to sustain future growth, there is need to maintain a high level of free cash flow. Studies have shown that free cash flow, if not paid out as dividend or interest, will end up serving as agency cost to the firm, since managers' interests are different from those of the shareholders, and in pursuing such personal interests, they may end up negatively affecting the firm. Thus, the following dilemma arises: Should Nigerian firms take decisions that will give no room for free cash flow, no matter how little, to avoid managers' expropriation which leads to agency cost? Or should free cash flow be encouraged in Nigerian firms so as to ease the financial challenges they face and stimulate their growth? This dilemma has not been solved by previous studies in the Nigerian context, even though free cash flow has gained the attention of a wide range of researchers in the field of accounting and finance. This study finds it necessary and expedient to establish the effect of free cash flow, not on performance, but on the growth prospects of Nigerian firms. Thus, this study investigates the effects of free cash flow on the growth of quoted non-financial firms in Nigeria.

2. Literature Review

Nyabwanga, Ojera, Simeyo, and Nyanyuki (2013) investigated the liquidity, solvency, and financial health of selected small and medium-sized enterprises in the Kisii Municipality, employing ratio analysis as a means of financial diagnoses. Their study found that the understudied firms had low liquidity, low solvency, and poor financial health. It was also discovered that variables representing liquidity, solvency, and financial health exert a significant impact on the firms' performance measures. An investigation conducted by Atieh (2014) focused on evaluating the liquidity of the pharmaceutical sector in Jordan using cash flow analysis. They found that some of the understudied firms had a good traditional liquidity ratio, while cash flow ratios tended to be weak. However, the cash ratios used in the study showed better positions of liquidity. The study, therefore, concluded that the liquid position of a firm is better represented by cash flow ratios than traditional ratios. Similarly, Amuzu (2010) studied cash flow as a measure of the performance of listed companies in emerging economies and found out that cash flow analysis measures the performance as well as competitiveness of firms appropriately. Mazloom, Azarberahman, and Azarberahman (2013) analysed the interrelationship between earning, cash flow measures of performance, and stock return in Nigeria. Secondary data collected over a period spanning from 2003 to 2011 were used in the study. Data collected in the study were analysed using multiple as well as simple regression. The study revealed that a company's performance and cash flow have a significant negative relationship. Furthermore, Amah, Ekwe, and Uzoma (2016) studied the relationship between free cash flow and operating earnings with the stock return and growth of net market values of operating assets in the Tehran stock exchange. The formulated hypotheses were tested using Pearson correlation and simple linear regression. The study revealed that there is a positive meaningful relationship between operating earning with return on equity, return on assets, and gearing of net market values in operating assets (Muneer et al., 2017).

Cheng, Cullinan, and Zhang (2014) conducted a study on the impact of free cash flow on performance using Chinese listed real estate firms and concluded that a negative relationship exists between them. Though the study made use of accounting profit, the author failed to control for growth opportunities among firms. In

addition, the study related free cash flow with contemporaneous profits, with no consideration for the overlapping effect. As a result, the study documented evidence that contradicts established free cash flow hypotheses. Gregory (2005) investigated the effect of free cash flow on the performance of firms involved in mergers and revealed that mergers with a higher level of free cash flow perform better than those with low free cash flow. Ashtiani (2013), carried out research work on the relationship between accounting ratios, operating cash flows, investments, financing, and stock returns in the Tehran Stock Exchange. The study sampled 650 quoted firms, covering a period between 1998 to 2004. Using techniques of analysis such as Pearson correlation and linear regression, the study showed that there is significant interrelationship among operating earnings, net profit, operating cash flows, investing cash flows, and stock returns; while the relationship that exists between growth of trade sale, financing cash flows and stock return is not significant.

Cheng et al. (2014) studied free cash flow, growth opportunities, and dividends of cross-listing of shares in China using multiple regression on 1105 randomly sampled companies over the period 2012 – 2016. It was discovered that free cash flow exerts a significant impact on dividend payments of Chinese cross-listed companies, but doesn't for non-cross-listed companies. Saez and Gutierrez (2015) provided evidence that free cash flow leads to an increase in dividend yield, and that the effect is stronger for low-growth firms. The study established that there is a significant positive relationship between the dividend policies and free cash flow of low-growth firms, but that the relationship tends to be insignificant for high-growth firms. Nor Hasmadila (2014) studied the 100 largest listed companies in Bursa, Malaysia, by using panel data analysis and multiple regression models. His study revealed that there is positive interrelationship between free cash flow and the dividend pay-out of quoted firms in Malaysia. Stouraitis and Wu (2004) studied the ownership structure and dividend policy of Japanese firms with free cash flow problems.

Review of Related Theories: Analyses conducted in the study established the fact that there is positive interrelationship between free cash flow and dividend payment by firms, though it tends to be greater in magnitude for low-growth firms than their high-growth counterparts. Investigated the impact of cash flow on the organizational performance of hospitality and print media industries in Nigerian. The study made use of a pilot study, focusing on 45 randomly selected SMEs. The study found that in the presence of technological advancement, there is a need for firms in the industries understudied to develop strategies to enhance their cash inflow in order to ensure quality service delivery, which is necessary to ensure their competitiveness. Adelegan (2003) analysed the impact of cash flow on dividend changes in Nigeria. The study sampled a total number of 63 quoted firms over a period from 1984 to 1997. Using ordinary least squares estimation, the study discovered that there is a significant positive relationship between cash flow and firm performance. Frank and James (2014) analysed the impact of cash flow on the corporate performance of selected food and beverage companies in Nigeria. Six food and beverage firms were sampled in the study, and data were collected from their annual reports and analysed using multiple regression. The study found that operating and financing cash flow has a significant positive relationship with corporate performance in the food and beverage sector of Nigeria.

Pecking Order Theory: The pecking order theory postulates that firms prefer to use capital generated from retained earnings to finance their businesses (Myers, & Majluf, 1984). Due to information asymmetries between managers and potential investors, firms' order of preference in terms of finance will be using retained earnings rather than debt (either short term or long term), short term debt instead of long term debt and any form of debt rather than equity (issue of new shares). Myers and Majluf (1984) argued that the problem of information asymmetry will be resolved if firms refuse to issue new security but utilise retained earnings to finance investment opportunities. This implies that the equity source of finance becomes more expensive as the asymmetric information between insiders (managers) and outsiders (owners) increases. Hence, it is preferable for firms with high information asymmetry to issue debt so as to avoid selling under-priced securities. Based on this, care should be taken in the choice of policy on dividend so that the source of financing or the mix of sources does not become a problem. Managers are privy to insider information that is not known to the market and they have more information on the most judicious distribution of the firm's earnings and the risk attached to such earnings than the owners (outsiders). Therefore, efficient use of free cash flows must be towards embarking on viable projects. Taking policies to distribute all earnings in order to reduce free cash flow to the barest minimum can signal higher returns but jeopardises the firm's financing

structure. This should not be accepted by the owners (shareholders) because managers tend to limit the use of equity in order to retain control of the firm (Abor, & Biekpe, 2006).

Agency Theory: According to Rozeff (1982), any firm with agency relationships faces the challenge of the agency problem due to the possibility of sub-optimality of goals between shareholders and managers who are supposed to act in the sole interests of the owner and render stewardship reports on time. The agency problem refers to a principal-agent problem where the principal is the shareholder and the agent is the manager whose main duty is to run the activities of the firm effectively and efficiently, in order to increase its value and maximise shareholders' returns. It emanates from the mis-alignment and divergence of the parties' interests because in such situations, managers no longer invest in viable or positive NPV projects that shareholders consider worthwhile. The agency costs incurred in aligning these interests involve monitoring and bonding costs and residual losses. Rashid (2015) state that the agency problem emanates from the fact that managers are more informed about worthwhile investments that will yield higher positive returns because they are involved in the daily activities of the firm. However, Ballwieser et al. (2012) show that managers whose activities are not properly monitored (agency monitoring costs) tend to pursue their personal interests at the expense of corporate goals by engaging in activities that increase their executive benefits. According to Jensen and Meckling (1976), reducing free cash flows in the custody of managers, minimises the possibility of embezzlement or investing in zero or negative NPV projects; this invariably minimises the agency problem (costs) and maximises shareholders' wealth, which is the firm's ultimate goal.

3. Methodology

This study makes use of a longitudinal research design, with focus on five quoted non-financial firms over a period of five years. The quoted firms sampled in the study are Dangote Flour Mills, Honeywell Nig. Plc, Dangote Sugar Refinery, Flour Mills of Nig. Plc, and PZ Cussons Plc. The justification for the choice of these five firms is the availability and consistency of their annual reports which facilitated access to the data needed to capture the variables of this study. The study covered the period from 2012 to 2016. The year 2012 was chosen as a base year because Nigeria's economy witnessed a sharp decrease in Gross Domestic Product during that time. This led to a rise in firms' finance challenges, and they are yet to recover from those challenges²⁴. A single equation panel model was estimated in this study. Panel data analysis was used because it is more informative than time series or cross sectional data analysis and it has the capacity to cater for heterogeneity problems. The study measured firms' growth (FGR) with the percentage change in the total asset over the period understudied, and Free Cash Flow (FCF) was calculated by subtracting increase in working capital and capital expenditure from the sum of net income, depreciation, and amortization. The model was controlled by liquidity, which was measured in terms of Current Ratio (CR), and Firm's Size (FS), measured in terms of the natural log of the total asset.

Hence, for simplicity of presentation, the model estimated in the study is presented in functional and linear form below:

$$FGR = f(FCF, CR, FS, U) \dots \dots \dots (i)$$

The model can as well be specified in linear form as:

$$FGR_{it} = \alpha_0 + \alpha_1 FCF_{it} + \alpha_2 CR_{it} + \alpha_3 FS_{it} + \varepsilon_{it} \dots \dots \dots (ii)$$

where:

FGR=Firm's growth rate

FCF=Free Cash Flow

CR=Current Ratio

FS=Firm's Size

i = cross-sectional variable from 1, 2, ... 5

t = time series variable form 1, 2, ... 5

$\alpha_0, \alpha_1, \alpha_2, \alpha_3$ are parameter estimates corresponding to the explanatory variable and the constant term, while ε_{it} is the idiosyncratic white noise error term.

²⁴<https://www.premiumtimesng.com/business/106240-nigerias-economic-growth-level-declines-in-2012-financial-analyst.html>

Data used in the study were sourced from the annual reports of the selected quoted firms over the period covered in the study (2012 to 2016). The study adopted correlation analysis and panel estimations which include pooled OLS estimation, fixed effect estimation, and random effect estimations, as well as restricted F-test and Hausman post-estimation test.

The general framework of the panel regression model is; $Z_{it} = \alpha_i + \beta Q'_{it} + u_{it}$(iii)

Where, Z_{it} is the dependent variable; Q'_{it} is the vector of the regressors; α_i is the constant term; i is the number of cross-sections and t is the time period. u_{it} is the stochastic error term.

Pooled Regression Model; $Z_{it} = \alpha + \beta Q'_{it} + u_{it}$(iv)

Here, it is assumed that $\Sigma(Q_t, u_t) = 0$ for all the time-period t .

Fixed Effect Model; $Z_{it} = \alpha_i + \beta Z'_{it} + \varepsilon_{it}$(v)

Here, α_i is treated as a variable that is partially correlated with the observed independent variables and with this, it solves the omitted variable bias that has been one of the problems with the fixed effect model.

Random Effect Model; $Z_{it} = \alpha_i + \beta Q'_{it} + \varepsilon_{it}$(vi)

Here, ε_{it} is a random error term, that is $\varepsilon_{it} = \alpha_i + u_{it} \approx I.I.D.N(0, \sigma_u^2)$.

Post Estimation Test Statistics: The restricted F-test was conducted to determine if the analysis should proceed from the pooled OLS. The Restricted F-test statistic equation is;

$$F_{obs} = \frac{(G_{UR(FEM)}^2 - G_{R(POOLED)}^2) / (P-1)}{(1 - G_{UR(FEM)}^2) / (PT - P - K)} \cong F_{P, P(T-1)-K}$$

To choose the most efficient estimator between fixed and random effect, Hausman test was conducted. The Fixed Effect estimator in a demeaned form is written as;

$$\hat{\beta}_{FE} = \left(\Sigma_i \Sigma_t \left(S_{it} - \bar{S}_t \right) \left(S_{it} - \bar{S}_t \right)' \right)^{-1} \left(\Sigma_i \Sigma_t \left(S_{it} - \bar{S}_t \right) \left(Z_{it} - \bar{Z}_t \right) \right);$$

β is the vector of the explanatory variables' coefficient; Z is the explained variable and S is the vector of the explanatory variables.

The Random Effect estimator is written as;

$$\hat{\beta}_{RE} = \left(\Sigma_{it} \left(S_{it} - \hat{\eta} \bar{S}_t \right) \left(S_{it} - \hat{\eta} \bar{S}_t \right)' \right)^{-1} \left(\Sigma_{it} \left(S_{it} - \hat{\eta} \bar{S}_t \right) \left(Z_{it} - \hat{\eta} \bar{Z}_t \right) \right);$$

Note that; $\hat{\eta} = 1 - \sqrt{\frac{1}{1 + n \left(\frac{\hat{\sigma}_u^2}{\hat{\sigma}_e^2} \right)}}$

Here, n stands for the number of cross sections and note that $\hat{\beta}_{FE} = \hat{\beta}_{RE}$ when $\hat{\eta} = 1$.

Whenever $\hat{\eta} \neq 1$, the Hausman test is required to compare the weighted squares of both estimators. The Hausman test statistic has asymptotic chi-square distribution and it is expressed as:

$$\chi^2 = \frac{(\hat{\beta}_{FE} - \hat{\beta}_{RE})^2}{Var(\hat{\beta}_{RE}) - Var(\hat{\beta}_{FE})}$$

4. Finding

Table 1: Correlation Matrix of the Series: FGR, FCF, CR, FS

	FGR	FCF	CR	FS
FGR	1.0000			
FCF	-0.2954	1.0000		
CR	0.0924	0.1867	1.0000	
FS	0.2948	-0.7094	-0.1873	1.0000

Source: Authors' Computation (2018)

Table 1 reports the correlation between variables used in the study. From the table, it can be observed that there is a negative correlation between firms' growth rate and free cash flow over the time period covered and across firms understudied. The reported correlation coefficient stands at 0.2954, showing that the correlation between the two variables is weak in magnitude over time, given the observation collated across the sampled firms over the study period. Similarly, the correlation coefficients are 0.0924, 0.2948, 0.1867, -0.7094, and -0.1873 for firm's growth rate and current ratio, firm's growth rate and firm's size, free cash flow and current ratio, free cash flow and firm's size, current ratio and firm's size, and current ratio and firm's size respectively. This indicates a positive correlation between the two control variables (current ratio and firm's size) and firm's growth rate, though it is weak in magnitude. The highest correlation between FCF and FS is not up to 0.8 which is the rule of thumb to denote multi-collinearity.

Table 2: Pooled OLS Parameter Estimates of the Series: FGR, FCF, CR, FS

Variable	Coefficient	Standard Error	T-Test Values	Probability
C	-98.83753	161.1652	-0.61	0.546
FCF	-.0001831	.0002772	-0.66	0.516
CR	.6904945	.8779295	0.79	0.440
FS	5.821649	8.908622	0.65	0.521

Source: Authors' Computation (2018). R-square=0.1276; Adjusted R-square= 0.60; F-statistics= 1.02; Prob(F-stat) = 0.4022

Panel Models Estimation Results: The estimation results presented in Table 2 show the impact of FCF on FGR when the heterogeneity effect across the firms sampled in the study is not taken into consideration. The results show that FCF exerts an insignificant negative impact on the growth rate of the manufacturing firms sampled in the study, with a reported coefficient estimate of -0.0001831 ($p=0.516 > 0.05$). Thus, an increase in FCF by a million has the tendency to impede the rate of growth of quoted firms sampled in the study by about 0.00018%. The quest to track a more inclusive interrelationship between FCF and FGR necessitated the incorporation of the heterogeneity effect across firms sampled in the study over time, and is the rationale behind the fixed effect and random effect estimations presented in Tables 3 and 4 below: Notably, the deviation from the intercept term reported for cross-section specific effect estimation (-1277.765) stood at -42.48483, -103.025, .4723559, and 2.579342 for Dangote Sugar Refinery, Flour Mills of Nigeria, Honeywell and PZCussons respectively, while the deviation from the intercept term (50.84731) reported for the period-specific estimation stood at 12.5627, 5.666324, 6.23266, 32.31692 for 2013, 2014, 2015 and 2016, respectively.

Table 3: Fixed Effects Estimates (Cross-Sectional and Period-Specific) of the Series: FGR, FCF, CR, FS

CROSS-SECTIONAL SPECIFIC EFFECT			TIME SPECIFIC EFFECT		
Variables	Coefficients	Prob	Variables	Coefficients	Prob
C	-1277.765	0.000***	C	50.84731	0.739
FCF	-0.000391	0.179	FCF	-0.0004207	0.145
CR	1.293308	0.076*	CR	1.237631	0.170
FS	71.82258	0.000***	FS	-3.178785	0.713
Effects			Effects		
DANGOTE SUGAR REFINERY	-42.48483	0.005***	2013	12.5627	0.252
FLOUR MILLS OF NIG	-103.025	0.000***	2014	5.666324	0.604
HONEYWELL	.4723559	0.957	2015	6.23266	0.597
PZ CUSSONS	2.579342	0.768	2016	32.31692	0.011**
R-square=0.6554			R-square=0.4962		
Adjusted R-square=0.5135			Adjusted R-square= 0.2887		
F-statistics=4.62			F-statistics=2.39		
Prob(F-stat) =0.0047			Prob(F-stat) =0.0673		

Sources: Authors' Computation (2018). Note that ***, **, * stands for significance at 1%, 5% and 10% respectively.

Table 3 presents results of the fixed effect estimation (cross-sectional and period-specific effect), which reflects the impact of FCF on FGR when the heterogeneity effect across firms sampled in the study and over time is incorporated into the model separately. Notably, the results show that when the cross-sectional effect was incorporated into the model, the impact of FCF on FGR stood at -0.000391 ($p=0.179 > 0.05$), implying that FCF still exerts a negative but insignificant impact on FGR when heterogeneity effect across firms is given consideration. In the same vein, when the heterogeneity effect over the period covered in the study was incorporated into the model, the result showed that FCF exerts an insignificant negative impact on FGR, with coefficient estimates of -0.0004207 ($p=0.145 > 0.05$). Also, Table 3 reveals that the period-specific effect as captured by intercept terms corresponding to each period covered in the study does not show significant deviation from the reference period or starting year (2012), except for the year 2016. The observed significant difference in the intercept corresponding to the year 2016 might be attributed to the huge impact of the economic downturn in Nigeria which led to the folding up of many firms. This downturn commenced from 2012 and still on-going at the moment.

The recession rose to the peak in 2016 and with what the country's economy witnessed in that year, it was indeed a trying period in which so many establishments, having FCF or not, struggled for survival. Furthermore, from the cross-sectional specific estimate, using Dangote Flour Mills as the base cross-sectional unit, it was discovered that the intercept of all the firms does not significantly deviate from the reference/base subject unit except for Dangote Sugar Refinery and Flour Mills of Nigeria. The reported R-square value for fixed effect cross-sectional specific estimation stood at 65.5%, while the figure reported for fixed effect period-specific stood at 49.6%. This shows that about 65.5% of the systematic variation in firm's growth can be explained by FCF, CR, and FS when the heterogeneity effect across firms sampled in the study is incorporated in the analysis, while only about 49.6% of the systematic variation can be explained when the period effect is incorporated. The discovery made in this study is in congruence with that of AKUMU (2014) as touching the impact of FCF on the performance of quoted firms measured in terms of profitability. Specifically, it was relayed in his study that there is an inverse relationship between FCF and the profitability of firms listed on the Nigerian Securities Exchange market.

Table 4: Random Effect Estimation of the Series: FGR, FCF, CR, FS

Variable	Coefficient	Standard Error	Z-Test Values	Probability
C	-179.56	194.2222	-0.92	0.355
FCF	-.00021	.0003066	-0.68	0.493
CR	.6389235	.8701447	0.73	0.463
FS	10.23945	10.71246	0.96	0.339

Source: Authors' Computation (2018). R-square=0.1231; Wald chi2(5) = 3.88; Prob> chi2 =0.2745

The estimation result presented in Table 4 reveals the impact of FCF on FGR when the heterogeneity effect across firms and over time is incorporated into the error term of the model. It can be observed that FCF exerts an insignificant negative impact on firms' growth to the tune of -0.00021 ($p=0.493 > 0.05$). The reported R-square shows that when the heterogeneity effect is incorporated into the error term of the model, only about 12.3% of the systematic variation in firms' growth can be explained by FCF along with current ratio and firm's size.

Table 5: Restricted F Test of Heterogeneity (Cross-Sectional and Time Specific)

	F-statistics	Probability
Cross sectional	6.51	0.0023
Time specific	1.11	0.0732

Source: Authors' Computation (2018)

Post Estimation Test: Table 5 reveals the result of the heterogeneity test conducted with respect to both cross-sectional and period-specific effects. The table shows f -statistics values of 6.51 and 1.11 with probability values of 0.0023 and 0.0732 for cross-sectional and period-specific effects, respectively. Therefore, it can be concluded that only a cross-sectional heterogeneity/uniqueness effect exists among the selected quoted firms. As such, the pooled OLS estimator restriction is not valid, since the cross-sectional heterogeneity effect is too significant to be ignored.

Table 6: Hausman Test

Null hypothesis:	Chi-square stat	Probability
Difference in coefficient not systematic	24.65	0.0000***

Source: Authors' Computation (2018). Note that *** represents 1% level of significance.

Table 7: Other Post Estimation Test

Wald test		
Null hypothesis	Statistics	Probability
No Panel homoscedasticity	2.0354	0.1246
Pesaran test		
No cross sectional dependence	1.655	0.0979
Wooldridge test		
Null hypothesis	Statistics	Probability
No AR(1) panel autocorrelation	4.6732	0.0967

Source: Authors' Computation, (2018)

Table 6 reveals a Chi-square value of 24.65 and a probability value of 0.0000. This result shows that there is enough evidence to reject the null hypothesis that differences in coefficients of fixed effect estimator and random effect estimation are not systematic. Therefore, given the fact that the difference between fixed effect estimates and random effect estimates is significant, the most consistent and efficient estimation for the

investigation conducted in the study is the fixed effect cross-section estimate presented in Table 3 above. The result presented in Table 7 shows that there is no evidence supporting the rejection of the null hypotheses of panel homoscedasticity, no cross-sectional dependence, and no AR (1) panel autocorrelation, given a reported probability statistic of $0.1246 > 0.05$ for the Wald test, $0.0979 > 0.05$ for the Pesaran test, and $0.0967 > 0.05$ for the Wooldridge test. Post-estimation test results thus validate the assumptions of equal variance of residual terms, cross-sectional independence, and absence of serial autocorrelation in the estimated model.

Discussion of Findings: The estimation result of the most consistent and efficient estimator (fixed effect) revealed that FCF exerts an insignificant negative impact on FGR, to the tune of -0.000391 ($p=0.179 > 0.05$). This result implies that an increase in FCF by a million will only culminate in about a 0.000391% average decline in the rate of growth of the quoted firms sampled in the study. The result reflects that maintaining increasing FCF at the expense of capital expenditure has the capacity to impede the rate at which a quoted firm in Nigeria can record outstanding growth in terms of an expanded total asset.

5. Conclusion and Recommendations

From the discoveries made in this study, it can be established that rising FCF has the capacity to erode the growth prospect of firms quoted on the Nigeria Stock Exchange, especially when growth is measured in terms of percentage change in total asset over a time. This study draws attention to the fact that maintaining increased FCF should be done without trading off capital expenditure if such an increase will not dampen the growth capacity of quoted firms in the country. Hence, quoted firms in the country and elsewhere should decrease their FCF, but explore viable investment opportunities that are capable of yielding positive Net Present Value. They should also leverage increased turnover such that there will be a reduction in transaction costs. It is by doing these that these firms will be in a position for better, stable, sustainable and consistent growth because when there is a reduced free cash flow, there will be reduced tendencies for agency costs in firms which if not controlled, can pose a huge hindrance to the growth of the firms.

Constraint of the Study and Idea for Advance Research: Just as all research suffer certain limitations, so be it for this study. The main limitation of this study was its inability to include all quoted firms on the Nigeria Stock Exchange because of the rarity of data. Nevertheless, these limitations do not affect the power and genuineness of this study's results, as the examined firms account for the largest share percentage of the manufacturing sector in Nigeria. For further research on this focus, researchers could examine the effect of FCF in the context of financial firms because they also operate agency relationships. This is based on the fact that any firm operating agency relationships requires an in-depth monitoring of their FCF so that agency costs are lessened to a level at which they can be operationally proficient, and their growth is not endangered.

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Flexible Work Arrangements, Job Satisfaction and Performance

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Abstract: Flexible work arrangements (FWA) prefer to flexibility regarding an employee's work location, working times and how much an employee works. FWA practices are designed to keep employees motivated and satisfied with work and non-work related roles. Existing empirical studies on the impact of flexible work arrangements on performance, and job satisfaction have mostly been conducted in developed countries. This paper sought to address this gap by undertaking a study in an organization specific context in a developing country, in particular Durban Westville Eskom, South Africa. The main aim of this paper was to establish the relationship between flexible work arrangements, performance and job satisfaction at Durban Westville Eskom shared services department. This paper is anchored on the two-factor theory, Vrooms expectancy theory, Role theory, and Spillover theory. The target population consisted of 120 employees reporting to revenue management shared services. Simple random sampling technique was used to determine the sample size whereby a sample of 92 employees was obtained. An online questionnaire was used to collect data from the sample. Data was analysed through descriptive statistics and correlation analysis. The findings show that a majority are satisfied with their current work arrangements, and that flexible work arrangement could make them stay with their current employer. In addition, it was found that performance and flexible work arrangement have a strong positive correlation. The study concluded that flexible work arrangements enhanced employee retention, and job satisfaction which led to higher productivity.

Keywords: *Flexible work arrangements, Job Satisfaction, Performance*

1. Introduction

Flexible work arrangements (FWA) can be said to be deliberately chosen alternatives to the standard eight-hour working day (Rau & Hyland, 2002). FWA refers to flexibility in relation to where an employee working from, the time he/she is working and even how much work an employee does (Chen, 2015). The concept of flexible work arrangement has been growing in interest among academics, practitioners, and executives, both in private and public sectors, especially due to its importance (Sturges, 2012). Due to the important role it plays, governments in first world countries such as the United States of America and countries that belong to the European Union have policies that have been put in place regarding flexible work arrangements (Jones & Jones, 2011). Flexible work life practices are deliberately designed such that they keep employees motivated and satisfied with work and non-work related roles. These practices balance work and family responsibilities, and help obtain a higher level of work commitment among employees (Chen, 2015; Palkisetia, 2015). However, it is notable that most existing empirical studies on the impact of flexible work arrangements on performance, and job satisfaction have mostly been conducted in developed countries. In this regard, this paper attempted to address this gap by conducting a study in an organization specific context in a developing country. In this case, the study will be conducted in Durban Westville Eskom, South Africa. The main aim of this paper was to establish the relationship between flexible worker engagements, performance and job satisfaction at Durban Westville Eskom shared services department. Eskom is a state-owned company that deals with the generation, transmission and distribution of electricity within South Africa and parts of Africa.

Descriptive Analysis: The company operates as a monopoly and is regulated by the National energy regulator of South Africa (NERSA). Given the experience of employees in the company, Eskom is faced with high absenteeism, late coming and high staff turnover rates. Thus, without any empirical investigation, this problem calls for attention. This paper therefore sought to address three main objectives; Firstly, it sought to determine the relationship between flexible work arrangements, job satisfaction and performance at Eskom shared services department; Secondly, it sought to establish the relationship between demographic profile and FWA, and thirdly, to establish the expectations employees of different age groups have on flexible work arrangements. In that regard, the paper sought to answer the following questions: (1) Does a relationship exist between Flexible work arrangement, job satisfaction and performance? (2) What is the relationship

between FWA and demographic characteristics such as age, education level, experience, intent to leave and job satisfaction? (3) How does the need for flexible work arrangements differ amongst employees of different age groups? The remainder of this paper covers the theoretical framework and related literature, research design and methods, results, Discussion and conclusion.

Theoretical Framework: The study was anchored on several theories that explain the link between FWA, job satisfaction and performance.

Hertzberg's: Fredrick Hertzberg's 2-factor theory served as the main framework for this paper. This theory was developed in 1959 and has been used to study job satisfaction and job dissatisfaction. This is realized through a consideration of intrinsic and extrinsic factors. The theory holds that the independent variable flexible work arrangement explains the dependent variables job satisfaction and performance. Hertzberg's two-factor theory has two dimensions of motivators and hygiene factors. These lead to intrinsic and extrinsic satisfaction respectively. Motivators are intrinsic factors that result in job satisfaction and comprise of recognition, possibility of growth and advancement, responsibility, and achievement. Hygiene factors are extrinsic in nature. They encompass salary, job security, relationships at work and home, policies and procedures and personal life. However, according to Hertzberg, job satisfaction could be achieved through intrinsic factors and that job dissatisfaction is the result of the absence of hygiene or extrinsic factors (Syptak, Marsland & Ulmer, 1999).

Factor Theory: To quantify the level of job satisfaction, using Hertzberg's 1959 motivation-hygiene theory, Ghazi Shahzada & Khan (2013) conducted a study whose findings showed that adequate levels of motivation and satisfaction needed to increase employee performance can be realized through prioritizing hygiene factors. Similarly, Palanski et al. (2014) in a similar study concluded that employees voluntarily leave their jobs due to personal reasons such as family conflicts, employee's perception of organizational culture, and future growth (Protas, 2013). Herzberg's hygiene factors of job satisfaction give a rationale as to why employees may be more productive and committed to their employer when they work in an environment that promotes job satisfaction. Therefore, this theory is relevant since it supports the relationship between work-life benefits and commitment to the organization.

Vrooms Expectancy Theory: Vrooms theory of job satisfaction sought to establish the relationship between workplace and personal factors. According to Vroom, valance, expectancy and instrumentality are instrumental in job satisfaction, motivation and performance at work. When the three factors are low, there is a likelihood of a decline in work performance due to reduced motivation. However, if those factors are high, higher levels of job satisfaction and motivation will occur (Vroom, 1964). Vroom (1964) declared that by satisfying employee's needs within an organization, a positive effect on employee performance can be achieved.

Role Theory: Role theory has been widely used to understand the relationship between work and family (Katz & Kahn, 1978). The theory posits that roles are based on demands or expectations about appropriate behaviour that depend on factors such as an individual's own assumptions, role identity and culture (Katz & Kahn, 1978). When these role demands or expectations do not conform to expectations, the role conflict may arise. According to Kahn, Wolfe, Quinin, Snoek and Rosenthal (1964) role conflict is the "simultaneous occurrence of two (or more) sets of pressures such that compliance with one would make more difficult compliance with the other" (p. 19). It is notable that Inter-role conflict results when demands of multiple roles are incompatible purely because involvement in one role is increasingly challenging by virtue of involvement in another role (Greenhaus & Beutell, 1985). Within the role theory, two hypothesis exist, namely, the scarcity hypothesis (Goode, 1960) and enhancement hypothesis (Sieber, 1974). These have been instrumental in explaining multiple role accumulation, and especially work-life balance.

Scarcity Hypothesis: The scarcity hypothesis (Goode, 1960) has largely been the underlying theory to explain work-family balance (Barnett & Gareis, 2006). Proponents of the scarcity hypothesis theory posit that individuals' physical and psychological resources are unavailable, therefore the more roles an individual occupies, the more extinguishes the resources become (Barnett & Gareis, 2006). Accordingly, individuals participating in multiple roles will inevitably experience role conflict and strain due to the scarcity of the

resources required to fulfil multiple roles (Carlson & Frone, 2003). High levels of work-family conflict were therefore thought to result in the imbalance between work-family (Greenhaus & Beutell, 1985).

Enhancement Hypothesis: The enhancement hypothesis (Sieber, 1974) has a positive perspective of work-family balance. Sieber (1974) and Marks (1977) suggested that the advantages of pursuing work and family roles are likely to outweigh the disadvantages. According to Sieber (1974), resources are abundant and through role accumulation, individuals acquire resources that may be beneficial when facing diverse life challenges. Similarly, Marks (1977) argued that resources of time and energy are flexible and through multiple role involvement, individuals can expand their resources and energy supply. Active engagement and commitment to multiple roles provide individuals with resources and opportunities that may enhance functioning in different roles (Barnett & Gareis, 2006; Kyule, Katunzi & Arasa, 2016). Furthermore, the benefits of multiple role involvement are likely to outweigh any stress and therefore yield sufficient satisfaction (Greenhaus & Powell, 2006; Sieber, 1974). Based on the enhancement hypothesis, participation in multiple roles can lead two main ways to positive results. Firstly, individuals can depend on satisfaction and success in one role to compensate for dissatisfaction in another role (Greenhaus & Powell, 2006). Secondly, positive experiences or outcomes of one role can be transferred to another (Barnett & Hyde, 2001; Greenhaus & Powell, 2006; Kyule et al., 2016). The enhancement hypothesis is important in facilitating an understanding work balance as it describes the positive outcomes of pursuing multiple roles

Spill Over Theory: The Spillover theory posits that an employee's experience in one facet in life affects their experience in another facet (Sirgy, Efraty, Siegel, & Lee, 2001) Glowinkowski & Cooper (1986) asserts that the occurrence of spillover can be attributed to the actions of one facet affecting the other facet. The spillover theory states that 'employees bear the attitude, skills, emotions and behaviors from their family life into their work role and from their work roles to their family lives' (Lambert 1990). The spillover effect can be positive or negative. Positive spillover can be defined as attributes from one area affecting performance positively in another area and negative spillover is when attributes from one area prevents the fulfilment of demands in another area. Existing researchers (Allen et al., 2013) have acknowledged both positive and negative spillover. Spillover theory was found relevant to this study since it has a significant influence on meeting work and family obligations either positively or negatively (Chen Powel and Greenhaus, 2009).

2. Literature Review

Flexible Work Arrangement: Flexible Work Arrangements (FWA) is a construct often defined in terms of flexibility about when, where, or how much one works in their day to day working life. In this paper, FWA are taken to be arrangements that allow employees to vary the amount, timing, or location of their work (De Menezes & Kelliher, 2011) in such a way that they are enabled to balance the expectations of their work and non-work lives more effectively. In addition, FWA may also be defined as employer-provided programmes that give employees some level of control over when and where they work outside of the standard workday (Hill et al., 2001). It's worth noting that FWA assist employees in realize a balance between work and life demands. These programs are specifically meant to help employees who are not able to manage their time between life and work due to their responsibilities at home such as taking care of children. Furthermore, flexible working programs also lead to lower turnover and absenteeism. This in turn results in higher productivity and profitability within the organization (Palkisetia, 2015). Three types of FWA exist, namely, flexibility in the scheduling of hours, the place of work, and the numbers of work hours. Flexibility in the scheduling of hours usually includes flexi-time, compressed workweek, and scheduling of breaks and overtime among others. Flexi-time requires employees to be engaged in work a certain number of core hours, which they may vary the time to begin and stop as long as they work the equivalent of a full workweek or any other nominated time. Compressed workweek involves having employees working longer hours each day to reduce the number of days in a workweek. Flexibility in the place of work allows employees to perform tasks at places other than their primary workplace during their work schedule. Thus, work flexibility that is location orientated allows employees to work from home through telecommuting/Telework or to work from a remote office through flex place (Palkisetia, 2015; Tufail et al., 2016). It's notable that FWA is linked to reduction in absenteeism and improved employee productivity (De Menezes & Kelliher, 2011). Other impacts of FWAs are enhanced job satisfaction (Richman, Johnson & Noble, 2011), increased organizational commitment (Beauregard & Henry, 2009), positive attitude (Richman, Johnson & Noble 2011); higher

financial performance (De Menezes & Kelliher, 2011); and reduced labor turnover (Society for Human resource management).

Job Satisfaction: Job satisfaction is the enjoyment employees experience while performing their job (Saeed Waseem Sikander & Rizwan (2014). This enjoyment is usually expressed as positivity towards work. Research has shown that employees who reportedly feel positive about their job achieve high levels of job satisfaction (Robbins & Judge 2013). High levels of job satisfaction have been found to lead to high employee motivation and thereby enhanced performance, consequently reducing turnover and absenteeism (Kyule et al., 2016). It is therefore easily deductible that job satisfaction has a relationship to low retention, absenteeism and late coming (Sukriket, 2015). In addition, other researchers have found employee's productivity, behavior and motivation to be linked to job satisfaction (Dobre, 2013; Yadav & Aspal, 2014; Tehseen & Ul Hadi, 2015; Tufail et al., 2017). In order to increase job satisfaction Uduji (2013) recommended that leaders in organizations should incorporate the needs of their employees into the organizational strategy so that employee dissatisfaction is reduced and employee motivation and satisfaction is enhanced. This can be realized through flexible work programs and organization a culture. Generally, most aspects of work have been found affect job satisfaction even those aspects that have no direct relationship with the job task itself (Awang et al., 2013), for example flexibility.

Performance: Performance has been defined in many ways by different authors. In this study, it will be defined simply as results orientated behavior (Armstrong & Taylor, 2014). These are the actions that individuals or groups perform as they have a contribution in achieving organizational goals in the anticipated manner (Campbell & Wiernik, 2015). In most cases, performance is often described in terms of output, that is, the achievement of set and quantified objectives. It is largely a matter not only of what people achieve but how they achieve it. High-performance results from functional behaviour, more so discretionary behavior and the effective use of the required knowledge, skills and competencies. This may thus be enhanced by Flexible work programs (Alromaihi, Alshomaly, & George, 2017). On the other hand, (Robbins & Judge, 2013; Kappagoda, 2012) assert that employee performance is a record of the results produced in a specific job function or activity during a specific time period associated with organizational objectives. It is the result produced by a specific functional unit or individual activity over a given period and not the personal characteristics of employees who performing the work. Performance is important to both employees and organizations. People are an organization's greatest assets: individuals and organizations have learned about the importance of the role of people in an organization, and how the success of an organization depends on its people (Bartlett and Ghoshal, 1995).

3. Methodology

This quantitative research on the relationship between Flexible work arrangements, job satisfaction and performance was carried out at Eskom, Durban Westville's department of shared services. The target population consisted of 120 employees reporting to revenue management shared services. Simple random sampling technique was used to determine the sample size. At a confidence level of 95% or 5% level of significance, a sample size of 92 respondents was obtained from a population of 120 employees. This was determined by using the sample size determination table in Sekaran & Bougie (2013). An online questionnaire was used to collect data from the sample. The questionnaire was developed using Question Pro, an online survey tool. Online questionnaires were used since they are a quick and efficient method for data collection (Creswell, 2014). Data was analysed through descriptive statistics and correlation analysis. Cronbach alpha value for the study was 0.76. Cronbach's alpha is a coefficient of reliability or consistency. It measures how well a set of items (or variables) measures a single unidimensional latent construct (Sekaran & Bougie, 2013). A Cronbach value above 0.75 shows that the items on each of the variables in the questionnaire are reliable for measurement (Brown, 2002).

4. Results

Demographic Profile: Personal characteristics of the employees have a relationship with the need for flexible work arrangement (FWA) (Al-Rajudi, 2012). To establish this, information on age, gender, marital status, level of education, experience, and children was sought from the research participants. Online

questionnaires were emailed to 90-respondents constituting the sample for the study. 60 of the respondents responded, a 65% response rate. 31 (51.7%) of the respondents were male while 29 (48.3%) were female, and 46.7% were in the age range 25 to 35 years. As concerns race, the majority of the employees in the department were African (47%) and Asian (38%). 49% had a bachelor's degree and 6. 5% had either a masters or doctorate degree. The high level of education could be attributed to the need for a skilled workforce with a specialized area of expertise within the department. Unmarried respondents constituted 43% of the employees, married 53% and divorced 3%. Majority of the respondents, 26(43%), had between 5-10 years of work experience and 20 (33%) had over 15 years of work experience, with 6(10%) having been in the department for less than 5 years.

Flexible Work Arrangement Needs: Flexible work arrangements presents options for dealing with work-life balance such as breaks from work, compressed working hours, self-roster flexi-time, paid leave and job-sharing (Lewis, Gambels and Rapoport, 2007). The research finding on current work arrangement at Eskom department -shared services indicated that 34 (56.7%) of the respondents were on flexi work arrangement, 5(8%)were on a compressed workweek while 20(33%) were not on either of them. This reflects the existing policies and practices in the company regarding work-life balance. The descriptive data analysis (table 1b) shows that younger employees have a greater need for flexible work arrangements 41(68%). The analysis further indicates that 30(50%) of the participants are desirous to extend their studies and that a flexible work arrangement would help them in that regard. Hence, it could be argued that when organisations incorporate the needs of employees into their strategy, dissatisfaction is reduced and employee motivation is increased. Furthermore, previous research has indicated that employees working more flexible hours are more productive than those working traditional hours and that these gains are manifested both in terms of quality of work and actual outputs (Bevan et al., 1999).

Table 1: Flexible work arrangement needs

Flexible work arrangement needs	Age25-45		Age45-60+		Variance
	No	Percentage	No	Percentage	
Further Studies	30	50%	8	13,33%	13,33%
Spending time with Kids	25	41,66%	12	20%	24,5%
Work Life Balance	41	68,33%	14	23,33%	2,22%
Time Management	15	25%	4	6,66%	6,67%
Work life commitments	21	35%	5	8,33%	13,33%
Adult Dependants	15	25%	9	15%	26,67%
Kid dependants	24	40%	6	10%	13,33

Descriptive Analysis -Flexible Work Arrangement, Job Satisfaction and Retention: The respondents were given a set of measures with corresponding statements on flexible work arrangement, job satisfaction and retention and had been asked to rate them on a five-point scale where: Strongly Disagree was rated as 1, Disagree=2 Neutral=3 Agree=4and Strongly Agree 5). Regarding the current level of job satisfaction, 43(72 %) indicated that they were satisfied. 47 (78%) of the respondents desired autonomy, while 77% indicated that flexible work arrangement would make them stay with their current employer.

Table 2: Flexible work arrangement, Job satisfaction and retention

Measure	Question		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Current level of Job satisfaction	I am satisfied with my current work arrangements	Count	2	4	11	31	12	60
		%	3,33	6,67	18,33	51,67	20	100
Desire for Autonomy	I would prefer to be involved in structuring my working times	Count	2	4	7	31	16	60
		%	3,33	6,67	11,67	51,67	26,67	100
		%	1,67	13,33	8,33	43,33	33,33	100

Table 3: Flexible work arrangement and job satisfaction

Statements		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
I am satisfied with my current work arrangements	Count	2	4	11	31	12	60
	%	3,33	6,67	18,33	51,67	20	100
I would prefer to be involved in structuring my working times	Count	2	4	7	31	16	60
	%	3,33	6,67	11,67	51,67	26,67	100
A flexible work arrangement will make me want to stay in my company's employ	Count	1	8	5	26	20	60
	%	1,67	13,33	8,33	43,33	33,33	100
I come late to work and leave earlier from work because of personal commitments	Count	24	17	11	7	1	60
	%	40	28,33	18,33	11,67	1,67	100
I often need time off during a working day to take care of personal commitments	Count	5	18	14	18	5	60
	%	8,33	30	23,33	30	8,33	100
I find it difficult to balance my work-life commitments	Count	13	21	16	10	0	60
	%	21,67	35	26,67	16,67	0	100
I would like to spend time with my kids after they finish school but my working hours do not enable me to do so	Count	6	17	17	125	5	60
	%	10	28,33	28,33	25	8,33	100
A flexible work arrangement	Count	0	5	12	28	15	60

will help balance my work-life commitment	%	0	8,33	20	46,67	25	100
I would like to further my studies but my working arrangement, where I am based and office hours, makes it difficult	Count	7	14	11	18	10	60
	%	11,67	23,33	18,33	30	16,67	100

Descriptive Analysis- Flexible Work Arrangement and Job Satisfaction: Table 7 presents responses to nine statements relating to work-life balance that the respondents had been asked to rate on a scale of 1 to 5 depending on how they viewed them. The statements mainly focused on flexible work arrangement and job satisfaction (where: Strongly Disagree was to be rated as 1; Disagree=2 Neutral=3 Agree=4 and Strongly Agree=5). A majority of the respondents 43(72%) agreed to strongly agree with the statement “I am satisfied with my current work arrangements”. Majority of the respondents 47 (78%) indicated that they would prefer to be involved in structuring their working times. Further, 77% of the respondents felt that flexible work arrangement could make them stay with their current employer. This result concurred with Sukriket (2015)’s finding that satisfied employees are less likely to leave their jobs compared to employees who were not satisfied. In addition, 43 (73%) respondents indicated that flexible work arrangement would help balance their work-life commitments. This, notwithstanding, 34 (57%) of the respondents found it difficult to balance their work-life commitments. Besides, 41 (68%) of the respondents disagreed with the statement, “that they come late to work and leave earlier because of personal commitments”. In summary, majority of the employees in the Department, 54 (88.5%) indicated that flexible work arrangement could make them satisfied. This result concurred with Richman, Johnson & Noble (2011) study finding that FWAs enhanced job satisfaction.

Correlation Analysis - Flexible Work Arrangement, Job Satisfaction and Performance: Using Pearson’s moment correlation analysis, the researchers sought to answer the question, “Does a relationship exist between Flexible work arrangement (FWA), job satisfaction and performance”? Table 4 presents the results of the analysis. The analysis show that performance and flexible work arrangement have a strong positive correlation which is statistically significant ($r = .585$, $p = 0.11$). Likewise, there is a strong positive correlation between flexible work arrangement and job satisfaction which is statistically significant ($r = .577$, $p = 0.11$). This result concurs with Ali (2016) findings that high job satisfaction levels and performance correlate to workplace flexibility. Other related studies including those by Indermun & Bayat (2013), Duggah & Denis (2014) and Shmailan (2016) have also found a positive correlation between job satisfaction and employee performance. The correlation results suggest that 34.2 per cent of the variance in performance is accounted for by FWA ($R^2 = 0.342$; $P < 0.05$) while 65.8 percent of the variation is accounted for by other factors that the study did not address. The analysis further indicate that 33% of the variance in job satisfaction was accounted for by FWA ($R^2 = 0.33$; $P < 0.05$) while 67 % of the variation could be explained by other factors. This simply implies that flexible work arrangement is an important factor in determining employee job satisfaction, behaviour and productivity (Chen, 2015; Dobre, 2013). This assertion is supported by Herzberg’s 2-factor theory and Vroom’s theory of job satisfaction. According to Herzberg & Mausner (1959), employees may be more productive and committed to their employer when they work in an environment that promotes job satisfaction. Similarly, Vroom (1964) declared that by satisfying the needs of employees within an organization, a positive effect on employee performance could be achieved,

Table 4: Correlation Analysis
Correlations

		Performance	Job Satisfaction	Flexible Work Arrangements
Performance	Pearson Correlation	1	.327*	.585**
	Sig. (2-tailed)		.011	.000
	N	60	60	60
Job Satisfaction	Pearson Correlation	.327*	1	.577**
	Sig. (2-tailed)	.011		.000

	N	60	60	60
Flexible	WorkPearson Correlation	.585**	.577**	1
Arrangements	Sig. (2-tailed)	.000	.000	
	N	60	60	60

*. Correlation is significant at the 0.05 level (2-tailed).
 **. Correlation is significant at the 0.01 level (2-tailed).

5. Conclusion

The study concludes that employees at Durban Westville Eskom were on flexible work arrangements, and that younger employees have a greater need for flexible work arrangements. This could be attributed to the nature of their social ties. In addition, employees preferred to be involved in structuring their working times. It is worth noting that flexible work arrangements enhanced employee retention. Likewise, flexible work arrangements enhanced job satisfaction which led to higher productivity.

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