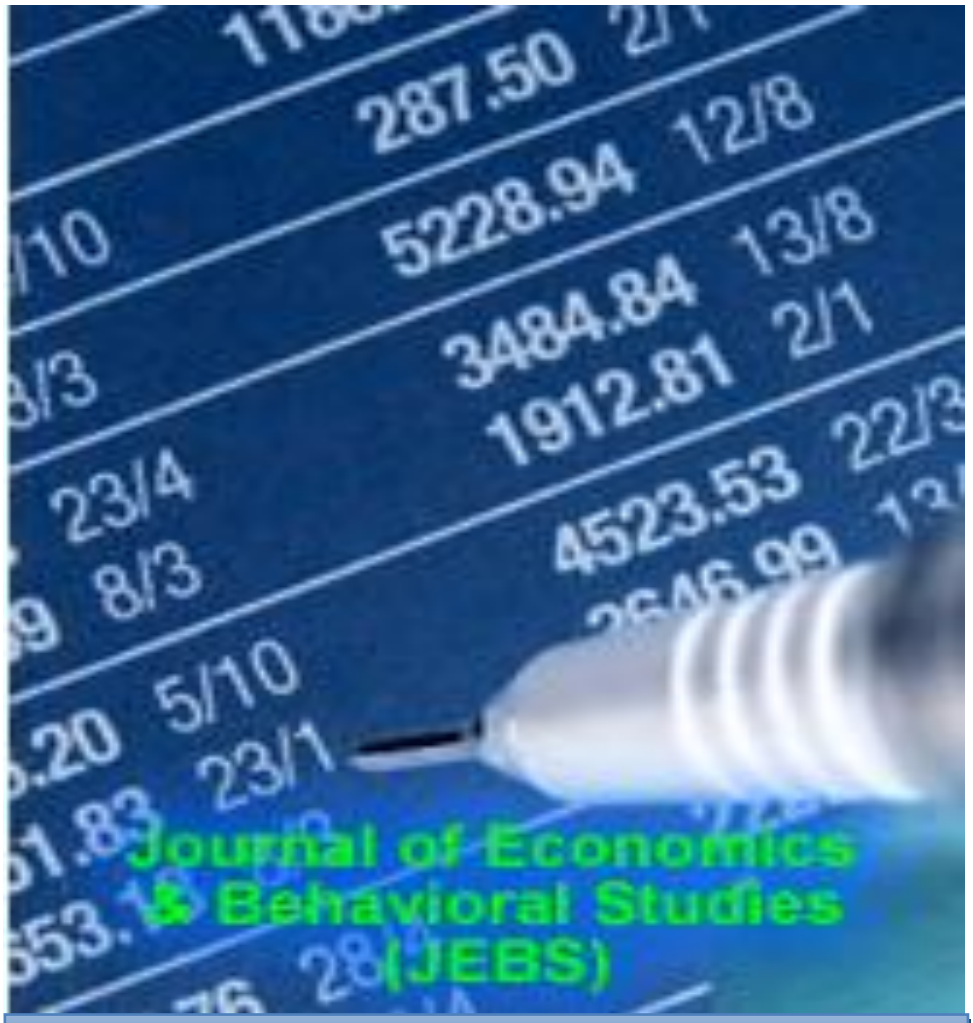

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Editorial

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 papers of scholars from Zimbabwe, South Africa, Indonesia and USA. Effect of Black Tax on Employee Engagement, The Harmonised Social Cash Transfer Program in Zimbabwe, Implementation of Accrual-Based Government Accounting Standards, Towards an Understanding of Low-Income Individuals' Financial Resiliency and Strengthening of the Coal-Gasification Industry and Formal Female Entrepreneurship and the Shadow Economy were some of the major practices and concepts examined in these studies. The 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

Journal of Economics and Behavioral Studies (JEBS)
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The Effect of Black Tax on Employee Engagement: The Mediating Role of Idiocentrism-Allocentrism-A Case of Pharmaceutical Industry in Zimbabwe

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Abstract: Employees in the Pharmaceutical industry are coming late to work and knocking off early. These actions unveiled by the employees are likely to incur economic costs on the employer, occasioned by low employee productivity. Owners of production have expressed concern over the general low staff morale in the pharmaceutical sector. While most studies have concentrated on internal job-related factors as drivers of employee engagement, this study seeks to assess employee engagement as being influenced by black tax, an external factor. The main aim of the research was to establish the influence of black tax on employee engagement, being mediated by idiocentrism-allocentrism, particularly focussing on the pharmaceutical manufacturing and retailing industry in Bulawayo, Zimbabwe. The study employed the philosophical approach of pragmatism to guide the whole research. The researcher adopted a multi-stage sampling technique supported by the census technique to pick participants from the population. Closed and open-ended questionnaires were used to collect data from qualified pharmacists who are working in both the manufacturing and retailing industry in Bulawayo. Statistical Package for Social Sciences v23 (Process v3.5 by Andrew F. Hayes) was used to test the hypothesised relationship among variables. Qualitative data were analysed using thematic analysis. The results suggest that black tax directly influence employee engagement in the presence of a mediator (idiocentrism-allocentrism). Furthermore, the results indicate that the indirect coefficient was partially significant, which means that idiocentrism-allocentrism has a partial influence on employee engagement. The researchers recommend that management should ensure that employees are motivated all the time. They should implement an open-door policy so that employees can share their issues that affect their engagement level at work.

Keywords: *Black Tax, Employee Engagement, Idiocentrism-allocentrism, Social Exchange, Behavioural.*

1. Introduction

Black tax is referred to extra money that black working people or entrepreneurs are spending every month to support their extended families (Magubane, 2016). It can also be defined as a financial obligation which the working class pay to look after their relatives who are not capacitated to fend for themselves (Ratlebjane, 2015). While looking at black tax concerning who it affects, in the South African society, Ratlebjane, (2015) established that black tax was almost exclusively associated with working-class black people. This added pressure, over and above work-related activities tends to reduce and disrupt employee concentration, commitment, application and total devotion to work, hence influencing effective employee engagement. Engaged employees are more productive for the firm (Johnson, 2016). Employee engagement is a critical component that can augment the growth of the organisation in any sector or industry. Employee engagement is clearly expressed by Knight & A. (2009) as the dedication, vigour and absorption which is exhibited by employees towards their work. Employee engagement enhances production which can lead to maximum output due to effort displayed by employees. Workers are a veritable instrument of organisational success and hence it is essential to keep them engaged in their work (*Tran*, 2018).

If employees are fully committed to the organisation, its business outcome will also improve and customer satisfaction is also achieved easily. However, in Zimbabwean culture, it is the norm for those who are financially stable to support their relatives who are weak in terms of financial capabilities. In this culture, grown-up children are obligated to look after their parents and younger siblings. So, this research is very important because it highlights the effect of black tax, an external variable on employee engagement. In 2008, the Gallup Management Group pointed out that employee engagement is important because engaged employees have 51% lower turnover, 27% less absenteeism, 18% more productivity and 12% higher profitability (Balaji, 2007). In the pharmaceutical industry, employees play a prolific role in the research and development of new drugs, manufacturing of human drugs, and contributing to the Gross Domestic Product of the country. However, the sector is contributing less as compared to other sectors in the country. The table

below shows the contributions of the mining sector, agriculture sector and pharmaceutical sector, in terms of each sectors export percentages on their total output.

Table 1: Export Contribution

Industry/Sector	Export Percentage
Mining	60%
Agriculture	40%
Pharmaceutical	10%

Sources: (Hawkins, 2009; UNIDO, 2011; UNIDO, 2017)

Table 1 indicates that the pharmaceutical industry is failing to produce and export more drugs outside the country, which might increase its GDP contributions. However, the above construct might be necessitated by the fact that the industry is experiencing high employee turnover, absenteeism and a high number of employees who report to work late (Okoye, Modebe, Nwanneka, Achugamonu, & Isior, 2016). It is interesting to note that, objectives of the pharmaceutical industry cannot be reached if employees are not engaged (Okoye et al., 2016). Some scholars have indicated that lack of employee engagement is instigated by the poor work environment, mental attitude, values and high expectations of employees, (Johnson, 2016). However, while the above factors immensely contribute to the lack of employee engagement, there is scant research that has been done to assess the influence of black tax on employee engagement. This analysis seeks to close the gap identified in the literature and also evaluate the effects of the black tax on employee engagement. Further, the researcher would like to find out the moderating role of idiocentrism-allocentrism on black tax and employee engagement.

Statement of the Problem: Pharmacists from different pharmaceutical companies are being given warnings by their immediate supervisors due to their behaviour at work. They report to work late and knock off early most of the time. Further to that, when they are at work, they spend most of their time responding to their electronic mails and receiving outside phone calls, which hinders production. These actions by the employees are likely to incur economic costs on the employer, occasioned by low employee productivity. In addition, control authorities of the industry have expressed concern over the general low staff morale in the pharmaceutical sector. While most studies have concentrated on internal job-related factors as drivers of employee engagement, this study seeks to assess employee engagement as being influenced by black tax, an external factor unrelated to the employee's job environment, being mediated by idiocentrism-allocentrism.

Research Objectives:

- To identify the causes of the existence of black tax;
- To determine the effect of black tax on employee engagement
- To establish the effect of black tax on idiocentrism-allocentrism
- To examine the effect of idiocentrism-allocentrism on employee engagement
- To ascertain the mediating effect of idiocentrism-allocentrism on the relationship between black tax and employee engagement.

Research Hypotheses:

- H_1 There is a positive relationship between black tax and employee engagement.
- H_2 There is a positive relationship between black tax and idiocentrism-allocentrism.
- H_3 There is a positive relationship between idiocentrism-allocentrism and employee engagement.
- H_4 Idiocentrism-allocentrism mediates the relationship between black tax and employee engagement.

2. Literature Review

Theoretical Framework: Theories that underpinned the study are behavioural and social exchange theory.

Behavioural Theory: Behaviour refers to everything that humans do, both verbal and nonverbal. Behaviourism is of the view that attitude should be expounded by observable experiences, not by mental processes. Behaviour refers to the learning approach (Maag, 2014). Behaviourists like Skinner and Watson

believed that behaviour is affected by external forces (Manila, 2012). Skinner posited that human beings are controlled by their experience, which means that engagement is not only affected by what happened within the circles of the organisation but also by other external forces like relatives demands (black tax) which can affect it. However, this entails that external stimuli can affect how employees behave at work. The external stimuli may either build or destroy employee engagement.

Social Exchange Theory: The theory is based on the philosophical and psychological orientations deriving from utilitarianism on one hand and behaviourism on the other side. Social exchange is defined as the exchange of activity. The exchange can be rewarding or costly between the least two persons (Coyle- Shapiro & Diehl, 2018). For example, a person who was taken to school by a relative can have the obligation to reciprocate when the other part is no longer capacitated. Ratlebjane, (2015) indicated that black tax is the money that is used by employed black people to support their relatives, parents and young siblings. However, through helping each other financially, some people are obliged to return that favour when they are capacitated to do so in life, thus paying black tax.

Employee Engagement: Knight & A. (2009) defined engagement as working together of employees to accomplish the objectives of the organisation "the joining of organisational employees' selves to their work roles. In engagement, employees dedicate themselves physically, cognitively and emotionally during role performance". While *Tran*, (2018) views personal engagement as the commitment of employees to their job responsibilities. Three elements can be viewed as the strong contributing factors of employee engagement and these are dedication, vigour and absorption aspects. The above-stated dimensions of employee engagement are influenced based on the psychological experiences of the self-in-role.

Importance of Employee Engagement: Employee engagement is a fundamental tool that enhances the growth and sustainability of an entity. There are a plethora of outcomes that are necessitated by employee engagement. These positive outcomes include organisational performance, employee productivity, employee retention and customer loyalty (Tanto, Lambey, & Pandowo, 2017). Several pieces of research indicated that employee engagement is relevant to organisational performance. Singh, (2018) revealed that employee engagement positively impacts organisational performance. Similarly, Ongel, (2010) in his research revealed that there is a positive relationship between employee engagement and organisational performance. Further to that, a high level of employee engagement compels employees to participate in organisational decisions and pursue learning objectives (De Waal & Pienaar, 2013). Committed and engaged employees develop new knowledge to respond to new opportunities.

In addition, if employees are engaged, they are eager to support the organisation and also engage themselves in mentoring and work volunteering (Truss, 2013). Engaged employees have the enthusiasm and energy to meet challenging objectives, hence that zeal enhances employee productivity. Still, further, employee engagement demonstrates commitment, involvement, participation, enhanced skills and energy that employees bring to work and these are a fundamental proxy of their dedication to the entity. When employees are engaged, it means that motivation is high, stress levels are low and their morale would be constantly increasing (Truss, 2013). However, the above indicators lead to low turnover. As we are now living in a global village, pharmaceutical companies need to follow both global and local standards. The way employees perceive their work is key because it influences the quality of their work, which instigate customer satisfaction and loyalty (Singh, 2018).

Drivers of Employee Engagement: Employee engagement is rooted in training and development, pay and benefits, involvement, health and safety and work-life balance. Commitment and the energy from the employees for their work are required by every owner of the production. These can be acquired through the training of employees (Azeem et al., 2010). Training and development has a positive bearing on an individual's performance at work and compels individuals to be engaged. Through training, employees acquire technical skills, interpersonal skills and knowledge which improve their jobs efficiently and effectively at the workplace. Pay and benefits are some of the ingredients which can coerce employees to be engaged (Singh, 2018). Employees need a transparent system of pay and benefits so that they can be engaged in their job roles. Engaged employees have the zeal to help each other, share ideas, enjoy their work and

automatically have pride in their work. So, engaged employees are motivated by the above-stated variables (Zainol, Hussin, & Othman, 2016).

Black Tax: Mhlungu (2015) defined black tax as the shorthand used to express the financial obligations of providing for extended family as a result of challenges faced by black people in a society. Magubane, (2016) suggested that black tax refers to both social and economic care, such as money, shelter, food and clothing. Overall, black people who are working provide for their extended families. Black tax is necessitated by high rates of unemployment in Africa (Ratlebjane, 2015). Broken family structures such as divorce or the death of a parent cause other people to stretch their hands financially to the extended families and friends. Growing up in such a situation strengthens family bonds and teaches those who are involved to consider family networks (Ratlebjane, 2015). Given the high unemployment rate in Zimbabwe and the traditional collectivist orientation of black people, it is almost likely that every person who is working or who is financially stable is in one way or another paying black tax. In a family set up in Zimbabwe, few people are employed and they are obliged to take care of their parents, young siblings and other family members. Therefore it can be noted that black tax is a very significant factor especially to black people in Africa (Mhlungu, 2015).

Importance of Black Tax: Black tax is a fundamental issue especially in a society of black people. People who are on payroll must take care of their relatives who are not capacitated to look after themselves. In a country like Zimbabwe, where the unemployment rate is above 95%, it becomes a moral duty of those who are lucky to be employed to help their relatives who are struggling to fend for themselves in life (Mahembe, 2011). Maslow's hierarchy of needs highlighted that there are basic needs that are supposed to be met by any human being. These basic needs include food, water and shelter. People must have food to eat, water to drink, and a place to call home before they can think about anything else. If any of these physiological needs are absent, people are compelled to meet the missing needs through other means available to them. If they fail to meet the above necessities, they ask for help from relatives or friends. Consequentially, the person who helps is directly paying black tax, even though that tax is not known in the workplace (Ratlebjane, 2015). Extended family support becomes an important aspect of coping and a basic resource of social capital. Experiencing relative economic challenges lead to higher levels of extended family involvement (Magubane, 2016). Therefore black tax exists in black society.

Causes of Black Tax: Black Tax springs from family members, extended family and social networks (Magubane, 2016). Black tax is necessitated by the rate of unemployment. People who are not employed are forced to seek help from their relatives and friends (Mhlungu 2015). Further, black tax is also caused by broken families for example death of a parent or all parents may necessitate the existence of black tax. Close relatives are forced to look after children who are left behind because of death. Still, further, divorce is another problem that causes black tax. Normally, in African society, a man is supposed to financially support the family, however, if the man decides to detach himself from the family, it means that the mother is supposed to look for financial help from relatives, hence black tax exists (Mhlungu 2015).

The Mediating Role of Idiocentrism-Allocentrism: Idiocentrism-allocentrism stands for personal level orientations of individualism and collectivism (Shemueli, Westman, Chen and Bahamonde, 2019). Society plays a vital role to cause the above two dimensions to be higher on average. However, individuals may differ from their community's trends because personal experiences are very influential (Shemueli et al., 2019). At an individual level, idiocentrism and allocentrism can be characterised as a set of values that may affect the way a person behaves, feels and controls the situation they face in the workplace. Black tax is something that happens in family circles but employees are forced to carry the effects to the workplace (Mhlungu, 2015). Shemueli et al. (2019) stated that employees with high idiocentrism are independent and they want to achieve their own goals. Therefore, the researcher wanted to find out if idiocentrism can mediate the effect of black tax on employee engagement. Employees with high allocentrism influence employee engagement because they want to achieve the objectives of a group or organisation. In this regard, allocentrism acknowledges agreement and cooperation within the organisation, beyond personal or cultural issues to attain organisational goals.

Empirical Evidence: Black Tax and Employee Engagement

Causes of the Existence of Black Tax: Magubane (2016) carried out a study in South Africa focusing on Black tax. The research revealed that black tax is caused by a lack of financial resources within the families. The findings above were also supported by Ratlebjane (2015) who carried out similar research in South Africa on how 'black tax' cripples youth's aspirations. The research revealed that due to limited job opportunities, young people who are lucky enough to have a job ended up supporting those relatives who are less well-off and siblings without parents due to death or divorce. Ratlebjane (2015) noted that the high cost of living is another element that causes the existence of black tax. It was revealed that the previous generation's cost of living was lower and several basic needs and utilities were free as compared to the present generation. This means that family incomes required for basic sustenance have been reduced hence necessitating the need for employed relatives to intervene financially and through other means. Therefore, the causes of black tax can be highlighted as unemployment and death of parents or divorce while kids are still young.

Black Tax and Employee Engagement: There is still limited literature when it comes to the effect of black tax on employee engagement. However, black tax can be in the form of financial support or social support. Employees go to work because they need financial support to satisfy their different needs, hence black tax is another need that can compel employees to be dedicated to their work. Both financial and social support might directly affect the engagement of employees. Extrapolating from the above lead us to the following hypothesis:

H_1: There is a positive relationship between black tax and employee engagement.

Black Tax and Idiocentrism-Allocentrism: There is a paucity of research on black tax and idiocentrism-allocentrism particularly in Zimbabwe. However, Shemueli et al. (2019) posited that employees with high idiocentrism are independent and they want to achieve their own goals. Further to that, employees with high allocentrism want to achieve the objectives of a group. In this regard, it can be assumed that black tax necessitates idiocentrism-allocentrism. Due to the above assumption, the following hypothesis was formulated:

H_2: There is a positive relationship between black tax and idiocentrism-allocentrism.

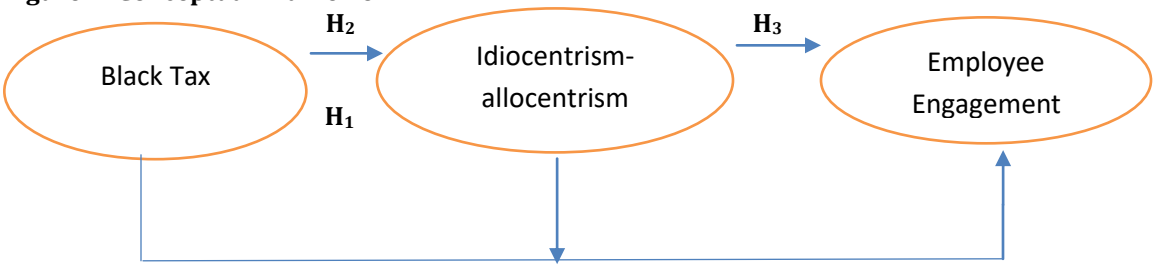
Idiocentrism-Allocentrism and Employee Engagement: Idiocentrism simply means individualism and allocentrism refers to collectivism. There is scant research on the effect of idiocentrism-allocentrism on employee engagement. However, if employees work in teams or collectively, they make relationships and these relationships might enhance their engagement in their job roles. Further to that, employees who believe in themselves, concentrate on their own goals, hence they can be engaged in their work. Therefore it can be assumed that:

H_3: There is a positive relationship between idiocentrism-allocentrism and employee engagement.

Mediating Role of Idiocentrism-Allocentrism on Black Tax and Employee Engagement: We assume that high allocentric orientation might strengthen the relationship between black tax and employee engagement because there is sparse literature on their effect. Deducing from the above lead us to the following hypotheses:

H_4: Idiocentrism-allocentrism positively moderates the relationship between black tax and employee engagement.

Figure 2: Conceptual Framework



Measures Employee Engagement: There are so many measurements of employee engagement that can be employed. The engagement was measured using the short version of the Utrecht Work Engagement Scale (Drake, 2012). The instrument comprises of nine items, for example ("My job inspires me") that represents three variables of employee engagement that is dedication, vigour and absorption. Items were rated on a five-point scale ranging from1 (strongly disagree) to 5 (strongly agree).

Idiocentrism-Allocentrism: It was measured using a scale developed by Dorfman and Howell, (1998), that assesses the cultural orientation dimensions of idiocentrism-allocentrism at the individual level. Six items, for example ("group welfare is more important than individual rewards"), were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). For the study, researchers operationalised the cultural orientation of all allocentrism as high and idiocentrism as low.

Black Tax: There is scant information on the measurement of black tax. Therefore researchers operationalised the cultural intelligence scale developed by Ang, Van Dyne, Koh, Ng, Templer, Tay and Chandrasekar, (2007), to measure black tax. The 20 item scale was scored on a five-point Likert scale rating from 1 (strongly disagree) to 5 (strongly agree).

Gaps Noted in Literature: The critical research gap that this study sought to fill was to assess the relationship between black tax and employee engagement. Most of the scholars only concentrated on internal job-related drivers which influence employee engagement, largely ignoring external drivers which can affect employee engagement (*Tran*, 2018). Previous researchers have established that employees are motivated to be engaged by issues such as training and development, performance appraisal, communication at work, equal opportunities and fair treatment, health and safety, cooperation, family friendliness, leadership and job satisfaction (*Tran*, 2018). However, there is scant research that has assessed whether the black tax (as an external factor) may drive or hinder employee engagement.

3. Research Methodology

The research was based on pragmatism philosophy as the researcher sought to ascertain causal relationships using both quantitative and qualitative methods. Pragmatism means solving some issues or challenges in a real or practical way rather than by using theory or abstract principles. Pragmatism allows the study to adopt both quantitative and qualitative research to have an in-depth understanding of issues that are being assessed (Bryman & Bell, 2007). For example in this study, researchers wanted to know if external factors like black tax affect employee engagement and the mediating role of idiocentrism-allocentrism. The nature of this research supports the adoption of a survey research design. Survey research design is normally employed in quantitative research projects, and it also involves sampling a representative percentage of the population (Bryman & Bell, 2007). Furthermore, survey research design can also be used in qualitative research, making it significant for the study. The surveys yield quantitative data that can be evaluated empirically. Surveys are normally used to assess causative variables between different types of data. For example, this study wanted to establish whether black tax has got any effect on employee engagement. The data were quantified and examined to provide insights that were used to form the conclusions. The population under study was the pharmaceutical industry including both manufacturing and retailing firms operating in Bulawayo. The city has got three registered companies that are manufacturing human drugs.

It was also revealed that in Bulawayo there are 88 registered pharmacies and each pharmacy employed only one qualified and registered pharmacist. There are 16 clinics and 3 big hospitals. The population for this study was therefore 122. The multi-stage sampling technique was used because there are different entities such as clinics, hospitals, pharmacies and drug manufacturing companies operating in Bulawayo. The multi-stage sampling method uses several distinct techniques. In this technique, the population is divided into groups at different stages. The sampling frame was studied by researchers and it revealed that the population was 122 pharmacists who are employed in various organisations. Clinics and hospitals were excluded because it was realised that not all of them had functional pharmacies or pharmacists. The population was reduced to 103. The researchers then adopted a census technique, which is applicable when dealing with a small population. The sample size was therefore 103 participants. A census study is used when the population is very small or if it is reasonable to include the entire population (Singh & Masuku, 2014). It is

called a census sample because data is gathered from every member of the population. Although cost considerations make this impossible for large populations, a census is more attractive for small populations of about 200 or less (Singh & Masuku, 2014). Thygesen & Ersbøll, (2014) used the entire population of 100 as a sample in their research of strengths and limitations in register-based epidemiology. A census eliminates sampling error and provides data on all the individuals in the population. The table below shows the sample size.

Table 2: Population Size and Sample Size

Sector	Population	Sample Size
Manufacturing companies (Pharmacists)	7	7
Retail Pharmacies (Pharmacists)	96	96
Total	**103**	**103**

The study used both closed and open-ended questionnaires because of their flexibility in allowing participants to respond on their own time. Furthermore, questionnaires are easy to administer as compared to other research instruments and they also have wide geographical coverage. Questionnaires can gather more information from a large group of people within a short period and in a relatively cost-effective way. Since the time frame of research is limited but accurate results are required, questionnaires cover-up by getting some of the required information at a small time frame given (Habimana, 2013).

Reliability of the Study: All respondents were given the same questionnaire to improve the reliability of the research. The questionnaire was tested using SPSS version 23 and the Cronbach Alpha was 0.712. Montshiwa & Moroke, (2014) note that if the Cronbach Alpha is more than 0.6 it means that the questionnaire is reliable, therefore the questionnaire was reliable for the current study.

Validity: The researcher designed the questionnaire using the research questions which were formulated based on the research objectives. This was to ensure that the responses from the field research would answer research questions formulated to address the research problems, which is content validity. In addition, a pilot test was conducted on a limited number of respondents to ascertain whether the research instrument was gathering relevant data for the study.

Data Analysis and Presentation: Thematic analysis model was used to analyse qualitative data. Statistical package for social sciences v23 (Process v3.5 by Andrew F. Hayes) was used to assess the effect of black tax on employee engagement, mediated by idiocentrism-allocentrism.

4. Findings

Causes of the Existence of Black Tax: Most of the responses indicated that black tax is caused by the high rate of unemployment in Zimbabwe. If people are not employed, they tend to seek help from their family members who are employed. Moreover, the results indicated that black tax is necessitated by divorce and the death of relatives. Therefore, the above results are constant with the results of Magubane (2016) and Ratlebjane (2015) who carried their studies in South Africa and revealed that unemployment and divorce are the sources of black tax.

Regression Analysis: SPSS Process: Regression analysis was used to test the effect of black tax on employee engagement, mediated by idiocentrism-allocentrism. According to Hayes and Rockwood (2019), the mediation test should meet three conditions in the regression analyses: For a mediation effect to be confirmed, the predictor X (Black Tax) must predict M (Idiocentrism-allocentrism), and the M (Mediator) must predict the outcome Y (Employee engagement). For complete mediation to be confirmed, the predictor variable (Black Tax) must not have a significant predictive effect on the outcome variable (Employee engagement) in the presence of the mediator variable (Idiocentrism-allocentrism). Where the predictor variable is still significant, then partial mediation is confirmed.

Testing Hypotheses

Table 3: Regression Analysis Using SPSS Mediation Process (Model 4)
Black Tax and Employee Engagement

Outcome Variable: Emp eng						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.43	.18	.01	155.36	1.00	245.00	.000
Model						
	coeff	se	t	P	LLCI	ULCI
constant	1.70	.14	11.79	.000	1.42	1.99
Black Tax	.17	.04	12.46	.000	.40	.55

Regression analysis was used to examine the hypothesis that black tax affected employee engagement. Results indicated that black tax had a weak significant predictive effect on employee engagement, B = .17, SE = .04, and p-value = .000 which is less than .005. These results supported the H_1, although the effect is weak. Approximately 18% of the variance in employee engagement was accounted for by the predictor (R^2 = .18). Therefore we accept the H_1 which assume that there is a positive relationship between black tax and employee engagement.

Black Tax and Idiocentrism-Allocentrism

Table 4: Black Tax and Idiocentrism-Allocentrism

Outcome Variable: Idio Allo						
Model Summary						
R	R-sq	MSE	F	df1	df2	p
.46	.22	.28	67.98	1.00	245.00	.000
Model						
	coeff	se	t	P	LLCI	ULCI
constant	1.83	.15	12.60	.000	1.54	2.12
Black Tax	.30	.04	8.24	.000	.24	.39

The results in table 4 indicated that black tax had a significant predictive effect on idiocentrism-allocentrism, B = .30, SE = .04 and p-value = .000. These results supported the H_2. Approximately 22% of the variance in idiocentrism-allocentrism was accounted for by the predictor (R^2 = .22). Therefore, it can be suggested that black tax triggers both individualism and collectivism. Black Tax necessitates other employees to mind their own business at the same time it compels other people to work as a team. Therefore the study accepts the H_2 which assert that there is a significant positive relationship between black tax and idiocentrism-allocentrism.

The Mediating Effect of Idiocentrism-Allocentrism on Black Tax and Employee Engagement

Table 5: Mediating Effect of Idiocentrism-Allocentrism on Black Tax and Employee Engagement

Outcome Variable: Emp eng						
Model Summary						
R	R-sq	MSE	F	df1	df2	P
.58	.34	.24	114.31	2.00	244.00	.000
Model						
	coeff	se	t	P	LLCI	ULCI
constant	.99	.17	5.76	.000	.65	1.32
Black Tax	.25	.04	8.85	.000	.27	.43
Idio Allo	.31	.04	6.72	.000	.29	.51

Regression analysis was used to examine the hypothesis that idiocentrism-allocentrism mediates the effect of black tax on employee engagement. Results in Table 5 indicated that black tax had a significant predictive

effect on employee engagement, B = .25, SE = .04, p =0.000, and idiocentrism-allocentrism was a significant predictor of employee engagement, B = .31, SE = .04 p = 0.000. Black Tax had a significant predictive effect on employee engagement in the presence of the mediator, (idiocentrism-allocentrism), which is consistent with partial mediation. Approximately 34% of the variance in employee engagement was accounted for by the predictors (R^2 = .34). The results indicated that idiocentrism-allocentrism partially mediates the relationship between black tax and employee engagement. Therefore, the results showed that black tax had a significant effect on employee engagement without being mediated by idiocentrism-allocentrism. Therefore it is concluded that idiocentrism-allocentrism partially mediates the relationship between black tax and employee engagement. Therefore it is concluded that idiocentrism-allocentrism partially mediates the relationship between black tax and employee engagement.

Table 6: Direct and Indirect Effect

The Total Effect of X on Y						
Effect	se	t	P	LLCI	ULCI	c-ps
.38	.04	12.46	.000	.40	.55	.70
Direct effect of X on Y						
Effect	se	t	P	LLCI	ULCI	c-ps
.25	.04	8.85	.000	.27	.43	.52
Indirect effect of X on Y						
	Effect	BootSE	Boot LLCI	BootULCI		
Idio-Allo	.13	.03	.08	.17		

The indirect effect was tested using a percentile bootstrap estimation approach with 5000 samples implemented with the PROCESS macro Version 3 (Hayes, 2017). The results in Table 6 indicated that the indirect coefficient was partially significant, B = .13, SE = .03. The direct effect was significant in the presence of the mediator with B = .25 and SE = .04. The total effect contributed by the black tax on employee engagement is 65.8% and idiocentrism-allocentrism (mediator variable) contributed 34.2% which confirmed that the indirect coefficient was partially significant.

5. Conclusion and Recommendations

The results revealed that the causes of the existence of the black tax are that most people are closely linked to their parents, siblings and other relatives. This is consistent with the traditional collectivist orientation of black people. The study found out that most people are unemployed and those who are fortunate to get employment to have the duty to financially and morally support their relatives. However, the results are constant with the results of Magubane, (2016) and Ratlebjane, (2015) who also revealed that young professionals in South Africa are failing to prosper because of the responsibilities they have, which is necessitated by their backgrounds. Furthermore, the results uncovered that black tax has a direct effect on employee engagement on the presence of the mediator (idiocentrism-allocentrism), which means that an indirect coefficient was partially significant. The results are linked with Social exchange theory which stated that black people are obliged to help others in return for the favours they offered them before (Andriani, 2013). Therefore, it can be concluded that black tax has a significant effect on employee engagement. Pharmacists need money to support their families and that compels them to be engaged in their profession to the extent that they can work for more than one organisation.

Recommendations: Recommendations to follow were gathered after a thorough understanding of the problem and assessing data obtained from black tax and employee engagement. Researchers recommend that human resource management should ensure that employees are motivated at all times. They should implement an open-door policy so that they know some of the external issues which affect employees. Management should promote socialisation at work so that employees can share their different experiences in life. For example, they should create a day where employees are involved in different activities such as playing soccer, netball, volleyball, cricket, and athletics.

Areas for Further Research: The research has given an insight into the area of black tax and employee engagement, moderated by idiocentrism-allocentrism and how black tax impacts employee engagement. The

following aspects should be considered for future research: Future research should replicate the same topic but focus on other sectors. If possible, it is also a noble idea to do a comparative study because black tax depends on the culture of the society, further to that, such research will make an informed judgement with a larger sample. It is also ideal to do a qualitative study on black tax in Zimbabwe. Future research should consider using longitudinal research design, using the same topic. In addition, future studies should consider using a different theoretical lens to underpin the same topic.

References

Andriani, L. (2013). SS-A Road Map of Theoretical Frameworks and Empirical Limitations.pdf. January, 1–26.

Azeem, M. F., Paracha, A. T., Akbar, A. & Kamili, S. (2010). Training Delivery and Methodology in Banks: An Empirical Study. *ASBM Journal of Management*, III(1&2), 64–77.

Balaji, R. (2007). Issues and Challenges Faced By HR Managers in Employee Engagement in IT Sectors. *International Journal of Innovative Research in Science, Engineering and Technology (An ISO Certified Organization)*, 3(6), 13114–13116.

Breevaart, K., Bakker, A. B., Demerouti, E. & Hetland, J. (2012). The Measurement of state work engagement: A multilevel factor analytic study. *European Journal of Psychological Assessment*, 28(4), 305–312.

Bryman, A. & Bell, E. (2007). Business Research Method.

Coyle-Shapiro, J. A. M. & Diehl, M. R. (2018). Social Exchange Theory. The Routledge Companion to Trust, May, 197–217.

De Waal, J. J. & Pienaar, J. (2013). Towards understanding causality between work engagement and psychological capital. *SA Journal of Industrial Psychology*, 39(2), 1–10.

Drake, T. J. (2012). Assessing Employee Engagement: a Comparison of the Job Engagement Scale and the Utrecht Work Engagement Scale.

Edmore, M. (2011). Literature Review on Small and Medium Enterprises' access to credit and support in South Africa. National Credit Regulator, 1–92.

Gabel-Shemueli, R., Westman, M., Chen, S. & Bahamonde, D. (2019). Does cultural intelligence increase work engagement? The role of idiocentrism-allocentrism and organizational culture in MNCs. Cross-Cultural & Strategic Management.

Habimana, T. (2013). Data Collection Instruments (Questionnaire & Interview). *Training in Sexual and Reproductive Health Research Geneva,* 1(Geneva Workshop 2013), 18

Johnson, J. A. (2016). *T*he Perilous Voyage of Indian Himalayan *' Ambassadors ' Amidst Anthropogenic Pressures*, 33(1), 2014–2017.

Knight, R. & A. (2009). A study of employee engagement at Topaz"s South Dublin Region Service Stations. *Journal of Workplace Learning*, 12(1), 103–110.

Maag, J. W. (2014). Persistent issues in behavioural theory and practice. *The SAGE Handbook of Special Education:* 2(Second), 281–298.

Magubane, N. N. (2016). Black tax : The emerging middle-class reality. November, 1–64.

Mhlungu, G. (2015). Black tax is not real | City Press. https://city-press.news24.com/Voices/Black-tax-is-not-real-20150508

Montshiwa, V. T. & Moroke, N. D. (2014). Assessment of the Reliability and Validity of Student-Lecturer Evaluation Questionnaire: A Case of North-West University. *Mediterranean Journal of Social Sciences*, 5(14), 352–364.

OKOYE, Lawrence Uchenna MODEBE, Nwanneka J. ACHUGAMONU, Uzoma ISIOR, A. (2016). *Performance in Nigeria*, 5(0), 79–81.

Ongel, E. (2010). The relationship between employee engagement and organisational performance: Implementations of organisations. *The International Journal of Social Sciences*, 25(1), 1–10.

Ratlebjane. (2015). Black Tax And Saving.

Singh, A. S. & Masuku, M. B. (2014). King of charcoal: Japanese create a new life for dying industry. *International Journal of Economics, Commerce and Management*, 2(11), 1–22.

Singh, S. (2018). The Impact of employee engagement on organisational performance – *a case of an Insurance Brokerage company in Gauteng*, 20(6), 66–76.

Tanto, H. W., Lambey, L. & Pandowo, M. (2017). Analysing the relation between employee engagement and employee performance, *at the hotel Gran PuriI Manado Menganalisa Hubungan Antara Keterikatan Karywan Dan Performa*, 5(3), 3654–3663.

Thygesen, L. C. & Ersbøll, A. K. (2014). When the entire population is the sample: Strengths and limitations in register-based epidemiology. *European Journal of Epidemiology*, 29(8), 551–558.

Tran. (2018). Employee engagement: How does the organisation increase engagement? From the view-point of HR representatives in Finland: Accessed at http://www.doria.fi/handle/10024/152929 on 21/10/2020 at 13:00 Hours.

Truss, C. (2013). What is engagement? Employee Engagement in Theory and Practice, 15–35.

Zainol, S. S. B., Hussin, S., Binti, M. & Othman, M. S. (2016). Determinants of Employee Engagement in Hotel Industry in Malaysia. A Theoretical Model. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 6(3), 1–9.

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The Harmonised Social Cash Transfer Program in Zimbabwe: Achievements and Challenges

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Abstract: The research article reviews the achievements and challenges that bewilder the harmonised social cash transfer (HSCT) program in Zimbabwe. World over HSCT programming has grown in terms of importance as a social protection service vehicle. Deploying a qualitative research design and documentary analytical framework corroborated by the capability approach, the study unpacks and brings to the fore the challenges and opportunities as nuances of HSCT programming in Zimbabwe. The study supports, add another dimension to existing literature and challenges previous findings of HSCT programming in the Zimbabwean environment. Thus the study argues that HSCT programming in Zimbabwe registered noticeable achievements which make it a critical social protection program that ought to be integrated into the broader national framework of protecting the vulnerable groups. The study further argues that the HSCT program contributes immensely to raising the dignity of those on the margins through the promotion of resiliency and the general well-being of the communities. Thus the study recommends that the HSCT program in Zimbabwe be part of the government and not-for-profit organisations' comprehensive package for administering social protection services.

Keywords: *Capability Approach, Harmonised Social Cash Transfer, Qualitative Documentary Analysis etc.*

1. Introduction

There is a dearth or paucity of updated literature on the achievements and challenges associated with Zimbabwe's Harmonised Social Cash Transfer (HSCT) program. The social protection programs in Zimbabwe are anchored in various pillars Government of Zimbabwe (2016) and these include; social assistance, social insurance, labour market interventions, livelihoods support strategies, social support and care among others. The study aims to unravel the challenges and achievements of HSCT programming in Zimbabwe to establish new trends, developments and identify hidden dimensions that may not be shared in ordinary discourses. The research study deployed a documentary analysis compounded by the capability approach for the erudition of new thoughts. Thus the study's specific objectives are to establish how the HSCT program has been fairing in Zimbabwe, identifying areas of strength and weaknesses. Thus the research article, in its structure, delves on to the contextual, theoretical and methodological engagements in the first part and the last part gazes at the discussions and synthesis of the thoughts about HSCT programming in Zimbabwe.

Contextualising HSCT Programming: Examining social protection programs as cash transfer, Ninno et al. (2016) defined it in terms of policies, programs that help individuals, groups and communities to build resilience to daily and life risks. In addition, these policies and programs promote the achievement of equity. Patel (2015: 162) has defined social protection as "widely used as an umbrella term for a wider range of programs of both state and non-state actors and includes income security and access to social services". The term social protection is broad and covers formal and non-formal measures designed to protect people from life crises and increase their capabilities to meet their basic needs (Mupedziswa and Ntseane 2013, Kaseke and Dhemba 2007, Devereux 2007, Mpedi 2008, Midgely 2013). Social Protection programs, therefore, provide opportunities to vulnerable members of society (Ninno et al., 2016). They do this by offering or providing a basic income to the vulnerable and reducing the risks of poor households while enhancing opportunities for a better future (Ninno et al., 2016). The increases in poverty among children in Zimbabwe can be traced to the 1990 period a decade after the independence (Munro 2015).

Some of the key issues that increased childhood poverty included the introduction of structural adjustment programs such as the Economic Adjustment Program known as ESAP, economic meltdown, HIV and AIDS and

the severe droughts of 1992, 1995, 2002 and 2008 among others (Mushunje and Mafico, 2010; Munro, 2015). Moreover, it was noted that during the year 2000, the Zimbabwean economy was severely affected by the recurrent drought, rising tensions over disagreements of distribution of land among other issues (Seidenfeld et al., 2016). Thus, by the late 2010s Chinyoka (2017) and later Mate (2018) observed that from 2000 to 2008, Zimbabwe had gone through major socio-economic and political developments. The significant features that characterised this period of extreme poverty included the high rate of unemployment, Operation Restore Order/Murambatsvina in 2005, land distribution, deindustrialisation and subsequent growth of the informal sector, resulting in hyperinflation, political bickering between the two major political players among others (Mate 2018). The 2000 to 2008 period was characterised by the huge suffering among the vulnerable members of Zimbabwean society. The impact of these socio-economic and political developments had enormous consequences for those already experiencing social deprivation. Within Zimbabwean society, this included people experiencing extreme poverty, elderly women, people with disabilities and children and youth. The acute socio-economic and political challenges severely affected the parentless children and children at risk in many ways.

These children could not meet their basic needs such as food, health, shelter among others (Ringson, 2017). The Government of Zimbabwe was perceived as being unable could address the poverty experienced by children (Mate 2018) and this was observed as more and more children started to live and work on the street to eke a living (Rurevo and Bourdillon 2003). During this period the street girls became more vulnerable to sexual exploitation, resulting in some girls engaging in transactional sex to survive life on the streets (Rurevo and Bourdillon 2003). To solve the poverty crisis and to address some of the socio-economic challenges faced by the vulnerable members of society, the Government of Zimbabwe through support from donors introduced the harmonised cash transfer program among other initiatives (Seidenfeld et al., 2016). The Government of Zimbabwe's national cash transfer program has been known as the Harmonised Cash Transfer (HSCT) (Chinyoka 2018; Seidenfeld et al., 2016). The HSCT program was started during the Government of National Unit characterised by a highly sensitive political environment among others (Seidenfeld et al., 2016; Chinyoka 2018). The HSCT program was introduced in 2011 by the Government of Zimbabwe's Ministry of Public Services Labour and Social Welfare through a pool funded managed by UNICEF (Seidenfeld et al., 2016; Kanengoni, 2016). The HSCT program also targeted labour constrained households that were food insecure (Seidenfeld et al., 2016; Chinyoka 2017).

The HSCT Program's main objectives included; enabling poor households to increase consumption levels above the poverty line, reducing the number of ultra-poor households, and helping beneficiaries avoid negative risk coping strategies (Seidenfeld et al., 2016). By February 2014, 55 509 households twenty out of sixty-five districts that were covered in Zimbabwe (Seidenfeld et al., 2016). Mate (2018) further explains that the harmonised cash transfer program only covered ten percent (10%) of those targeted districts. Therefore, it means that ninety percent of the households are left out even if they live in abject poverty. The program targeted households headed by the elderly (61%), children (3%), in addition, 81 % of the households were female-headed ones (Seidenfeld et al., 2016). The HSCT program also targeted households of vulnerable members of society such as those with disabilities, orphaned children people living with HIV and AIDS, such that they could meet their basic daily needs (Seidenfeld et al., 2016). Drawing from the capability approach, through the harmonised cash transfer program the vulnerable members of society such as the elderly, orphans other vulnerable children are able to meet their basic needs. The cash transfer has been popularised as one of the key interventions in responding to the growing crisis of orphanhood in Sub Saharan Africa (Roelen et al., 2012). UNICEF (2015) estimates that by 2015, there were over 52 million orphans in the region.

To respond to the needs of these orphaned children in a context characterised by the collapse of extended, family systems and the HIV and AIDS pandemic, there was a need to introduce child-sensitive social protection programs in the name of cash transfer programs. The cash transfer programs have been popularised social welfare interventions in the majority of developing countries. Devereux et al. (2017) define social cash transfer as regular and non-contributory payments either in cash or kind for example vouchers or food. Devereux et al. (2017) added that payments are made by the Government of non-governmental organisations to poor people/individuals or households. The primary objective of social cash transfer is to decrease chronic or shock poverty through addressing social risk and or reducing economic vulnerability

(Devereux et al., 2017). There is a further subdivision of cash transfer programs (Roelen et al., 2017). In other words, Roelen et al. (2017) came up with three different typologies of cash transfer programs. The first type is unconditional child grants, where income is provided to households of orphaned children (Roelen et al., 2017). The second category is programs that include the accumulation of physical and structural assets (Roelen et al., 2017). Some of the assets could include small livestock such as rabbits, chicken among others. Some of the programs that fall within this category include public works, and or human capital (Roelen et al., 2017).

This type is coined as a conditional cash transfer program. The third category is what Roelen et al. (2017) observed as a more integrated package of support. Roelen et al. (2017) give example graduation programmes as part of the integrated packages. The social transfer program includes various non-contributory welfare grants (Devereux et al., 2017). These include social pensions, disability grants, child support grants and family allowance (Devereux et al., 2017). The conditional social transfers can either be cash or kind basis (Devereux et al., 2017). The financial backing for cash transfer programs came from Western donors including the British Government through the DFID and from UNICEF (Seidenfeld et al., 2016). The harmonised cash transfer program became one of the pillars of the Child Protection Fund (UNICEF, 2010). However, cash transfer programs were not the panaceas for all those experiencing social exclusion.

Conceptual Framework-Capability Approach: Bussiere et al. (2016) noted that the capability approach was coined by Sen (2013). Sen (2013) defines the capability approach in terms of two major issues namely capabilities and functionality. Sen (2013) added that the approach focuses on ends, not means. In other words, the argument is that focusing on the means does not lead to capability development. Human beings should not see as consumers or as having needs rather as broadly as agents of change (Sen, 2013). They can change their circumstances around their lives (Sen, 2013). Human beings have the capabilities, and these are demonstrated when they can think, assess, evaluate, resolve, inspire, agitate and through these means thus reshaping the world (Sen 2013). However, Robeyns (2005) observed that the capability approach is a multi-dimensional concept and can be used to evaluate different aspects of human's wellbeing. Robeyns (2005) added that some of the aspects included the following; poverty, inequality among others. In addition, the capability approach provides a framework that shows how freedom is connected to people's capabilities (Sen 2013). An individual's capability can better develop when they have concrete experiences, opportunities and resources to draw upon when navigating pathways towards the desired outcome.

Such situations are common among street children where their capability is affected because of the limitedness of resources. It may be proposed that the child's agency becomes a key feature or characteristic of the capability approach, affecting their ability to pursue life goals which they value. Nussbaum (2003 & 2011) revisited Sen's social justice/capability approach. She argues that Sen's 'perspective of freedom' is too vague. Nussbaum added that some of the freedoms affect others by limiting them. However, she argues that some of the freedoms are important as others are trivial among others. Nussbaum argued that human dignity is very important in human lives. She extended Sen's original proposition by listing ten central capabilities that represent, in her view, a dignified life. These included according to Bussiere; bodily health, bodily integrity, sense, imagination and thought, emotions, practical reasons, affiliation, other species, play, and control over one's environment (Bussiere et al., 2016). Returning to Nussbaum's capability perspective, children and other vulnerable members of Zimbabwean society's capabilities and functioning are severely affected as the HSCT program in the country is marred with multiple challenges. The children and other vulnerable members of Zimbabwean society do not live dignified life as a result of the challenges associated with the HSCT program.

2. Research Methodology

Qualitative documentary analysis was adopted in this study. Bowen (2009: 28) defines document analysis as "a systematic procedure for reviewing or evaluating documents both printed and electronic material.'' The scholar furthers that the examination and interpretation process is to elicit meaning, gain understanding and develop empirical knowledge. The documents that may be used for systematic evaluation of a study take a variety of forms (Bowen, 2009). Like any other research method, document analysis has advantages and limitations. Bowen (2009) observed that some of the advantages include; coverage (Yin, 1994), exactness, stability, efficiency, availability, cost-effectiveness, lack of obtrusiveness among others. However, document

analysis has a number of limitations and these include; insufficient detail, biased selectivity, low irretrievability among others (Yin, 1994; Bowen, 2009). The documentary analysis involved a desk review of various literature around child-sensitive social protection programs in Zimbabwe. The literature review focused on, legislations, policies, research reports, academic books and or articles among others. The conclusions made in this article were based on purposively identified themes namely, social cash transfer, social protection programs, child sensitiveness among others.

3. Research Findings

This section delves into the presentation and discussion about the nuances of harmonised social cash transfer within the Zimbabwean environment. The section is divided into two parts the first one deliberating on the achievements while the second part focuses on the challenges ensured in the administration of harmonised social cash transfer.

HSCT and the Promotion of Resiliency: The research findings suggest that the HSCT program promoted resiliency among households that were observed resonated with Seidenfeld et al. (2016) argument that the program led to improvements in a number of domains and areas that are associated with promoting resiliency. These areas included; increased agricultural assets (sickles and hoes) and livestock (donkeys, goats), diversification of income sources for example growing of different crops and enterprising in non-farming activities among others. Thus the study, through its empirical evidence points to the reduction of debts among the beneficiaries, significant risks of food insecurity and absolute poverty. Seidenfeld et al. (2016) further argue that shocks and risks included by drought and crop failure and price increases tend to be reduced by harmonised social cash transfer programming. This part of the study findings is further highlighted in the sections below as they relate to human existence.

Adolescent Development and Increased in Violence Awareness: The study also established that HSCT programming significantly contributed towards adolescent development particularly those who were under the project administration. The study observed and witnessed a steady transition from adolescent hood to adulthood in the first year of HSCT program implementation suggested that there was safe migration into adulthood. The study holds a similar epistemological gaze with Seidenfeld et al. (2016) and argues that some domains like reducing the likelihood of early pregnancies among female youths, delaying sexual debut and also early marriages were visible and notable. Thus this study argues that HSCT programming positively contributes towards safer sex behaviours among youths and adolescents which include practices such as the increase in condom use and reduction in forced sex. Capability is affected, therefore, when people live in a resource-constrained environment, characterised by and resulting in limited opportunities.

Field-based evidence also showed that HSCT programs provided opportunities for raising not only sexual related problems but awareness on violence and protection issues. The HSCT program in Zimbabwe promoted an increase in violence awareness campaigns in the various communities as the field workers took the frontline responsibility of sharing information. The study holds the argument that a continuous and sustainable approach to HSCT contributes to societal transformation and positions children for the takeover of leadership in society. There was an increase in the reporting of violence cases the police and community leaders in line with the awareness companies carried out particularly in districts that implemented the program. Seidenfeld et al. (2016) noted the same developments in their comparative study of districts that implemented the HSCT program against those that did not implement it. Based on this evidence, this study argues that HSCT is a practical vehicle for information sharing and awareness-raising in communities.

Increased Investment in Children and Other Vulnerable Members of Society: The increased investment in children and other vulnerable members of society has been one of the benefits associated with the HSCT program in Zimbabwe. While Nyawasha (2012) made a general position about the positive relationship of HSCT programming and child welfare, this study further noted and argues that orphans who participated in HSCT got access to money to meet their basic needs including food, clothes educational related complimentary such as stationery and school uniforms. Whilst Nyawasha (2012) observed that 68 per cent of the participants in a study had indicated that the HSCT program significantly impacted in helping address the socio-economic challenges faced by orphaned children. This study noted holistic improvement in orphaned

children's welfare transforming from being beggars of food to enrolling on schools. Provision of basic social protection services to children in difficult circumstances as well as other vulnerable members of society enhances their dignity. This is a central aspect of HSCT programming which even Sedenfeld et al. (2016) acknowledges the psychosocial benefits of HSCT programming among vulnerable members of society. The study concurs with Nyawasha (2012) that when the social-psychological dignity of the vulnerable is raised, they are able to make meaningful contributions and decisions that affect their day to day lives. These observations and arguments are augmented by the contradictory nuances and dimensions of HSCT programming that are discussed below.

Human Capital Related Challenges of Implementing HSCT Programs: An observation of note about the implementation of the HSCT programs had to do with human capital resources or requirements. The research findings suggest that effective HSCT program implementation was marred by human resources challenges. While the issue of staff retention remains an aspect characterising many organisations the world over, the Zimbabwean economic 'melt down' environment contributed to the skills flight in both the government department of social development and local not-for-profit organisations. The study established that competent and experienced employees complained of low salaries, hence, the challenge of low level of motivation. The chain reaction points to the limited skills in the administration of such a delicate social protection program increased case load for the available employees with limited experience that result in poor programming. Similar observations were noted by Mushunje and Mafico (2010) and Sedenfeld et al. (2016) who carried related studies in Zimbabwe. A classic example was that of social welfare officers employed at the District level by the Department of Social Development who were supposed to be twelve but were only four. Above all, they had just joined the department from the universities, hence, the issues of experience, skills and staff compliment affected the administration of HSCT negatively.

Coverage and Targeting Criteria: It is evident that the HSCT program phase 1 targeted 10 districts of Zimbabwe despite the vastness of the country. Similar observations were noted by Chinyoka (2017) and that by late 2011 during the first scale-up period, the HSCT program had benefited 19, 827 households only. The study also established that harmonised cash transfer program in Zimbabwe has challenges relating to limited funding as a household get between USD 10 and 25 per month when the Zimbabwe food poverty line is pegged at USD 30 per person per month (Chinyoka 2017). In other words, the cash transfers which were administered to beneficiaries were far less below both the food poverty line and the total consumption poverty line. Chinyoka (2018) raised the same position in the 2018 survey and argued that Zimbabwe is the least comparably with neighbouring countries in Southern Africa, that is, South Africa (95 %), Botswana (85%) and Namibia (65%). As such the study established that the coverage of the HSCT programme was very much limited as many poor households were excluded from being beneficiaries. The HSCT program was accessing limited funding from both Government and UNICEF through the Child Protection Fund which targeted ten percent of poor households in each district and was mathematically an increase particularly compared to the traditional public assistance program, but on a practical level, it remained to have limited coverage. This study also found out that the formalised HSCT program was out of reach to children living in the streets. These vulnerable had no household to be identifiable with hence the program did not extend its coverage to them.

Limited Integration with Other Social Protection Programs: The field-based evidence suggest that the HSCT program was not well integrated with other social protection programs such as Basic Education Assistance Module (BEAM), Assisted Medical Treatment Order (AMTO) and the Public Assistance programs administered in the department of social development. During the first phase of the HSCT program, there was no coordination as noted by Sedenfeld et al. (2016 despite the direct influence between HSCT and other programs such a BEAM. The study established that while BEAM programming has been community-based, the community dynamics at the grassroots level made it totally independent of HSCT program targeting. As a result of such poor integration and or coordination of social protections efforts, the efforts that were supposed to take advantage of each other were weakened, hence, the success or achievements of the HSCT program became compromised. The study holds the argument that coordination problems of such noble programs that benefit the vulnerable groups may be a reflection of poor social protection governance and lack of commitment from politicians as discussed below.

Lack of Political Will: The study also established that HSCT programming was affected by a lack of political will from bureaucrats and politicians. As already noted by Chinyoka (2018), the post Government of the National Unity government era witnessed a shift in the investment of social protection programs in Zimbabwe. Politicians who used to prioritise social protection programming as part of their social and political responsibility shifted to electioneering and consolidation of political power at the party level. ZANU PF being the only political party in government was interested in agrarian-based social protection programs such as the agricultural input scheme which did not only receive a lesser budget but was not accessible by the vulnerable groups in society. As a result of limited political will, the funding of the HSCT program was whittled down as the Government of Zimbabwe focused on Command Agriculture programming, input scheme and other non-cash social transfer related programs. The study argument about lack of political will was concretised by the Government of Zimbabwe's failure to honour a funding commitment they had reached with donors of contributing 50/50 funds toward the HSCT program. This left the donor to fund an in the proportional figure which eventually left a big gap whose effects could only be felt at the beneficiary level.

The researcher's engagements with study interlocutors showed that some politicians and bureaucrats did not hold the issue of spending much money on a social protection project. They held negative attitudes towards the HSCT program. Similar observations were noted and documented by Chinyoka (2018) during the Government of National Unity in 2013 as members of parliament shared their negative thoughts about investing in the HSCT program. The politicians were of the view of giving vulnerable members of Zimbabwean society food instead of cash (Chinyoka 2018). This study again noted these negative energies of policymakers towards the HSCT program, hence, an avalanche of conflicting social protection priorities. The research article, therefore, argues that the Government of Zimbabwe, directly and indirectly, seem to be more interested in the funding of the BEAM program while the donors' community show preference towards the HSCT program. The consequence of the contradictions and inconsistencies in thought and direction of programming leaves the vulnerable members of society at a loss.

4. Discussion and Synthesis

As already highlighted above, the HSCT program in Zimbabwe has been associated with positive impacts and drawing from the capability approach, it is arguable that the HSCT program in Zimbabwe enhanced dignity among vulnerable members of society. The HSCT program expanded the capabilities of the vulnerable members of society as there was increased investment in children. Through the promotion of resiliency, the HSCT program facilitated that the vulnerable members of society were able to adapt positively in the face of adversities, shocks among others. Therefore HSCT as part of community social protection raises peoples' capabilities (Roelen et al., 2017). Taking it further from the capability approach, Samuel and Stavropoulou (2016) argue that the total of material support of those in difficult circumstances is that their social-psychological well-being improves. Some of the psychosocial benefits included; improved mental health, reduction in household stress levels. The Kenyan trials were used to further elaborate on this point and state that unconditional transfer of cash to the vulnerable increases happiness and life satisfaction among beneficiaries. Another capability approach scholar, Samuel and Stayropoupou (2016) share our view through the Malawi cash transfer case study in which the program contributed to the reduced psychological distress.

Among schoolgirls by 17 % under the conditional cash transfer and 38 % benefit in the unconditional cash transfer. Utilising the capability approach, the cash transfer program enhances the well-being of the beneficiaries through improved psychosocial well-being. Covarrubias' et al. (2012) work in Malawi also speaks to this Zimbabwean study in that beneficiaries of the HSCT program are able to invest in productive assets and livestock. Covarrubias et al. (ibid) added that because of the social cash transfer there was an increase in the number of households with goats and chicken as 52 and 59 % respectively which is equivalent to the Zimbabwean study. The beneficiaries of the social cash transfer program significantly reduced hunger and increased average meals per day in their households similar to Adato and Basset (2009) study in Zambia. The Zambian case shares common threads with this study in that in both cases, beneficiaries of the HSCT program improved their nutrition status as they consumed fruits, vegetables, fats and protein. The consumption of milk, meat, fats, fruits and sugar increased as comparably with non-beneficiary households. Related to the improved nutritional status are the positive impacts on the education of children. The study

agrees with Adato and Basset (2009) that families under this program are able to pay for the school expenses of their children and the same children's school attendance is consistent with normalcies.

Adato and Basset 2009 use the South Africa example to highlight this point and posit that where the Child Support Grant has been implemented there was an 8.1point increase in school enrolment among six-year-old children and also 1.9 points for those that were aged seven years. The other dimension of the HSCT program as already alluded to are the challenges associated with it. Drawing from the capability theoretical framework, the children and other members of the Zimbabwean society do not live a dignified life because of the challenges associated with the HSCT program. The capabilities and functioning of the children and other vulnerable members are seriously affected, for example, when street children of the Harare Central Business District are or were left of the HSCT program it demonstrates that the children were denied their basic services/needs. It also highlights that the street children remained in childhood characterised by extreme childhood poverty, and some adopted risk coping mechanisms. Some of the risk coping mechanisms could include engaging in substance abuse, transactional sex work among, others (Chikoko, 2014). Similarly, this study shares Bosworth et al. (2016) observations that the social cash transfer program in Kenya had some limitations because of irregular and late disbursements of funds, lack of an objective mechanism to differentiate the poverty level of the targeted beneficiaries.

During the pre-pilot evaluation period, there was a significant inclusion error (Bosworth, et al., 2016). Devereux et al. (2017), discuss the various targeting mechanisms on social cash transfers and these include; means-testing, proxy means testing, geographic targeting, community-based targeting, self-targeting, multiple mechanisms, categorical targeting among others. However, the authors observed that targeting is always a big issue in many social protection programs. The social cash transfer program has received several criticisms through an in-ward looking approach from some of its proponents like Molyneux et al. (2016) who acknowledge that centrally about HSCT programming are the exclusion and inclusion eras at implementation stages. This study noted such eras particularly during target which ultimately may disadvantage deserving people or and incorporate non-deserving ones into the program. We argue that these eras are a consequence of the scheme design and implementation eras. Drawing from the capability approach, when social cash transfer programs are characterised by some of the above-mentioned challenges or problems, then the targeted households do not reach their full potential in life. A further critique of HSCT programming from a capability approach is also raised by Granlund (2020) who argues that the feminist lenses of the social cash transfers are opaque which reinforces a materialistic role or assumes that women are 'bearers of benefits to others' and in addition to using women 'to fix the world'.

The critique is associated with the conditional cash transfer program which predominantly has female, beneficiaries (Granlund 2020). Through conditional cash transfer programs, women are seen as being forced to comply with time-consuming obligations to benefit or receive cash benefits (Grandlund 2020). Some of the obligations included; taking babies and children for health checks, assuring school attendance (Grandlund 2020). This argument is seen as reinforcing and or reproducing inequality and the genderised division of labour which in most instances places women and or mothers with more burden of child care (Grandlund 2020). Many critics have questioned the underlying rationale of the cash transfer program (Molyneux et al., 2016). Some have doubted whether the cash transfer program is as effective as suggested in talking poverty. The small size of the amount of the cash transfer, limited linkages to training and or survival or livelihoods skills for adult household members presents few opportunities around the minimum safety net (Slater 2011; Molyneux et al., 2016). Ellis (2012) noted that during the pilot experiences of Malawi and Zambia, the cash transfer programs did not lift the targeted households from poverty. The author added that the program seemingly addressed some of the critical poverty, which could be life-threatening. Utilising the capacity approach, when the cash transfer program fails to pull people or households from poverty, then it becomes worrisome as the same households would struggle to enhance their wellness.

5. Conclusion and Recommendations

The research article has brought to the fore the complex nuances of the HSCT program in Zimbabwe by highlighting the multiple strengths and weaknesses in the administration of the program. The study did not only show the debates about program implementation but also showed why the HSCT program challenges

are outweighed by the achievements. By adopting the capability approach, the study further foraged on why the HSCT program is compatible with other existing social protection services and how beneficiaries at the grassroots level may be advantaged by government and not-for-profit organisations working together. An integrated approach to social protection compounded with political will on the part of bureaucrats and politicians have far-reaching positive consequences on children and adults experiencing distress. The study has shown that communities and individuals experience a reduction in cases and or incidences of violence, promotion of resiliency and adolescent development among others. Thus the study propagates the argument that HSCT programming is a progressive and pro-poor social protection program that ought to be reviewed often to always come up and execute best practices.

Recommendations: The study provides a number of recommendations to improve the performance of harmonised social cash transfer programs. These include;

- There is a need for public sector reform coupled with long term development assistance for organisational change and behavioural changes at various levels such as national, provincial and district as noted by Schubert and Slater (2006) to enhance the capacity of social welfare services.
- There is a need for lobbying and advocating Government of Zimbabwe and other donors such as DFID to avail more financial and technical resources towards social protection programs.
- There is a need to come up with a sustainability strategy for social protection programs in Zimbabwe. This is on the basis that a bigger chunk of the HSCT program's financial resources is donor-driven.
- There is also a need to build capacity on policymakers, practitioners, academics and researchers on social protection issues. For example, capacity strengthening or building programs for social welfare services through the provision of computers, vehicles, training courses, administrative budgets among others (Schubert and Slater 2006).
- The provision of social protection programs such as the HSCT program from a human rights-based approach to all deserving or vulnerable members of society.
- There is a need to improve in targeting and coverage criteria of the HSCT program. Thus ensuring that the most vulnerable members of society benefit from the social protection programs. For example, the street children as a special constituency of children in Zimbabwe have not been benefitting from HSCT programs.
- There is a need to combine the social protection program with skills training. This will go a long way in terms of ensuring that the vulnerable members of society can earn a living through selling their labour.
- There are cost-benefit considerations as noted by Schubert and Slater (2006), given the limitedness of budgets in low-income countries like Zimbabwe. The administrative costs should be kept as low as possible.
- There is a need to review upwards of the monthly payout of 25 USD per household as noted by Nyawasha (2012) considering that the pay-out is meagre in relation to the basic needs of the beneficiaries.
- There is a need to integrate and or coordinate the HSCT with other social protection programs like Basic Education Assistance Module, Assisted Medical Treatment Orders etc. This will go a long way in terms of coordination of social protection programs and leverage on that to reduce duplication of efforts and resources.

References

Adato, M. and Bassett, L. (2009). Social protection to support vulnerable children and families: The potential of cash transfers to protect education, health and nutrition, *AIDS Care*, 21(1), 60-75.

Bosworth, J., Alviar, C., Corral, L., Mwasiaji, W., Ochieng, S., Pearson, R., Pozarny, P. & Wiseman, W. (2016). The cash transfer programme for orphans and vulnerable children: The catalyst for cash transfer in Kenya cited in From Evidence to Action: The story of cash transfers and impact evaluation in Sub-Saharan Africa, The Food and Agriculture Organisation of the United Nations, The United Nations Children's Fund & Oxford University Press, Madison, Oxford.

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2).

Bussiere, C., Sicsic, J. & Pelletier-Fleury, N. (2016). Simultaneous effect of disabling conditions on primary health care use through a capability approach *Social Science and Medicine,* 154, 70-84.

Chikoko, W. (2014). Substance abuse and Commercial Sex Work among adolescent street children of Harare Central Business District *Journal of Social Development in Africa*, 29, 2.

Chinyoka, I. (2017). Poverty, changing political regimes and social cash transfers in Zimbabwe WIDER Working Paper 2017/88

Chinyoka, I. (2018). How and why do states provide for children? Comparing social grants for families with children in Southern Africa, unpublished PhD thesis, Department of Sociology, University of Cape Town, South Africa.

Devereux, S. (2007). Social pensions in Southern Africa in the Twentieth Century *Journal of Southern African Studies,* 33(3).

Devereux, S., Masset, E., Sabates-Wheeler, R., Samson, M., Rivas, A. M. & te Lintelo, D. (2017). The targeting effectiveness of social transfer *Journal of Development Effectiveness,* 9(1), 162-211.

Dhemba, J. (2013). Social Protection for the Elderly in Zimbabwe: Issues, Challenges and Prospects in the *African Journal of Social Work*, 3(1).

Ellis, F. (2012). We are all poor here': Economic differences, social divisiveness and targeting cash transfer in Sub Saharan Africa *Journal of Development Studies,* 48(2), 201-214.

Granlund, S. (2020). The Promise of Pay Day: Exploring the role of state cash transfers in post-apartheid rural South Africa, unpublished Doctoral thesis, Swedish University of Agricultural Sciences, Uppsala.

Kanengoni, J. (2016). Perceptions of the recipients of social welfare assistance about the effectiveness of Zimbabwe's welfare assistance programme: The case of Gutu district in Zimbabwe, unpublished Masters of Arts in Social Development Dissertation, Department of Social Work, School of Human and Community Development, University of the Witwatersrand, South Africa.

Mate, R. (2018). Social policy and social spending in Zimbabwe: 1980 to 2015, United Nations Research Institute for Social Development Working paper 2018-8

Molyneux, M., Jones, N. & Samuels, F. (2016). Can cash transfer programs have transformative effects? *The Journal of Development Studies,* 52(8), 1087-1098.

Mpedi, L. G. (2008). The role of religious values in extending social protection: A South African perspective *Acta Theologica,* 1.105(23).

Munro, L. T. (2015). Children in Zimbabwe after the long crisis: Situation analysis and policy issues *Development Southern Africa*, 32(4), 477-493.

Mushunje, M. T. & Mafico, M. (2010). Social protection for orphans and vulnerable children in Zimbabwe: The case for cash transfer *International Social Work,* 53(2), 261-275.

Mupedziswa, R. & Ntseane, D. (2013). The contribution of non-formal social protection to social development in Botswana *Development Southern Africa*, 30(1), 84-97.

Patel, L. (2015). Social welfare and social development, (2nd edition), Oxford University Press, Southern Africa, Cape Town.

Ringson, J. (2017). Community-based coping strategies for orphans and vulnerable children in Zimbabwe, unpublished PhD thesis, University of the Witwatersrand, South Africa.

Roelen, K., Delap, E., Jones, C. & Chettri, H. K. (2017). Improving child wellbeing and care in Sub Saharan Africa: The role of Social Protection *Children and Youth Review,* (73), 309-318.

Robeyns, I. (2005). The capability approach: a theoretical survey *Journal of Human Development*, 6(1), 93-117.

Rurevo, R. & Bourdillon, M. F. C. (2003). Girls: The less visible street children of Zimbabwe *Children, Youth and Environment*, 13(1), 1-20.

Nyawasha, T. S. (2012). Evaluating the effectiveness of the Cash Transfer Programme for Orphaned Children in Zimbabwe *Journal of Sociology and Social Anthropology*, 3(2), 145-151.

Ninno, C., Coll-Black, S. & Fallavier, P. (2016). Social Protection Programmes for Africa's Dryland International Bank for Reconstruction and Development/The World Bank, Washington, DC.

Nussbaum, M. (2003). Capabilities as fundamental entitlements: Sen and Social Justice *Feminist Economics,* 9(2-3), 33-59.

Nussbaum, M. C. (2011). Creating capabilities- The Human Development Approach, 1st Edition, Harvard University Press, Cambridge. Mass.

Samuels, F. & Stavropoulou, M. (2016). 'Being able to breathe again': The effects of cash transfer programmes on psychosocial well-being, *The Journal of Development Studies,* 52(8), 1099-1114.

Seidenfeld, D., Dumba, L., Handa, S., Muwoni, L. & Reeves, H. (2016). Using evidence to overcome political and economic challenges starting a national unconditional cash transfer programme cited in From Evidence to Action: The story of cash transfers and impact evaluation in Sub-Saharan Africa, The Food and Agriculture Organisation of the United Nations, The United Nations Children's Fund & Oxford University Press, Madison, Oxford.

Sen, A. (2013). The ends and means of sustainability *Journal of Human Development and Capabilities*, 14(1), 6-20.

Schubert, B. & Slater, R. (2006). Social cash transfers in low-income African countries: Conditional or unconditional? *Development Policy Review,* 24(5), 571- 578.

Slater, R. (2011). Cash transfers, social protection and poverty reduction *International Journal of Social Welfare*, 20(3), 250-259.

Yin, R. K. (1994). Case study research: Design and methods (2nd Ed), Thousand Oaks, CA: Sage.

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Implementation of Accrual-Based Government Accounting Standards in Indonesia: A Review of Organizational Factors

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Abstract: The purpose of this quantitative research is to test and prove empirically the effect of applying accrual-based accounting standards in Indonesia. The population in this study is the head of the financial subdivision and the financial staff of the regional government organizational unit in the DKI Jakarta province. The study used the random sampling method and managed to collect 84 respondents. Structural Equation Modeling (SEM) is used in this study as a data analysis test tool using Smart PLS software version 3.0. The results show that the quality of human resources and organizational commitment have a significant effect on the application of accrual-based accounting standards in Indonesia. Meanwhile, training and organization culture does not have a significant influence on the implementation of accrual-based accounting standards in Indonesia. The contribution for local government to improve their performance in reporting local government financial statements (LKPD) and assess their conformity with accounting standards in accordance with PP No. 71 of 2010 and ensure that the adoption of accrual-based accounting standards has been thoroughly established in local governments.

Keywords: *Quality of Human Capital, Training, Organization Commitment, Organization Culture Organization.*

1. Introduction

The public sector's use of the cash basis accounting system has been criticized since it does not offer information on costs related to institutional activities. With the presence of the accrual system, public entities are able to manage costs more rationally and public services can be maximized (Kusuma & Fuad, 2013). The entity seeks to adopt the principles of New Public Management (NPM) which are useful for promoting accountability and transparency of the financial management system. In accordance with accrual-based accounting, this system is used to measure components of financial position. Aswar and Saidin (2018), NPM is part of management science which states that the existing management in private sector entities is better in practice. The OECD (Organization for Economic Co-Operation and Development) was formed to build the principles of New Public Management that were useful in increasing transparency and accountability in 1970. Aswar (2019) the NPM principle aims to ensure that the information disclosed in financial statements can be accounted for, relevant and credible in decision-making. Report on budget implementation on a basis that is in accordance with the APBD. Indonesia is divided into 34 provinces and 514 regencies/cities. Indonesia has implemented the accrual basis accounting system in 24 provinces and 300 districts/cities, according to the 2020 IHPS Semester 1 figure from the 2015-2019 National Medium-Term Development Plan.

According to Leksono and Haryanto's (2017) financial statements, the average value of local governments using accrual-based government accounting standards is 69.55 percent. Semarang City Government and Semarang District Government are the two levels of government in Semarang. Banyumas 72.02%, 69.64%, District Government. Banyuwangi 71.43%, Tangerang City Government 68.90%, District Government. Temanggung 69.94%, District Government. Jepara 68.79%, District Government. Pandeglang 76.83%. It is concluded that Pontianak City is the local government that has the lowest disclosure value of 58.82%. Then the District Government. Padeglang is the local government that has the highest value with a disclosure of 76.83%. The application of the accrual-based government accounting system has many challenges. According to data from the Semester Examination Results Summary (IHPS) I 2019 records are related to the Accrual-Based Agency Accounting System (SAIBA). The preparation of capital expenditure realization is not applied in the SIMAK BMN application related to the input of assets in the fiscal year, the amount and type of assets are the same in the Central and regional DIPA. Due to the use of journals, this causes an indication of assets that have not been nullified and have not been inputted amounting to Rp. 6.69 trillion.

Then, the opinion on the 2018 LKTBI stated that BI had made inaccurate records related to BI's income recording related to the administrative sanctions for Export Proceeds (DHE) which still applied on a cash

basis. BI's income from administrative sanctions for Export Proceeds (DHE) has not been recorded and this claim has not been paid since 2012. Based on IHPS 1 of 2018, the obligation to pay Non-Bank Funds Transfer Reports (LTDBB) has not been recognized as receivables but is recognized and recorded when cash is received. In addition, there is a report that was found by BPK from OJK in 2018 which stated that prepaid expenses were not utilized for building rent. According to Simanjuntak (2010) and Najati, Pituriningsih, and Animah (2016), the government faces major challenges in adopting accrual-based accounting standards, namely good Human Resources (HR), Information technology, accounting systems, leadership commitment, agility to changes, as well as opinions given by the Supreme Audit Agency. The work unit has a role as the main driver in maximizing the application of the accrual-based government accounting system. Things that affect the work unit, starting from the quality of human resources, the training provided educational background, and organizational commitment. Ardiansyah (2013) in Ajhar, Akram, and Pituriningsih (2015) the quality of human resources (HR) is one of the many factors that influence the government's capability in applying accrual-based accounting standards. Human resource quality is a crucial factor in the organization as well as a driving force. Training, strong communication, a good educational background, and corporate culture are all required to maximize the quality of human resources (Ouda, 2008).

So that the government in Indonesia must manage human resources in the field of government accounting well. Hamalik (2007) training is a series of processes aimed at the workforce that are executed by experts/professionals in their field. Training is useful in improving the ability and performance of the workforce. An organization's effectiveness and production are projected to rise as a result of training. Some discovered that training attempts to increase individual skills and that training can influence the success of accrual accounting application and execution. An adequate training program has a considerable impact on the use of the accrual accounting system (Aswar & Saidin, 2018). The use of accrual-based accounting necessitates extensive training (Najati et al., 2016). If accrual accounting training is more adequate, Jonathan, Aswar, and Ermawati (2020) believe that increasing the use of accrual-based accounting standards will be encouraged. Sinambela (2018) organizations can grow rapidly if the organization has professional, committed, quality and integrity human resources. In Irfani, Pituriningsih, and Husnan (2020), a strong commitment can realize the maximum application of the accrual basis. Because it takes time for preparation and collaboration of all entity units, from accounting entities, treasury units, reporting entities, and accounting standard-setting units. If the organizational commitment is high, the implementation of New Public Management will be ideal, and the accrual-based accounting system will be implemented successfully. Organizational commitment is a type of motivation from inside the workforce to do something to support the organization's success in meeting its objectives (Aswar, 2019).

Azman (2015) the government's readiness to implement the accrual-based accounting system depends on organizational commitment. Chatab (2007) states that 74% of all organizations have failed due to not being aware of the importance of a good organizational culture. Hidayah and Zarkasyi (2017), Hofstede (1990) organization culture is characterized by prioritizing the interests of self-commitment to things that are more important than self-interest. The sample was chosen to represent the overall level of application of the accrual-based government accounting system. Culture is said to be the glue that holds organizations together by setting standards for what workers can and cannot do. Robbins (2003) organization culture forms a mechanism in giving meaning that can shape the attitude of each individual (Jonathan, Aswar & Ermawati 2020). This study adds to the literature on human resource quality, training, organizational commitment, organizational culture, and the adoption of accrual-based accounting standards in accordance with previous research recommendations (Nasution, Erlina & Sari, 2016; Ajhar, Akram & Pituriningsih, 2015; Najati et al., 2016; Seda & Christiaens 2017). Najati et al. (2016) employed the training, organization culture, and the use of accrual accounting instead of organizational commitment, which is linked to HR quality. Then, in a study by Basri et al. (2016), they used organizational commitment, human resource quality, information technology usefulness, and government readiness to implement accrual-based accounting systems without considering correlations like training and organizational culture. The goal of this research is to look into and verify the impact of using accrual-based government accounting standards in Indonesia.

2. Literature Review and Hypothesis Development

Institutional Theory: Organizations are formed by the institutional environment around everyone. The ideas that these individuals have that have influence are institutionalized and are considered legitimate values of the organization. Scapens (2007) in Hidayah (2017) states that the organization adopts a system, structure, or procedure related to the environmental culture in the organization. DiMaggio and Powell (1983) in Aswar (2019) have three mechanisms that cause institutional isomorphism, external pressures that shape organizations as coercive isomorphism, normative isomorphism, and mimetic isomorphism. Coercive isomorphism is when an organization decides to adopt something because of pressures from the wider community or other entities to fulfill its expectations.

Implementation of Accrual Accounting: According to Jonathan et al. (2020), organizational success is influenced by the organization's ability to attain and retain legitimacy in its environment, according to the new institutional theory. Various studies in public sector accounting reform in developed and developing nations have employed institutional theory. Institutional theory has been utilized as a conceptual framework in previous research on public sector accounting to prove numerous aspects that influence the use of accrual-based accounting rules (Mbelwa, Adhikari & Shahadat, 2019; Seda & Christiaens, 2017; Nor- Aziah and Scapens, 2007; Jonathan, Aswar & Ermawati, 2020; Adhikari & Nesbakk, 2016; Aswar & Saidin, 2018a; Aswar and Saidin, 2018b). Based on the previous study, many studies that focus on the quality of HR, Nasution et al. (2016) consider HR, supporting facilities, incentives, and organizational commitment to see the effect of accrual-based SAP implementation. Respondents in this study reached 102 respondents from the finance and treasury departments taken from 34 SKPD of North Sumatra Province. The results of this study indicate that the quality of human resources and incentives has a positive significance but supporting facilities have a negative significant effect. SKPD commitment is able to moderate to strengthen or weaken each variable. Jonathan et al. (2020) used moderating variables such as training, communication, educational background, and organizational culture to examine the adoption of accruals in the Indonesian government. This study was carried out in Bekasi City, with questionnaires distributed to 44 regional organizations.

According to the findings, training and communication have a substantial impact on the implementation of accrual-based accounting, although educational background has no such impact. The ability of organizational culture to control the relevant factors has been demonstrated. Irfani et al. (2020) examined the effect of organizational commitment, accounting training, use of the SAIBA application, and employee education in the finance department on the success rate of implementing the accrual accounting system in agencies. Multiple linear regression analysis was applied in this study. The work unit of the BPN Regional Office of West Nusa Tenggara Province was chosen in executing this research with a total of 63 respondents. The results of this study state that the New Public Management theory strengthens the variables related to the use of the SAIBA application, education of employees in the finance department, organizational commitment, and accounting training to correlate with the success of implementing the accrual accounting system in the scope of the agency. Survey-descriptive research by Hidayah and Zakarsyi (2017) analyzes the inter-role of culture, management competence, and HR in the effectiveness of adopting the accrual accounting system and the impact of the quality of accounting information. The aim is to test the validity of the questionnaire by using the Smart PLS software application with Cronbach's alpha. The findings revealed that HR management competency had a substantial impact on the efficiency of accrual accounting implementation, while culture had no impact on the quality of accounting data.

Conceptual Framework and Hypotheses: The hypothesis in this study is produced based on the components that influence the adoption of accrual-based government accounting standards following the creation of each hypothesis:

The Influence of HR Quality on the Implementation of Accrual-Based Government Accounting Standards in Local Governments: Based on the context of institutional theory, this is in line with the institutional theory of normative isomorphism, which means that improving the quality of human resources is necessary for professional demands. According to Robbins (2003), the ability of human resources is as an individual's ability to do tasks at work. Entities must manage HR as much as possible so that the contribution of each individual can affect the achievement of organizational goals. The significance of HR quality on the

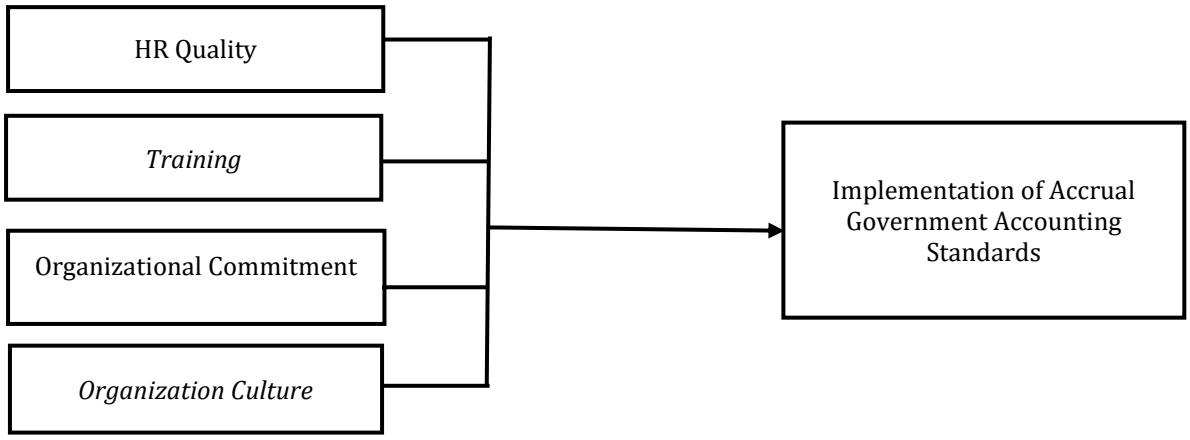
implementation of accrual-based accounting standards (Basri, Fahlevi, & Soraya, 2016; Hidayah & Zakarsyi, 2017; Safitri, 2017).
H1: The quality of resources has a significant effect on the implementation of accrual accounting standards.

The Effect of Training on the Implementation of Accrual-Based Government Accounting Standards in Local Governments: In the context of institutional theory, training is related to normative isomorphism institutional theory, which means that training is used as a medium of learning and skill improvement due to professional guidance. Training provides an opportunity for each individual to prepare and equip themselves in the form of insight and skills needed in accordance with the work carried out (Mondy, 2008). A previous study stated that there was significance between the training on the implementation of accrual-based accounting standards (Dianto & Aswar, 2020; Aswar & Saidin, 2018; Jonathan, Aswar & Ermawati, 2020).
H2: Training has a significant effect on the implementation of accrual accounting standards.

The Effect of Organizational Commitment on the Implementation of Accrual-Based Government Accounting Standards in Local Governments: According to the context of institutional theory, organizational commitment is related to the institutional theory of coercive isomorphism which is described by the government as being required to decide to adopt something because of pressures from other entities to fulfill its expectations. Fuad and Akhmadi (2018) explained that the challenge in the process of implementing Government Regulation no. 71 of 2010 one of which is due to the lack of commitment in local government organizations in adopting the changes so that the government is not ready to face the changes. Mbelwa, Adhikari & Shahadat (2019) positively support organizational commitment in implementing accounting standards on an accrual basis in Tanzania. This research is also supported in Indonesia (Safitri, 2017; Putra & Ariyanto, 2015; Irfani, Pituriningsih & Husnan, 2020).
H3: Organizational commitment has a significant effect on the implementation of accrual accounting standards.

The Influence of Organizational Culture on the Implementation of Accrual-Based Government Accounting Standards in Local Governments: Organizational culture is related to normative isomorphism institutional theory in the setting of institutional theory; specifically the application of organizational culture is a requirement because it is a professional need. In Najati, Pituriningsih, and Animah (2016), organizational culture drives people to meet change's challenges since culture has an impact on their behavior in the workplace. The use of accrual-based government accounting standards is maximized when there is a healthy organizational culture and each employee's supporting conduct in coping with changes. A previous study has found that the use of accrual-based accounting rules is influenced by organizational culture (Najati et al., 2016; Aswar & Saidin, 2018; Jonathan et al., 2020).
H4: Organizational culture has a significant effect on the implementation of accrual accounting standards.

Figure 1: Research Framework



3. Research Methodology

The population in this study is a local government organizational unit in the DKI Jakarta area. Regional government organizational units in the DKI Jakarta area were selected based on the random sampling method. Then local government organizations in the DKI Jakarta area have a different structural arrangement from other urban areas. The study collects samples based on predetermined criteria, namely the reporting entity and the recording entity where the individual units are the head of the finance subdivision and finance staff. In total 78 regional organizational units in the DKI Jakarta province are used as samples in this study. The sample was chosen to represent the overall level of application of the accrual-based government accounting system. The total sample of this research is 156 samples. The unit of analysis in this study is the individual in charge of recording and compiling OPD financial reports in the DKI Jakarta province. Then the data collection for this research has been carried out through the distribution of questionnaires which are distributed directly to each unit of local government organizations. The data collected is in the form of a questionnaire filled out by 2 people, namely the head of the finance sub-section and the finance staff. The method in this research is quantitative – primary. Literature research is carried out by collecting information related to the variables contained in this study, namely by understanding references in the form of accounting journals, books, and related supporting sites. Each of these research variables has its measurements adopted from previous studies. Following are the indicators used by each variable:

Table 1: Variable Measurement

Variable	Measurement	Source
Application of Accrual-Based Government Accounting Standards in Indonesia	Revenue recognition, expense recognition, asset recognition, debt recognition, and equity recognition	Aswar and Saidin (2018)
HR Quality	The variable quality of human resources is measured by the level of education, experience, training, accounting understanding, and professionalism.	Nasution, Erlina and Sari (2016).
Training	Training is measured based on the dimensions of the training program and training competence.	Aswar and Saidin (2018)
Organizational Commitment	Organizational commitment is measured based on organizational commitment in adopting accrual accounting and the level of accuracy and reliability of the resulting financial statements.	Basri, Fahlevi, and Soraya (2016)
Organization Culture	Organizational Culture is measured by the openness and willingness of employees to support collaboration and adoption of accrual-based accounting, the enthusiasm of employees in self-development, and respect for employees by superiors.	Aswar and Saidin (2018)

4. Results and Discussion

The study's participants include 78 local government entities in the DKI Jakarta area. The sample was chosen using a random sampling procedure. Furthermore, this study used the SmartPLS version 3.0 tools to conduct data analysis utilizing the Structural Equation Model (SEM). Table 2 shows the descriptive statistics of the data.

Table 2: Descriptive Statistics of Data

Variable	Total question items	Mean	Std. Deviation
Application of Accrual-Based Accounting Standards	5	3,86	0,108
HR Quality	4	3,82	0,339
Training	8	4,10	0,271
Organizational Commitment	6	3,86	0,373
Organization culture	7	4,29	0,062

The mean variable for the use of accrual-based accounting standards is 3.86, with a standard deviation of 0.108. According to the descriptive statistics in table 2, the mean variable for accrual-based accounting standards implementation is 3.86, with a standard deviation of 0.108. The quality of human resources has a mean of 3.82 and a standard deviation of 0.339. After then, the training's mean is 4.10, with a standard deviation of 0.271. Furthermore, organizational commitment has a mean of 3.86 and a standard deviation of 0.373. The organization's culture has a mean of 4.29 and a standard deviation of 0.062.

Table 3: Reliability Test and Convergent Validity Test

Variable	Average Varian Extracted (AVE)	Composite Reliability	Cronbach's Alpha
AA	0,666	0,909	0,874
SDM	0,548	0,820	0,710
LAT	0,581	0,913	0,899
KO	0,521	0,764	0,562
BO	0,589	0,909	0,884

In table 3, it is stated that the minimal value for the reliability test consisting of the results of the composite reliability test and Cronbach's alpha, as defined by Hair et al. (2014), is 0.7 for standard composite reliability and 0.6 for Cronbach's alpha. According to the findings of the tests, the organizational commitment has the lowest Cronbach's Alpha value of 0.562, indicating that this variable is near to a reliable number. The variables in this study show strong reliability in each construct, it can be concluded. Convergent validity measures the extent to which each item that reflects a convergent construct differs from that of an item that measures a different construct. The findings of the average variance extracted (AVE) with a minimum value of 0.50 reveal the convergent validity test. The results of the tests carried out on the variables used in this study were all displayed values above 0.50. So, it can be concluded that all variables are declared valid.

Table 4: Discriminant Validity Test

Variable	AA	LAT	SDM	KO	BO
AA	0,816	0,365	0,408	0,450	0,432
LAT		0,763	0,617	0,255	0,527
SDM			0,740	0,284	0,634
KO				0,722	0,433
BO					0,767

The construct in each variable has a discriminant validity value of greater than 0.6 according to the Fornell-Lacker Criterion table. Applying accrual-based accounting standards (AA) are 0.816, training (LAT) are 0.763, HR quality (HR) is 0.740, organizational commitment (KO) is 0.722, and organization culture (BO) is 0.767. It was concluded that all constructs in each variable were declared valid.

Table 5: Testing PLS Path Algorithm and Bootstrapping

Variable	Path Coefficient (Original Sample)	T Statistics	P Values
SDM -> AA	0,221	1,998	0,046
LAT -> AA	0,043	0,344	0,731
KO -> AA	0,316	3,007	0,003
BO -> IAA	0,152	1,005	0,316

The quality of human resources (HR) has a positive relationship with the application of accrual-based accounting, procedures, as shown in table 5, with a constant value of 0.221. The quality of human resources has improved by 0.221 as a result of the adoption of accrual-based accounting procedures, while the other factors remain the same. As a result, the implementation of accrual-based accounting standards will expand as the value of human resources improves. T-count > t table of 1.998 > 1.99045 and a significant value of 0.046 0.05 demonstrating that the quality of human resources has a substantial effect on the application of

accrual-based accounting standards (AA), then Ha1 is acceptable. This is consistent with Basri, Fahlevi, and Soraya (2016), who investigated the readiness to adopt the accrual accounting system in government agencies in Banda Aceh and discovered that the quality of human resources had a positive and significant impact on the readiness to adopt the accrual accounting system in government agencies. Through a study conducted at SKPD Banten, Hidayah and Zakarsyi (2017) conclude that the quality of human resources has a favorable and significant impact on the success of accrual accounting implementation. The training path coefficient (LAT) has a value of 0.043. Other variables stay unchanged, but the training has increased by 0.043, indicating that the use of accrual-based accounting standards has a positive relationship.

If a result, as the training value rises, the use of accrual-based accounting rules will rise as well. When t-count > t table of 0.344 > 1.99045 and a significant value of 0.731 0.05 in the association between training (LAT) and the application of accrual-based accounting standards (AA) reveals a significant value of 0.731 0.05, Ha2 is rejected. This supports the findings of Irfani, Pituriningsih, and Husnan (2020), which conducted research at the NTB Province BPN regional office on the successful implementation of an accrual-based agency accounting system and discovered that no training program had a positive and significant impact on the system's success. Then, according to Widianti, et al. (2016), the training provided has no beneficial or substantial influence on the application of accrual accounting in the government sector in the Tegal Regency government SKPD. However, Dianto and Aswar (2020), Aswar and Saidin (2018), Jonathan et al. (2020). This demonstrates that the use of sufficient user training given by third parties in the form of vendors or external consultants is still debatable. Individuals do not have full access to learning and self-development due to inefficient implementation of training programs arranged by vendors or adequate external consultants supplied to users, notably in the financial sector. Training for accountants has little effect on the implementation of accrual-based accounting standards being maximized. Organizational commitment (KO) has a path coefficient of 0.316.

Other variables stay constant, but the organizational commitment has increased by 0.316, indicating that the use of accrual-based accounting standards has a positive association. If a result, as the value of organizational commitment rises, the use of accrual-based accounting rules will rise as well. Organizational commitment (KO) to the application of accrual-based accounting standards (AA) has a significant value of 0.003 0.05 and a value of t count > t table of 3.007 > 1.99045, implying that the use of accrual-based accounting standards is influenced by organizational commitment. Adhikari & Shahadat (2019) support organizational commitment in providing positive support in applying accounting standards on an accrual basis in Tanzania, which is in line with Mbelwa's research. This demonstrates that the type of organizational commitment that is created might increase accrual accounting implementation. In addition, In Bengkalis Regency SKPD, Safitri (2017) did a study that supports organizational commitment in influencing accrual-based government accounting standards. Organizational commitment has a positive impact on the application of accrual-based government accounting regulations, according to Putra and Ariyanto (2015). Furthermore, the organization culture (BO) has a path coefficient of 0.152. This demonstrates that the application of accrual-based accounting standards is influenced by organizational culture. As a result, the employment of accrual-based accounting procedures will increase in tandem with the value of the organization's culture.

Ha4 is rejected when the impact of organizational culture (BO) on the adoption of accrual-based accounting standards (AA) is t count > t table of 1.005 > 1.99045 with a significant value of 0.316 0.05. These findings imply that organizational culture has no influence on the adoption of accrual-based accounting. This contradicts the institutional theory of normative isomorphism, which states that organizational culture acts as an individual's enthusiasm for self-development and supports the application of accrual-based accounting standards as the professional demands of entities in adopting a system based on accrual-based accounting standards. This is in line with the findings of Hidayah and Zakarsyi (2017), which discovered that organizational culture had no impact on the success of accrual accounting implementation. However, it contradicts the findings of Najati, Pituriningsih, and Animah (2016), Aswar and Saidin (2018), and Jonathan et al. (2020). These findings suggest that, in addition to formal training, individual growth possibilities provided by the organization, such as job diversity and rotation, do not receive learning based on direct experience, particularly in the financial sector. This shows that the lack of experience and learning that employees gain due to a lack of job rotation and variety of work assignments does not necessarily influence the adoption of accrual-based accounting rules in an environment with a healthy organizational culture.

5. Conclusion and Recommendations

The purpose of this study is to investigate and demonstrate the impact of the independent factors of human resource quality, training, organizational commitment, and organizational culture on the accrual-based accounting standards adoption in the DKI Jakarta Province. The quality of human resources has a positive and significant effect on the application of accrual-based accounting standards. This shows that the good quality of human resources owned by recording actors and reporting financial statements of local government organizational units can improve and facilitate the implementation of accrual-based accounting standards. Training has no positive and significant effect on the application of accrual-based accounting standards. This shows that respondents who have participated in training activities while they are tied to local government organizational units do not affect the level of application of accrual-based accounting standards. Organizational Commitment has a positive and significant effect on the application of accrual-based accounting standards. This indicates that good organizational commitment can improve and facilitate the application of accrual-based accounting standards. This result is also due to the existence of a strong individual desire to provide the best results in each of their performances which can improve the application of accrual-based accounting standards in the regional government organizational unit. Organizational culture has no positive and significant effect on the application of accrual-based accounting standards. This indicates that the organization's culture is formed from a government organizational unit.

Some limitations of researchers in carrying out this research are the number of questionnaires that have not been returned by respondents is quite a lot of 72 questionnaires. This is due to the Emergency PPKM and the high exposure to Covid-19 in DKI Jakarta. Public entities, which are largely exposed to Covid-19, have decided to lock down to stymie the licensing process. Respondents who are frequently out of the office for assignments or who work from home (WFH) and who are self-isolating are hampered by the current pandemic; the entity hasn't had time to process research submissions, and respondents haven't had time to complete questionnaires distributed by researchers. Because the research was limited to the DKI Jakarta Province's regional administration, it was unable to provide a more comprehensive picture or extrapolate to the entire Indonesian government's application of accrual accounting. Researchers should also collect study data using interview methodologies to dive further into the application of accrual-based accounting standards and get more answers. It is envisaged that scholars will broaden their research reach outside the DKI Jakarta Province's regional government organizational entities. The addition and variation of other variables that can affect the application of accrual-based accounting standards, such as facility support and the use of accrual-based agency accounting system applications for developing research are among the recommendations for future research based on the findings of this study.

References

Seda, S. S. & Christiaens, J. (2017). Why do some municipalities apply accrual-based rules more than others? Evidence from Turkey. *Technical University of Liberec, Czech Republic*, 3(20), 189-206.

Adhikari, P. & Gårseth-Nesbakk, L. (2016). Implementing public sector accruals in OECD member states: major issues and challenges. *Accounting Forum*, 40(2), 125–142.

Ajhar, Akram Pituriningsih, E. (2015). Factors that influence the readiness of accrual-based SAP implementation and performance accountability of government agencies (empirical study on the local government of Dompu Regency). *Journal of Actual Accounting*, 3(1), 62–73.

Ardiansyah, A. (2013). Factors affecting the effecting the readiness of PP 71 of 2010 about government accounting standards (case study on working units in KPPN Malang's working area). *FEB Student Scientific Journal*, 1(1), 1–16.

Aswar, K. & Saidin, S. Z. (2018). Accrual accounting adoption in Java Municipalities: an empirical investigation. *International Journal of Business and Economic Sciences Applied Research*, 11(3), 24-30.

Aswar, K. & Saidin, S. Z. (2018). The influencing factors on the level of accrual accounting adoption: a conceptual approach. *Romanian Economic and Business Review*, 13(2), 30-36.

Aswar, K. (2019). Factors on the accrual accounting adoption: empirical evidence from Indonesia. *International Journal of Business and Economic Sciences Applied Research,* 12(3), 36-42.

Aswar, K. & Ermawati. (2020). Adoption of accrual accounting in local government: a case study in Banten Province. EQUITY: *Journal of Economics, Management, Accounting*, 22(1), 62-74.

Azman, T. (2015). Analisis komitmen organisasi, sumber daya manusia, infrastruktur serta sistem informasi dalam dalam penerapan standar akuntansi pemerintah berbasis akrual (studi kasus skpd pemerintah kabupaten kepulauan meranti). *Jurnal SOROT*, 10(1), 1-142.

Basri, H., Fahlevi, H. S. & Soraya H. (2016). Determinants of government agencies readiness in adopting accrual accounting system – a study in the local agencies of the Indonesian Ministry of Religious Affairs. *Publication Journal of Accounting, Finance and Auditing Studies*, 2(4), 60-74.

Supreme Audit Agency of the Republic of Indonesia. (2016). Summary of Financial Audit Results Semester I 2016, 420.

Supreme Audit Agency of the Republic of Indonesia. (2018). Summary of First Semester 2018 Financial Audit Results Index. Semester 1 2018 Audit Results Index, 470.

Supreme Audit Agency of the Republic of Indonesia. (2019). Summary of First Semester Financial Audit Results, 426.

Chatab, N. (2007). Organization culture profile: Diagnosing Culture and Stimulating Change. Alphabet. Bandung.

Dianto, A. W. & Aswar, K. (2020). Assessing accrual accounting implementation in Cianjur Regency: an empirical investigation. *International Journal of Business and Economic Sciences Applied Research*, 13(1), 7-12.

DiMaggio, P. J. & Powell, W. W. (1983). The iron cage revisited: institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48, 147–160.

Fuad, A. F. & Akhmadi. (2018). Pengaruh lingkungan kerja non fisik dan komitmen organisasi terhadap kinerja karyawan dengan kepuasan kerja intrinsik sebagai variabel intervening (studi kasus pada pt. paramitra gunakarya cemerlang, asia pulp and paper - sinarmas grup). *Jurnal Riset Bisnis dan Manajemen Tirtayasa*, 2(2), 126-145.

Hamalik, O. (2007). Manajemen Pelatihan Ketenagakerjaan Pendekatan Terpadu Pengembangan Sumber Daya Manusia. Jakarta: Bumi Aksara

Hidayah, N. & Zarkasyi, W. (2017). The effect of human resources management competency and the role of culture on accrual accounting implementation effectiveness and the impact on quality of accounting information. *European Research Studies Journal,* 20(4B), 183-199.

Hofstede, G. (1990). Measuring organizational cultures: qualitative and quantitative study across twenty cases. *Administrative Science Quarterly*, 35(2), 286-316.

Irfani, M., Pituriningsih E. & Husnan, L. H. (2020). Determinan keberhasilan penerapan sistem akuntansi instansi berbasis akrual dalam penyusunan laporan keuangan pemerintah. *E-Jurnal Akuntansi*, 30(6), 1522–1538.

Jonathan, A. T. P., Aswar, K. & Ermawati. (2020). Implementasi akuntansi akrual di pemerintah Indonesia: peranan budaya organisasi sebagai moderasi. *Journal of Economic and Behavioral Studies,* 12(4), 67-72.

Kusuma, M. I. Y. & Fuad. (2013). Analisis faktor faktor yang mempengaruhi tingkat penerapan akuntansi akrual pada pemerintah. *Diponegoro Journal of Accounting,* 2(3), 1.

Leksono, B. S. & Haryanto. (2017). Evaluasi penerapan standar akuntansi pemerintahan (sap) akrual dalam penyusunan laporan keuangan tahun 2014 dan 2015 pada pemerintah daerah di indonesia. *Diponegoro Journal of Accounting*, 6(1), 1-7.

Mbelwa, L. H., Adhikari, P. & Shahadat, K. (2019). Investigation of the institutional and decision-usefulness factors in the implementation of accrual accounting reforms in the public sector of Tanzania. *Journal of Accounting in Emerging Economies,* 9(3), 335-365.

Mondy, R. W. (2008). Manajemen SDM. Jakarta: Erlangga.

Najati, I., Pituringsih, E. & Animah. (2016). Implementasi akuntansi berbasis akrual: pengujian determinan dan implikasinya terhadap kualitas laporan keuangan kementerian/lembaga. *Jurnal Akuntansi Universitas Jember,* 14(1), 1-16.

Nasution, D. A., Erlina, D. & Sari, T. A. (2016). Analisis faktor-faktor yang mempengaruhi implementasi SAP berbasis akrual dengan komitmen SKPD sebagai variabel moderating pada pemerintah Provinsi Sumatera Utara. *Jurnal Ekonom,* 19(4), 175-185.

Nor-Aziah, A. K. & Scapens, R. W. (2007). Corporatization and accounting change. *Management Accounting Research*, 18(2), 209–247.

Ouda, H. A. G. (2008). Towards a generic model for government sector reform: the New Zealand experience. *International Journal on Governmental Financial Management*, 2, 91.

Putra, I. W. G. Y. D. & Ariyanto, D. (2015). Faktor-faktor yang mempengaruhi penerapan standar akuntansi pemerintahan berbasis akrual. *E-Jurnal Akuntansi Universitas Udayana*, 13(1), 14-32.

Robbins, S. P. (2003). Perilaku Organisasi Jilid 2. Jakarta: PT. Indeks.

Safitri, D. (2017). Faktor faktor yang mempengaruhi penerapan standar akuntansi pemerintahan berbasis akrual (Studi pada skpd pemerintah kabupaten bengkalis), *Jurnal Akuntansi*, 5(2), 174-189.

Simanjuntak, B. H. (2010). Menyongsong era baru akuntansi pemerintahan di Indonesia. Disampaikan pada Kongres XI Ikatan Akuntan Indonesia, 1–15.

Sinambela, L. P. (2018). Manajemen Sumber Daya Manusia. Jakarta: PT Bumi Aksara.

Widianti, H., Hadiyati, S. N. & Sulistyowati, D. (2016). Analisis faktor-faktor yang mempengaruhi implementasi akuntansi akrual pada sektor pemerintah. *SENIT*, 1(1), 155–162.

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Towards an Understanding of Low-Income Individuals' Financial Resiliency: Exploration of Risk Preferences, Personality Traits, and Savings Behavior

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Abstract: The Coronavirus disease 2019 (COVID-19) pandemic has helped expose and exacerbate individuals' and households' financial vulnerability worldwide. Meanwhile, behavioral elements affecting low-income populations' ability to save and become more financially resilient have yet to receive sufficient academic attention. This exploratory study aims at the beginning to help elucidate the determinants of low-income individuals' real-life savings behavior by utilizing laboratory performance measures (to characterize participants' risk preferences by using the Balloon Analog Risk Task – BART, in study 1), as well as self-report surveys (to characterize participants' personality traits, in study 2). Combining results from both studies, latent personality traits (i.e., attitude towards risk, perseverance, distractibility, and state anxiety) are found to affect the risk preferences of low-income individuals (captured using a novel BART performance measure indicative of an individual's strategic risk preference adaptation), which in turn impact their ability to successfully complete matched savings programs and, thus, their ability to save and enhance their financial resilience.

Keywords: *Financial Vulnerability/Resilience, Low-income Participants, Matched Savings Programs, Personality Traits, Balloon Analog Risk Task (BART).*

1. Introduction

According to the Center on Budget and Policy Priorities (CBPP) COVID-19 Hardship Watch, in the U.S. the "pandemic and the economic fallout have been widespread but are particularly prevalent among Black, Latino, Indigenous, and immigrant households" (CBPP, 2020, p. 1). Unfortunately, this calamitous situation should have been expected. Several studies prompted by the great recession of 2008 demonstrated how fragile and vulnerable Americans were to financial shocks. In particular, Lusardi (2011) examined Americans' self-reported ability to withstand shocks and found that "only 49 percent of respondents have set aside emergency or rainy day funds that would cover expenses for 3 months in case of sickness, job loss, economic downturn, or other emergencies. Thus, many families would not be able to draw on personal financial resources if hit by a shock" (p. 7). Ominously, in a similar study, "half of Americans report that they would probably or certainly be unable to cope" with "an unexpected need in the next month that required them to come up with $2,000" (Lusardi et al., 2011, p. 9).

This may have triggered the Federal Reserve Board to ask respondents in 2013 how Americans would pay for a $400 emergency, and implausibly, "47 percent of respondents said that either they would cover the expense by borrowing or selling something, or they would not be able to come up with the $400 at all" (Gabler, 2016, p. 1). Since households' own savings are the resource used most often to deal with shocks (Lusardi et al., 2011), the COVID-19 pandemic is likely to have caught Americans in a period of widespread financial vulnerability, understood as the limited ability to withstand temporary economic setbacks (Gauthier & Furstenberg, 2010). Unfortunately, low-income households and individuals worldwide were -and may continue to be- especially unprepared to face the more intransient adverse economic consequences of the COVID-19 pandemic. To make matters worse, academic research on low-income households' and individuals' savings behavior may be especially difficult to conduct. On the one hand, when low-income individuals manage to save, they would also be more likely to engage in asset building behavior and presumably to become less financially vulnerable (which would then make them less likely to conform to study parameters). On the other, when low-income individuals conform to study parameters, they would be more likely to follow the inclination not to save and/or build assets, presumably because they have repeatedly forgone the opportunity to do so in the past, and thus they would be study participants less likely to engage in the savings behavior under investigation. In particular, inaction inertia or the "inclination to resist an action after previously bypassing a similar action" (Westfall et al., 2012, p. 192) has been studied in the context of

consumer promotional formats (Liu & Chou, 2018), as well as of loss aversion in relation to sunk cost effects (Westfall et al., 2012). Crucially, inaction inertia has also been identified as individuals' reluctance to enroll in attractive savings opportunities induced by previous inaction (Krijnen et al., 2020). Conversely, and unsurprisingly, savings habits are associated with regular savings and thus matter for reducing the stress of financially difficult situations (Loibl et al., 2011). Because of this, it would not be counterintuitive to suppose that inaction inertia, perhaps compounded by misgivings and distrust of out-groups (especially those interested in financial matters), could be more pronounced in low-income settings (a research question that should be explored in a separate study). If this were the case, studies aimed at exploring low-income individuals' savings behavior would be more likely to fail, which may in part help explain their scarcity.

Despite this, and especially because of this, it is imperative to explore new and more effective ways to enhance low-income individuals' financial resiliency, so that they are better prepared to withstand future economic shocks associated with, for instance, another (but hopefully less devastating) pandemic, more frequent as well as more severe extreme weather events, or periodic economic downturns or recessions. Thus, in this study, we set out to explore the determinants of low-income individuals' real-life savings behavior by utilizing laboratory (lab) measures of individual risk preferences captured using the Balloon Analog Risk Task (BART) (study 1), and also by means of self-report surveys (to characterize personality traits) (study 2). To achieve this, we designed a six-month matched savings program (6mMSP) in alliance with a not-for-profit partner (Catalyst Miami). Before starting this 6mMSP, 24 low-income participants (recruited from a pool of Catalyst Miami clients) played a risky decision-making game called the BART. The intervention was conducted (before the pandemic's onset) in an effort to explore whether participants' performance while playing the BART (i.e., task performance metrics) could help predict their subsequent savings behaviors (i.e., real-life savings outcomes). Additionally, we used participants' BART and savings performance to explore associated latent personality traits. Finally, we explored whether BART performance measures mediated the relationship between latent personality traits and total savings. With this in mind, the following section describes various ways of enhancing financial resiliency and how financial behaviors (e.g., savings behaviors) relate to psychological factors as well as to individual risk preferences. We will then describe the tools and methods utilized before presenting our results. Afterward, we discuss our findings along with implications, to finalize with limitations, future work, and conclusions.

2. Literature Review

This section delves into ways of enhancing financial resiliency by incentivizing savings and discusses how saving behavior relates to psychological factors (e.g., personality traits). We also describe how the BART has been used to help elucidate these relationships, specifically in terms of individual risk preferences.

Financial Resiliency and Matched Savings Programs: Financial resiliency is the opposite of financial vulnerability and may be operationalized as individuals or households following minimal financial preparedness guidelines (such as having emergency funds equivalent to at least three months of living expenses) (Loke, 2016). Accordingly, scholars and policymakers have explored different ways of incentivizing such behaviors to enhance individuals' and households' ability to weather economic shocks, especially since low savings have remained an assiduous concern in the U.S. (Hall, 2021; Thaler, 1994). It may have been because of this that in the 1990s, asset-building programs, which entailed matched savings for home ownership, education, and small business capitalization, were instituted through individual development accounts (IDAs) (Sherraden et al., 2003). IDAs have been studied in relation to effective policy design (Sherraden, 2000) and have even been explored as the potential link between the savings inclinations of low-income individuals and other policy instruments, such as federal and state income tax provisions targeted at them (Smeeding, 2005). However, counterintuitive results were uncovered, such as: total savings not increasing with income or savings rate actually decreasing with income (Sherraden et al., 2003). Or the savings outcomes of Caucasians depending on individual (i.e., socio-demographic) characteristics, while those of African Americans depended on institutional (programmatic) factors such as matching rates, automatic direct deposits, financial education, etc (Weiss & Sherraden, 2005).

Despite their limited success (Loibl et al., 2018), IDA research provides "reason to believe that the poor can save if they are embedded in institutional conditions that promote saving" (Sherraden, 2008, p. 17). Insofar as

access (e.g., having an account or being able to open one), facilitation (e.g., coaching, nudging) and expectations (e.g., having defined savings targets) could matter more than financial incentives (e.g., higher matching rates) (Sherraden, 2008). Thus, highlighting the tension between institutional approaches that deem context a more important driver of savings outcomes of matched savings programs than savers' individual characteristics (Birkenmaier et al., 2014). There are various aspects of IDA research that are relevant to this study. Most prominently, matched savings programs appear to help the poor save and build assets (Loke, 2016). In addition, institutional recommendations regarding the design of matched savings programs (e.g., expectations) were taken into consideration and are addressed in the methods section. However, here, we are also concerned with how personality traits may affect the financial behaviors of low income individuals.

Financial Behavior and Psychological Factors: Enhancing individuals' and households' financial behaviors are likely to entail augmenting their financial capabilities, which may be understood as the ability to make appropriate financial decisions, identifying adequate financial products and services, and understanding how to properly manage credit and debt (Mason & Wilson, 2000). Doing so would help reduce welfare dependency, chronic indebtedness, stress levels, and associated ill-health (and other disparities), insofar as encouraging savings behavior can reduce financial vulnerability (and associated poverty increases). While also enhancing people's life opportunities (Taylor et al., 2011) along with their well-being (Shim et al., 2012). Now, since happier individuals tend to save more, as they tend to be less inclined to consume (Guven, 2012), there appears to be a virtuous cycle by which positive financial behaviors (such as savings) may enhance individuals' well-being and psychological health, and in turn, better psychological health (e.g., happiness) affects people's disposition to save.

However, seemingly simple actions, such as establishing a savings plan, require not only basic financial knowledge, but also key administrative skills, such as having a written savings goal/plan and following the plan, for instance, by watching expenses to ensure that they do not exceed income (Gutter et al., 2012). In particular, when versions of the above skills were captured and combined into a financial management behaviors score (FMBS); they were found to relate to the likelihood of having a savings account (i.e., access). Furthermore, having a savings account, in turn, depended on an individual's planning horizon, as well as the number of perceived barriers to savings (Gutter et al., 2012). But it would be perilous to simply assume that individuals will always have the cognitive bandwidth available to engage in future planning (Mullainathan & Shafir, 2013). In sum, psychological and affective factors influence savings behavior. Indeed, it is "well established that psychological factors, such as the Big Five personality traits (agreeableness, conscientiousness, extraversion, neuroticism, and openness to experience)" along with "self-esteem, optimism, and trust are important predictors of economic behaviors" (Kesavayuth et al., 2018, p. 122). For instance, the extent to which adults (and even children) may find spending money to be painful, can be used to predict key financial behaviors and outcomes (e.g., credit scores, savings behavior, etc.) (Smith et al., 2018). Which in turn may help explain why consumers' financial health can be predicted using their aversion to high-cost financial products and services (Greenberg et al., 2020).

Moreover, the locus of control (LOC), a psychological construct associated to the extent to which individuals believe their actions help determine life outcomes, has been studied in relation to, among others, health behaviors (Conell-Price & Jamison, 2015) and attitudes towards risk (Kesavayuth et al., 2018). Similar to the ways in which self-esteem has been shown to influence decision framing and risk-taking behavior (McElroy et al., 2007). In effect, when risk tolerance is understood as an individual's inclination to engage in behaviors that may result in uncertain and/or negative outcomes (Gambetti & Giusberti, 2019), it seems intuitive to suppose that an individual's risk preferences (and associated personality traits) will affect their perception of how much control they can exert over life outcomes, including their savings and financial resilience. In light of this, it should be easy to see how trait anxiety could make individuals save money but also avoid investments, as anxious people tend to associate investments with high risks and low control. Conversely, investments tend to be made by individuals with high self-control, extraversion, and independence (Gambetti & Giusberti, 2019). This is the case because an inflated sense of self-importance can be associated with greater risk-taking (Brunell & Buelow, 2017). Perhaps because of this, extraversion is also associated with levels of debt and assets held (Brown & Taylor, 2014). In sum, economic decisions involve real-life consequences associated with individuals' personalities and risk preferences (Ludwig et al., 2020). Because of this, capturing

individuals' personality traits, and eliciting their risk preferences is essential for characterizing their economic and financial behaviors (Holzmeister, 2017). Which economists realized long ago while proposing that individuals' preferences and attitudes towards risk determined the curvature of their utility functions (Arrow, 1965). However, here, we are focused on the savings behavior, personality traits and risk preferences of low-income individuals.

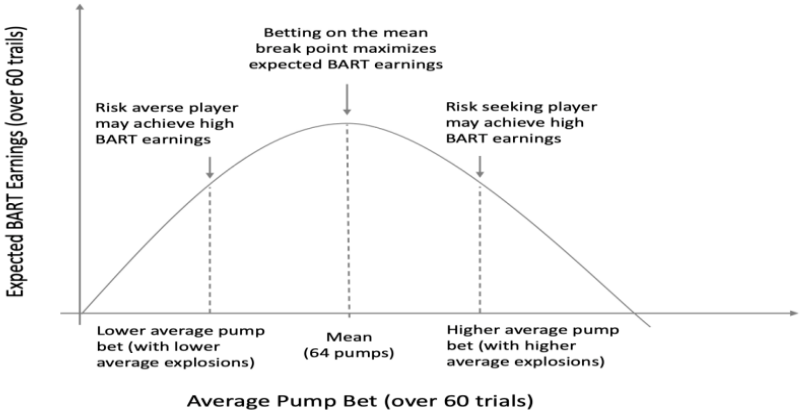
Risk Preference Elicitation and the Balloon Analog Risk Task (BART) (Study 1): To help characterize the risk preferences of individuals in general, behavioral and cognitive neuroscience scholars have used tools such as the BART, a computerized decision-making paradigm that provides behavioral (lab-based) risk preference measures (Aklin et al., 2005; Lejuez et al., 2003; Lejuez et al., 2002). Risk preferences measured using the BART have been associated with both risk-taking propensity personality traits (e.g., sensation seeking, trait impulsivity) and real-world risky behaviors (e.g., substance abuse, smoking, gambling, unsafe, sex) (Fairley et al., 2019; Lejuez et al., 2003; Lejuez et al., 2002). The BART has also been used in behavioral economics research to investigate how decision-making under uncertainty is affected by age (Sproten et al., 2018), and in the behavioral finance literature as a risk preference elicitation tool (Holzmeister, 2017). Specifically, while completing the BART, participants are shown a series of 20 virtual balloons, one after another. Participants earn virtual money by "pumping up" each of those 20 balloons. This virtual money, earned while playing BART, "is stored on a temporary account until participants decide to collect the money (transfer it to a permanent account) and to proceed to the next balloon, or until the balloon pops", and any money accrued in the temporary account is lost (Sproten et al., 2018, p. 48). Thus, no BART earnings may be transferred from the temporary bank account into the permanent bank account from balloons that popped. Consequently, the permanent account is used to keep track of participants' total BART earnings from balloons that did not pop.

In this exploratory study, all participants completed three runs (each lasting approximately eight minutes) with 20 trials in each run, of the modified BART consisting of only blue balloons with an average break or pop point of 64 pumps. The original task had more balloon colors, with each color balloon having different average breakpoints, so that each set of balloon colors would expose participants to different risk levels. Now, in order to effectively elicit individuals' risk preferences, participants completed the BART after having been trained on the task and having had the opportunity to practice playing it. As explained above, participants were presented with a "virtual" balloon for which they had to guess the number of pumps it could withstand. Participants chose between 1 and 128 pumps using a scrolling device that collected participants' responses. The number of pumps guessed was defined either by scrolling upwards (to increase the number of pumps guessed) or scrolling downwards (to decrease the number of pumps guessed). If the balloon withstood more than the number of pumps guessed (i.e., participant placed a winning bet), the participant accrued one cent per pump. As such, higher pump bets can lead to more potential BART earnings. The chance that a balloon pops is randomly generated; however, the probability that a "balloon would explode on the first pump is 1/128. If the balloon did not explode after the first pump, the probability that the balloon would explode was 1/127 on the second pump, 1/126 on the third pump, and so on up until the 128th pump, at which the probability of an explosion is 1/1 (i.e., 100%)" (Lejuez et al., 2002, p. 77). Thus, higher pump bets confer greater risk, as the likelihood that the balloon will pop increases. Just as in the original BART application, participants were not given information about the probability of an explosion. They were simply told that at some point each balloon would explode and that this explosion could occur as early as the first pump (since some balloons could only withstand very few pumps), while others could withstand all the way up to 128 pumps.

Now, to model real-world situations in which excessive risk-taking results in diminishing returns, each successive pump on any particular balloon trial increased the amount to be lost because of an explosion while decreasing the relative gain of any additional pumps. For example, after the first pump, the next pump risks only 1 cent (accrued in the temporary bank) but could increase the possible earnings on that balloon by 100%. However, after the 64th pump, the next pump risks 64 cents accrued in the temporary bank and would increase possible earnings on that balloon trial by only 1.6% (or 1/64) (Lejuez et al., 2002; Sproten et al., 2018). In essence, decreasing marginal returns to risk-taking after the 64th pump (or the mean break/pop point) is also built into the game. As explained above, the average break (or pop) point is 64 pumps, which is

the mean at which expected BART earnings would be maximized and around which the balloons' break points are normally distributed (Figure. 1).

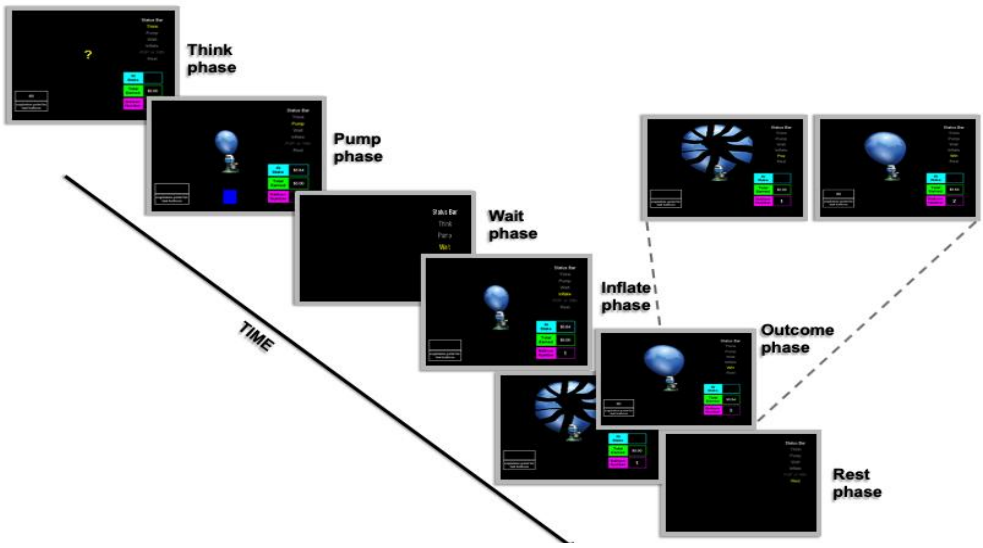
Figure 1: Expected BART Earnings as a Function of Average Pump Bet



This means that relatively high earnings may be attained by risk-averse players who may choose to consistently place lower bets (while minimizing balloon explosions). As well as by risk-seeking players who may prefer placing larger bets (sustaining more balloon explosions). Note that players with adaptive risk preferences may decide, after noticing various balloons exploding consecutively at low break points (e.g., approximately 30 pumps), to place a larger size bet on the next balloon (e.g., approximately 100 pumps) realizing that its probability of withstanding a large number of pumps has increased (since the mean break point is 64 pumps). Which would, in turn, point to participants' ability to adapt risk preferences and be strategic about their risk-taking? This situation may help explain why Fairley et al. (2019, p. 15) assert that "the BART is not commonly used by economic scholars because of concerns that participants may not adequately comprehend uncertainty associated with the task and because of the resulting difficulty in relating participants' choices to standard risk models." In any case, once participants scrolled to their desired pump bet, they pressed the scroll button to lock in their response. This then triggered a screen showing a virtual balloon being inflated (Figure. 2). Subsequently, participants received feedback indicating whether they won the bet placed (and money from the temporary bank was moved to the permanent bank, adding to their total BART earnings) or the balloon popped. When participants placed a winning bet, the amount added to the accumulated total remained visible on the screen. However, if the balloon popped, no money was accrued, and the last balloon's break point remained visible on the screen. This outcome phase was followed by a "rest phase" during which participants waited for the next trial and got to bet on a new balloon.

Figure 2: Modified BART

In each trial, participants had to pump up a virtual balloon during the "pump phase" followed by a "wait phase" (i.e., where the participant waited for a few seconds). In the following "inflate phase", participants were presented with an animation of a balloon being inflated. An "outcome/feedback phase" followed the inflate phase, in which participants were presented with the outcome, i.e., that they had either won the reward or the balloon popped.



Personality Traits and Self-Report Surveys (Study 2): To characterize various aspects of participants' personalities, participants also completed eight self-report questionnaires: State-Trait Anxiety Inventory (STAI) (Spielberger et al., 1983), Barratt Impulsivity Scale (BIS) (Barratt, 1993), Delay Discounting Questionnaire (Kirby & Maraković, 1996), Attitude Towards Risks (ATR) Questionnaire (Franken et al., 1992), Cognitive Failures Questionnaires (CFQ) (Broadbent et al., 1982), Toronto Alexithymia Scale (TAS) (Bagby et al., 1994), Behavioral Inhibiting System/Behavioral Activating System (BIS/BAS) (Voigt et al., 2009), and Temperament and Character Inventory (TCI) (Cloninger et al., 1994). Table 1 below details 28 personality metrics captured with these instruments.

Table 1: Personality Questionnaires and Metrics (Variables) Captured

Items	Self-report Surveys (Instrument)	General Instrument Description	Personality Metrics (Variables) Captured and Ranges
1-2	**State-trait anxiety inventory (STAI)**	STAI is a 40-item questionnaire based on a 4-point Likert scale. The STAI measures two types of anxiety: (a) state anxiety and (b) trait anxiety.	**State anxiety:** how a person is feeling at the time regarding perceived threats (considered temporary) Range: 23 to 49 (a lower value means that the respondent exhibits lower state anxiety, and a higher value means higher state anxiety). **Trait anxiety:** how people feel in typical situations and on a daily basis (anxiety level as a personal characteristic) Range: 36 to 54 (a lower value means that the respondent exhibits lower trait anxiety and a higher value means higher trait anxiety).
3-7	**Barratt impulsivity scale (BIS)**	This scale is widely used as a measure of impulsivity. It includes 30 items that are scored to yield six first-order factors (attention, motor, self-control, cognitive complexity, perseverance, and cognitive instability impulsiveness), and three second-order factors (attentional, motor and non-	**BIS total:** Range: 44 to 78 (a lower value means lower impulsivity, and a higher value means that the respondent exhibits highly impulsive behavior). **BIS average:** Range: 1.46 to 2.6 (a lower value means lower impulsivity, and a higher value means that the respondent exhibits highly impulsive behavior). **Attentional sum:** difficulty paying attention or concentrating. Range: 9 to 24 (a lower value means that the

		planning impulsivity).	respondent has less difficulty concentrating, and a higher value means that the respondent has greater difficulties concentrating or paying attention). **Motor sum:** person's ability to make up his/her mind. Range: 14 to 36 (a lower value means that the respondent has a lower ability to make a quick decision, and a higher value means that the respondent has a higher ability to make a quick decision). **Non-planning sum:** ability to plan for the future. Range: 14 to 32 (a lower value means a lower planning ability, and a higher value means a higher planning ability).
8	**Delay discounting questionnaire**	This is a 27-item, self-administered questionnaire that assesses whether the participants prefer smaller immediate rewards over larger delayed rewards. This measure is scored by calculating whether the respondent's answers place him/her in the reference discounting curves, where placement amid steeply declining curves indicates a tendency to devalue rewards (i.e., higher levels of impulsivity).	Range: 0.0001 to 0.25 (a lower value means that the respondent exhibits less delay discounting, lower impulsivity, indicated by preferring larger delayed rewards. In addition, a higher value means, higher discounting, higher impulsivity, indicated by preferring smaller immediate rewards).
9	**Attitude towards Risk (ATR)**	ATR is a 34-item questionnaire that quantifies the subjects' attitudes towards risk.	Range: 77 to 157 (a lower value means that the respondent exhibits higher risky behavior and a higher value means that the respondent prefers lower risk-taking).
10-13	**Cognitive failure questionnaire (CFQ)**	CFQ is a 25-item questionnaire to assess the frequency with which people experience cognitive failures, such as absent-mindedness, in everyday life. Slips and errors of perception, memory, and motor functioning. Summing scores across the relevant items yields subscale scores representing three dimensions: forgetfulness, distractibility, and false triggering.	Range: 19 to 70 (a lower value means that the respondent exhibits lower absent-mindedness, and a higher value means higher absent-mindedness). **Forgetfulness:** Tendency to let go from one's mind something known or planned, for example, names, intentions, appointments, or words. Range: 7 to 28 (a lower value represents a lower amount of forgetfulness, and a higher value represents higher forgetfulness). **Distractibility:** Being absentminded or easily disturbed in one's focused attention in social situations or interactions. Range: 6 to 23 (a lower value represents lower distractibility, and a higher value represents higher distractibility). **False triggering**: Interrupted processing of sequences of cognitive and motor actions. Range: 3 to 21 (a lower value represents lower false triggering and a higher value represents higher false triggering)

14-17	**Toronto alexithymia scale (TAS)**	TAS is a 20-item instrument that is most commonly used as a measure of alexithymia. Alexithymia refers to the condition that involves having trouble identifying and describing emotions, as well as a tendency to minimize emotional experience and focus attention externally. This instrument has 3 subscales: Difficulty, describing feelings, difficulty identifying feelings, and externally oriented thinking.	**TAS total:** Range: 29 to 73 (a lower value means that the respondent exhibits lower alexithymia and a higher value means higher alexithymia). **Difficulty describing feelings subscale:** this subscale is used to measure difficulty describing emotions. Range: 6 to 21 (a lower value means that the respondent exhibits less difficulty describing emotions and, a higher value means that the respondent exhibits more difficulty describing emotions). **Difficulty identifying feeling subscale:** this subscale is used to measure difficulty identifying emotions. Range: 7 to 27 (a lower value means that the respondent exhibits less difficulty identifying feelings, and a higher value means that the respondent exhibits greater difficulty identifying feelings). **Externally oriented thinking subscale:** this subscale is used to measure the tendency of individuals to focus their attention externally. Range: 8 to 25 (a lower value means that the respondent exhibits a lower tendency to focus attention externally, and a higher value means a higher tendency to focus attention externally).
18-21	**BIS/BAS questionnaire**	The BIS/BAS is a 24-item self-report instrument designed to measure two motivational systems: the behavioral activation system (BAS), which captures goal-oriented motivation; and the behavioral inhibition system (BIS), which alludes to motivation based on the avoidance of adverse outcomes.	**BAS drive:** corresponds to motivation based on goal-oriented outcomes. Range: 7 to 16 (a lower value means a lower tendency to strive for something desired or lower appetitive motives, and a higher value means that the respondent exhibits higher appetitive motives). **BAS fun-seeking:** motivation to find novel rewards spontaneously. Range: 8 to 16 (lower values mean lower motivation to find novel rewards, and higher values mean higher motivation to find novel rewards). **BAS reward responsiveness:** sensitivity to pleasant reinforcers in the environment Range: 14 to 20 (lower values mean lower sensitivity to pleasant reinforcers, and higher values mean higher sensitivity to pleasant reinforcers). **BIS:** corresponds to motivation to avoid adverse outcomes Range: 9 to 26 (a lower value indicates lower adverse motives, or low desire to move away from unpleasant outcomes, and a higher value means that the respondent exhibits higher adverse motives

22-28	**Temperament and character inventory (TCI)**	The TCI is a 240-item questionnaire that encompasses seven dimensions of personality traits. Four temperaments (novelty seeking, harm avoidance, reward dependence, persistence) and three characters (self-directedness, cooperativeness, self-transcendence).	**Novelty-seeking:** trait associated with exploratory activity in response to novel stimulation, impulsive decision making, quick loss of temper and avoidance of frustration Range: 11 to 33 (a lower value means that the respondent exhibits lower novelty-seeking behavior and higher values mean that the respondent exhibits higher novelty-seeking behavior). **Harm avoidance:** trait characterized by excessive worrying, pessimism, shyness and being fearful, doubtful and fatigued. Range: 3 to 27 (a lower value means that the respondent exhibits lower harm avoidance behavior and a higher value means higher harm avoidance). **Reward dependence:** trait characterized by the tendency to respond markedly to signals of reward, particularly to verbal signals of social approval, social support and sentiment Range: 9 to 23, (a lower value means that the respondent exhibits lower reward dependence, and a higher value means higher reward dependence). **Persistence dimension:** perseverance in spite of fatigue or frustrations Range: 1 to 8 (a lower value means that the respondent exhibits lower persistence, and a higher value means that the respondent exhibits higher persistence). **Self-directedness:** trait related ability to regulate and adapt behavior to the demands of situations to achieve personally chosen goals Range: 17 to 39 (a lower value means that the respondent exhibits lower self-directed behavior, and a higher value represents higher self-directed behavior). **Cooperativeness dimension:** trait concerning the degree to which a person is generally agreeable in their relationships with other people Range: 22 to 42 (a lower value means that the respondent exhibits lower cooperativeness, and a higher value means that the respondent exhibits higher cooperativeness). **Self-transcendence**: trait that involves the expansion of personal boundaries, including experiencing spiritual ideas. Range: 13 to 30 (a lower value means that the respondent exhibits lower self-transcendence, and a higher value means that the respondent exhibits higher self-transcendence).

Studies 1 and 2 were part of an fMRI study in which all participants played the BART (as well as other tasks) while lying in an MRI scanner. Participants completed self-report surveys and were trained on how to complete behavioral tasks (including the BART) before entering the magnet.

3. Methods

Participants: Potential participants were identified and enrolled in the study in collaboration with Catalyst Miami, a nongovernmental organization whose mission is to improve health, education, and economic opportunities in Miami. Catalyst Miami has a track record of connecting low-income families with financial services, such as tax preparation, credit building, savings opportunities, and financial coaching, through its community outreach programs. Individuals from different community outreach programs were recruited to participate in the study using advertisement flyers, which specified eligibility requirements, and were distributed by Catalyst Miami employees and coaches. Each participant completed a behavioral session and the 6mMSP. Before the behavioral session, all participants completed eight self-report personality questionnaires. We then explained to participants how to play the BART. Once they understood how to use the scrolling device to place bets, as well as the objective of the game, we proceeded to collect data while they played the BART on their own. Data were collected for 27 adult participants with low annual incomes (household incomes of approximately $20,000/yr.). These participants were then asked to open savings accounts to start the 6mMSP (more details on this savings program are given below). However, three participants were not able to open savings accounts, highlighting the importance of access (as described above). All volunteers were drug-free and had no current or past medical, neurological or psychiatric disorders. All participants signed written informed consent documents approved by Florida International University (FIU)'s IRB Ethical Committee. The study participants (14 female, 10 male) were all adult (average age 39.3 ± 12.4 years) low annual income individuals (average annual income $16,975 ± $5,472). The group included racially and ethnically diverse individuals (Table 2) with relatively low educational attainment, specifically: 14 participants had a high school diploma (58.3%), seven had earned an Associate's degree (29.16%), and three had some college (12.5%).

Table 2: Participant Demographics

Demographics	Participants (n=24)
Race	12 African American, 12 Caucasian
Ethnicity	16 Hispanic, 8 Non-Hispanic

Procedures and Intervention: Following consent, participants first completed eight self-report surveys (study 2), were then trained on how to play BART, and subsequently completed the risk preference task (3 runs, each run consisting of 20 trials) (study 1). After successfully doing so, participants received payment and were then accompanied by a Catalyst Miami coach to open a savings account to start the 6mMSP (participants received a $70 gift card and an additional $20 were directly deposited into their newly opened savings account).

Intervention: Six-Month Matched Savings Program (6mMSP): After completing self-report surveys and the lab behavioral session, participants were enrolled in a matched saving program in which they needed to save $20 each month for the following 6 months. Participants received a $10 match for depositing each month's saving goal ($20/month), as well as a $60 reward for completing the 6mMSP without any interim withdrawals (i.e., without touching their savings). We note that the first month's $20 deposit was provided by the 6mMSP, which by default generated the first $10 match. In essence, every participant who managed to complete all self-report surveys played the BART and opened a savings account received $100 ($70 gift card, first month's $20 direct deposit, and first month's $10 match). If participants diligently deposited $20 into their savings accounts for the following five months, they received a $10 match each month from the 6mMSP until month six. Therefore, if participants saved $100 ($20/month for five months), they stood to receive a 50% match ($10/month for five months), which was a clearly defined monthly savings target and incentive for participants (i.e., expectations, another key institutional driver of savings outcomes). Moreover, if participants managed to complete the 6mMSP without any interim withdrawals, with at least $180 ($20/month deposits for six months, with $10/month corresponding matches also for six months), they received an additional 33.33% matching reward of $60 at the end of the savings program.

Participants who successfully completed the 6mMSP received $210 in payments from the study, along with at least $100 of their own money (some participants actually deposited more than the $20/month required by the 6mMSP), for a total potential savings of at least $310 (as participants could deposit more than the

required amount). This amount of savings would significantly contribute to participants' ability to cope with nominal shocks (i.e., a $400 emergency) and enhance their financial resiliency. In addition, this amount closely approximated the additional amount saved by individuals who participated in randomized control trials (RCTs) involving matched savings programs. In particular, Duflo et al. (2006) conducted an RCT and found that when individuals were offered matches to amounts saved (e.g., matches to their individual retirement account-IRA contributions), take-up rates, or individuals' willingness to participate in matched savings programs, increased as the percentage of IRA contributions matched also grew. This, in turn, helped make the treatment (or matched) group IRA contributions, on average, $335 larger than the control (or unmatched) group contributions. Therefore, a suitable savings target was defined using reasonable expectations as well as sensible incentives that would capture real-life savings behavior in low-income populations. Participants' savings behavior was monitored by Catalyst Miami, and data were collected for the 24 participants who opened savings accounts and participated in the 6mMSP. Each participant's total savings at the end of the 6mMSP (i.e., total savings) was the main indicator considered in our analyses.

Measures

BART Performance Measures: Traditionally, the main dependent variables when using the BART (i.e., the essential BART key performance indicators - KPIs) are: the average number of pumps, calculated for trials in which the balloon did not explode, or adjusted pumps (Claus & Hutchison, 2012), which we shall refer to here as the average pump bet, and total BART earnings (Kohno et al., 2016). In general, participants with higher average pump bets also experienced higher average balloon explosions, which is both intuitive and inherent to the BART's design (see Table 3 below). The highest total BART earnings ($20.21) were attained by MMMM005, with an average pump bet of 70.07 pumps (and average explosions of 4.77 balloons), and not by those who continuously placed higher pump bets (such as MMMM003 and MMMM009) or lower bets (such as MMMM001 and MMMM019), which is also inherent to BART's design.

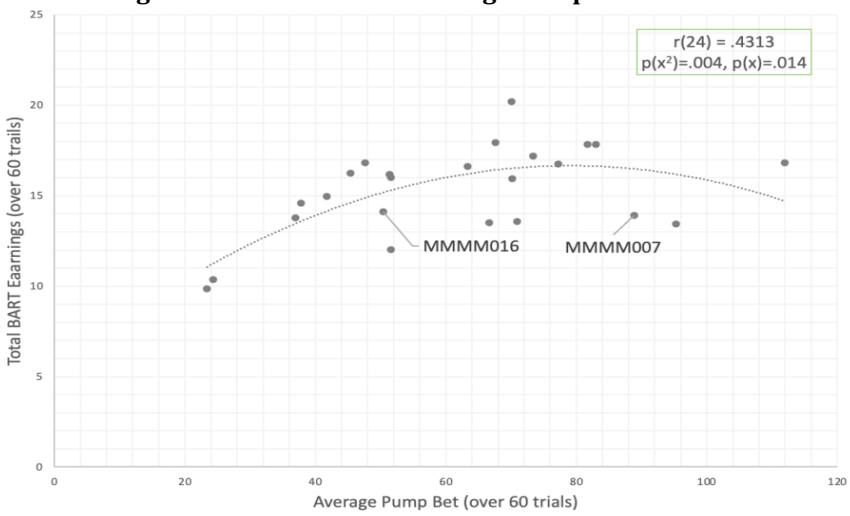
Table 3: Traditional BART Performance Indicators and Effective Pump Bet

Participant	Total BART Earnings	Avg Pump Bet	Avg Explosions	Effective Pump Bet
MMMM001	$ 9.86	23.40	2.60	0.42
MMMM002	$ 13.76	36.95	3.15	0.37
MMMM003	$ 16.82	111.93	7.88	0.15
MMMM004	$ 17.20	73.42	5.38	0.23
MMMM005	$ 20.21	70.07	4.77	0.29
MMMM007	$ 13.90	88.85	6.20	0.16
MMMM008	$ 16.62	63.37	5.23	0.26
MMMM009	$ 13.43	95.25	6.68	0.14
MMMM011	$ 14.60	37.85	2.77	0.39
MMMM012	$ 13.57	70.97	5.73	0.19
MMMM014	$ 14.97	41.72	3.60	0.36
MMMM015	$ 15.94	70.20	5.05	0.23
MMMM016	$ 14.12	50.42	4.42	0.28
MMMM017	$ 16.74	77.20	6.18	0.22
MMMM018	$ 17.92	67.60	5.58	0.27
MMMM019	$ 10.37	24.32	2.68	0.43
MMMM020	$ 17.84	81.70	6.07	0.22
MMMM021	$ 16.23	45.37	3.45	0.36
MMMM022	$ 13.52	66.68	6.30	0.20
MMMM023	$ 12.02	51.62	4.23	0.23
MMMM024	$ 17.83	83.00	6.30	0.21

MMMM025	$	16.19	51.37	4.38	0.32
MMMM026	$	16.02	51.55	4.95	0.31
MMMM027	$	16.83	47.62	3.52	0.35

We note that MMMM016 attained $14.12 with an average pump bet of 50.42 pumps (and average explosions of 4.42 balloons), while MMMM007 attained similar BART earnings ($13.90) with a much higher average pump bet of 88.85 pumps and, thus, with much higher average explosions (6.2 balloons). As highlighted in Figure. 1 (as well as Figure. 3 below), risk-averse players (such as MMMM016) may attain similar BART earnings to those of risk seekers (i.e., MMMM007). In general, Figure. 3 also shows how our sample of low-income participants exhibited the expected BART performance lab behavior.

Figure 3: Total BART Earnings as a Function of the Average Pump Bet



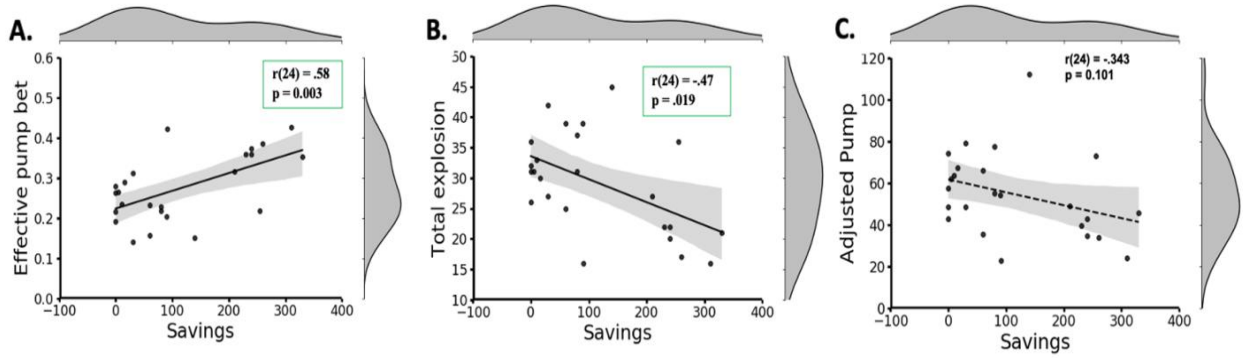
However, focusing on traditional BART KPIs, such as total BART earnings, would not differentiate MMMM007 from MMMM016. Additional risk-taking measures (such as the average pump bet or, conversely, average explosions, which are linear transformations of total pumps and total explosions, respectively) would be required to be able to effectively characterize each participant's risk preferences as either risk-seeking or risk-averse. This seems problematic on at least two fronts; first, two or more KPIs would be required to appropriately characterize a participant's risk preference effectively (i.e., whether participants attained the same BART earnings using more or less average pump bets). Second, traditional BART KPIs by themselves would not adequately capture how participants reacted to the fact that excessive risk-taking may result in diminishing returns (an essential feature of individuals' risk preferences and ATR).

Effective Pump Bet (New BART Key Performance Indicator): Therefore, we developed a new BART KPI, and normalized total BART earnings by average pump bet placed for each participant (across 60 trials). This new BART KPI, effective pump bet (EPB), not only allowed us to better characterize participants' behaviors in relation to the diminishing returns brought about by excessive risk-taking but also did so by means of only one (more comprehensive) performance measure. Indeed, participants may have exhibited relevant and adaptive risk preferences beyond recognizing that continuously betting the mean (64 pumps) could maximize their expected BART earnings. In particular, we posit that what should also matter is *participants' ability to maximize BART earnings, from pump bets placed, by strategically adapting their risk preferences*. As such, EPB helps differentiate MMMM007 from MMMM016, by evidence that the former only managed to squeeze $0.16 per average pump bet by adopting a risk-seeking strategy, while the latter attained $0.28 per average pump bet by adopting a much more conservative strategy (and performing 75% better in EPB terms).

4 Results and Analysis

Effective Pump Bet (EPB) and Real-Life Total Savings (Study 1): We conducted a bivariate Pearson's correlation analysis, using SPSS (version 26), of lab behavior (BART performance) using EPB, total explosions and adjusted pumps against total savings. We found that EPB was positively correlated with savings behavior [r(24) = 0.58, p = 0.003], indicating that participants exhibiting adaptive risk preferences (while playing BART and measured using EPB) tended to end up with higher total savings (Figure. 4A). Meanwhile, the total number of balloon explosions was negatively correlated with savings behavior [r(24) = -0.47, p = 0.019], indicating that as the total number of explosions increased, total savings decreased (Figure. 4B). Finally, average pump bet or adjusted pumps (a traditional BART KPI) was not significantly related to total savings (Figure. 4C).

Figure 4: Relation between Laboratory Behavior (Bart Performance Measures) and Total Savings



Grouping Participants Using Behavioral Measures (EPB) and Real-Life Total Savings: Figure. 4A shows that EPB explains almost 60% of the variation in total savings among study participants. We thus used EPB along with total savings (Table 4) to develop a standardized composite indicator of BART-Savings performance using principal components analysis (zPC-BS-Perf). This was done to consolidate lab and real-life performance measures and to simplify the exploration of personality traits affecting them both the most.

Table 4: Observed EPB, Total Savings and Composite Indicator of Bart-Savings Performance

Participants	Effective Pump Bet (EPB)	Total Savings	Composite Indicator of Bart-Savings Performance (ZPC-BS-PERF)
MMMM001	0.42136	$ 91.00	1.3564
MMMM002	0.37239	$ 240.00	1.9497
MMMM003	0.15026	$ 140.00	-1.1872
MMMM004	0.23427	$ 10.05	-1.2610
MMMM005	0.28843	$ 15.50	-0.6384
MMMM007	0.15644	$ 60.00	-1.7218
MMMM008	0.26228	$ -	-1.0358
MMMM009	0.14099	$ 30.00	-2.1131
MMMM011	0.38573	$ 260.00	2.2433
MMMM012	0.19121	$ -	-1.7991
MMMM014	0.35884	$ 230.00	1.7292
MMMM015	0.22706	$ 80.00	-0.8130
MMMM016	0.28006	$ -	-0.8448

MMMM017	0.21683	$	255.00	0.3917
MMMM018	0.26508	$	4.55	-0.9715
MMMM019	0.42645	$	310.00	3.05626
MMMM020	0.21835	$	80.00	-0.9065
MMMM021	0.35778	$	370.00	2.7691
MMMM022	0.20274	$	90.00	-0.9991
MMMM023	0.23287	$	60.00	-0.9009
MMMM024	0.21481	$	-	-1.5455
MMMM025	0.31518	$	210.00	1.1099
MMMM026	0.31076	$	30.00	-0.2897
MMMM027	0.35344	$	330.00	2.4224

Please note how, in Table 4, participants with high EPB and high total savings had a high positive zPC-BS-Perf score, while participants with low EPB and low total savings had negative zPC-BS-Perf scores.

Latent Personality Traits Associated to Laboratory and Real-Life Behaviors (Study 2): We also used EPB and total savings to perform hierarchical clustering analysis and group participants into high and low-performance clusters. In particular, we utilized multiple hierarchical agglomerative methods (including Ward, Centroid and Average Distance), as well as divisive methods (based on correlations) to corroborate the stability of the clusters obtained (Everitt et al., 2011). Eight participants were classified in the high-performance cluster (MMMM001, 2, 11, 14, 19, 21, 25 and 27), and all others were grouped in the low-performance cluster. As shown in Table A1 in the Appendix, participants' cluster assignments were consistent across all four methods. These clusters were then used as a binary target variable (1 for high-performance participants and 0 for low performance) in a partial least squares (PLS) model used to identify latent personality traits associated with high and low performance. PLS is useful when a few latent variables (among many input variables) contribute to most of the variation in the target variable values.

Specifically, we utilized a PLS node in SAS Enterprise Miner 14.1 to reduce the set of input and target variables to principal component matrices, such that input variable components could be used to predict the scores of target variable components. Subsequently, target variable component scores are used to predict target variable values (Wold et al., 1984). Now, in order to corroborate the stability of any emerging personality traits, we also used the standardized composite indicator of BART-savings performance (zPC-BS-Perf) from Table 4 as a continuous target variable in a separate PLS model. In essence, PLS was used to identify which of the 28 personality metrics captured acted as latent personality traits with respect to the lab and real-life behaviors. Finally, we ran an additional model with two continuous target variables, first using lab behavior (standardized EPB – zEPB) as target variable and then real-life behavior (standardized total savings – zSav) as target variable (results in Table 5 below).

Table 5: Latent Variable from Three PLS Models

Target Variable and Input Variables	**One Binary Target Variable (Hi Perf Cluster = 1, lo Perf Cluster = 0) and 28 Input Variables**	**One Continuous Target Variable (zPC-BS-Perf) and 28 Input Variables**	**Two Continuous Target Variables**	
			zEPB as the Target and 28 Input Variables	**zSav as the Target and 28 Input Variables**
Model specifications	-PLS factor extraction (Wold, 1980), Singular Vector Decomposition (SVD) algorithm -Variable selection <u>Parameter Estimate</u> score to exceed +/- 0.1 -<u>Variable Importance Projection</u> (VIP) score to exceed 0.8	-PLS factor extraction, SVD algorithm -Variable selection <u>Parameter Estimate</u> score to exceed +/- 0.1 -<u>Variable Importance Projection</u> (VIP) score to exceed 0.8	-SIMPLS factor extraction (De Jong, 1993), SVD algorithm -Variable selection <u>Parameter Estimate</u> score to exceed +/- 0.1 -<u>Variable Importance Projection</u> (VIP) score to exceed 0.8 **zEPB as the target**	-SIMPLS factor extraction, SVD algorithm -Variable selection <u>Parameter Estimate</u> score to exceed +/- 0.1 -<u>Variable Importance Projection</u> (VIP) score to exceed 0.8 **zSav as the target**
Latent variables selected	**ATR** **Distractibility** **Perseverance** **State Anxiety**	**ATR** **Distractibility** **Perseverance** **State Anxiety**	**ATR** Cognitive Failure Distractibility **State Anxiety**	**ATR** Attentional factor **Perseverance** **State Anxiety** BIS Self-directedness
Comment			**Distractibility** has an important effect on zEPB	**State anxiety** has an important effect on zSav

As expected, attitude towards risk (ATR) was selected as a latent variable in all four models (Table 5), as well as state anxiety, which also seemed intuitive given that our study focused on low-income participants (who may have felt uncomfortable coming to a university, completing long surveys, getting in a magnet, playing BART, etc.). Meanwhile, distractibility and perseverance were also selected as latent personality traits while using the groupings obtained through clustering as binary target variable, as well as while using zPC-BS-Perf as a continuous target variable. For the two continuous target variables model, distractibility had an effect on the standardized EPB (zEPB), while state anxiety had an effect on the standardized total savings (zSav). Because of this, ATR, state anxiety, distractibility and perseverance were identified as the latent personality traits contributing most to BART and savings performance.

Composite Indicator of Latent Personality Traits: These four latent personality traits contributing most to BART and savings performance, were then standardized and combined into a composite indicator of latent personality traits (PC4) using principal component analysis. Please see Table 6 below.

Table 6: Standardized Attitude towards Risk, State Anxiety, Distractibility and Perseverance, As Well as the Composite Indicator of Latent Personality Traits

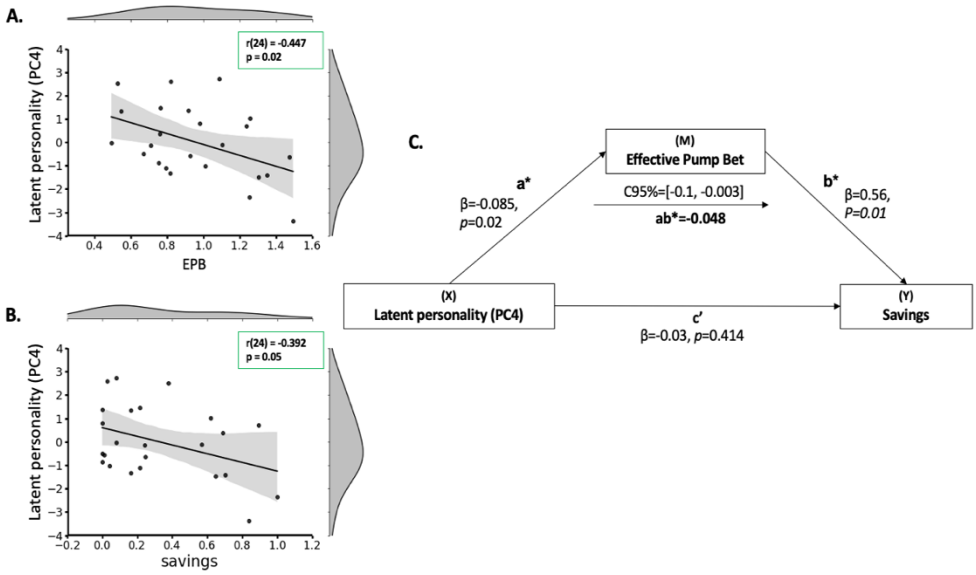
Participant	zATR	zState_Anxiety	zDistractibility	zPerseverance	Composite Indicator of Latent Personality Traits (PC4)
MMMM001	1.7	1.346	0.705	0.857	-0.63247
MMMM002	1.625	1	0.705	1	-1.47997
MMMM003	1.513	1.307	1.352	0.714	2.51230
MMMM004	1.85	1.423	1	0.142	2.59828
MMMM005	1.35	1.884	0.529	1.142	-1.02577
MMMM007	1.025	1.538	1.058	1	1.34262
MMMM008	0.963	1.346	1.117	1	1.36184
MMMM009	1.413	1.076	0.882	0.857	-0.02099
MMMM011	1.413	0.961	0.470	0.714	-1.41511
MMMM012	1.13	1.153	0.764	1	-0.49889
MMMM014	1.713	1.230	1.058	0.714	1.01612
MMMM015	1.963	1.5	0.705	1	-1.10121
MMMM016	1.8	1.538	0.705	0.428	0.80394
MMMM017	1.8	1.461	0.941	0.857	0.37211
MMMM018	1.54	1.076	0.882	1	-0.57119
MMMM019	1.63	0.961	0.352	1.142	-3.3664
MMMM020	1.34	1.269	1.058	0.714	1.46324
MMMM021	1.78	1	0.529	1	-2.34151
MMMM022	1.75	1.269	0.764	0.714	-0.14205
MMMM023	1.363	0.884	0.823	1.143	-1.32471
MMMM024	1.738	0.923	0.705	0.714	-0.86987
MMMM025	1.613	1.576	0.941	1.142	-0.10361
MMMM026	1.28	1.153	1.294	0.571	2.71991
MMMM027	1.35	0.884	1.117	0.857	0.70338

Please note that lower zATR values point to risk-seeking preferences, while higher values mean risk-averse preferences. Similarly, for zPerseverance, lower values indicate lower persistence, and higher values indicate the opposite. The principal component weights associated with these two variables were negative (-0.158 and -0.406, respectively), which meant that participants for whom ATR and perseverance had large, weighted contributions to PC4—in terms of significant risk-averse behavior and high-end persistence—had negative overall scores for the composite indicator of latent personality traits (PC4) affecting BART and savings performance. In contrast, participants with high state anxiety as well as high distractibility (with principal component weights of 0.217 and 0.574, respectively), along with lower negative contributions associated with risk-averse behavior and high persistence, had positive PC4 scores.

Mediation Analysis: Using SPSS (version 26), we conducted a bivariate Pearson's correlation analysis between PC4 and lab behavior (i.e., EPB) and real-world behavior (i.e., total savings). The results indicated that latent personality scores (from PC4) significantly negatively correlated with our measure of adaptive risk preferences, EPB [$r(24) = -0.447$, $p = 0.02$], indicating that as the score on the latent personality measure increased, savings decreased (Figure. 5A). Similarly, the latent personality score was significantly negatively correlated with real-world savings behavior and savings [$r(24) = -0.392$, $p = 0.05$], indicating that as the latent personality score increased, savings decreased (Figure. 5B).

Figure 5: Relationship between Latent Personality Traits (Pc4), Lab Behavior (EPB) and Real-World Behavior (Total Savings)

(A) PC4 is significantly negatively correlated with EPB [*r(24) =-0.447, p = 0.02*]. **(B)** PC4 is significantly negatively correlated with total savings [*r(24) =-0.392, p = 0.05*]. **(C)** Mediation model showing the relation between latent personality traits (in PC4), lab behavior (BART performance in terms of EPB), and real-life behavior (as total savings). EPB fully mediated the effect of latent personality traits (PC4: X) on total savings (Y) as (1) PC4 accounted for the significant variance in EPB (**a path**); (2) EPB accounted for the unique variance in total savings when controlling for PC4 (**b path**); (3) the indirect mediation effect was significant (**ab path**); and (4) PC4's direct effect on total savings was not significant when EPB was included in the model. * $p<0.05$. Since PC4 exhibited a significant correlation with both EPB (Figure. 5A) and savings (Figure. 5B), we conducted a mediation analysis using SPSS PROCESS V3.4 to examine whether the relation between PC4 (i.e., a composite indicator of latent personality traits) (X).



Real-world behavior (i.e., total savings) (Y) could be explained by lab behavior (M, BART task performance in terms of EPB). In other words, we conducted the mediation analysis to test the hypothesis that the effect of PC4 (X) on total savings (Y) was mediated by EPB (M). As shown in Figure. 5C, EPB fully mediated the influence of PC4 on total savings. Specifically, when including EPB as a mediator in the model, PC4's direct effect on total savings failed to reach significance (c' path: β= -0.03, p =0.414), whereas the indirect effect was significant (ab path: β = -0.048: 95% CI =-0.01, -0.003). This suggests that higher PC4 scores predict decreases in EPB. In addition, even though higher EPB predicted higher total savings, higher PC4 scores decreased total savings by decreasing EPB. In essence, latent personality traits (i.e., attitude towards risk, state anxiety, distractibility and perseverance) affected the risk preferences of low-income individuals, in turn impacting their ability to take full advantage of matched savings programs, save, and become financially resilient.

Discussion

To help start elucidating the way in which these four latent personality traits may affect individual risk preferences and, subsequently, real-life savings behavior of low-income individuals, we will now discuss how each may influence individuals' decision-making processes, in particular their risk preferences. Regarding attitudes towards risk, captured using the 34-item Attitudes Toward, Risk Scale (ATRS), having a propensity to take physical and/or psychological risks should not be expected to contribute to individuals' ability to place effective pump bets or to save. Insofar as ATRS scores can be associated with increased sensation-seeking and impulsivity. Interestingly, access to formal savings—among otherwise unbanked populations—

helped delay their inclination to take risks (Carvalho et al., 2016). In terms of state anxiety, which is a subscale of the State-Trait Anxiety Inventory (STAI) questionnaire, and reflects the more temporary condition of anxiety (captured through feelings of apprehension, tension, nervousness and concern) (Spielberger et al., 1983). Previous studies have discovered that people with lower anxiety were more likely to save regularly among individuals from low and moderate-income households (Hayhoe et al., 2012), which stands in juxtaposition with the more generalized role that trait anxiety plays in making individuals of all backgrounds save more but invest less, as discussed above (Gambetti & Giusberti, 2019). In general, it does not seem counterintuitive to suppose that lower state anxiety, through the influence it may exert on risk preferences, should enhance individuals' ability to place effective pump bets and to save.

Distractibility is a subscale of the Cognitive Failure Questionnaire (CFQ) and is identified as a disturbance in the individual's ability to focus attention (Hadlington, 2015). Unsurprisingly, measures of distractibility relate to other personality traits (e.g., proneness to become bored or the need to seek excitement), behavioral tendencies (e.g., hyperactivity and impulsiveness) as well as to cognitive functioning (e.g., failure of concentration or focus) (Kass et al., 2010). Thus, it seems intuitive that lower distractibility would enhance individuals' ability to place effective pump bets and to save. Finally, regarding perseverance (or persistence), which is defined as an individual's tendency to maintain behaviors despite frustration and fatigue (Cloninger et al., 1994). As such, perseverance may be expected to help facilitate adherence to norms, rules and programs. Thus, perseverance may enhance individuals' ability to save. The above points combined ought to help shed additional light on how high PC4 scores could decrease total savings by decreasing participants' ability to place effective pump bets (or strategically adapt risk preferences).

Implications: Our findings could help refine interventions aimed at enhancing financial resiliency among low-income populations through the use of matched savings programs. For instance, depending on participants' BART performance-matched savings programs could be offered in a manner that maximizes the number of participants likely to successfully complete them. In essence, EPB could help identify individuals who are most likely to readily take full advantage of savings opportunities. This in turn could also help avoid the stipulation of unnecessary (and expensive) financial coaching programs to these same individuals. Now, behavioral decision-making researchers have already considered using BART to identify real-world risk-takers (Schürmann et al., 2019). Here we propose using new BART performance measures (e.g., EPB), to customize matched savings programs by means of tailored (participant-focused) accompanying coaching sessions. This way, participants deemed less likely to successfully complete matched savings programs, based on their BART performance (captured using EPB), could then be offered varying levels of attention and customized coaching, based on their PC4 scores. Which, once again, could avoid the stipulation of generalized (and perhaps ineffective) coaching services? Specifically, the examination of how zPC-BS-Perf varies as a function of PC4 for our sample (Figure. 6) points to ways of defining the intensity and periodicity of coaching services associated with matched savings programs (using participants' PC4 scores).

Figure 6: BART-Savings Performance as a Function of Latent Personality Traits

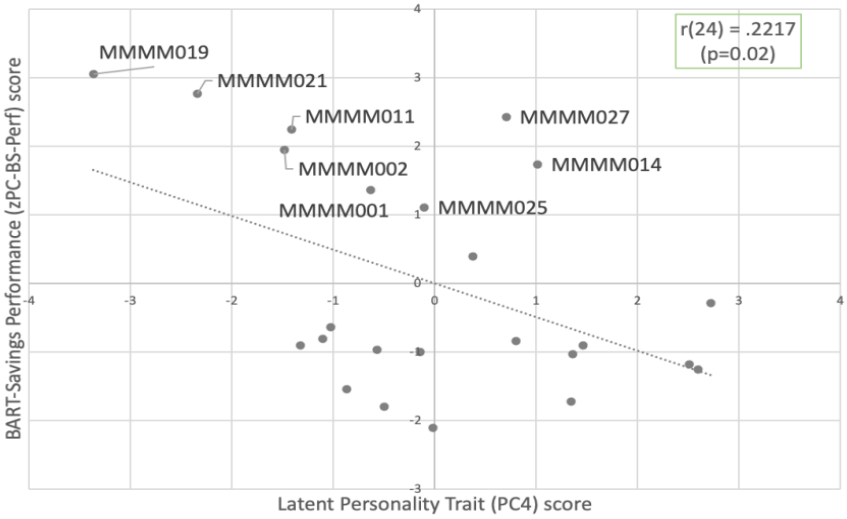


Figure 6 shows that low-income individuals with higher risk-seeking attitudes, higher state anxiety, higher distractibility and lower persistence exhibit lower overall BART-savings performance. In fact, we expect each point subtracted from the PC4 score to increase zPC-BS-Perf by 49.22%. As such, customized coaching sessions could be aimed at helping participants develop strategies to manage their state anxiety and distractibility to improve their attitude towards risk while enhancing their persistence, and thus improving participants' chances of completing matched savings programs.

Limitations and Future Research: Our study should be replicated with a larger group of low-income participants. In addition, considering the inclusion of a control group of high-income individuals could help tease out any potential low-income condition effects on state anxiety. As expected, exploring the savings behavior of low-income individuals was not a trivial endeavor. In particular, we experienced unexpected and surprisingly long delays in recruitment, which may be associated with individuals' reluctance to enroll in savings opportunities due to repeated previous inaction (Krijnen et al., 2020). As discussed in the introduction, inaction inertia may not only be more pronounced in low-income contexts but may also be adversely influencing participants' ability to strategically adapt their risk preferences (another aspect that should be explored in future research). In addition, cognitive scarcity among low-income populations—by which exacting daily struggles consume individuals' brain power, thus leaving little bandwidth to engage in future planning (Mullainathan & Shafir, 2013)—should be explored in light of our findings. For instance, neurocognitive mechanisms (or substrates) associated with cognitive capacity (such as working memory) that may affect low-income individuals' savings ability should be explored. Moreover, neurocognitive substrates associated with risk preferences (elicited through BART) underpinning low-income individuals' ability to save should also be studied.

5. Conclusion

The COVID-19 pandemic and the economic wreckage it continues to bequeath are surely exacerbating the financial perils of many households and individuals the world over. Here, we set out to explore how personality traits could help define risk preferences, which in turn could affect the savings behavior of low-income individuals. In particular, we explored the relationship between 28 personality metrics, traditional lab (BART) performance measures, and real-life savings behaviors of 24 low-income participants (clients of Catalyst Miami). We uncovered the influence that four latent personality traits (encompassed in PC4) exerted on participants' ability to strategically adapt their risk preferences (captured using a new BART performance measure - EPB), which subsequently affected their savings behavior. Despite the exploratory nature of this study, our efforts yielded a new BART measure that could help policymakers, funders, practitioners, and not-for-profits optimize their impact by identifying low-income individuals more likely to readily take advantage of matched savings programs. As this new BART measure is associated with four personality traits, it should

also help customize financial coaching services for low-income individuals less likely to do so. Our hope is that these findings can contribute to the development of more effective savings programs at a time when they could play a vital role in helping mitigate the financial vulnerability.

References

Aklin, W. M., Lejuez, C., Zvolensky, M. J., Kahler, C. W. & Gwadz, M. (2005). Evaluation of behavioral measures of risk-taking propensity with inner-city adolescents. *Behavior Research and Therapy,* 43(2), 215–228. https://doi.org/10.1016/j.brat.2003.12.007

Arrow, K. J. (1965). Aspects of the Theory of Risk-Bearing. Yrjö Jahnsonian Sä¨tiö.

Bagby, R. M., Parker, J. D. & Taylor, G. J. (1994). The twenty-item Toronto Alexithymia Scale—I. Item selection and cross-validation of the factor structure. *Journal of psychosomatic research,* 38(1), 23-32. https://doi.org/https://doi.org/10.1016/0022-3999(94)90005-1

Barratt, E. S. (1993). Impulsivity: Integrating cognitive, behavioral, biological, and environmental data. In The Impulsive Client: Theory, Research, and Treatment (pp. 39–56). American Psychological Association. https://doi.org/https://doi.org/10.1037/10500-003

Birkenmaier, J., Curley, J. & Kelly, P. (2014). Matched savings account program participation and goal completion for low-income participants: Does financial credit matter? *Journal of Social Service Research,* 40(2), 215–231. https://doi.org/10.1080/01488376.2013.875095

Broadbent, D. E., Cooper, P. F., FitzGerald, P. & Parkes, K. R. (1982). The cognitive failures questionnaire (CFQ) and its correlates. *British journal of clinical psychology,* 21(1), 1-16. https://doi.org/https://doi.org/10.1111/j.2044-8260.1982.tb01421.x

Brown, S. & Taylor, K. (2014). Household finances and the 'Big Five'personality traits. *Journal of Economic Psychology,* 45, 197-212.

Brunell, A. B. & Buelow, M. T. (2017). Narcissism and performance on behavioral decision-making tasks. *Journal of Behavioral Decision Making,* 30(1), 3-14.

Carvalho, L. S., Prina, S. & Sydnor, J. (2016). The effect of saving on risk attitudes and intertemporal choices. *Journal of Development Economics,* 120, 41–52. https://doi.org/10.1016/j.jdeveco.2016.01.001

CBPP. (2020). Tracking the COVID-19 Recession's Effects on Food, Housing, and Employment Hardships. Center on Budget and Policy Priorities. https://www.cbpp.org/research/poverty-and-inequality/tracking-the-covid-19-recessions-effects-on-food-housing-and

Claus, E. D. & Hutchison, K. E. (2012). Neural mechanisms of risk-taking and relationships with hazardous drinking. *Alcoholism: Clinical and Experimental Research,* 36(6), 932–940. https://doi.org/10.1111/j.1530-0277.2011.01694.x

Cloninger, C. R., Przybeck, T. R., Svrakic, D. M. & Wetzel, R. D. (1994). The Temperament and Character Inventory (TCI): A guide to its development and use. Center for Psychobiology of Personality, Washington University.

Conell-Price, L. & Jamison, J. (2015). Predicting health behaviors with economic preferences & locus of control. *Journal of Behavioral and Experimental Economics,* 54, 1–9. https://doi.org/10.1016/j.socec.2014.10.003

De Jong, S. (1993). SIMPLS: An alternative approach to partial least squares regression. *Chemometrics and Intelligent Laboratory Systems,* 18(3), 251–263. https://doi.org/10.1016/0169-7439(93)85002-X

Duflo, E., Gale, W., Liebman, J., Orszag, P. & Saez, E. (2006). Saving incentives for low-and middle-income families: Evidence from a field experiment with H&R Block. *The Quarterly Journal of Economics,* 121(4), 1311–1346. https://doi.org/10.1162/qjec.121.4.1311

Everitt, B. S., Landau, S., Leese, M. & Stahl, D. (2011). Cluster Analysis. John Wiley & Sons.

Fairley, K., Parelman, J. M., Jones, M. & Carter, R. M. (2019). Risky health choices and the balloon economic risk protocol. *Journal of Economic Psychology,* 73, 15-33.

Franken, R. E., Gibson, K. J. & Rowland, G. L. (1992). Sensation seeking and the tendency to view the world as threatening. *Personality and Individual Differences,* 13(1), 31–38. https://doi.org/10.1016/0191-8869(92)90214-A

Gabler, N. (2016, May 2016). The secret shame of middle-class Americans. The Atlantic, 317.

Gambetti, E. & Giusberti, F. (2019). Personality, decision-making styles and investments. *Journal of Behavioral and Experimental Economics,* 80, 14–24. https://doi.org/10.1016/j.socec.2019.03.002

Gauthier, A. H. & Furstenberg, F. F. (2010). The experience of financial strain among families with children in the United States. Working Paper WP-10-17. National Center for Family & Marriage Research.

Greenberg, A. E., Sussman, A. B. & Hershfield, H. E. (2020). Financial product sensitivity predicts financial health. *Journal of Behavioral Decision Making,* 33(1), 15-26.

Gutter, M. S., Hayhoe, C. R., DeVaney, S. A., Kim, J., Bowen, C. F., Cheang, M., Cho, S. H., Evans, D. A., Gorham, E. & Lown, J. M. (2012). Exploring the relationship of economic, sociological, and psychological factors to the savings behavior of low-to moderate-income households. *Family and Consumer Sciences Research Journal,* 41(1), 86–101. https://doi.org/10.1111/j.1552-3934.2012.02130.x

Guven, C. (2012). Reversing the question: Does happiness affect consumption and savings behavior? *Journal of Economic Psychology,* 33(4), 701–717. https://doi.org/10.1016/j.joep.2012.01.002

Hadlington, L. J. (2015). Cognitive failures in daily life: Exploring the link with Internet addiction and problematic mobile phone use. *Computers in Human Behavior,* 51, 75–81. https://doi.org/10.1016/j.chb.2015.04.036

Hall, C. C. (2021). Promoting savings for financial resilience: Expanding the psychological perspective. *Current Directions in Psychological Science,* 30(1), 49–54. https://doi.org/10.1177/0963721420979603

Hayhoe, C. R., Cho, S. H., DeVaney, S. A., Worthy, S. L., Kim, J. & Gorham, E. (2012). How do distrust and anxiety affect saving behavior? *Family and Consumer Sciences Research Journal,* 41(1), 69–85. https://doi.org/10.1111/j.1552-3934.2012.02129.x

Holzmeister, F. (2017). oTree: Ready-made apps for risk preference elicitation methods. *Journal of Behavioral and Experimental Finance,* 16, 33–38. https://doi.org/10.1016/j.jbef.2017.08.003

Kass, S. J., Beede, K. E. & Vodanovich, S. J. (2010). Self-report measures of distractibility as correlates of simulated driving performance. *Accident Analysis & Prevention,* 42(3), 874–880. https://doi.org/10.1016/j.aap.2009.04.012

Kesavayuth, D., Ko, K. M. & Zikos, V. (2018). Locus of control and financial risk attitudes. *Economic Modeling,* 72, 122–131. https://doi.org/10.1016/j.econmod.2018.01.010

Kirby, K. N. & Maraković, N. N. (1996). Delay-discounting probabilistic rewards: Rates decrease as amounts increase. *Psychonomic bulletin & review,* 3(1), 100-104. https://doi.org/https://doi.org/10.3758/BF03210748

Kohno, M., Nurmi, E. L., Laughlin, C. P., Morales, A. M., Gail, E. H., Hellemann, G. S. & London, E. D. (2016). Functional genetic variation in dopamine signaling moderates prefrontal cortical activity during risky decision making. *Neuropsychopharmacology,* 41(3), 695–703. https://doi.org/10.1038/npp.2015.192

Krijnen, J. M., Zeelenberg, M., Breugelmans, S. M. & van Putten, M. (2020). Inaction inertia in retirement saving. *Journal of Behavioral Decision Making,* 33(1), 52-62.

Lejuez, C. W., Aklin, W. M., Jones, H. A., Richards, J. B., Strong, D. R., Kahler, C. W. & Read, J. P. (2003). The balloon analog risk task (BART) differentiates smokers and nonsmokers. *Experimental and Clinical Psychopharmacology,* 11(1), 26–33. https://doi.org/10.1037/1064-1297.11.1.26

Lejuez, C. W., Read, J. P., Kahler, C. W., Richards, J. B., Ramsey, S. E., Stuart, G. L., Strong, D. R. & Brown, R. A. (2002). Evaluation of a behavioral measure of risk-taking: The Balloon Analogue Risk Task (BART). *Journal of Experimental Psychology: Applied,* 8(2), 75–84. https://doi.org/10.1037/1076-898X.8.2.75

Liu, H. H. & Chou, H. Y. (2018). Promotional formats and inaction inertia. *Journal of Economic Psychology,* 66, 22-32.

Loibl, C., Jones, L. & Haisley, E. (2018). Testing strategies to increase saving in individual development account programs. *Journal of Economic Psychology,* 66, 45-63.

Loibl, C., Kraybill, D. S. & DeMay, S. W. (2011). Accounting for the role of habit in regular saving. *Journal of Economic Psychology,* 32(4), 581-592.

Loke, Y. J. (2016). Financial preparedness for income shock among Malaysians. *Malaysian Journal of Economic Studies,* 53(2), 279–295.

Ludwig, J., Jaudas, A. & Achtziger, A. (2020). The role of motivation and volition in economic decisions: Evidence from eye movements and pupillometry. *Journal of Behavioral Decision Making,* 33(2), 180-195.

Lusardi, A. (2011). Americans' Financial Capability. National Bureau of Economic Research (NBER) Working Paper 17103. National Bureau of Economic Research.

Lusardi, A., Schneider, D. J. & Tufano, P. (2011). Financially fragile households: Evidence and implications. National Bureau of Economic Research (NBER) Working Paper No. 17072. National Bureau of Economic Research.

Mason, C. L. J. & Wilson, R. M. S. (2000). *Conceptualizing Financial Literacy* (Vol. 7). Business School, Loughborough University.

McElroy, T., Seta, J. J. & Waring, D. A. (2007). Reflections of the self: how self-esteem determines decision framing and increases risk-taking. *Journal of Behavioral Decision Making,* 20(3), 223-240.

Mullainathan, S. & Shafir, E. (2013). Scarcity: Why Having too Little Means So Much. Macmillan.

Schürmann, O., Frey, R. & Pleskac, T. J. (2019). Mapping risk perceptions in dynamic risk-taking environments. *Journal of Behavioral Decision Making,* 32(1), 94-105.

Sherraden, M. (2000). From research to policy: Lessons from individual development accounts. *Journal of Consumer Affairs,* 34(2), 159–181. https://doi.org/10.1111/j.1745-6606.2000.tb00089.x

Sherraden, M. (2008). IDAs and Asset-Building Policy: Lessons and Directions. Center for Social Development, George Warren Brown School of Social Work, Washington University.

Sherraden, M., Schreiner, M. & Beverly, S. (2003). Income, institutions, and saving performance in individual development accounts. *Economic Development Quarterly,* 17(1), 95–112. https://doi.org/10.1177/0891242402239200

Shim, S., Serido, J. & Tang, C. (2012). The ant and the grasshopper revisited: The present psychological benefits of saving and future-oriented financial behaviors. *Journal of Economic Psychology,* 33(1), 155-165.

Smeeding, T. M. (2005). The EITC and USAs/IDAs: Maybe a Marriage Made in Heaven? Working Paper 00-18. Center for Social Development, George Warren Brown School of Social Work, Washington University.

Smith, C. E., Echelbarger, M., Gelman, S. A. & Rick, S. I. (2018). Spendthrifts and tightwads in childhood: Feelings about spending predict children's financial decision making. *Journal of Behavioral Decision Making,* 31(3), 446-460.

Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R. & Jacobs, G. A. (1983). State-Trait Anxiety Inventory for Adults. Consulting Psychologists Press Inc. PsycNET [WWW Document]. URL https://psycnet.apa.org/record/9999-06496-000?doi=1

Sproten, A. N., Diener, C., Fiebach, C. J. & Schwieren, C. (2018). Decision making and age: Factors influencing decision making under uncertainty. *Journal of Behavioral and Experimental Economics,* 76, 43–54. https://doi.org/10.1016/j.socec.2018.07.002

Taylor, M. P., Jenkins, S. P. & Sacker, A. (2011). Financial capability and psychological health. *Journal of Economic Psychology,* 32(5), 710–723. https://doi.org/10.1016/j.joep.2011.05.006

Thaler, R. H. (1994). Psychology and savings policies. *The American Economic Review,* 84(2), 186–192.

Voigt, D. C., Dillard, J. P., Braddock, K. H., Anderson, J. W., Sopory, P. & Stephenson, M. T. (2009). BIS/BAS scales and their relationship to risky health behaviors. *Personality and Individual Differences,* 47(2), 89-93. https://doi.org/https://doi.org/10.1016/j.paid.2009.02.003

Weiss, M. G. & Sherraden, M. (2005). Racial differences in performance in a matched savings program. *Journal of Income Distribution,* 13(3-4), 6.

Westfall, J. E., Jasper, J. D. & Christman, S. (2012). Inaction inertia, the sunk cost effect, and handedness: Avoiding the losses of past decisions. *Brain and cognition,* 80(2), 192-200.

Wold, H. (1980). Model construction and evaluation when theoretical knowledge is scarce: Theory and application of partial least squares. In J. Kmenta & J. B. Ramsey (Eds.), Evaluation of Econometric Models (pp. 47–74). Academic Press.

Wold, S., Ruhe, A., Wold, H. & Dunn III, W. (1984). The collinearity problem in linear regression. The partial least squares (PLS) approach to generalized inverses. *SIAM Journal on Scientific and Statistical Computing,* 5(3), 735–743. https://doi.org/10.1137/0905052

Appendix

Table A1: Results of Clustering Participants using Four Different Methods

	Hierarchical Clustering Approach Agglomerative Methods			
Subject	**Ward**	**Centroids**	**Average Distance**	**Divisive Methods**
MMMM001	**Cluster1**	**Cluster1**	**Cluster1**	**Cluster1**
MMMM002	**Cluster1**	**Cluster1**	**Cluster1**	**Cluster1**
MMMM003	Cluster2	Cluster2	Cluster2	Cluster2
MMMM004	Cluster2	Cluster2	Cluster2	Cluster2
MMMM005	Cluster2	Cluster2	Cluster2	Cluster2
MMMM007	Cluster2	Cluster2	Cluster2	Cluster2
MMMM008	Cluster2	Cluster2	Cluster2	Cluster2
MMMM009	Cluster2	Cluster2	Cluster2	Cluster2
MMMM011	**Cluster1**	**Cluster1**	**Cluster1**	**Cluster1**
MMMM012	Cluster2	Cluster2	Cluster2	Cluster2
MMMM014	**Cluster1**	**Cluster1**	**Cluster1**	**Cluster1**
MMMM015	Cluster2	Cluster2	Cluster2	Cluster2
MMMM016	Cluster2	Cluster2	Cluster2	Cluster2
MMMM017	Cluster2	Cluster2	Cluster2	Cluster2
MMMM018	Cluster2	Cluster2	Cluster2	Cluster2
MMMM019	**Cluster1**	**Cluster1**	**Cluster1**	**Cluster1**
MMMM020	Cluster2	Cluster2	Cluster2	Cluster2
MMMM021	**Cluster1**	**Cluster1**	**Cluster1**	**Cluster1**
MMMM022	Cluster2	Cluster2	Cluster2	Cluster2
MMMM023	Cluster2	Cluster2	Cluster2	Cluster2
MMMM024	Cluster2	Cluster2	Cluster2	Cluster2
MMMM025	**Cluster1**	**Cluster1**	**Cluster1**	**Cluster1**
MMMM026	Cluster2	Cluster2	Cluster2	Cluster2
MMMM027	**Cluster1**	**Cluster1**	**Cluster1**	**Cluster1**

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Strengthening of the Coal-Gasification Industry: Evidence from Indonesia

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Abstract: The purpose of this research is to analyze Indonesia's coal-gasification industry policy. This research needs to map the undeveloped coal-gasification industry. In fact, the coal-gasification industry can increase the economic value of coal, increase local income, absorb the labor force, and reduce pollution. It also has some strategic roles in national fiscal revenue and foreign exchange reserves and is of great significance to regional development. The research methods used are quantitative and qualitative. The results of this study indicate that government needs to provide some financial incentives for the coal-gasification industries, especially for pioneer companies for having coal-gasification works, and ensure that policies taken will be able to encourage economic growth and investment in Indonesia's coal-gasification industry. To support investment in the coal-gasification industry, it is necessary to formulate policies and rules to provide a sign for its implementation.

Keywords: *Coal, gasification industry, fiscal incentives policy.*

1. Introduction

Indonesia is a country with abundant natural resources such as oil, natural gas, minerals and coal (Anjar, et al., 2019; Marques, et al., 2019). In order for these natural resources to provide the greatest possible prosperity to the community, their management must be carried out wisely and always consider various aspects. These aspects include economic, social and environmental aspects (Alin, 2004; Sutthichaimethee, 2018). One of the abundant natural resources that have not been managed optimally is coal. The spread of potential coal reserves in Indonesia can be found in several areas, including Kalimantan, Sumatra, Papua and several other regions. The potential content of coal resources in Indonesia is estimated at 151 billion tonnes with coal reserves of 39 billion tonnes. However, if there are no innovation efforts in coal processing, coal reserves are expected to be depleted in the next 70 years, so that by 2090 Indonesia's coal reserves will run out (Geological Agency, 2018). According to Deon Arinaldo, et al. (2019), there is a transition period for the management and utilization of coal in Indonesia. The management and utilization of coal require medium and long-term planning related to collaborative cooperation between various sectors, agencies, ministries and local governments to optimize the benefits of coal. This is because coal still has an important role in Indonesia's trade balance and economic development in several regions. Another reason is increasing economic value through the mining process and in the development of the downstream coal industry. This is believed to be one of the alternatives to increase the multiplier effect for the national economy (Wang, 2017).

On the other hand, it will be able to reduce dependence on exports of raw material commodities that have not been further processed. Currently, cooperation among some ministries, such as the Ministry of Industry, the Ministry of Energy and Mineral Resources, the Ministry of Industry, the Ministry of Finance and the Ministry of Home Affairs is needed to build certain a policy framework to optimize coal's economic value trough coal gasification works. Coal mining has a huge contribution to state incomes, either from charges and non-charges, like fixed expenses, abuse expenses or eminences. Realization of Coal Non-Charges State Revenues continues to increase. In 2018 and 2019 it reached USD 1,492,216,540 and USD 1,375,840,980 (Ministry of Finance of Indonesia, 2020). Indonesia's coal holds are as of now recorded at 3 percent of the world's absolute coal saves. While the structure comprises of low-calorie coal content, adding up to 29 percent, medium calories by 64 percent, while the high and very high-calorie composition is 4 and 3 percent. For high and very high-calorie coal, mining entrepreneurs are usually exported directly because of the high price. For low and medium-calorie coal content, the Government continues to encourage added-value enhancement. One of them is through the gasification process. This process is to convert coal from solid form to Dimethyl Ether (DME) so that it can be consumed like Liquified Petroleum Gas (LPG) which is commonly consumed by households so far. The gasification industry is expected to support the coal downstream program in Indonesia, and the coal utilization program optimally.

Likewise, it can reduce the amount of LPG imports so that there are savings in foreign exchange. On the other hand, subsidies have also decreased, the supply of LPG has increased and the price of LPG has become cheaper. Another benefit of the coal-gasification industry is the absorption of labor and an increase in regional revenue where the gasification industry is located. Currently, not many mining companies in Indonesia are interested in developing a coal-gasification program. The main obstacle is gasification technology and very high investment costs. Right now there is just one state-possessed organization that will turn into a pilot project for the improvement of the coal-gasification industry, namely PT Bukit Asam in collaboration with PT Pertamina, PT. Pupuk Indonesia and PT. Candra Asri. PT Bukit Asam is one of the pilot project objects. Currently, it continues to carry out business efficiency to start a gasification project that is feasible or economically feasible, as well as obtaining bank financing support. Gasification technology is currently very possible to be developed. Several countries have also succeeded in carrying out the coal-gasification industry.

As an alternative energy, such as China, the United States, South Korea, Mongolia and Japan (Fei, 2016). The main problem of the coal-gasification industry for mining companies in Indonesia is the very high investment costs, so that this project may be given incentive support from the government to encourage the gasification industry to develop. Currently, the investment needed to start the coal gasification industry is the US $ 2.4 billion (Kontan.co.id, 2020). One of the supports that can be provided by the Government is the provision of fiscal incentives. Several alternative fiscal incentives can be given to coal gasification industry developers, including tax holidays, tax allowances, and exemption from import duties for raw materials and machinery and equipment. In addition, it is also possible to provide integrated Special Economic Zone facilities and to postpone or reduce royalty payments or special prices for mine-mouth coal downstream. Another support is the certainty of the final product price of the gasification industry. However, another important key is the seriousness and political will of the Government to make the coal gasification industry program a success.

2. Research Method

The research method used is a mixed method that combines qualitative and quantitative approaches. The quantitative method in this study uses BCA to create a benefit and cost scenario that provides financial incentives for the Indonesian coal-gasification industry. The formula is as follows: (Salman, 2017; Zulfiandri, 2017).

$$PV^{i} = \left(B_0^i - C_0^i\right) + \frac{\left(B_1^i - C_1^i\right)}{(1+r)} + \ldots + \frac{\left(B_T^i - C_T^i\right)}{(1+r)^T}$$

Where,
PV^i = Present Value project i
B_t^i = Benefit from project i at time t
C_t^i = Cost from project i at time t

To deepen the study in this study, a qualitative exploratory method was used. In the exploratory qualitative approach, the purpose is to discuss and analyze by digging deeper into various information regarding the policy of providing financial incentives for investment in the coal gasification industry in Indonesia. Well, springs of information and data in a subjective methodology in this investigation are to look for data from strategy producers about financial impetuses to help the coal-gasification program in Indonesia, just as through Focus Group Discussions (FGD) and writing considers. The fiscal incentive policy scenarios provided by the Government are tax allowances, charge exclusions and sovereignties which can influence macroeconomic exercises. The information utilized is information from the Central Bureau of Statistics and information from PT. Bukit Asam.

3. Literature Review

In the development of the pioneer industry as well as the coal-gasification industry, it will face various obstacles. One of these obstacles is the amount of investment. According to Zhou et al. (2015), there are 5 obstacle factors, one of which is financial factors which are obstacles to business organizations for business development. Other factors are knowledge, technology, economy and social and political factors. One of the financial supports from the government to develop the coal-gasification industry is to provide fiscal

incentives. The implementation of the current coal-gasification investment fiscal incentives in Indonesia has not yet been implemented, so a study is needed that can be used as a reference or consideration for making decisions on incentives that are given, especially the fiscal incentives for coal-gasification investment. Price (2014), in his writings, mentions the term fiscal incentive as a financial incentive. He also mentioned that financial incentives coming from the government were considered very important to improve the development and operation of the company. To be effective, these fiscal incentives must cover the costs and risks between projects and the industries in which they operate. In addition, pioneer project developers must consider financial incentives from the government as one of the predictions that will be made during the planning, construction and operation period of a project. Fiscal incentive policies are also defined as government policies carried out to utilize state expenditures and revenues to influence economic conditions. Some examples of fiscal incentive policies are royalties, tax holidays, import duty incentives, export duties, tax incentives, and subsidies.

The government's fiscal incentives in recent years are aimed at anticipating the impact of the global economic crisis and various other economic conditions. This fiscal incentive is also expected to be a catalyst, namely the maintained level of consumption and investment that will be able to encourage economic growth (ekonomi.bisnis.com, 2020). Several studies have noted that fiscal incentives can have both negative and positive impacts on investment in several countries. A study conducted by Fowowe (2013) in Nigeria, turns out that fiscal incentives have a negative impact on investment. Meanwhile, the results of the study of Mousley et al. (2009) stated that fiscal incentives in the form of tax holidays became ineffective because at the same time the tax holiday was given, it turned out that investors had spent a lot of relatively large capital. On the other hand, another study says that fiscal incentives have a positive impact on investment in a country. Like the study that was conducted by Cleeve and Botman (2008). According to them, the impact of fiscal incentives actually encourages foreign investment (the case of 16 African countries for the period 1990-2000). In addition, the tax holiday is one of the important things to encourage more foreign investment. To support the analysis of the benefits and disadvantages of fiscal incentives in various countries, Benefit-Cost Analysis (BCA) is used. According to Nuryadi (2014), BCA is an economic analysis used to calculate two variables, namely the benefit variable and the cost variable. This method is widely used to evaluate the use of economic resources with the aim that these economic resources are used efficiently.

4. Results and Discussion

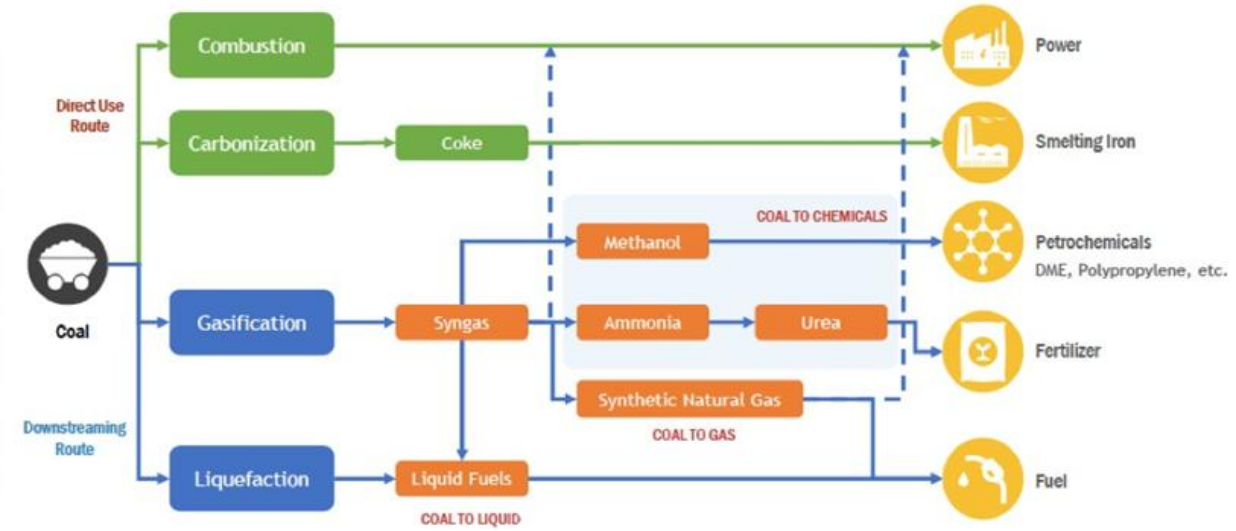
According to the 2019 World Statistics Agency report on energy, Indonesia's coal reserves account for more than 3% of the world's coal deposits. Meanwhile, coal reserves owned by several countries, including the United States 26%, Russia 18%, China 13%, Australia 9%, India 7%, Germany 5%, Ukraine 4%, Poland 4%, South Africa 9%, and the remaining 9% spread in various other countries. Indonesia's large coal reserves need to be optimized for use. Currently, the Government of Indonesia remains consistent in the success of the coal downstream policy, remembering expanding the additional worth of coal for the type of coal gasification. This policy is expected to increase national economic growth. Apart from being carried out through fiscal disincentive policies in the form of imposition of export duty rates, also through the provision of fiscal incentives. This fiscal incentive is predicted to boost investment in the downstream mining commodity industry.

Meanwhile, the imposition of export duties is in principle based on the state levies policy, does not interfere with economic growth. Increases poverty alleviation and provides employment and income distribution. In addition, the coal-gasification industry policy also continues to pay attention to the impact of weakening exports of this commodity on society. The government can provide an alternative source of new livelihoods or other types of work that can reduce the adverse effects of layoffs or weakening economic activity. The government can also consider providing affirmative policies (policies that favor certain groups), such as assistance for basic necessities and basic services for communities and workers, especially around mining areas (Abidin, 2014). Basically, the execution of disincentive strategies and other monetary motivating forces for mineral and coal is planned as a momentary arrangement on restricting mineral and coal sends out which adversely affects the Indonesian economy, specifically causing a decrease in crude mineral fares and new interest in the mining area.

In any case, approaches with respect to sending out limitations will emphatically affect the economy if it is upheld by the advancement of new interest in the mineral and coal area. This is with the goal that Indonesia can send out handled mineral and coal wares (Amir, 2013). This policy is also intended to encourage the downstream activities of the coal mining sector, especially the production of coal gasification and other derivative products which are expected to have higher added value. Adjustment of disincentive policies and other fiscal incentives is also one of the incentives that will be able to encourage and accelerate the construction of smelters and coal-gasification production technology and other supporting production. The results of coal mining activities have several qualities such as high-calorie quality, medium calorie and low calorie. In general, high calorie and medium calorie coal products for mining entrepreneurs tend to be directly sold or exported with the hope that the price is relatively high.

In fact, low-calorie coal will be sold domestically at a relatively low price. The government sets the lowest price especially for the supply of Steam Fired Power Plant to State Electricity Enterprise, which is USD 70 per metric ton. Therefore, the Government has carried out different approaches to expand the additional worth of coal mining items as a downstream program. There are several steps a coal mining company can take. First, direct use of coal, which is usually used by power generation companies, the textile industry, the cement industry, the fertilizer industry and others. Second, conversion, through further processing, this method is through subsequent processing such as gasification, liquefaction, cokes, activated carbon and coal slurry. Third, increasing the value of coal (upgrading), increasing this value, among others, through coal cleaning technology. This can be described as follows:

Figure 1: Derivatives of Coal Down Streams Activities



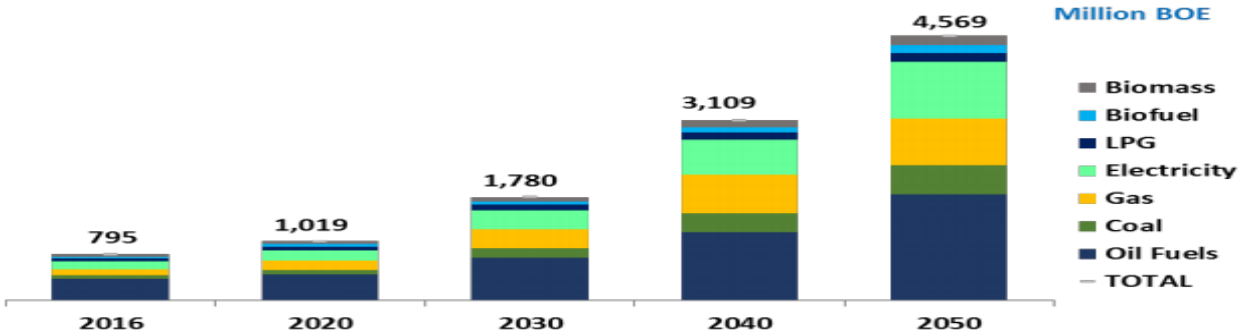
Source: Ministry of Energy and Mineral Resources, 2019

Currently, the coal downstream program that will be developed includes coal gasification. One of the state-claimed companies that have the chance to attempt a gasification project is PT. Bukit Asam. This company will form coal into a gas (syngas) which is then changed over into methanol and afterward transformed into Dimethyl Ether (DME) and Polypropylene (PP). Two regions will create, specifically in Tanjung Enim, South Sumatra and part of the Riau district. These two regions are required to have the option to produce DME of 400 Kilo Ton Annually (KTA) and 1,400 KTA (BPS, 2016). Theccoalsgasificationsprocess is the activity of converting coal into gas products (especially CO and H2). This project requires a large investment at the beginning of its establishment and it is hoped that the raw material used in the gasification industry process is low-quality coal which can be added value. The benefits of developing the coal-gasification industry include the absorption of raw materials in the form of low-quality coal. It is also hoped that the coal-gasification industry will later be able to supply national gas needs so that it can reduce gas imports, which means saving foreign exchange. On the other hand, some products can be produced by the coal-gasification industry, such as ammonia as the main material for fertilizer production and material for the production of plastic ore.

In addition, the positive impacts arising from the coal-gasification industry include growing the national and regional economies, absorbing labor, increasing state revenue from tax and non-tax sides as well as growing similar industries in other regions. The government continues to encourage the downstream process of coal, such as the coal-gasification process. This is expected to be a step to meet national energy needs. However, the challenges and obstacles to the coal-gasification process are still great, such as the need for complex technology, relatively large investment and limited infrastructures such as limited electricity supply and transportation. Another problem is the overlapping authority with other sectors and the absence of regulations governing permits and trading systems for the exploitation of coal processed products. Likewise, institutionally, organizations that handle coal still have overlapping duties and functions. For example, the Ministry of Energy and Mineral Resources deals with the three first echelons of coal, such as the General Administration of Mines and Coal, the General Administration of Renewable Energy and Energy Conservation, and the General Administration of Petroleum and Natural Gas.

On the other hand, the Ministry of Industry and Information Technology also deals with coal. Another problem is the determination of the application of royalties (whether in terms of coal or coal-derived products). Not to mention environmental problems as a result of coal mining and pollution due to burning using coal. However, currently, the coal-gasification industry has been developed by several countries, apart from the United States it is also developed in China, Japan, South Korea, Australia and Mongolia. By benchmarking several examples of countries that have carried out the gasification industry, it is hoped that in the future the coal-gasification industry can be developed in Indonesia. The government's task is to encourage through various policies, such as fiscal incentives so that investment in the coal-gasification industry can grow and develop rapidly. This is in line with government policies to achieve national energy security. Data (BPPT, 2018) shows that the national energy demand for LPG, gas, electricity and others until 2050 continues to increase. As the following data.

Figure 2: National Energy Demand Roadmap (2016-2050)



Source: BPPT, 2018 (BOE = barrel of oil equivalent)

It is estimated that the demand for gas, LPG will continue to rise. The increase in gas demand until 2050 is estimated to be more than 7.9 times or an average increase of 6.3 percent. At the same time, demand for coal continues to increase in line with an average growth of 6.3 percent per year. One of the reasons is the relatively rapid development of the coal-based industry. In addition, the use of coal, which is a fuel for power plants, continues to increase.

Impact of Indonesia's Coal-Gasification Industry: Indonesia's coal-gasification industry plan has had an impact on improving the national economy in multiple sectors, including the economy, industry, taxation, and investment sectors. For example, in the case study of PT. Bukit Asam, as one of the mining companies in Indonesia's downstream coal pilot project. The company is expected to operate as a coal gasification industry company in 2022. The impact of increased coal production and downstream investment on the national GDP was US$7,392,523,710, compared with US$4,568,966,610 in 2017. The impact of PT Bukit Asam's increase in coal production on GRDP in 2022 is estimated to be USD 170,917,500 and USD 2,911,333,148 of investment. The value of PT Bukit Asam's coal-gasification proceeds is estimated to be US$1,163,363,030, and the resulting externality is estimated to be US$292,564,190. The total value of social benefits obtained by the PT

Bukit Asam coal-gasification industry is estimated to be US$478,592,253. In this study, the benefit coefficient of downstream coal-gasification at PT Bukit Asam was 0.41.

For taxes revenue when coal gasification is downstream by PT Bukit Asam, it is assessed that USD 564,954,468 will be gotten, comprising of taxes revenue externalities assessed at USD 380,355,100, an excess payment is assessed at USD 64,019,216 and an economics rents factor of USD 380,355,100. USD 120,580,152. Possible Non-Tax State Revenue starting from creation charges (royalties), fixed expenses (deadrents), woodland duties, and profits subsequent to downstreaming is assessed at USD 69,055,821, which comprises of non-charge state incomes for the middle USD 17,366,003, the Regional Government of South Sumatra Province USD 14,233,593 and the Regional Government of Muara Enim USD 37,010,659. It is assessed that a few kinds of charges will increment with the downstream of coal gasification. A portion of the duties that will increment incorporate Land and Building Tax and Surface Water Tax. Then again, the coal downstream program as gasification has resulted in expanding financial development in regions where the coal gasification industry is established. Coming up next is an outline of the effect of downstream and speculation on the GRDP of Muara Enim Regency. It tends to be seen that in 2017 (preceding there were downstream exercises) coal GRDP of Muara Enim Regency was USD 3,212,544,000. After the foundation of the coal gasification industry in 2022, it is assessed that the GDP of the worth of coal creation will be USD 7,792,629,600. This implies that there is an expansion in the GDP of coal gasification production by more than 2.50 times. As delineation, with the downstream of coal there will be an expansion in the speed of the economy, an increment underway worth and an increment in venture and business. A valid example of coal downstream at PT Bukit Asam which is situated in Muara Enim Regency.

With this downstream, it is assessed that the PDRB of Muara Enim Regency will increment, retaining in excess of 5,000 laborers. This increment in the number of laborers came from a few areas. The most predominant area, among others, is the coal area, which is required to ingest a labor force of 2,403 individuals. At that point followed by the compound and plastic industry area (306 individuals), the discount and retail exchange area (398 individuals), the corporate administrations' area and building renting (459 individuals), the street transport area (223 individuals) and a few different areas. The coal downstream completed by PT Bukit Asam is likewise expected to build charge income because of the creative interaction of coal into a few different items like items for urea (ammonia) compost as crude material, DME as crude material for gas and polypropylene (PP) as a plastic material. From the reenactment of Business Entity Tax and Individual Tax income, the downstream Polypropylene is focused to add to Corporate Income Tax of USD 1,061,976. Then, downstream DME expanded Corporate Income Tax by USD 357,776 and for Urea expanded Corporate Income Tax by USD 253,673. In like manner, a singular personal assessment will likewise increment. The public authority is steady of establishments or business elements that will complete coal-gasification downstream by giving different offices and fiscal incentives. Fiscal's incentive force backing can be given to organizations that will do the coal-gasification industry by continually thinking about the positive effect on the public and territorial economies and expanding expectations for everyday comforts and advantages for the social government assistance of the local area.

As delineation, coming up next is an examination of the cost and benefit got through giving, incentives. For instance, if the Government diminishes the royalty rate from 13.5 percent or USD 14,290,744 to 0 percent for a business substance that completes gasification downstream, like PT Bukit Asam, it implies that state income for the middle is decreased by USD 2,857,602. Provincial incomes (South Sumatra territory and Muara Enim locale) add up to USD 11,433,460. On the off chance that motivators are accommodated the coal-gasification industry, it will expand benefits for the local and central governments. The central government will actually want to save foreign exchange reserves of USD 848,120,320 because Indonesia can deliver PP and DME and get extras foreign exchange of USD 147,737,088 on the grounds that it can send out manures from ammonia from coal downstream. Similarly, for the regional government, Muara Enim Regency's PDRB has increased in the form of additional coal production, estimated at US$201,663,180 and an additional investment of US$2,704,337,424. Another impact is the absorption of labor, which is estimated to be 5,578 people. The social welfare value of the Muara Enim Regency is US$474,674,340. From various perspectives, there are several aspects of the benefits obtained, so the government can provide financial incentives to pioneer companies such as PT Bukit Asam. Some of these aspects include increasing the national economy and local government, such as increasing national income, social welfare, and increasing employment, as well as the

positive impact on the downstream areas of the coal-gasification industry. However, on the other hand, there is a need for clear regulatory arrangements regarding fiscal incentives for the coal-gasification industry because it has the potential for irregularities.

5. Conclusion and Recommendations

If the fiscal incentive policy scheme is applied to the coal-gasification industry, such as reducing royalty rates and other taxes, in the short term it will reduce state revenues from the tax revenue sector. However, in the long term, the benefits of this policy scheme will have an impact on improving the national economy as well as the regional economy. It is estimated that there will be a 2.5-fold increase in GDP and GRDP. Likewise, tax and non-tax revenues also increased 2.5 times on average. On the other hand, it will provide social benefits as well as employment which is estimated to be more than 5000 workers. To support the coal-gasification industry, which will be carried out by PT Bukit Asam as a pioneer company, the Government can provide fiscal incentives in the form of reducing royalty rates and other taxes. The success of this pioneer company is expected to have an impact on other companies to carry out the same development in the coal-gasification industry sector in Indonesia.

References

Anjar, W. A., Hayadi, B. H., Subekti, P., Sudrajat, D., Wikansari, R., Bhawika, G. W. & Surya, S. (2019, August). Forecasting the Export and Import Volume of Crude Oil, Oil Products and Gas Using ANN. *In Journal of Physics: Conference Series*, 1255(1), 012016.

Alin, H., Budy P. & Resosudarmo. (2004). Tingkat Ekstraksi Optimal Minyak Bumi Indonesia: Aplikasi Model Optimasi Dinamik. *Jurnal Ekonomi dan Pembangunan Indonesia,* 01,11-34.

Antara, M. (2009). Dampak Pengeluaran Pemerintah dan Wisatawan Serta Investasi Swasta Terhadap Kinerja Perekonomian Bali: Suatu Simulasi Model Accounting Matrix, 1-23.

Amir, H. (2013). Economic Impact Analysis of the Indonesia Mineral-Export Tax Policy: A CGE Approach. *The International Journal of Economic Policy Studies,* 8, 1-22.

Abidin, M. & Zainul. (2014). Rasionalitas dan Evaluasi Penetapan Bea Keluar Dalam Rangka Mendukung Kebijakan Pengelolaan Mineral. *Jurnal Bina Praja,* 6(2), 129–142.

Badan, G. (2018). Potensi Mineral dan Batubara Indonesia. Bandung, 1-9.

Boadway, R. & Frank, F. (1993). The Taxation of Natural Resources. Principles and Policy Issues. The World Bank, 1-72.

BP Statistical Review of World Energy. (2016). Outlook 2016. London, 36.

BPS (Indonesian National Statistical Office). (2016). Documentation for the Indonesian Social Accounting Matrix (SAM), 1-720.

Deon, A. & Julius, C. A. (2019). Indonesia's Coals Dynamics: Toward a Just Energy Transition. Institute for Essential Services Reform (IESR) Jakarta. Indonesia First Edition, 1-48.

Directorate General of Budget, Ministry of Finance of Indonesia. (2020). List of Natural Resources Revenue, Mineral and Coal, 1-327.

Cleeve, E. (2008). How Effective Are Fiscal Incentives to Attract FDI to Sub-Saharan Africa? *Journal of Developing Areas,* 42(1), 135-153.

Ekonomi.bisnis.com. (2020). Kamus Ekonomi: Apa itu Insentif Fiskal. Downloaded July 25, 2020 from https://ekonomi.bisnis.com/read/20130823/9/158344/kamus-ekonomi-apa-arti-insentif-fiskal

Fei, M. (2016). Underground Coal Gasification (UCG): A New Trend of Supply-Side Economics of Fossil Fuels. Natural Gas Industry B, 3(4), 312-322.

Fowowe, B. (2013). Do Fiscal Incentives Promote Investment? Empirical Evidence from Nigeria. *The Journal of Developing Areas,* 47(2), 17-35.

Indonesian Ministry of Energy and Mineral Resources, Directorate General of Mineral and Coal. (2019). Mineral and Coal Downstream Program, 1-40.

Kontan. (2020). PT BA Pastikan Investasi Gasifikasi Batubara Ditanggung Mitra. Di akses tanggal 29 April 2021, dari https://industri.kontan.co.id/news/bukit-asam-ptba-pastikan-investasi-proyek-gasifikasi-batubara-ditanggung-mitra.

Lembaga Penyelidikan Ekonomi dan Masyarakat Fakultas Ekonomi Universitas Indonesia (LPEM). (2006). Kebijakan Pungutan Ekspor batu Bara, Laporan Akhir, LPEM FE UI, 1-68.

Marques, C. & Antonio. (2019). Is there a resource curse phenomenon for natural gas? Evidence from countries with abundant natural gas. *Resources Policy,* (63), 1-1.

Media Industri Kemenperin. (2016). Wujudkan Hilirisasi Industri Berbasis Sumber Daya Alam, 1-66.

Ministry of Energy and Mineral Resources Republic of Indonesia. (2017). Handbook of Energy & Economic Statistics of Indonesia, 38.

Mousley, P., Babalola, A. & Espina C. (2009). Building the Enterprise Sector for Employment and Growth: Some Policy Options, in World Bank: Nigeria Employment and Growth Study. Washington D.C.: World Bank, 1-304.

Nuryadi. (2014). Cost Benefit Analysis Antara Pembelian Alat Ct-Scan dengan Alat Laser Dioda Photocoagulator di Rumah Sakit Daerah Balung Jember. *Jurnal Ikesma,* 10, 49–58.

Price, P. J. (2014). Effectiveness of Financial Incentives for Carbon Capture and Storage. Ieaghg.org. Bluewave Resources, LLC McLean, Virginia, USA, 1-14.

Pupuk Indonesia. (2018). Kajian Internal Rate of Return tahun, 1-774.

Salman, F. (2017). Cost and Benefit Analysis of RSPO Certification (Case Study in PT BCA Oil Palm Plantation in Papua). *Indonesian Journal of Business and Entrepreneurship,* 3(3), 219-228.

Suthichaimethee, P. (2018). A Relation of Causal Factors in the Economic, Social, and Environmental Aspects Affecting the Implementation of Sustainability Policy in Thailand: Enriching the path Analysis Based on a GMM Model. *Journal Resources,* 7(4), 87.

United Nations Hanbooks. (2017). Taxation of the Extractive Industries by Developing Countries, United Nations, New York, 1-491.

Wang, D. (2017). Energy price slump and policy response in the coal-chemical industry district: A case study of Ordos with a system dynamics model. *Journal Energy Policy,* (104), 325-339.

Zhou, K., Taigang L. & Lifeng, Z. (2015). Industry 4.0: Towards future industrial opportunities and challenges. In Fuzzy Systems and Knowledge Discovery (FSKD), IEEE 12th International Conference, 2147-2152.

Zulfiandri. (2017). Transaction Cost and Benefit-Cost on Vertical Integration of Cacao Small Scale Agroindustry Value Chain. *Journal of Management and Agribusiness,* 14, 187-197.

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Formal Female Entrepreneurship and the Shadow Economy

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Abstract: Although female entrepreneurship yields products, markets, and business models that might not exist otherwise and are relevant to economic growth and development as well as issues related to gender equality, the factors that drive female entrepreneurship is largely understudied. The primary objective of this study is to examine the relationship between the size of a country's informal sector and the prevalence of female entrepreneurship in the formal economy. This relationship is empirically tested using a regression analysis that employs a cross-country data set of 70 countries. The analysis results indicate a significant inverse relationship between the size of the informal sector and the prevalence of formal sector female entrepreneurship. It is argued that a larger informal economy implies a greater number of women working in the informal sector due to discriminatory barriers to the formal economy. Both formal sector entrepreneurship and work in the informal economy can lessen the barrier to entry women face related to work-life balance by allowing greater flexibility in work hours; however, employment in the informal sector is a relatively poor substitute to formal sector employment as informal sector work does not include benefits, nor is it taxed or included in official statistics. Policy recommendations for encouraging formal female entrepreneurship are made. Promoting female entrepreneurship in the formal sector not only helps to close gender, inequality gaps, but also serves to improve tax systems, lessen distortions in national accounts and official indicators, and improve the provision of public goods.

Keywords: *Female Entrepreneurship, Shadow Economy, Formal Sector, Barriers to Entry, Work-Life Balance.*

1. Introduction

Entrepreneurship has long been recognized as a critical source of sustained economic growth and development as it generates employment opportunities, drives innovation and spending in markets, and enhances knowledge transfers (Aparicio et al., 2016; Meyer & de Jongh, 2018). Understanding and promoting the mechanisms that foster entrepreneurship is therefore relevant to macroeconomic policymakers as well as officials operating at the industry level. Previous research has found that while some of the mechanisms that drive entrepreneurial activity are similar among men and women, there are factors that uniquely affect female entrepreneurship (Verheul, et al., 2004; Minniti & Naudé, 2010; Daymard, 2015). As Verheul, et al. (2004) describe, as compared to their male counterparts, female entrepreneurs tend to develop different personal and business profiles, pursue different goals, operate their businesses in other sectors, and develop different products. As a result, female entrepreneurs contribute to economic growth and development by creating products, markets, and business models that perhaps would not exist otherwise. Further, female entrepreneurship generates economic opportunities for women and can provide an exit from poverty, especially in developing countries (Lock & Smith, 2016; Daymard, 2015; Minniti & Naudé, 2010).

Analyzing the factors that drive female entrepreneurship is important not only from a macroeconomic perspective of economic growth and development but also as a tool to combat poverty. Although there are clear benefits to studying the drivers of female entrepreneurship, as De Brui et al. (2006) state, the field is vastly understudied. This study contributes to the literature on female entrepreneurship by further exploring the factors that affect female engagement in entrepreneurship; specifically, the size of a country's shadow or informal economy. As Verheul, et al. (2004) describe, the size of the informal economy can have a different impact on female versus male entrepreneurship. A significant body of literature has concluded that women are more likely to work in the informal sector than their male counterparts as the informal sector allows greater work-life flexibility and has lower barriers to entry compared to the formal sector (Goel & Saunoris, 2017; Fapohunda, 2012; Nelson, 1999; Chant & Pedwell, 2008; International Labour Organization, 2018; Verheul, et al., 2004; Daymond, 2015; Minniti & Naudé, 2010). Fapohunda (2012, pg. 35) states that women dominate the informal sector as "(e)mployment opportunities in the formal sector are often denied (to) women because of family responsibilities, lack of skills, social and cultural barriers".

Chant & Pedwell (2008, pg. 13) refer to this occurrence as the "feminization of informal labor". Although entrepreneurship in the formal sector is generally associated with greater barriers to entry, entrepreneurial work can nevertheless offer greater flexibility for work that typically falls to women such as childcare and other household tasks, compared to employment in the formal, non-entrepreneurial sector (Daymard, 2015). In this light, work in the informal sector and entrepreneurial work in the formal sector can be viable options for women seeking flexible employment opportunities. Nonetheless, the formal sector is associated with greater barriers to entry relative to the informal economy. Due to social and cultural discrimination, women are more likely to face formal sector barriers related to lack of education, skills, and access to capital, which can render entrepreneurship in the formal sector unattainable. The primary objective of this study is to empirically explore the relationship between the size of a country's shadow economy or informal sector and the prevalence of female entrepreneurship in the formal economy. It is hypothesized that there is an inverse relationship between the size of the informal sector and the prevalence of formal sector female entrepreneurship. A relatively larger informal sector implies there are more women employed in this sector due to more work opportunities in the informal economy and/or because they face barriers to entering the formal sector. This hypothesis is tested using a cross-country data set. The analysis results indicate that if women are unable to overcome discriminatory barriers to formal sector entrepreneurship, they tend to be employed in the informal sector. Paid work in the informal sector is, however, an inferior employment opportunity for women as informal sector work does not include benefits such as health care and retirement benefits, which will serve to widen the gender pay gap.

2. Literature Review

Female Employment and Barriers to Entry: Compared to their male counterparts, females arguably face greater barriers to entry in attaining employment in the formal sector across the globe. These barriers can be subdivided into two broad categories; family and childcare demands and discrimination that limits or prevents access to education, skill attainment, property or capital. In reference to family and childcare demands, the ILO (2018, pg. 1) notes that women "…often bear the brunt of unpaid childcare and domestic work" and devote more hours of unpaid care work than men. Fapohunda (2012, pg. 40) states that formal sector employment opportunities in Nigeria "…are often denied (to) women as a result of family responsibilities…" and, in a study of female entrepreneurs in India, Daymard (2015) finds that women often substitute formal employment for informal work to have greater flexibility for childcare and domestic tasks. About the actual childcare duties, Craig & Powell (2011, pg. 276) state that mothers tend to take on the more labor-intensive, "…physical care tasks such bathing, dressing, feeding, changing and putting children to bed". Craig & Powell (2011) note that these tasks generally need to be done at specific times of the day, which implies that women are less likely to be able to maintain standard work hours in the formal sector. In a study of female entrepreneurs in Singapore, Kim & Ling (2001) find that married female entrepreneurs bear the majority of responsibilities for household work and childcare, which creates an obstacle in managing their own businesses. In a recent study exploring the impact of the COVID-19 pandemic on housework and childcare among Italian men and women, Del Boca et al. (2020, pg. 1001) find that the women have undertaken "…most of the additional housework and childcare associated to COVID-19…". As Kim & Ling (2001, pg. 204) succinctly state, "(a)s long as the society continues to emphasi(z)e a woman's basic role as that of mothering, working women will face role struggles."

The second barrier women face entering the formal sector is discrimination that results in a lack of education, or the skills required for formal sector employment, and/or access to capital and property needed to conduct business in the formal economy. As the ILO (2018) describes, a range of discriminatory social norms can limit women's access to education and skill attainment as well as property, assets, and financial services and, as Kahn et al. (2013) note, gender discrimination leads to an under-investment in women in the labor market. Hargaittai & Shafer (2006, pg. 434) state, "(t)he extent to which human capital is fostered, employed, and recognized is profoundly social and has often been examined along gender lines" and note the extensive literature exploring the educational and occupational inequities for men and women. Further, as Daymard (2015) describes, a low level of education is widely recognized as a barrier to entry in the formal sector, especially in developing countries. A considerable body of research has examined the role of discrimination towards women on a variety of socio-economic outcomes at the country level. In a Pakistani study, Salik &

Zhiyong (2014) find that in areas of Pakistan equal opportunity in higher education does not exist and women face significant hurdles in obtaining higher education due to gender discrimination.

In another Pakistani study, Roomi & Parrott (2008, pg. 59) conclude that female entrepreneurs "…suffer from a lack of access to capital, land, business premises, information technology, training and agency assistance…" as a result of "…deep-rooted discriminatory socio-cultural values and traditions". In Southern and Eastern Sub-Saharan Africa, Joireman (2008, pg. 1238) describes how "…women have not traditionally or legally shared the same protections of their property and inheritance rights as men…" and face barriers in the most basic economic tasks such as "…selling their own produce or in buying new fields..." Further, Joireman (2008) states that even if laws exist to enable women to operate as legally recognized economic actors in Sub-Saharan Africa, there are social restrictions that prevent them from doing so. In a comparison study of male- and female-owned small and medium-sized enterprises in Ghana, Abor & Biekpe (2006) find that the female-owned enterprises are significantly less likely to employ debt finance, which supports the view that there is discrimination in the lending process. In Nigeria, Fapohunda (2012) states that women are often denied employment opportunities in the formal sector due to a lack of skills. In a study of women entrepreneurship in Asian developing countries, Tambunam (2009) finds that the representation of female entrepreneurs is relatively low, which Tambunam (2009) attributes to the low levels of education and lack of capital among women in these countries.

Fawole (2008, pg. 168) describes these discriminatory practices as economic violence and defines this violence towards women as occurring when "…a male abuser maintains control of the family finances, deciding without regard to women how the money is spent or saved, thereby reducing women to complete dependence for money to meet their personal needs." Fawole (2008) states that economic violence towards women includes restricted access to funds and credit, lack of control over education, discriminatory traditional laws on inheritance, property rights, and use of communal land. Gender-based inequities in education and access to capital have also been identified in developed countries. In a study examining access to capital among small businesses in the United States, Robb (2013) finds that women-owned businesses operate with considerably less capital, on average, compared to their male counterparts. Diehl (2014) notes that women represent only 26 percent of all college and university presidencies in the United States, and through a series of interviews with women in senior leadership roles, participants reported experiencing gender-based barriers. In another study of higher education in the United States, Vasquez (1982) finds that Mexican American women face barriers to higher education that are based on sex-role restrictions. In a Canadian study, Ferguson (2016, pg. 3) finds that although women have become increasingly well-educated, Canadian women "…continue to have fewer apprenticeship or trade certificates as well as STEM university degrees than their male counterparts."

Female Entrepreneurship in Formal Sector: Entrepreneurship in the formal sector lessens one of the barriers to entry by offering women greater flexibility to manage childcare and other domestic tasks. McGowan et al. (2012) state that a significant number of women choose entrepreneurship as a means to balance work responsibilities with domestic commitments and Bhardwaj & Mittal (2017, pg. 44) refer to female entrepreneurship as a "(t)ool for work-life balance". As dos Santos et al. (2019) describe, female entrepreneurs have some characteristics in common with other entrepreneurs; however, their motivations, such as the desire for greater flexibility to manage work-life balance, differ from their male counterparts. In a study of female entrepreneurs, Agarwal & Lenka (2015) note that women start up their own businesses to gain greater flexibility and control their professional and personal responsibilities.

In a literature review of female entrepreneurship, Poggesi et al. (2016, pg. 755) conclude that the role of the family is present in all identified streams of literature and state that "(t)he search of a better balance between work and family is indeed considered as one of the strongest motivations leading women to start and run their own businesses." A survey conducted by U.S. Small Business Administration found that women are more likely to start a business to maintain a work-life balance (Roy, 2014) and in a study in the Netherlands, Annink & den Dulk (2012) find that a greater number of women are starting their own businesses to balance both paid work and family life. As Rehman & Roomi (2012) state, the concept of work-life balance is no longer limited to western culture and has spread to eastern cultures due in part to globalization. In a study in the Emirates, Forster et al. (2013) find that an increasing number of Emirate women are opting for self-

employment to gain work-life balance. Daymard (2015) finds that female entrepreneur in India who do not have employees often also substitute regular employment to gain greater time flexibility for household tasks or childcare.

Female Employment in the Informal Sector: While entrepreneurship can lessen the barrier to employment that women face by providing greater control over their work hours, work in the informal sector can also lessen this barrier in addition to removing the discrimination barrier that can limit or prevent women's access to education, skill attainment and capital. The informal sector or the shadow economy is broadly defined as the "…(m)arket-based production of goods and services, whether legal or illegal, that escapes detection in the official estimates of GDP…" (Smith, 1997, pg. 15). Work in the informal sector is undetected and untaxed and is largely conducted under the radar of government officials. Thus, as Goel & Saunoris (2017) describe, the informal sector has fewer barriers to entry given the lack of required certifications and regulations. Meagher (2010) notes that economists have viewed the informal economy as a sector free of gender-biased regulations and a source of economic opportunity for women.

ILO (2018) states that the majority of workers in the informal economy are women and Nelson (1999) concludes that participation in the informal economy is significantly differentiated by gender. The relatively low barriers make work in the informal sector attractive to women who are seeking paid work, but also need flexible work hours and might not have the education or certifications needed to work in the formal sector. Further, as Goel & Saunoris (2017) describe women in certain countries might be discouraged from working outside of the home, which can lead to informal sector work being the only viable option. Female informal sector work can include a range of domestic work, childcare, and the selling of homemade commodities, among other forms of work (Mohapatra, 2012; Goel & Saunoris, 2017). As Chant & Pedwell (2008, pg. 1) state that "(w)omen remain concentrated in 'invisible' areas of informal work, such as domestic labor piece-rate homework, and assistance in small family enterprises…". It is important to note that female entrepreneurship exists in the informal sector as well; however, these enterprises go unregulated and untaxed and are not under the purview of government oversight.

Formal Female Entrepreneurship and the Shadow Economy: Thus, both entrepreneurship in the formal economy and informal sector work can lower barriers women face to paid work; however, the informal sector arguably removes more of these barriers. Further, the larger the size of a country's shadow economy suggests that relatively more women are employed in this sector as women dominate the shadow economy (ILO, 2018). A larger shadow economy also implies that there are more informal work opportunities for women relative to a country with a relatively small shadow economy. In reference to female entrepreneurship, Verheul, et al. (2004, pgs. 6-7) suggest that the size of the informal sector can be negatively related to entrepreneurial activity in the formal sector as "…people operating in the informal sector absorb (entrepreneurial) opportunities otherwise available for individuals starting a business in the formal sector." Thus, it is hypothesized:

H1: All else equal, there is an inverse relationship between the size of the informal sector and the prevalence of formal sector female entrepreneurship. This hypothesis is empirically tested using data from 70 countries and a description of the methodology and data used follows.

3. Methodology

Regression analysis is used to empirically test the hypothesis of an inverse relationship between the size of a country's informal sector and the prevalence of female entrepreneurship. The regression model is defined as:

$$Formal\ Female\ Entrepreneurship_i = \beta_0 + \beta_1 Shadow_i + \beta_2' Z_i + \varepsilon \qquad (1)$$

Where *Formal Female Entrepreneurship* represents the prevalence of formal sector female entrepreneurship, *Shadow* represents the size of a country's informal or shadow economy, and *Z* is a vector of control variables. A description of the data and measures of formal female entrepreneurship, the size of the shadow economy, and control variables follow.

Data: Formal Female Entrepreneurship and Shadow Economies. The Global Entrepreneurship and Development Institute's (GEDI), Female Entrepreneurship Index (FEI) is used to proxy the prevalence of formal female entrepreneurship at the country level. As GEDI (n.d.) describes the FEI "…measures the development of high potential female entrepreneurship worldwide". The GEDI defines 'high potential' female entrepreneurship as female start-ups that are related to 'high impact entrepreneurship', or market expanding, innovative, and exporting businesses (Terjesen & Lloyd, 2015). The FEI is based on 15 pillars that contain both individual and institutional variables corresponding to both the micro and macro-level aspects of female entrepreneurship (Terjesen & Lloyd, 2015). To calculate the FEI, the GEDI states that it sources data from internationally recognized sources such as the World Economic Forum, the ILO, and the Global Entrepreneurship Monitor (GEDI, n.d.). The FEI ranges from a maximum value of 100 to a minimum value of zero. In 2015, the United States, Australia, and the United Kingdom ranked first, second, and third with FEI scores of 82.8, 74.8, and 70.6, respectively.

In the middle range, Peru, Barbados, and Greece ranked 38th, 39th, and 40th in 2015 with FEI scores of 43.6, 43.4, and 43.0, respectively. The lowest-ranked countries in 2015 are Pakistan, Malawi, and Bangladesh with ranks of 77th, 76th, and 75th and FEI scores of 15.2, 15.5, and 17.9, respectively. Medina & Schneider's (2018) most recent data is used to measure the size of a country's shadow or informal economy as a percent of its GDP. This database includes country-level data from 1991 to 2015 and, although other measures of informal economies exist, Medina & Schneider (2018) note that their estimation process is unique as it is the first to incorporate the light intensity approach as an indicator variable within Multiple Indicators Multiple Causes. Further, their estimation process also uses a full alternative methodology, Predictive Mean Matching. Medina & Schneider's (2018) measure of the size of countries' shadow economies has been used in several recent studies including Cuong et al. (2021), Alarcón-García (2020), and Huynh, C. M. (2020).

Data: Control Variables.

Female Education: As described above, lack of education or access to education is a barrier that can prevent women from starting a business in the formal sector. Daymard (2015) notes education as a factor affecting female entrepreneurship and Goel & Saunoris (2017) describe how limited education levels can drive women to work in the informal sector rather than the formal sector. The percentage of the female population aged 25 and older with some secondary education that is provided by the United Nations is used to measure the level of female education within a country.

Ease of Doing Business: The relative ease of establishing and operating businesses in the formal sector affects both male and female entrepreneurship (Daymard, 2015). The World Bank's Doing Business (DB) index is used to proxy the relative ease of conducting business within a country. The DB index analyzes regulation that promotes efficiency and supports the freedom to conduct business by examining 12 different areas of business regulation, including the ease of starting a business. The DB scores range from zero (least relative ease of conducting business) to 100 (greatest relative ease of conducting business). The World Bank's DB index has been used in recent studies such as Estevão et al. (2020).

Female Representation in Parliament: As previously discussed, women can face a host of discriminatory cultural and social norms that prevent or restrict access to the property, assets, financial services, and the general freedom to work outside of the home (ILO, 2018; Goel & Saunoris, 2017). Thus, it is important to control for gender-based cultural and/or social barriers that limit not only women's societal mobility, but their ability to establish and operate businesses in the formal sector. The percentage of seats held by women in national parliaments (WP) provided by the World Bank is used as a proxy for this cultural and/or social barrier. All else equal, the greater the percentage of women holding seats in parliament, arguably implies a greater societal acceptance of women as respected leaders and businesses operators.

Economic Development: Finally, the level of economic development is controlled for as income per capita affects both male and female entrepreneurship (Daymard, 2015). Developed countries tend to be associated with higher overall institutional quality, lower corruption, and stronger intellectual property rights, all of which support entrepreneurial activity. The World Bank's 2015 GDP per capita (GDPPC) is used to measure income per capita at the country level.

Descriptive Statistics: The above data is available for 70 countries and a list of the countries included in the analysis is provided in Table 1.

Table 1: Countries Included in Analysis

Algeria	Costa Rica	Hungary	Mexico	Spain
Angola	Croatia	Iceland	Netherlands	Sweden
Argentina	Czech Republic	India	Norway	Switzerland
Australia	Denmark	Iran	Pakistan	Thailand
Austria	Ecuador	Ireland	Peru	Trinidad and Tobago
Bangladesh	El Salvador	Israel	Poland	Tunisia
Belgium	Estonia	Italy	Portugal	Turkey
Bolivia	Ethiopia	Jamaica	Romania	Uganda
Bosnia & Herzegovina	Finland	Japan	Russia	United Arab Emirates
Botswana	France	Korea	Saudi Arabia	United Kingdom
Brazil	Germany	Latvia	Singapore	United States
Chile	Ghana	Lithuania	Slovakia	Uruguay
China	Greece	Malawi	Slovenia	Venezuela
Colombia	Guatemala	Malaysia	South Africa	Zambia

Table 2 provides a summary of the data sources used in this analysis and the descriptive statistics. A correlation matrix is provided in Table 3. As expected, formal female entrepreneurship (FEI) is positively correlated with female education (FED), ease of doing business (DB), percentage of parliament seats held by women (WG), and income per capita (GDDPC). Notably, FEI has a strong negative correlation with the size of a country's shadow economy (Shadow), which offers initial support for H1.

Table 2: Data Summary and Descriptive Statistics

Variable	Data Source	Mean	St. Deviation	Min	Max
Formal Sector Female Entrepreneurship (FEI)	GEDI	45.45	1.97	15.2	82.9
Size of the Shadow Economy (Shadow)	Medina & Schneider (2018)	22.21	1.23	6.9	46.9
Female Education (FED)	United Nations	69.32	2.92	10.8	100
Ease of Doing Business (DB)	World Bank	68.2	1.45	34.1	84.9
% Female Held Parliament Seats (WG)	World Bank	25.11	1.35	3.1	53.1
Income per Capita (GDPPC)	World Bank	21,020.6	2,411.0	380.6	84,776.1

Table 3: Correlation Matrix

	FEI	Shadow	FED	DB	WG	GDPPC
FEI	1					
Shadow	-0.74	1				
FED	0.79	-0.65	1			
DB	0.83	-0.61	0.75	1		
WG	0.26	-0.12	0.04	0.07	1	
GDPPC	0.79	-0.70	0.63	0.66	0.30	1

4. Analysis of Results and Discussion

The estimated regression results are provided in Table 4. The results show that, on average, countries with a greater percentage of females with secondary education, greater ease of doing business, a greater percentage of female parliament seats, and higher income per capita tend to also have a greater prevalence of formal female entrepreneurship. These results support previous research. Regarding H1, the coefficient on the size of a country's shadow economy is negative and significant, suggesting that, all else equal, the larger the size of

a country's shadow economy, the lower the prevalence of formal female entrepreneurship, which supports H1. Further, the variance inflation factors are low and range from 1.15 to 2.73, indicating the multicollinearity is not an issue in the regression and we fail to reject the null hypothesis of no heteroscedasticity using White's test (p-value, 0.4232).

Table 4: Estimated Regression Results

	Coefficient Estimate	Std Err	t Stat	P-Value	VIF
Intercept	-3.61	7.70	-0.47	0.6406	0
Shadow	-0.28	0.12	-2.36**	0.0215	2.302
FED	0.16	0.05	2.95***	0.0044	2.731
DB	0.52	0.11	4.74***	<0.0001	2.697
WG	0.19	0.08	2.51**	0.0148	1.159
GDPPC	0.0002	0.00007	2.86***	0.0057	2.680
Adj. R^2 = 0.8351 *F* stat = 70.87***		*p <0.10; **p <0.05; ***p<0.01			

About female employment opportunities, these results imply a substitute relationship between formal female entrepreneurship and work in the informal sector. As previously discussed, both formal entrepreneurial work and work in the informal sector can lessen barriers to employment women face; however, barriers resulting from social and/or cultural discrimination can still prevent women from starting businesses in the formal sector. Notably, although these two types of employment can be viewed as substitutes, it is important to highlight that they are far from perfect substitutes. By the very nature of being conducted underground and off-book, informal sector work does not come with a variety of benefits, such as health care and retirement benefits, that are found exclusively in the formal sector. Relative to informal sector work, work in the formal sector can offer greater gender equality as it can serve to close the gender pay gap by giving women retirement benefits and improved access to health care. Formal sector employment is included in a country's national accounts and official indicators. Countries with large informal economies distort national accounts and official indicators on unemployment, labor force, income, and consumption (Bovi, 2002; Schneider & Enste, 2000). Biases in official data hamper economic and social policy planning, which can result in inefficient allocation of resources and poorly designed national tax systems (Bayer et al., 2018; Bovi, 2002). Further, because informal economic activities are omitted from official records and are therefore untaxed, the reduced tax revenue can limit the provision of public goods and slow economic growth (Bovi, 2002). Thus, while both types of work can offer women a means to earn money and, in some cases, offer women an exit from poverty, they are far from equal economic opportunities.

5. Implications and Recommendations

The overarching implication of this study is that to enhance female entrepreneurship in the formal sector policies are needed to address social and cultural discrimination that limits women's access to education, property rights, and capital. Policies designed to address these discriminatory barriers need to consider the gender-based social and cultural restrictions that are unique to the society; however, as Latu et al. (2019, pg.11) state, "…(f)emale role models can inspire girls and women in male-typical domains." Thus, policymakers should contemplate ways to support or recognize successful female entrepreneurs who serve as guest speakers in schools and universities. Policymakers should also consider policies that encourage girls and women to take coursework and/or receive certifications in entrepreneurship and business. Other methods to promote successful female entrepreneurship could be conducted through public service and social media campaigns. These campaigns should highlight successful female entrepreneurs as positive female role models to encourage other women into the field. Policies that encourage bank lending to female start-ups can provide access to funds and enable women to operate businesses in the formal sector. Finally, policymakers need to examine the inherent gender biases that can exist in inheritance laws and property rights. As long as discriminatory barriers exist, women seeking economic opportunity will more likely end up working in the informal sector without retirement and health care benefits, which will widen the gender pay gap and exacerbate gender inequalities.

Conclusion: The primary objective of this study was to empirically explore the relationship between the size of a country's informal sector and the prevalence of female entrepreneurship in the formal economy. Using a cross-country data set of 70 countries, the analysis results indicate that there is a statistically significant inverse relationship between the size of a country's shadow economy and the prevalence of formal sector female entrepreneurship. This result suggests that if women cannot overcome discriminatory barriers to formal sector entrepreneurship, they are more likely to seek employment in the shadow economy. Work in the shadow economy is inferior to formal sector employment for both women and a country as a whole as informal sector work does not include benefits, nor is it taxed or included in official statistics. We offer recommendations to policymakers seeking to encourage formal female entrepreneurship. Promoting female entrepreneurship in the formal sector not only helps to close gender inequality gaps, but also serves to improve tax systems, lessen distortions in national accounts and official indicators, and improve the provision of public goods. Formal female entrepreneurship also contributes to a country's GDP and economic growth by providing markets and goods that might not be available otherwise. Efforts made to advance female entrepreneurship in the formal economy have clear benefits for the macro economy and gender equality.

References

Abor, J. & Biekpe, N. (2006). SMEs' access to debt finance: A comparison of male-owned and female-owned businesses in Ghana. *The International Journal of Entrepreneurship and Innovation*, 7(2), 105-112.

Agarwal, S. & Lenka, U. (2015). Study on work-life balance of women entrepreneurs–review and research agenda. *Industrial and Commercial Training,* 47(7), 356-362.

Alarcón-García, G., Azorín, J. D. B. & de la Vega, M. D. M. S. (2020). Shadow economy and national culture: A spatial approach. *Hacienda Pública Española/Review of Public Economics*, 232(1), 53-74.

Annink, A. & den Dulk, L. (2012). Autonomy: the panacea for self-employed women's work-life balance? *Community, Work & Family*, 15(4), 383-402.

Aparicio, S., Urbano, D. & Audretsch, D. (2016). Institutional factors, opportunity entrepreneurship and economic growth: Panel data evidence. *Technological forecasting and social change*, 102, 45-61.

Bayar, Y., Odabas, H., Sasmaz, M. U. & Ozturk, O. F. (2018). Corruption and the Shadow Economy in Transition Economies of European Union: A Panel Cointegration and Causality Analysis. *Economic Research*, 31(1), 1940 – 1952.

Bhardwaj, B. R. & Mittal, V. (2017). Women entrepreneurship: A tool for work-life balance. In *International conference on technology and business management*, 17, 44-50.

Bovi, Maurizio. (2002). The Nature of the Underground Economy – Some Evidence from OECD Countries. ISAE, Istituto di studi e analisi economica.

Chant, S. & Pedwell, C. (2008). Women, gender and the informal economy: An assessment of ILO research and suggested ways forward. https://ecommons.cornell.edu/bitstream/handle/1813/100337/ILO_Women_Gender_InformalEconomy.pdf?sequence=1

Cuong, H. V., Luu, H. N. & Tuan, L. Q. (2021). The impact of the shadow economy on foreign direct investment. *Applied Economics Letters*, 28(5), 391-396.

Craig, L. & Powell, A. (2011). Non-standard work schedules, work-family balance and the gendered division of childcare. *Work, Employment and Society*, 25(2), 274-291.

Daymard, A. (2015). Determinants of Female Entrepreneurship in India. OECD Economics Department Working Papers, No. 1191, OECD Publishing, Paris. https://doi.org/10.1787/5js4rfh5gtbq-en.

De Bruin, A., Brush, C. G. & Welter, F. (2006). Introduction to the Special Issue: Towards building cumulative knowledge on women's entrepreneurship. *Entrepreneurship Theory and Practice*, 30(5), 585–593.

Del Boca, D., Oggero, N., Profeta, P. & Rossi, M. (2020). Women's and men's work, housework and childcare, before and during COVID-19. *Review of Economics of the Household*, 18(4), 1001-1017.

Diehl, A. B. (2014). Making meaning of barriers and adversity: Experiences of women leaders in higher education. *Advancing Women in Leadership Journal*, 34, 54-63.

Dos Santos, V. F., Morais, G. M., de Araújo Ribeiro, F. F. & Jardim, D. (2019). Female Entrepreneurship: Evolution, Current Challenges, and Future Prospects. *International Journal of Business Administration*, 10(5), 24-32.

Estevão, J., Lopes, J. D., Penela, D. & Soares, J. M. (2020). The Doing Business ranking and the GDP. A qualitative study. *Journal of Business Research*, 115, 435-442.

Fapohunda, T. M. (2012). Women and the Informal Sector in Nigeria: Implications for Development. *British Journal of Arts and Social Sciences*, 4 (1), 35 – 45.

Fawole, O. I. (2008). Economic violence to women and girls: is it receiving the necessary attention? *Trauma, Violence, & Abuse*, 9(3), 167-177.

Ferguson, S. J. (2016). Women and Education: Qualifications, Skills and Technology. Women in Canada: A Gender-Based Statistical Report. *Statistics Canada*. https://eric.ed.gov/?id=ED585396.

Forster, N., Al Ali Ebrahim, A. & Ibrahim, N. A. (2013). An Exploratory Study of Work-Life Balance and Work-Family Conflicts in the United Arab Emirates. *Skyline Business Journal*, 9(1), 34 - 42.

Global Entrepreneurship and Development Institute (GEDI). (n.d.). https://thegedi.org/research/womens-entrepreneurship-index/.

Goel, R. K. & Saunoris, J. W. (2017). Unemployment and International Shadow Economy: Gender Differences. *Applied Economics,* 49(50), 5828–5840.

Hargittai, E. & Shafer, S. (2006). Differences in actual and perceived online skills: The role of gender. *Social Science Quarterly*, 87(2), 432-448.

Huynh, C. M. (2020). Shadow economy and air pollution in developing Asia: what is the role of fiscal policy? *Environmental Economics and Policy Studies*, 22(3), 357-381.

Joireman, S. F. (2008). The mystery of capital formation in Sub-Saharan Africa: women, property rights and customary law. *World Development*, 36(7), 1233-1246.

Khan, M., Akhtar, S., Mehmood, H. Z. & Muhmood, K. (2013). Analyzing skills, education and wages in Faisalabad: Implications for labor market. *Procedia Economics and Finance*, 5, 423-432.

Kim, J. L. S. & Ling, C. S. (2001). Work-family conflict of women entrepreneurs in Singapore. *Women in Management Review,* 16(5/6), 204- 221.

Latu, I. M., Mast, M. S., Bombari, D., Lammers, J. & Hoyt, C. L. (2019). Empowering mimicry: Female leader role models empower women in leadership tasks through body posture mimicry. *Sex roles*, 80(1), 11-24.

Lock, R. & Smith, H. L. (2016). The impact of female entrepreneurship on economic growth in Kenya. *International Journal of Gender and Entrepreneurship*, 8(1), 90-96.

McGowan, P., Redeker, C. L., Cooper, S. Y. & Greenan, K. (2012). Female entrepreneurship and the management of business and domestic roles: Motivations, expectations and realities. *Entrepreneurship & Regional Development*, 24(1-2), 53-72.

Meagher, Kate. (2010). 72 the empowerment trap: gender, poverty and the informal economy in sub-Saharan Africa, 472 – 477. https://www.wiego.org/sites/default/files/publications/files /Meagher_Gender.Empowerment.Trap_.pdf.

Medina, L. & Schneider, M. F. (2018). Shadow economies around the world: what did we learn over the last 20 years? International Monetary Fund. https://www.elibrary.imf.org/view/journals/001/2018/017/article-A001-en.xml.

Meyer, N. & de Jongh, J. (2018). The importance of entrepreneurship as a contributing factor to economic growth and development: The case of selected European countries. *Journal of Economics and Behavioral Studies*, 10(4(J)), 287-299.

Minniti, M. & Naudé, W. (2010). What Do We Know About The Patterns and Determinants of Female Entrepreneurship Across Countries? *European Journal of Development Research* 22**,** 277–293. https://doi.org/10.1057/ejdr.2010.17.

Mohapatra, K. K. (2012). Women workers in informal sector in India: understanding the occupational vulnerability. *International Journal of Humanities and Social Science*, 2(21), 197-207.

Nelson, M. K. (1999). Economic Restructuring, Gender, and Informal Work: A Case Study of a Rural County 1. *Rural Sociology,* 64(1), 18-43.

Poggesi, S., Mari, M. & De Vita, L. (2016). What's new in female entrepreneurship research? Answers from the literature. *International Entrepreneurship and Management Journal*, 12(3), 735-764.

Rehman, S. & Roomi, M. A. (2012). Gender and work-life balance: a phenomenological study of women entrepreneurs in Pakistan. *Journal of Small Business and Enterprise Development,* 19(2), 209–228.

Robb, A. (2013). Access to capital among young firms, minority-owned firms, women-owned firms, and high-tech firms. Office of Advocacy, US Small Business Administration, Washington, DC. https://cdn.advocacy.sba.gov/wp-content/uploads/2019/05/15130241/rs403tot2.pdf.

Roomi, M. A. & Parrott, G. (2008). Barriers to development and progression of women entrepreneurs in Pakistan. *The Journal of Entrepreneurship*, 17(1), 59-72.

Roy, P. (2014). Analyzing female entrepreneurship in a global context-the challenges and the road ahead. *International Journal of Information and Management Sciences*, 1(5), 332-336.

Salik, M. & Zhiyong, Z. (2014). Gender discrimination and inequalities in higher education: A case study of rural areas of Pakistan. *Academic Research International*, 5(2), 269 - 276.

Schneider, F. & Enste, D. (2000). Shadow Economies: Size, Causes, and Consequences. *Journal of Economic Literature*, 38(1), 77 -114.

Smith, P. M. (1997). Assessing the size of the underground economy: The statistics Canada perspective. The underground economy: Global evidence of its size and impact, 11-37. https://www.fraserinstitute.org/sites/default/files/UndergroundEconomy.pdf#page=33.

Tambunan, T. (2009). Women entrepreneurship in Asian developing countries: Their development and main constraints. *Journal of Development and Agricultural Economics*, 1(2), 027-040.

Terjesen, S. & Lloyd, A. (2015). The Female Entrepreneurship Index (FEI). Global Entrepreneurship and Development Institute (GEDI), Paper No. 15-51. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2625254.

Verheul, I., van Stel, A. J. & Thurik, A. R. (2004). Explaining female and male entrepreneurship across 29 countries. Papers on Entrepreneurship, Growth and Public Policy, No. 0804. https://www.econstor.eu/handle/10419/19953.

Vasquez, M. J. (1982). Confronting barriers to the participation of Mexican American women in higher education. *Hispanic Journal of Behavioral Sciences*, 4(2), 147-165.