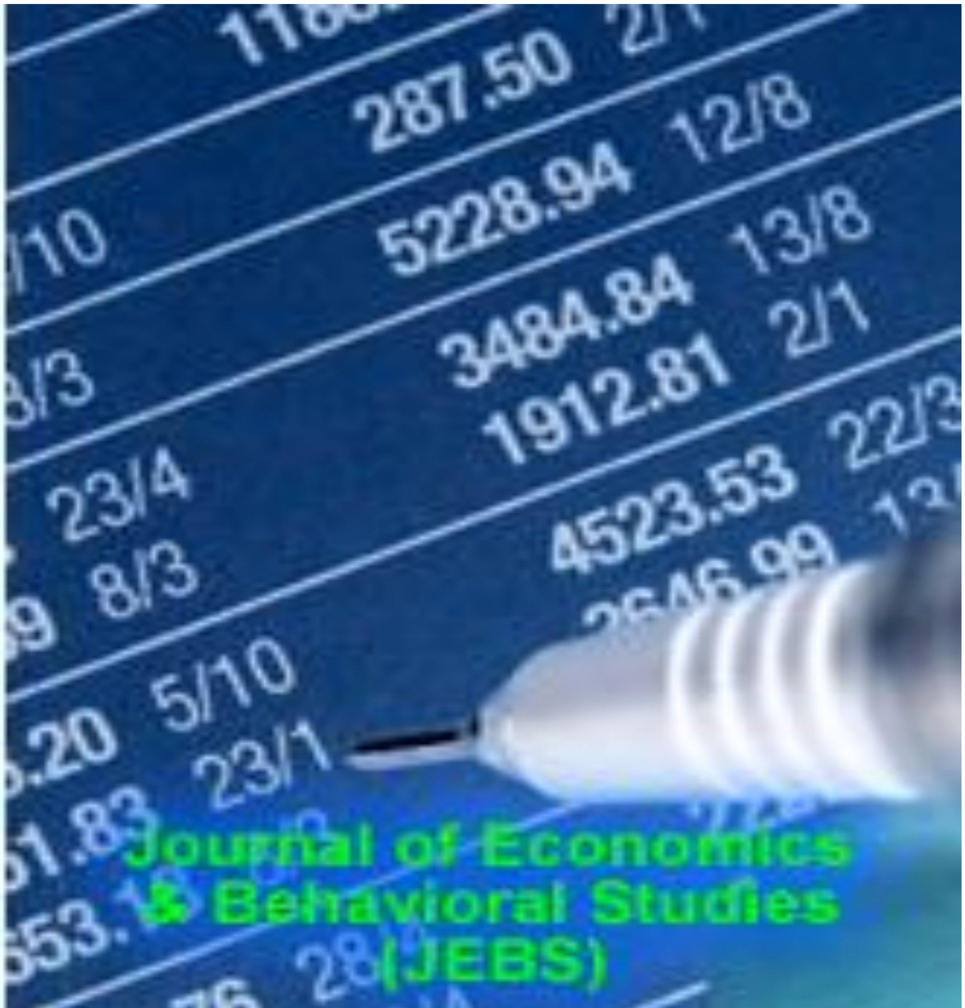

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Editorial

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 devlopments but comprise interdisciplinary and multi-facet approaches to economics and behavioral theories and practices as well as general transformations in the fields. Scope of the JEBS includes: subjects of managerial economics, financial economics, development economics, finance, economics, financial psychology, strategic management, organizational behavior, human behavior, marketing, human resource management and behavioral finance. Author(s) should declare that work submitted to the journal is original, not under consideration for publication by another journal, and that all listed authors approve its submission to JEBS. Author (s) can submit: Research Paper, Conceptual Paper, Case Studies and Book Review. Journal received research submission related to all aspects of major themes and tracks. All submitted papers were first assessed by the editorial team for relevance and originality of the work and blindly peer reviewed by the external reviewers depending on the subject matter of the paper. After the rigorous peer-review process, the submitted papers were selected based on originality, significance, and clarity of the purpose. The current issue of JEBS comprises of papers of scholars from South Africa, Zimbabwe, Indonesia, Rwanda and Nigeria. Size and shape: the influence of packaging on consumers' decision-making, climate change and food insecurity dynamics, impact of policy uncertainty on macro-economy, manufacturing firms' propensity and intensity to export, influence of internal control activities on profitability and solvency, analysis of the 2008 US financial crisis, health system and human rights, psychological ownership of knowledge, cognitive and psychological bias in investment decision-making behavior, determinants of domestic violence, green marketing trek: drivers, challenges and future directions, consumer buying behavior, economic development, relationship between real exchange rate and economic growth, paradox of emerging technologies, capital structure and the profitability of listed retail firms, corporate governance and financial distress, emerging information technologies & delivering of service quality, biographical & human resource management predictors, food insecurity & the rising urbanisation, promoting business inclusivity for sustainable livelihoods and determinants of South African banks' capital buffers were some of the major practices and concepts examined in these studies. Current issue will therefore be a unique offer where scholars will be able to appreciate the latest results in their field of expertise, and to acquire additional knowledge in other relevant fields.

Prof. Sisira R N Colombage, Ph. D.
Editor In Chief

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Size and Shape: The Influence of Packaging on South African BOP Consumers' Decision-Making

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Abstract: The bottom of the pyramid (BOP) proposition espouses the use of 'single-serve' or 'sachet' packaging in order to enhance affordability, encourage consumption and offer an assortment of good-quality products to BOP consumers. This study assesses the influence of packaging (in relation to size and price of different quantities) on South African BOP consumers' purchase decisions. The study analyses whether or not these consumers have a tendency to purchase smaller quantities of products as opposed to making bulk purchases. This study further investigates the impact that packaging criteria (storage, convenience of purchase, prices of different package sizes and reusability of packaging) have on consumers' decision-making. The aim is to uncover South African BOP consumers' perceptions of packaging as a decision-making influencer in order to formulate appropriate strategies that businesses can adopt in order to lucratively serve this market. Using area sampling, a sample of 600 BOP consumers living in relative poverty within the rural areas of South Africa was drawn. Data was collected using a self-developed questionnaire whose psychometric properties were statistically analyzed using descriptive and inferential statistics. The study's results reveal that although South African BOP consumers view small quantities of products as convenient and easy to store, the majority have an inclination to purchase large quantities instead of smaller package sizes. South African BOP consumers are also enticed to purchase products that are packaged in reusable containers, thereby, enabling the containers to be re-used after the consumption of the contents. Practical recommendations are articulated for business organizations.

Keywords: *Bottom of the pyramid (BOP); single-serve packaging; sachet packaging; BOP consumer decision-making; reusable packaging; storage and convenience of packaging*

1. Introduction

The eradication of poverty is at the forefront of many developing countries' economic and social goals, which has driven governments and non-governmental organizations (NGOs) to seek ways to uplift under privileged communities and promote human development. Prahalad (2005) proposes an unconventional alternative to global poverty alleviation, which affords the approximately 4 billion people who reside at the bottom of the economic pyramid (BOP) an opportunity to unburden themselves from the poverty trap and secure better lifestyles. The collaborative endeavors of government, NGOs, large domestic firms, multinational corporations (MNCs) as well as the poverty stricken citizens themselves can provide a propitious solution to global poverty reduction whilst simultaneously profiting business organizations that serve this multi-trillion-dollar market segment (Prahalad & Hart, 2002). In order to successfully penetrate the BOP market, it is crucial for businesses to redesign their business strategies and direct their efforts at marketing good-quality yet low-cost products that will afford BOP consumers the opportunity to better satisfy their needs with their limited incomes, thereby, heightening their dignity and self-esteem (Prahalad, 2005). In order to accomplish this, MNCs need to enhance affordability of their products. Selling on credit to BOP consumers, obtaining micro-credit from financial institutions, decreasing production costs and providing flexible payment schemes are some of the recommendations made to businesses in order to enhance affordability of their products (Anderson & Billou, 2007; Pitta, Guesalaga & Marshall, 2008; Prahalad, 2012).In addition, another innovation that delivers an array of products to BOP consumers and enhances affordability is the utilization of smaller packages and 'single-use' or 'sachet' packaging (Anderson &Billou, 2007;Chatterjee, 2009; Prahalad, 2012). Prahalad (2012) asserts that smaller packages not only provides the poor with an assortment of products to choose from but also encourages consumption, as these smaller quantities are more affordable. This study evaluates the impact of packaging (in relation to size and price of different quantities) on South African BOP consumers' decision-making. The study also investigates the purchasing behavior of these consumers in relation to their preference for purchasing smaller packages as opposed to larger quantities of products. In addition, this study aims to provide insight into South African BOP consumers' perceptions of packaging as a decision-making influencer in order to articulate suitable strategies that can be implemented by business organizations to successfully serve this market.

Purpose of the article: This article analyses whether or not South Africa BOP consumers have a propensity to purchase smaller quantities of products as opposed to making bulk purchases. In addition, this article will provide insight into the influence that packaging criteria (storage, convenience of purchase, prices of different package sizes and reusability of packaging) have on South African BOP consumers' decision-making.

2. Literature Review

An overview of the BOP market: The BOP proposition indicates that there is substantial untapped purchasing power at the bottom of the pyramid and that there is great potential for BOP markets to yield soaring profit margins for MNCs. Prahalad (2005) states that there are more than 4 billion people with a per capita income of less than $2 per day, at purchasing power parity rates, and estimates that the BOP market size is enormous at $13 trillion. These 4 billion or more people represent a prodigious majority of the population in developing countries of Asia, Africa, Eastern Europe, Latin America and the Caribbean with Asia, Africa and Latin America together, accounting for approximately 94% of the BOP population (World Economic Forum, 2009). The poorest segment of the BOP market resides in Africa (World Economic Forum, 2009). Although the World Economic Forum (2009) cites that the majority of the BOP consumers (68% globally) dwell in rural areas, there are vast regional disparities within the global BOP market with regard to rural and urban concentration. For instance, in Africa and Asia, BOP markets are concentrated predominantly in rural areas whereas in Eastern Europe and Latin America there is a high concentration of BOP markets in urban areas (Dansk Industry International Business Development, 2007).

Prahalad (2005) believes that business organizations need to alter their perceptions of the poor in order to successfully penetrate BOP markets. Prahalad (2005) encourages organizations to view the poor as value-conscious consumers who encompass an ardent entrepreneurial drive that is conducive to co-creating propitious solutions that would alleviate poverty, improve consumers' well-being and garner profits for business organizations. By enlisting the help of impoverished individuals, businesses will not only provide employment opportunities to them but will also enhance their dignity and self-esteem. Prahalad and Hart (2002) outline that the key to profitably serving BOP markets is to place emphasis on ensuring large volumes of sales with low prices and profit margins. Simanis (2012), however, affirms that in order to reap profits through this 'low price, high volume' model, firms require an unrealistic penetration of more than 30% of consumers in the BOP target market. One of the dominant assumptions that Prahalad and Hart (2002) believe that MNCs make regarding BOP markets is that distribution access to this market is difficult and this serves as a paramount deterrent to servicing the needs of BOP consumers. Prahalad and Hart (2002) are confident that the problem of MNCs accessing the BOP market can be overcome through designing their distribution systems to cater for the needs of the rural consumers and by partnering with local people and village enterprises in order to improve distribution. Another misconception made by business organizations is that BOP consumers are not brand-conscious and will purchase the cheapest products on the market (Prahalad, 2005). Contrary to this, South African BOP consumers are brand-conscious and brands play an influential role in their purchase decisions (Oodith & Parumasur, 2017). In addition, South African BOP consumers are highly loyal to their trusted brands, willing to pay premium prices for preferred brands and desire value-for-money from superior brands (Barki & Parente, 2010; Majumder, 2012; Nakata & Weidner, 2011; Neuwirth, 2012; Nyanga, 2015; Oodith &Parumasur, 2017; Prahalad, 2012; Rijke, Diehl & Schoormans, 2009; Subrahmanyan & Gomez-Arias, 2008; Variawa, 2010).

Prahalad (2005) believes that by not servicing the needs of the poor, MNCs are disadvantaging these consumers because they are then subjected to the poverty penalty, which is paying a premium on purchases from local businesses in the BOP market as a result of not having alternative sources of supplies available to them. Mendoza (2008) defines the poverty penalty as the comparatively higher cost that is shouldered by the poor when participating in certain markets, in comparison to the non-poor. According to Mendoza (2008), the poverty penalty can assume at least five possible forms:

- *Poor quality*: products sold to the poor are of an inferior quality compared to those sold to non-poor consumers;
- *Higher price*: products sold to the poor are higher in price compared to similar goods that are sold to non-poor consumers;

- *Non-access*: product prices are so exorbitant that the products become completely unaffordable to poor consumers;
- *Non-usage*: products are priced so excessively or are of such poor quality that poor consumers opt out of consumption and
- *Catastrophic spending burden*: the consumption of the product or service (e.g. healthcare) becomes such a necessity that the poor are faced with the arduous decision of how to finance the consumption thereof, as this will categorically result in curtailing spending on other necessities.

Prahalad (2005) argues that the poverty penalty can be eliminated if MNCs, with their large scale and scope of operations as well as management expertise, target BOP markets by offering these consumers a variety of products and services to choose from. In order to accomplish this, it is imperative for business organizations to develop a commercial infrastructure that will suit the dynamic needs of BOP consumers and overcome the challenges associated with servicing these markets (Prahalad& Hart, 2002). Four crucial elements (creating buying power, shaping aspirations, improving access and tailoring local solutions) need to be taken into consideration in articulating this framework. Prahalad and Hart (2002) state that partnering with BOP consumers, providing employment opportunities to them, increasing their earnings potential, offering credit to them and improving accessibility of products are interventions that would enhance their buying power. In terms of shaping aspirations, Prahalad and Hart (2002) advise MNCs to use educational marketing communication messages that will not only assist BOP consumers in gaining an understanding of the operational functions of products but will also provide insight into how these products will enhance their health and well-being. In order to improve access, MNCs need to partner with BOP consumers and local businesses in order to harness existing infrastructure and communication links to distribute products to BOP markets (Prahalad& Hart, 2002). In tailoring local solutions, careful consideration must be taken in terms of BOP consumers' purchasing habits, earnings, daily regimes and habitats (Prahalad& Hart, 2002). In order to successfully penetrate BOP markets, MNCs need to modify their current business practices and marketing strategies so that they will be successful in targeting the approximately 4 billion people at the bottom of the economic pyramid. According to Prahalad (2012), one of the key success factors is to enhance affordability of products (through innovative, 'single-serve' or 'sachet' packaging) without compromising on quality.

The influence of packaging on BOP consumers' decision-making: Packaging is an element that assists in identifying a brand and comprises those activities involved in designing and producing a wrapper or container to house the product (Jobber & Ellis-Chadwick, 2013). The basic functions of packaging are to protect the product, offer convenience to consumers in terms of easy transport and storage of products and to offer quantity variations to those consumers (particularly single-person households) wishing to purchase smaller quantities of products (Belch & Belch, 2012; McDaniel, Lamb & Hair, 2013; White, 2017). Dibb, Simkin, Pride and Ferrell (2012) add that another function of packaging is to promote the product's features, benefits, image and uses and that marketers often utilize reusable packaging to make the product more desirable by creating the perception of a '2-in-1' bargain deal in which consumers get a storage container to use after they have consumed the product. The important packaging considerations for marketers are to ensure that packaging is tamper-proof, child-proof, environmentally-friendly, recyclable and biodegradable (Dibb et al., 2012).

A vital role played by packaging is to build and maintain strong brand equity. Brand equity refers to the marketing and financial worth of the brand and a brand that has prominence in terms of awareness, loyalty and perceived quality usually encompasses superior brand equity (Dibb et al., 2012; McDaniel et al., 2013). The creation of a strong brand equity assists a brand in generating higher profit margins due to an increased sales volume, growing market share and ultimately adds to the company's competitive advantage (Schiffman & Wisenblit, 2015). Packaging enables brand recognition through the use of various brand elements in the product packaging such as the brand names, logos, colors and visual structures (Keller, 2013). According to Keller (2013), packaging characteristics such as aesthetics and convenience, help create an emotional bond between the consumer and brand, thereby, increasing brand loyalty. In addition, Brakus, Schmitt and Zarantonello (2009 cited in Variawa, 2010) state that brand-related stimuli such as, brand colors, shapes, slogans, background design elements, mascots and brand characters assist BOP consumers with brand recognition and the establishment of intense brand associations. South African BOP consumers are remarkably astute in effortlessly differentiating between brands on the basis of the brands' logos, design and/or coloring and are able to easily identify the packaging of the products that they customarily purchase (Oodith &Parumasur, 2017).

According to Keller (2013), packaging size and shape influences consumers' perceived value of a product as many consumers believe that the bigger the package, the better the value for their money. Keller (2013) further asserts that words and images on product packaging often influences consumers' perceived expectations of a product, which in turn affects their purchase decisions. Attractive designs, labels, and images are effective in influencing consumers' purchase decisions and allows organizations to differentiate their products from that of competitors' (White, 2017). Oodith and Parumasur (2017) found that, despite their low levels of education or illiteracy, South African BOP consumers are able to recognize brand names and packaging of products and use these as a means of identifying trusted brands. BOP consumers who have an inability to read often rely on visual cues (pictures on packaging) and brand logos as a safety mechanism for appraising the worth of brands (Dinica & Motteau, 2012; Oodith & Parumasur, 2017; Viswanathan, Rosa and Harris, 2005 cited in Nakata & Weidner, 2011). Sehrawet and Kundu (2007) state that business organizations will be able to differentiate their offerings from a plethora of competing products in BOP markets through the effective selection of package shapes and features, brand colors, trademarks and logos.

The BOP proposition advocates the use of smaller-unit packages in order to encourage consumption, create affordability and offer a greater choice to BOP consumers. Dubey and Patel (2004) assert that smaller-unit packs or sachets tender a means of intensifying penetration of BOP markets, thereby, increasing volumes as well as creating opportunities for new and more frequent occasions for consumption. Prahalad and Hart (2002) and Dubey and Patel (2004) outlined that smaller packs or sachets of products like shampoos, makeup, snacks, beverages and confectionery have prompted BOP consumers to purchase these products. Further to this, Prahalad and Hart (2002) state that by utilizing single-serve packaging, BOP consumers are afforded the opportunity to switch brands every time they purchase. Dubey and Patel (2004) add that single-serve sachets encourage trial usage of brands, especially new introductions on the market, as BOP consumers do not commit a large amount of their limited financial resources to the purchase of bulk quantities.

According to Dubey and Patel (2004), using smaller package sizes boasts the benefits of:

- Increasing affordability for BOP consumers and attracting middle- and upper-income consumers to purchase these smaller package sizes under certain circumstances, such as for travelling purposes;
- Affording BOP consumers, the opportunity to consume branded products at a low cost;
- Encouraging trial purchases by BOP consumers;
- Providing greater variety in foods and beverages for a similar capital outlay;
- Enabling frequent purchases of products like ice creams, chocolates and cold drinks;
- Improving convenience in transportation, storage and use;
- Enabling companies to lower the cost of production in the long run and achieve economies of scale as small packs assist producers in increasing market size due to wider coverage and use.

The BOP consumers have an appreciation for reusable packaging in that it allows them to use the empty containers or bottles after the depletion of its contents. It is a common practice to reuse bottled water or energy drinks bottles for carrying drinking tap water and for the storage of other liquids. The BOP consumers also have a preference for creatively repackaged products that ensure smaller quantities as it increases the range of products that they are able to afford and store (Oodith &Parumasur, 2013). Package quality influences non-BOP consumers' decisions to purchase products as these consumers often view packaging that is of a high quality to be associated with superior-quality products (White, 2017). Sehrawet and Kundu (2007) found that packaging also assists rural BOP consumers in their purchase decisions. The ease of storing the package is an important factor in influencing their purchasing behavior and these BOP consumers associate better packaging with a better-quality product. Other pertinent factors that influenced purchasing decisions were easy-to-carry package sizes, the weight of the packaging, simplicity, transparency and similarity of packaging (Dinica & Motteau, 2012; Sehrawet & Kundu, 2007).

Convenience and accessibility of products are important determinants of BOP consumers' purchasing behavior. A South African study on informal trade in townships revealed that spaza shops have become sensitive to the needs of local consumers and have revolutionized their offerings by repackaging consumer products into smaller quantities in order to enhance affordability and convenience, in that these consumers no longer have to walk distances of up to 10 kilometers to purchase cosmetics, spices and groceries (Terblanche, 2010 cited in Variawa, 2010). The study showed, for example, that entrepreneurs were selling sugar by the spoonful as opposed to 500g packages which BOP consumers deemed to be too expensive (Terblanche, 2010 cited in Variawa, 2010). Hamilton (2003) found that although larger package sizes were within the household budget, there was still a preference by certain BOP households to make smaller purchases in order to avoid having too much of their income tied up in products that may not be consumed for some time.

Researchers (Goliath Business News, 2005; Jaiswal, 2007; Karnani, 2007) state that although small packages increase convenience and assists the poor in managing cash flows, it does not increase affordability. Further to this Karnani (2007) asserts that the only plausible way to increase affordability would be to reduce the price per use which he believes is not achievable by using sachet packaging. Byron (2007 cited in Davidson, 2009) states that single-serve packages may cost more than larger packages from a per-ounce basis which leads critics (Davidson, 2009; Jaiswal, 2007; Karnani, 2007) to believe that the poor are being misled into thinking that the smaller packages are cheaper whilst the true reality is that they are paying more on a per unit basis. Further to this, Karnani (2007) and Ireland (2008) point out that smaller unit packaging places additional burden on the environment with regard to pollution and that the higher costs associated with single-serve packaging ultimately erodes profits. Ireland (2008) agrees with Karnani (2007) that sachets and smaller package sizes are conducive to promoting impulse purchases by BOP consumers who, owing to lack of security and banking services, find it difficult to save money. However, Ireland (2008) asserts that the shopping occasion also has an influence on BOP consumer behavioral practices in relation to the package sizes that they purchase. Certain commodities that can be classified as planned purchases result in some BOP consumers opting to postpone their buying until they visit supermarkets where they are able to acquire the larger formats that are cheaper on a per unit basis than sachets (Ireland, 2008).

3. Methodology

Respondents: The study population comprised residents of rural areas within South Africa who are classified as people living in relative poverty. The researcher was able to determine the population of this study using a Desktop Research Report from the South African Institute of Race Relations that contained the 2012relative poverty statistics of 278 municipalities and districts in South Africa. The number of individuals living in relative poverty in each of the regions was calculated using the population sizes (per region) and the corresponding rates of poverty. The researcher identified the population for the study as those individuals residing in districts with a poverty rate of 70% or more but owing to the fact that there are provinces with a higher prevalence of poverty than others, the researcher further defined the population to include individuals from the top three municipalities with the highest poverty rates (above 70%) per province resulting in a population of 2 556 422 elements. By utilizing an online Sample Size Calculator, a sample of 600 subjects was generated using the population of 2 556 422 constituents, a confidence level of 95% and a confidence interval of 4% (Sample Size Calculator, 2014).

This study utilized the area sampling approach. Through this sampling approach, the total population is separated into clusters of elements which can be arbitrarily chosen for the study (Blumberg, Cooper & Schindler, 2008). Based on the area sampling design, homogeneous clusters of BOP consumers in South Africa have been identified according to the different municipalities within the various provinces in South Africa. Due to the lack of time and financial resources, the researcher decided to conduct fieldwork in the Eastern Cape, KwaZulu-Natal and Limpopo provinces as these provinces reported the highest number of people living in relative poverty. The rural areas within the chosen provinces comprised mainly Black South Africans and in a bid to obtain a varied perspective from the inclusion of another racial group in South Africa, the Western Cape, which houses predominantly Colored South Africans, was included in the sample.

Although the minimum sample for the study was 600 subjects, 631 correctly completed questionnaires were received by the researcher. The adequacy of the sample was further determined using the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (0.816) and the Bartlett's Test of Spherecity (1472.092; p = 0.000) for factors relating to packaging/quantity, which respectively indicated suitability and significance. The results indicate that the normality and homoscedasticity preconditions are satisfied. With regard to the composition of the sample, there were less male (41.5%) than female (58.5%) respondents. The Eastern Cape (36.6%) and KwaZulu-Natal (36.5%) provinces reported the highest percentage of respondents for this study. The Limpopo province comprised 22.2% of the respondents whilst 4.8% of the participants were from the Western Cape. There were only two race groups represented in the sample of this study. Black South Africans constituted 95.2% of the respondents whilst Colored South Africans accounted for the remaining 4.8% of the respondents. In terms of age, the 30-39 years (22.3%) and 40-49 years (22.2%) age group categories reported the highest percentage of respondents. The 18-29 years' age category had a 20.9% representation in terms of respondents, followed by the 50-59 years (17.6%) and 60 years and over (17%) age categories. Respondents with a high school educational background accounted for the majority (37.9%) of the sample whilst 35% of the participants were in possession of a primary school educational qualification. Respondents who had no formal education at all comprised 15.2% of the sample. Respondents who acquired diploma qualifications comprised 9.4% of the sample and the minority (2.5%) of the respondents were graduates with degree qualifications. In terms of income, 26.5% of the respondents earned between R1001 and R1500 per month, followed by the R251-R500 (20.9%) and R501-R1000 (20.8%) monthly income categories. Respondents with monthly earnings between R1501 and R2000 comprised 11.3% of the sample whilst 10.9% of the respondents earned above R2000 per month. Respondents with earnings below R250 per month comprised 9.7% of the sample for this study.

Measuring instrument, the research instrument for this study was a questionnaire. In formulating the questionnaire, the researcher ensured that a simple questionnaire that suited the level of understanding and level of education of the BOP respondents was designed. In order to facilitate easier understanding of the statements in the questionnaire, the questionnaire was translated by a reputable company into three African languages of preference (isi-Zulu, Tshivenda and Xhosa) – certified, for the various provinces. The enormity of this study (sample of 600 elements) and the predominantly low levels of education of the BOP respondents had warranted the use of closed-ended questions that were both positively and negatively worded. The questionnaire was categorized into two sections. Section A of the questionnaire used a nominal scale to record the biographical details (age, highest educational qualification, monthly income, number of people living in a household, gender and race) of the BOP consumers. Section B of the questionnaire used an ordinal scale in which consumers were requested to rank certain variables in order of importance to them, as well as an interval scale in the form of a 5-point Likert scale. Statements 35 to 41 in Section B of the questionnaire related to the packaging/quantity dimension of this study which was further categorized according to package size (5 items) and price (2 items). Prior to the actual commencement of this study, a pilot test was performed on a minute group of 15 BOP consumers from the KwaZulu-Natal province. The purpose of the pilot test was to examine the viability of the proposed procedure, as well as uncover potential inadequacies and defects in the measurement procedures. The appropriateness of the design of the questionnaire was also investigated and the results indicated that no changes were required before the actual commencement of this study.

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

Measures/statistical analysis of questionnaire: The validity of the questionnaire was statistically assessed using Factor Analysis. When undertaking the Factor Analysis, only items with loadings greater than 0.4 were considered. Furthermore, when an item loaded significantly on two factors, only that with the highest value was considered. The packaging/quantity dimension of this study was sub-divided into two components, namely, package size and price of different quantities in order to investigate the impact that the prices of different quantities have on BOP consumers' buying behavior and the influence of packaging variables (storage, convenience of purchase, reusability of packaging) on decision-making. The item loadings determining the factors are outlined in Table 1.

Table 1: Factor Analysis-Validity of the questionnaire assessing Packaging/Quantity

	Component	
	1	2
B35	0.863	0.044
B36	0.886	0.017
B37	0.813	-0.065
B38	0.276	0.702
B39	-0.005	0.422
B40	0.831	-0.007
B41	0.383	-0.709
Eigenvalue	3.104	1.180
Percent of Total Variance	44.34	16.85

Table 1 indicates that 4 items load significantly on Factor 1 and account for 44.3% of the total variance. Three items relate to package size and 1 item relates to the price of different package quantities. Since the majority of items relate to *package size*, Factor 1 may be labelled likewise. Table 1 indicates that 3 items load significantly on Factor 2 and account for 16.9% of the total variance. Two items relate to package size and 1 item relates to the price of different package quantities. Since there is a higher significance in the item relating to *price of different package quantities*, Factor 2 will be labelled likewise.

Administration of measuring instrument: With the assistance of trained fieldworkers, data was collected through personally administered questionnaires. The justification for utilizing this approach was due to the fact that most South African BOP consumers residing in rural areas have low levels of education and literacy which necessitated the use of trained fieldworkers in order to correctly complete of the questionnaires. The researcher recruited and trained a team of fieldworkers from the selected provinces (Eastern Cape, Western Cape, Limpopo and KwaZulu-Natal) who ensured that there was an avoidance of a low-response rate and incomplete questionnaires.

Statistical analysis of data: Descriptive statistics (mean, variance, standard deviation) and inferential statistics (correlation, Kruskal-Wallis One-way ANOVA, Mann-Whitney U-Test, Kruskal-Wallis t-Test) were used to evaluate the objectives and hypotheses of the study.

4. Results

The results acquired relating to the 'packaging/quantity' dimension of the study will be presented using descriptive statistics (Table 2). The respondents of this study (BOP consumers) were asked to rate their perceptions of the 'packaging/quantity' dimension of the study using a 1 – 5 point Likert scale.

Table 2: Descriptive Statistics: Packaging/Quantity Dimension of the Study

Key Dimensions of the Study	Mean	95% Confidence Interval for Mean Lower Bound	Upper Bound	Std Dev.	Min.	Max.
Packaging/quantity	3.069	3.010	3.127	0.751	1.000	5.000
Package size	3.221	3.158	3.284	0.806	1.000	5.000
Price of different quantities	2.687	2.613	2.761	0.943	1.000	5.000

In terms of South African BOP consumers' perceptions of the key dimension of packaging/quantity (Table 2), the higher the mean score, the more positively the sub-dimension is viewed. Against a maximum attainable score of 5, it is evident from Table 2 that South African BOP consumers are very cognizant of package sizes and quantities when making their purchase decisions (Mean = 3.069). Their level of consciousness in relation to packaging/quantity (Mean = 3.069) is a synthesis of their awareness of varied package sizes, price, assortment of products and convenience of purchasing and storing packages for which frequency analyses were undertaken.

In terms of quantity and package sizes, 35.3% of the BOP consumers agree that buying smaller packages of goods allows for better storage within households as these smaller packages require less storage space and 36.6% of the respondents admit to buying smaller packages as the prices are comparatively lower than larger packages. The results of the study also reveal that the majority of respondents (69.7%) admit that they are enticed to purchase products that are packaged in containers in order to reuse these containers after their contents have been depleted. In terms of purchasing luxury beauty and hair-care products, 36.5% of BOP consumers agree and a further 7.9% strongly agree that they do engage in purchasing beauty and hair-care products for special occasions. The results of the study show that 37.1% of respondents agree and a further 13.5% strongly agree that buying smaller quantities of goods enables them to purchase an assortment of products with their meagre incomes. The results of the study reveal that 40.9% of the BOP consumers disagree and a further 23.6% strongly disagree that they refrain from purchasing large quantities of products in order to reap savings at a later stage.

As mentioned previously, the packaging/quantity dimension of this study was further categorized into two components, namely, package size and price of different quantities in order to ascertain whether or not price influences South African BOP consumers' decisions to purchase certain package sizes. In addition, the package size component enables the researcher to analyses the importance of certain criteria (storage, convenience of purchase, reusability of packaging) on the buying behavior of South African BOP consumers. Against a maximum attainable score of 5, it is apparent from Table 2 that South African BOP consumers are very mindful of these criteria (storage, convenience of purchase, reusability of packaging) when making their purchase decisions (Mean = 3.221). However, as evidenced in Table 2, price has a mediocre influence on South African BOP consumers' decisions to purchase certain package sizes or quantities (Mean = 2.687). In order to further probe the importance that BOP consumers attach to the components of the packaging/quantity dimension of the study, mean analyses were undertaken (Table 3).

Table 3: Descriptive Statistics: Packaging/Quantity Dimension of the Study

Components of the Packaging/Quantity Dimension of the Study	Mean	95% Confidence Interval for Mean		Std Dev.	Min.	Max.
		Lower Bound	Upper Bound			
Convenience	3.014	2.910	3.119	1.340	1.000	5.000
Easy storage	3.163	3.059	3.268	1.338	1.000	5.000
Lower Price	2.998	2.903	3.094	1.221	1.000	5.000
Reusable packaging	3.739	3.652	3.825	1.103	1.000	5.000
Luxury purchases	3.010	2.914	3.105	1.218	1.000	5.000
Assortment of products	3.181	3.084	3.277	1.238	1.000	5.000
Bulk purchases	2.376	2.287	2.464	1.133	1.000	5.000

Table 3 indicates that BOP consumers attach varying degrees of importance to the various packaging/quantity criteria that influence purchase decisions which, in descending level of mean score values, are: -

- Reusable packaging (Mean = 3.739)
- Assortment of products (Mean = 3.181)
- Easy storage (Mean = 3.163)
- Convenience (Mean = 3.014)
- Luxury purchases (Mean = 3.010)
- Lower Price (Mean = 2.998)
- Bulk purchases (Mean = 2.376)

As evident in Table 3, the most important packaging/quantity criteria used by BOP consumers in their purchase decisions is the ability to reuse the containers after the consumption of its contents (Mean = 3.739). The ability to purchase an assortment of products that were packaged in smaller quantities (Mean = 3.181) with limited income and the ease of storage of these smaller quantities in households (Mean = 3.163) are also of paramount importance to BOP consumers when making their purchase decisions. According to the results of the study (Table 3), the purchase of bulk packages in order to reap savings later on (Mean = 2.376) has the least level of importance to these consumers when making purchase decisions. When engaging in purchase decision-making, BOP consumers consider a multitude of factors and evaluative criteria (branding, savings potential/ability to pay off debt, price/affordability, quality, appearance/acceptability, adaptability of existing products, functionality/performance, advertising/awareness, accessibility/availability and partnering with MNCs) that shape their buying behavior this study, the researcher analyses the influence of packaging/quantity in tandem with these variables on South African BOP consumers' purchase behavior. Two hypotheses were tested with regard to the quantity and package size dimension of the study.

Hypothesis 1: There exists significant intercorrelations amongst packaging/quantity and the other key dimensions (branding, savings potential/ability to pay off debt, price/affordability, quality, appearance/acceptability, adaptability of existing products, functionality/performance, advertising/awareness, accessibility/availability and partnering with MNCs) of the study relating to BOP consumers (Table 4).

Table 4: Correlation-Packaging/Quantity and Other Key Dimensions of the Study

Key Dimensions of the Study	r / **p**	**Packaging/Quantity**
Packaging/quantity	r	1.000
	p	
Branding	r	0.004
	p	**0.925**
Savings potential/ability to pay off debt	r	0.013
	p	**0.747**
Price/affordability	r	0.396
	p	**0.000***
Quality	r	-0.270
	p	**0.000***
Appearance/acceptability	r	0.018
	p	**0.648**
Adaptability of existing products	r	0.158
	p	**0.000***
Functionality/performance	r	-0.335
	p	**0.000***
Advertising/awareness	r	0.161
	p	**0.000***
Accessibility/availability	r	-0.172
	p	**0.000***
Partnering with MNCs	r	0.132
	p	**0.001***

*p<0.01, **p<0.05

Table 4 indicates that there is a significant relationship between packaging/quantity and price/affordability, adaptability of existing products, advertising/awareness and partnering with MNCs and, a significant but inverse relationship between packaging/quantity and quality, functionality/performance and accessibility/availability, respectively, at the 1% level of significance. The implications of the significant relationships are that BOP consumers who are mindful of package sizes and quantities are price sensitive, prone to purchasing multi-purpose products that are designed for their living conditions, more inclined to buy products that are recommended by family and friends and are enthusiastic about partnering with MNCs. The significant, inverse relationships infer that BOP consumers who are more prone to purchasing smaller quantities of products tend to compromise on the quality of the products that they purchase and are less conscious of the products' performance and durability. Further to this, consumers who prefer to purchase smaller quantities are dissatisfied by the lack of assortment of products at their disposal and are more displeased by the long distances that they need to travel in order to acquire products from a supermarket. Therefore, Hypothesis 1 may be partially accepted.

Hypothesis 2: There is a significant difference in the perceptions of BOP consumers, varying in biographical profiles (age, highest educational qualification, monthly income and number of people living in a household, gender and race) regarding packaging/quantity (Table 5 and Table 6).

Table 5: Kruskal-Wallis One-way ANOVA/Mann-Whitney U-Test/Kruskal-Wallis t-Test: Biographical Variables and Packaging/Quantity

Biographical Variables	Kruskal-Wallis One-way ANOVA/ Kruskal – Wallis T-Test Chi-Square	Mann-Whitney U	Z	P
Age	17.527			0.002*
Highest Educational Qualification	15.363			0.004*
Monthly Income	36.010			0.000*
Number of People Living in a Household	7.919			0.048**
Race	0.491			0.484
Gender		41993.500	-2.817	0.005*

*p<0.01, **p<0.05

Table 5 indicates that there is a significant difference in the perceptions of BOP consumers varying in age, highest educational qualification, monthly income and gender regarding packaging/quantity at the 1% level of significance. Further to this and as evidenced in Table 5, there is a significant difference in the perceptions of BOP consumers varying in number of people living in a household regarding packaging/quantity at the 5% level of significance. According to Table 5, no other significant differences exist. In order to assess where the significant differences lie, mean analyses were undertaken (Table 6).

Table 6 indicates that:

- BOP consumers, in the 60 years and over age category, do not view purchase decisions, based on quantity and package sizes, as favorably as consumers from the other age categories. The BOP consumers in this category are less likely to buy luxury beauty and hair-care products to be used for special occasions, or to purchase products in small quantities in order to obtain a large assortment of products from their incomes. The BOP consumers in this category are more prone to purchasing products in large quantities in order to reap future savings.
- The BOP consumers who are in possession of degrees, view purchase decisions, based on quality and package sizes, more favorably than the consumers from the other educational qualification categories. These individuals are more prone to buying small quantities of products because it facilitates easier transportation and storage at home. These consumers are also more likely to purchase products with reusable packaging and spend a higher proportion of their income on beauty and hair-care products.
- The BOP consumers with a monthly income above R2000 per month do not view purchase decisions, based on quantity and package sizes, as favorably as the BOP consumers from the other monthly income categories. The individuals in this category are more likely to purchase large quantities of products in order to reap future savings and are less likely to purchase small quantities of products simply because of the ease in transporting and storing them. The BOP consumers in this category are also less prone to purchasing small quantities of products for the sake of obtaining a wide assortment

of products with their current incomes, which is comparatively more than the incomes of the BOP consumers from the other monthly income categories.

- The BOP consumers, residing in households consisting of 1-3 people, do not view purchase decisions, based on package sizes and quantity, as favorably as the BOP consumers from the other household-size categories. Comparatively, these individuals are more likely to purchase large quantities of products in order to reap the benefits of future savings than the BOP consumers from the other household-size categories.
- Male BOP consumers have a greater preference for products in reusable packaging and in varying quantities and package sizes than female BOP consumers.

Table 6: Mean Analyses-Biographical Variables and Packaging/Quantity

Biographical Variables		**Mean**	**Std Dev.**	**N**
Age Categories (in years)	18-29	3.122	0.742	132
	30-39	3.101	0.735	141
	40-49	3.088	0.707	140
	50-59	3.198	0.753	111
	60 and over	2.800	0.786	107
	Total	**3.069**	**0.751**	**631**
Highest Educational Qualification	No education	3.129	0.567	96
	Primary school	2.974	0.772	221
	High school	3.166	0.737	239
	Diploma	2.850	0.823	59
	Degree	3.366	1.041	16
	Total	**3.069**	**0.751**	**631**
Monthly Income	Under R250	3.347	0.573	61
	R251-R500	3.194	0.670	132
	R501-R1000	3.177	0.736	131
	R1001-R1500	2.867	0.806	167
	R1501-R2000	3.153	0.665	71
	Above R2000	2.781	0.827	69
	Total	**3.069**	**0.751**	**631**
Number of People Living in a Household	1-3	2.949	0.741	184
	4-6	3.083	0.784	236
	7-9	3.178	0.732	153
	10 or more	3.101	0.654	58
	Total	**3.069**	**0.751**	**631**
Gender	Male	3.169	0.669	262
	Female	2.997	0.797	369
	Total	**3.069**	**0.751**	**631**

From the results reflected in Table 5, it is evident that Hypothesis 2 may be partially accepted.

Discussion of results: In terms of quantity and package sizes, the outcomes of this study indicate that a moderate proportion of South African BOP consumers are of the opinion that purchasing smaller packages of goods is convenient, in that, these smaller packages require less storage space in households. The results of this study also reveal that approximately a third of South African BOP consumers opt for buying smaller packages as the unit prices are relatively lower than larger packages. The findings of this study, thereby, reveal that purchasing small quantities of products is not preferred by the majority of South African BOP consumers. This outcome is strongly corroborated by the findings of Variawa (2010) that South African BOP consumers prefer buying products in bulk. The results of this study also authenticates the findings of Ireland (2008) that BOP consumers in Venezuela refrain from purchasing smaller quantities and wait until they visit supermarkets in order to purchase larger formats of products that result in future savings. Furthermore, the current study's findings are consistent with the findings of AMPS SA (2008 cited in Variawa, 2010) that BOP consumers prefer buying in bulk as opposed to small sachets. In addition, a study by AC Nielsen (undated cited in Jaiswal, 2007) revealed that, for several products, the best-selling package size is the same across both BOP and non-BOP markets and that smaller package sizes are not the most popular quantities amongst BOP consumers. Dinica and Motteau (2012) support the viewpoint of Chikweche and Fletcher (2012) that due to the high uncertainty of delivery and forecasted product shortages, BOP consumers are inclined to purchase available products, in large or small quantities.

The outcomes of this study, however, contradict the findings of other studies wherein, BOP consumers have a preference for the purchase of sachets and smaller packages of goods which are inexpensive, increase penetration into BOP markets, create value for the poor, encourage impulse purchases and are suitable for less-essential 'luxury' products that are purchased for occasional usage (Anderson & Markides, 2006; Chatterjee, 2009; Dansk Industri International Business Development, 2007; Dubey & Patel, 2004; Hamilton, 2003; Ireland, 2008; Jaiswal, 2008; Karnani, 2007; Nakata & Weidner, 2011; Sehrawet & Kundu, 2007). Dubey and Patel (2004), Gordon (2008 cited in Louw, 2008), Pfeiffer and Massen, (2010) and Prahalad (2005) concur that sachets bring high-priced, branded products within BOP consumers' reach whilst still maintaining the perception that a high price is synonymous with superior quality. Sachets and smaller package sizes are conducive to encouraging brand sampling and minimizing the risks involved in trial usage of products (Dubey & Patel, 2004; Jaiswal, 2008; Karnani, 2007). Due to limited incomes, BOP consumers deem it sensible to purchase smaller quantities of products in order to avoid having too much of their limited incomes tied up in larger package sizes that may not be consumed for some time (Chikweche& Fletcher, 2010; Hamilton, 2003; Jaiswal, 2008; Kirchgeorg & Winn, 2006). Hamilton (2003), Pfeiffer and Massen (2010), Pitta et al. (2008) and Prahalad (2005) add that the vast majority of BOP consumers, who do not possess stable cash flows that allow for pantry-loading, are inclined to purchase food products shortly before preparation and make smaller daily purchases. Limited storage space and an insecure environment at home create a greater propensity to purchase smaller quantities of products in order to promote the ease of storing goods within BOP households (Alsop & Abrams, 1986 cited in Sehrawet & Kundu, 2007; Dubey & Patel, 2004; Mendoza, 2008; Rajagopal, 2009). Alsop and Abrams (1986 cited in Sehrawet & Kundu, 2007) add that an important packaging characteristic that BOP consumers rely upon when selecting brands is the ease of storage of the product. Further to this, Sehrawet and Kundu (2007) found that easy transportation of packages is also of crucial importance to BOP consumers. Although single-serve packages increase convenience and allow the poor to better regulate their cash flows, it does not increase the real affordability of products and has a detrimental effect on the environment in the form of pollution (Chatterjee, 2009; Karnani, 2007; Kirchgeorg & Winn, 2006). Davidson (2009) adds that BOP consumers are misled into thinking that single-serve sachets are cheaper when they are in fact paying much more on a per-unit basis.

As per the findings of this study, a moderate proportion of the South African BOP consumers are accustomed to purchasing smaller quantities of goods in order to acquire an assortment of products with their scarce incomes. This outcome is supported by Dubey and Patel (2004) and Kunreuther (1973 cited in Mendoza, 2008) who assert that sachets and smaller quantities provide BOP consumers with more variety of products with limited financial resources. According to the outcomes of this study, the majority of the South African BOP consumers are inclined to purchase products that are packaged in containers in order to reuse these containers once its contents have been consumed. This finding is consistent with the discoveries of Timol (2010 cited in Variawa, 2010), Tripathi and De (2007) and Variawa (2010) that reusable packaging provides value-for-money even after the consumption of the products. The current study's results indicate that there are significant relationships between packaging/quantity and the other key dimensions of this study.

Intercorrelations between packaging/quantity and other key dimensions of the study: In terms of the findings of this study, there is a significant relationship between packaging/quantity and advertising/awareness and partnering with MNCs and, a significant but inverse relationship between packaging/quantity and accessibility/availability, respectively. The significant relationships infer that BOP consumers who purchase larger quantities of products place greater emphasis on discounts and other promotional incentives and are highly prone to engage in partnerships with MNCs. The implication of the significant, inverse relationship is that BOP consumers who are more cognizant of the quantity and package sizes of products are displeased by the limited array of products at their disposal and are highly disgruntled by the long distances that they need to travel in order to purchase products from a supermarket. There were no other significant relationships between packaging/quantity and the key dimensions of this study.

Influences of biographical variables on packaging/quantity: According to the findings of this study, the South African BOP consumers' perceptions of the packaging and quantity of products are influenced by the biographical variables of age, education, monthly income, household-size and gender. Younger BOP consumers are more prone to purchasing luxury beauty and hair-care products and smaller quantities of commodities than older consumers. BOP consumers with lesser incomes tend to purchase smaller quantities of products, whereas, those in the higher income categories are inclined to purchase larger quantities of goods in order to reap the benefits of future savings. South African BOP consumers who earn lower incomes and who belong to larger households are more disposed to purchasing smaller quantities of products in a bid to secure a wide assortment of products with their measly incomes. The findings of this study illustrate that male BOP consumers prefer products in larger package sizes in comparison to female consumers.

Recommendations: Based on this study's results relating to the South African BOP consumers' perceptions of quantity and package sizes of products, the subsequent recommendations to business organizations are offered:

- *Utilize sachet packaging for 'luxuries' like hair-care and cosmetic products when targeting young female South African BOP consumers*: This strategy allows for easy transportation and enhances affordability of products that are purchased for occasional usage. In order to leverage scale effects for these companies, they could opt for increasing their market base for single-serve sachets by selling them for promotional purposes to retailers serving the non-BOP market as well as hotels, hospitals and airlines who require smaller quantities of consumer products. It is imperative for businesses to utilize biodegradable and environmentally-friendly sachet packages when pursuing this strategy. Single-serve sachet packaging is suitable when the target market for a product comprises South African BOP consumers who predominantly earn very low incomes and who belong to larger-sized households (Oodith &Parumasur, 2014).
- *Single-serve sachet packaging is useful for promotional purposes (free samples) that encourage brand trial*: Owing to the fact that South African BOP consumers are highly skeptical about trusting new and unfamiliar brands, this approach will be ideal in allowing for trial usage of the free samples in order for the BOP consumers to ascertain, for themselves, the level of product quality.
- *Provide incentive schemes for recycling*: A workable strategy that encourages BOP consumers to recycle would be to offer a free product to those who collect a specified amount of used containers or packages and return them to the company. Depending on the nature and design of the packaging it can either be re-used or recycled by the company. Cash-back schemes would also provide additional income to BOP consumers for recycling used packages (Oodith &Parumasur, 2014).
- *Create ecologically sustainable packaging*: This strategy will require MNCs to use biodegradable and recyclable materials in their packaging in order to reduce pollution. These innovations can be transferred to the developed markets for a global decrease in resource use and pollution (Oodith &Parumasur, 2014).
- *Wherever possible, utilize reusable containers for packaging products*: South African BOP consumers are prone to purchasing products in reusable packaging as they are able to derive value-for-money from reusing the packaging after its contents have been depleted.
- *Use a product-bundling approach to offer an assortment of affordable products of the same company*: The results of this study reveal that a moderate proportion of the South African BOP population are enticed to purchase smaller quantities in order to obtain an array of different products with their limited incomes. This strategy will enable MNCs that specialize in different product categories to offer a product bundle whose overall price is lower than the sum of the individual product prices. This will enable MNCs to build brand loyalty and earn a reputation as an organization that provides a variety of good-quality products at reasonable prices.
- *Offer quantity discounts on bulk purchases of consumer products*: The results of this study indicate that the majority of South African BOP consumers prefer buying products in bulk in order to reap the benefits of future savings, as opposed to smaller quantities. Offering discounts on bulk purchases will render purchases more economical for South African BOP consumers.

- *Differentiate the brand's packaging through the use of highly distinct brand-related stimuli (such as, logos, package shapes and features, images, brand colors)*: South African BOP consumers are highly proficient in distinguishing between competing brands based on brands' logos, design and/or coloring. Therefore, MNCs need to ensure that the use of brand-related stimuli (such as, brand colors, shapes, slogans, background design elements, mascots and brand characters) is distinct enough to aid brand identification and the promotion of robust brand associations (Oodith & Parumasur, 2017).

Future Research: A probe into BOP consumers' perceptions of packaging/quantity from a provincial perspective will be beneficial in order to uncover any equivalences and discrepancies in terms of packaging criteria (storage, convenience of purchase, reusability of packaging). Furthermore, data could be collected from the provinces (Free State, Gauteng, Mpumalanga, North West and Northern Cape) that were not included in this study, when comparing and contrasting South African BOP consumers' perception of packaging/quantity.

5. Conclusion

The results of this study, in relation to packaging/quantity, reveal that the majority of South African BOP consumers have a preference for purchasing products in bulk as opposed to smaller package sizes or sachets. Purchasing in bulk is deemed beneficial in terms of future savings, reducing the frequency of purchase occasions and the costs associated with transportation to and from supermarkets. South African BOP consumers are enticed to purchase products that are packaged in reusable containers or packaging, thereby, enabling the containers to be re-used after the consumption of the contents.

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Climate Change and Food Insecurity Dynamics in the Rural Limpopo Province of South Africa

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Abstract: In the developing nations of the world, poor gross domestic product growth has shown serious vacuum to be filled in order to achieve the sustainable development goals. In that regard, this research article intends to contribute to the sustainable development goals of the United Nation's goal by explaining the rural food insecurity in the light of climate change dynamic in some selected rural communities of Limpopo Province, South Africa. The data employed in the study were collected from 120 randomly selected rural household heads. Data were analysed with descriptive (frequency, mean etc.) and inferential statistics (Principal component Analysis (PCA), Tobit and Probit Regression) which were properly fitted (P<0.05) for the set research objectives. Descriptive results indicate that the average age of the respondents was 52 years with 60% of the household heads being married and a mean household size of 5.The study concluded that there is climate change effect and food insecurity in the study area and therefore recommended among others that the government of South Africa should endeavour to implement a more rural focused food security-climate change policies in order to relieve the intensity of food insecurity situations among these disadvantaged rural dwellers of the province as well as to entrench a policy of long term development of agriculture. Finally, the study emphasized that the rural farming households should be enlightened through proper extension services to carry out climate change adaptation and mitigation measures in alleviating the food insecurity situation in the rural communities of the province.

Keywords: *Climate change, food insecurity, Tobit regression, Probit regression, Principal Component Analysis*

1.Introduction

Climate change is quickly becoming one of the most pressing threats to many critical sectors of civilization. It currently remains one of the most recognized spectre that is fiercely argued, contested and debated worldwide. Manyatsi et al*.* (2010), defined climate change as the long-term significant change in the average weather that a given region experience. The Intergovernmental Panel on Climate Change (IPCC,2007) identified Africa as 'one of the most vulnerable continents to climate variability and change because of multiple stresses and low adaptive capacity'. Sub Saharan Africa have been confirmed as one of the most severely affected regions to climate change since most of the population are dependent on climate sensitive agricultural-economic activities. IFAD (2008), affirms that climate change poses considerable threat to rural farmers and their communities in developing countries, especially those living in the tropics and sub-tropics. Climate change in the light of increasing temperatures, land area suitable for agriculture, length of planting and breeding seasons, yield potentials cum livestock's output, particularly along the arid and semi-arid area are expected to decrease. Climate variability in the sub regions of Africa is associated with increasing the frequency and intensity of climate hazards especially drought (Joosten & Grey, 2017). In sub-Saharan Africa, where climate change is however expected to be the most acute, translating into intense food insecurity, increased water stress and resultant increased exposure to disease and other health problems. Incidentally, individual suffering from poor health may be weak, unable to work and automatically unable to provide for their farming households' and other dependants (Omotayo et al., 2016;Omotayo, 2017).

To this effect, the Department of Agriculture, Forestry and Fisheries (DAFF, 2012), embarked on an ambitious sector plan which addresses rural development in South Africa, focusing on improving competitiveness, sustainability, equity and transformation. The plans include supporting the fast-tracking of land reform and providing support to smallholder farmers, including facilitating access to markets. Despite the urgent need to adapt to climate change in South Africa at both national and local levels, the rate of adaptation to climate change and its food security ripple effect is still low owing to the limited options for alternative livelihoods, lack of support for climate change adaptation actions, limited knowledge of climate change adaptation options, poor planning and limited knowledge of future climate change scenarios. In this study, Climate change is considered as the distinct change in measures of climate such as temperature, rainfall, snow or wind patterns lasting for decades or longer (US Environmental protection agency, USEPA, 2009). The direct impacts of climate variables such as air, temperature, humidity, wind speed and other climate factors influence animal and plant performance such as growth, milk production, wool production and reproduction (Lal, Alavalapati, & Mercer, 2011). This study is different from other previous studies because it fitted climate change indices such as drought, soil erosion, high temperature, etc. in Principal Component Analysis cum Tobit regression. Specifically, the study sought to explain respondents' socio economic characteristics, explain the perception and knowledge of climate change, assess the determinants of climate change in the study area as well as to analyse the factors influencing the farmers' food security status (Using Probit regression analysis) in the rural Limpopo Province of South Africa thereby, bringing out substantial policy recommendation that will prompt the government of South Africa in timely intervention.

2. Methodology

Study Area: The research was conducted in the Sekhukhune district of Limpopo province which is situated in the south-eastern part of Limpopo province. Sekhukhune district municipality is located in the Limpopo Province, the northernmost part of South Africa (Stats SA, 2011). It is bordered by Guateng province to the south, Mpumalange province to the east as well as Waterberg towards the West. Sekhukhune is relatively accessible with the use of its relatively extensive road network system. It is characterized by scattered pattern of human settlement and contains a large number of rural villages with both limited economic infrastructure opportunities and services of a reasonable standard. The district is the smallest in the province, making up 11% of its geographical area. It is comprised of five local municipalities: Fetakgomo, Makhuduthamaga, Elias Motsoaledi, Ephraim Mogale and Greater Tuberatse. The district covers 14528km^{2}and population of 1076840with 5% of the districts population estimated to live in urban area. The major occupations of the people include mining, trade, financial and business services and agriculture. The choice of the province was based on the popular small scale agricultural activities as well as the fact that it is the second poorest province and food insecure in the nation (Perret et al., 2005).

Method of Data Collection: Primary data were used in this study. These data were collected in year 2016 by administering a structured questionnaire to respondents in the study area. The data collected include demographics characteristics, housing conditions, climate changeperception and adaptation, and foodconsumption expenditures. The questions were translated into the local language of the respondents during administration and their response was recorded in English language.

Population, Sampling Procedure, and Sample Size: A multi-stage sampling procedure was adopted in the selection of 120 respondents in the study. Questionnaires were administered in the two local municipalities purposively selected from the earlier stated five municipalities based on the population, as well as the prominence of agricultural activities in these rural communities. The second stage was the selection of 10 villages: Ga-masha, Ga-Mampuru, Ga-Phaspha, Ga-Mouru, Santeng, Mokotaseng, Mapodile, Ga-Manoke, Kgautswane and Pumahe were administered to respondent from each of the communities while the last and final stage of sampling was the selection of 12 farming household heads from each of the communities. The samples were representatives, sufficiently robust and satisfactory to give estimates at local government, state and at the regional level.

Statistical Analysis: Descriptive statistics such as frequency, percentages, mean, food security index and Principal Component Analysis, Tobit and Probit regression were employed to fulfil the objectives of the study. Principal Component analysis was used to form a climate change index which was later used as dependent variable in the Tobit regression analysis. In order to determine the food security status of the rural households, the households were classified into food secure and food insecure households, using the food security index. The food security index formula is given by:
Fi = Per capita food expenditure for the ith household
2/3 mean per capita food expenditure of all households ……………………………………………………………………. (1)
Where Fi = Food security index; When Fi ≥1= Food secure ith household and Fi ≤ 1= Food insecure ith household.

In that regard, a food secure household is therefore the household whose per capita monthly food expenditure fall above or is equal to two third of the mean per capita food expenditure. On the other hand, a food insecure household is that whose per capita food expenditure falls below two-third of the mean monthly per capita food expenditure (Omonona et al., 2007 as cited by Ifeoma and Agwu, 2014). Additionally, the number of food secure/insecure households in the state was determined by taking the frequency of the food secure/insecure households. The headcount ratio (H) of food security was calculated to measure the percentage of the population of households that are food secure/insecure. The headcount index formula is given by; Headcount index (H) = M/N Where M = number of food secure/insecure households N = the number of households in the sample.

Modelling the Correlates of Climate Change Indices in some Selected Rural Communities of Limpopo Province: Estimating the determinants of climate change poses both econometric and climate modelling challenges. The econometric challenge of estimating the effect of some socio economic and environmental factors on dependent variables of interest has been well appreciated, as has the climate change modelling challenge of simulating changes in the distribution. The variables selected for constructing climate change index were (erratic rainfall, perception of drought, high temperature, presence of soil erosion, perception of wind storm) highlighted in the questionnaire and described in Table 2. The variables selected for constructing the food index were coded as 1 if yes and 0 otherwise, in order to provide a simple measure of the aggregation of these climate change indicators. The index was computed as follows:

$$Climatechangeindex = \quad D_{\mathrm{i}} + \beta_{\mathrm{i}} \sum_{n=1}^{C} X_{\mathrm{ir}} + z^{0} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots . (2)$$

Where climate change index is the Composite index,D_{i} and β_{i} represents the parameters to be estimated. However,X_{ir}represents the vector of independent variables coded aserratic rainfall (yes=1,0 otherwise), perception of drought (yes=1,0 otherwise), high temperature (yes=1,0 otherwise), presence of soil erosion (yes=1,0 otherwise), perception of wind storm (yes=1,0 otherwise), and z_0 represents the error term. Using the index generated by PCA as the dependent variable, the Tobit regression analysis was used to analyse the determinants of climate change in the study area. The standard Tobit model can be written as (Tobin, 1958):
$y^* = x_i'\beta + u_i u_i \sim N(0,\sigma^2)$ i=1,…,n ……(3)
yi =yi* if yi*>0; yi = 0 otherwise; yi = climate change index (earlier generated)
The explanatory variables are: Household Size, type of crop grown, household heads' age, educational status of the head, credit accessibility, food security status, reduction in soil moisture, asset ownership, knowledge of climate change, household income, food expenditure, climate change adaptation, agricultural activities, release of methane or Co from farm, bush burning practice, tree cutting, farm activities leading to soil erosion. Where: xi is a vector of explanatory variables corresponding to the ith respondent, yi, are observed proportion of the ith respondents with climate change yi* is an unobserved continuous latent variable assumed to determine the value of yi while; ui is the disturbance term.

Probit Model of Factors Influencing the Farmers' Food Security Status in the Limpopo Province: Probit model was used to identify the factors influencing the achievement of food security among the respondent households. Probit model could be represented as:
$Y=\sum \alpha X+ei$ ……(4)
Where Y = vector of dependent variable (1 for food secure households; 0 for food insecure households) as previously explained; X = vector of explanatory variables (predictors); α = Probit coefficients; ei = random error term. The explanatory variables included in the model are: Household size, gender of the household head, employment status, age of the household's head, experience of shock, theft incidence, climate change, high food price, educational status, possession of asset, house materials, farm size, farming experience, food expenses.

3. Results

Socio-Economic Characteristic of the Rural Communities in Limpopo Province of South Africa: The result shown in Table 1 revealed the fact that a considerable number i.e. 56.67% of the respondents were male. This shows that there are more male headed households in the study area than female headed (43.33%) counterparts. The average age of the household head in the study area was 52 years old with a standard deviation of 13.6 while the general population is considerably younger with ageing household heads. This corroborates with the finding of De Cock et al. (2013). In addition, there were no significant differences between the household sizes of the different communities in the study as majority of the respondents' i.e. 80.83% have 5 households size thereby giving an average household size of 5 members in the study. Marital status of the respondents is principally partnership in nature with 30% of them living as patners.15.83% were married while about 27.50 were divorced. In addition, household heads have a generally low level of education. Furthermore, some 30.83 % have had no schooling, although most of the household heads have either completed primary 33.33% have had some secondary education 32.50% while the lowest percentage i.e. 3.33%. The low levels of education are skewed towards the older generation, as they grew up in the apartheid era and had limited access to formal education Adeniyi et al. (2016). An average annual income of R18000 ($1325.55) was recorded in the study which was supported by the respondents' response on their possession of asset which 40% of them claimed not to have. This indicate a high level of poverty in the study area while 59.17% of the respondent were found to be food insecure. This is in line with the report on a survey in Sekhukhune by Rule et al. (2005) which confirmed that most of the households experienced lack of food or money during January and February.

Table 1: Socio-economic characteristic of the rural Household heads(n=120)

Socio-economic Variable	Frequency	Percentage	Average	Standard Deviation
Gender				
Male	68	56.67		
Female	52	43.33		
Age				
20-39	10	8.33		
40-59	75	62.50	52	13.6
60-79	35	29.17		
Household size				
1-5	97	80.83		
6-10	21	17.5	5	0.8
11-15	02	1.67		
Marital status				
Married	19	15.83		
Partner	36	30.00		
Divorced	33	27.50		0.7
Living apart not divorced	15	12.50		
Widow or Widower	11	9.17		
Single	6	5.00		
Education level				
No education	37	30.83		
Primary education	40	33.33	7	2.2
Secondary education	39	32.50		
Tertiary education	4	3.33		
Source of Income				
Farming	45	37.50		
Family and friends	15	12.50		
Grants	55	45.83		
Cooperatives	0	0.00		
Bank loan	3	2.50		
Others	2	1.67		
Income Per Annum (Rand)				
1-20000	87	72.50	R18000/ $1325.55	
20001-40000	21	17.50		
40001-60000	8	6.67		
60001-80000	2	1.67		
80001-100000	1	0.83		

100001 and above	1	0.83
Asset Possession		
Yes	41	34.17
No	48	40.00
Not Sure	31	25.83
Food security status		
Food secure	49	40.83
Food insecure	71	59.17
Note: Exchange rate as at Dec., 2017: $1US was equivalent to R13.58		

Source: Computed from Field Survey

Respondents Perception and Knowledge of Climate change in Limpopo Province: Table 2 shows that all the 15 climate change perception and knowledge indicators were rated yes or no by the respondents with majority of the respondents indicating yes for all the perception questions while (51.67%) of the respondents claimed not to be knowledgeable about climate change. The implication is that although majority of these respondents lack formal knowledge of climate change, yet they can perceive and observe its incidence on their livelihood and agricultural activities. This is in line with the conclusion of Maponya and Mpandeli (2013), in their study that barriers like lack of education and skills and information, lack of government support are core problems of rural communities of Limpopo Province which should be addressed.

Table 2: Perception and knowledge of Climate Change Profile of the Respondents

N	Climate change Knowledge and Perception Indicators	YES		NO		
		Freq	%	Freq	%	SD
1	Aware of climate change	88	73.33	32	26.67	0.78
2	Knowledgeable on climate change	58	48.33	62	51.67	0.66
3	Perception of erratic rainfall pattern	101	84.17	19	15.83	0.79
4	Perception of presence of draught	116	96.67	04	3.33	0.96
5	Perception of reduction in soil moisture	91	75.83	29	27.17	0.71
6	Perception of reduction in crop yield & animal harvest	112	93.33	08	6.67	0.58
7	Perception of rise in temperature	115	95.83	05	4.17	1.02
8	Perception or observation of flooding of farmland	102	85.00	18	15.00	0.71
9	Perception or observation of heavy wind/storm	89	74.17	31	25.83	0.55
10	Perception or observation of soil erosion	76	63.33	44	36.67	0.59
11	Perception of high pest & disease infestation	63	52.50	57	47.50	0.88
12	Crop failure and animal mortality	117	97.50	3	2.50	0.82
13	Incurred more cost on investment	119	99.17	1	0.83	0.81
14	Reduction of plant and livestock's quality and quantity	77	64.17	43	35.83	0.65
15	Delay in planting and livestock production	111	92.50	9	7.50	0.74

Source: Computed from Field Survey

Modelling the Correlates of the Determinants of Climate Change in the Limpopo Province of South Africa: This section estimated the determinants of the farming households' perception of climate change in Limpopo South Africa using Tobit regression model. High level of tolerance computed for the variables indicates that there was absence of serious multicollinearity in the analysis. In order to avoid inconsistency and biasness from the estimated parameters, the study subjected the variables to multicollinearity test using Collin command in STATA 11. Test for multicollinearity among the variables was carried out with variance inflation factor (VIF) see Table 3. Since some of the variables that were included to capture the respondent demographic and environmental characteristics showed statistical significance, the null hypothesis is for this specific objective is therefore rejected. Following the procedure earlier described above, Principal Component Analysis was employed to construct the climate change index which was the dependent variable in the Tobit regression. Table 4 shows that eight out of the seventeen fitted independent variables in the analysis were significant. The variables that significantly affect the households' perception of climate change were type of crop grown($p<0.01$), reduction in soil moisture ($p<0.01$), knowledge of climate change($p<0.10$), climate change adaptation ($p<0.01$), agricultural activities($p<0.05$), bush burning practice ($p<0.01$), tree cutting ($p<0.01$) and farm activities leading to soil erosion ($p<0.01$). While other variables were statistically insignificant ($p>0.10$).

Table 4 shows that the parameter of the type of crop grown by the farmers was negative (-0.55700) and significant ($p<0.01$). This indicates a negative relationship between the type of crop grown by the farmers and their perception of climate change in the study area. This could largely be due to the low educational level of this respondent and or due to inadequate knowledge of climate change in the study area as their perception of climate change supposed to positively affect the type of crop to be grown at all times so as to avoid the negative impact of climate change in the study area. Likewise, the parameter of the farming households' perception of reduction in soil moisture captured in its dummy form was observed to be statistically negative (-0.95933) and significant ($p<0.01$). On the other hand, the coefficient of respondents' knowledge of climate change was positive (0.01909) and significant ($p<0.10$) in the model. It implies that if the households' heads knowledge of climate change increase with increase in their perception of climate change. This is realistic because knowledge arouses the perception of an event. Adequate knowledge of climate change will help the farmers to know the rightful perception of climate change and how to possibly avoid its consequences in the study area. Climate change adaptation parameter was realized to be positive (0.24197) and significant at ($p<0.01$), indicating a positive and direct relationship between the respondents' adaptation of method of preventing climate change impact and climate change perception in the study area. The coefficient of agricultural activities which could contribute to climate change threat was positive (0.16667) and significant at ($p<0.05$) in the study. This implies that adaptation of climate change strategies contributes positively to climate change in the study. The dummy parameter of bush burning practice by the respondents also gave a positive (0.85730) and significant ($p<0.01$), in the study. This stand to explain that bush burning contributes to climate change in the study, this is expected as bush burning leads to emission of gases that contributes to climate change. Tree cutting coefficient was further found to be positive (1.87526) statistically significant ($p<0.01$). This by implication indicates that tree cutting contributes to climate change as there is positive relationship between the two as founded in this study. Finally, farm activities leading to soil erosion was positive (3.76161) and significant to climate change at ($p<0.01$). This means there is a positive link between the soil erosion and climate change in the study area.

Table 3: Multicollinearity Test of Variables

Variables	VIF	Tolerance	Eigenvalue
Household Size	1.80	0.5568	13.0490
Climate change Adaptation method	1.68	0.5938	1.0940
Household Heads' Age	1.48	0.6737	1.0666
Educational Status of the Head	1.50	0.6669	0.8759
Credit Accessibility	2.11	0.4735	0.4997
Food Security status	2.37	0.4220	0.3388
Reduction in Soil Moisture	6.08	0.1645	0.2806
Asset Ownership	2.02	0.4950	0.2130
Knowledge of Climate change	1.28	0.7788	0.1836
Household Income	4.89	0.2043	0.1473
Food Expenditure	4.03	0.2483	0.0882
Type of Crop Grown	6.10	0.1638	0.0562
Agricultural activities	1.59	0.6281	0.0330
Release of methane or Co from Farm Activities	1.70	0.5899	0.0297
Bush Burning practice	1.87	0.5341	0.0206
Tree cutting	1.47	0.6784	0.0117
Farm activities leading to soil erosion	1.64	0.6110	0.0110

Source: Authors Computation from the Computer Printout of Multicollinearity Test

Table 4: Tobit Results of the Correlates of the Determinants of Climate Change

Variables	Coefficient	Std. Error	t	P> /t /	Tolerance
Household Size	-0.01078	0.03369	-0.32	0.749	0.5568
Type of Crop Grown	-0.55700	0.16308	-3.42	0.001	0.5938
Household Heads' Age	0.11447	0.09087	1.26	0.211	0.6737
Educational Status of the Head	-0.05803	0.03854	-1.51	0.135	0.6669
Credit accessibility	-0.60255	0.46806	-1.29	0.201	0.4735
Food Security status	0.07928	0.44559	0.18	0.859	0.4220
Reduction in Soil Moisture	-0.95933	0.29288	-3.28	0.001	0.1645
Asset Ownership	-0.03863	0.03179	-1.22	0.227	0.4950
Knowledge of Climate change	0.01909	0.01075	1.77	0.079	0.7788
Household Income	0.04131	0.12773	0.32	0.747	0.2043
Food Expenditure	-0.03486	0.08329	-0.42	0.676	0.2483
Climate change Adaptation	0.24197	0.05442	4.45	0.000	0.1638
Agricultural activities	0.16667	0.07199	2.32	0.023	0.6281
Release of methane or Co from Farm	-0.03016	0.08971	-0.34	0.737	0.5899
Bush burning practice	0.85730	0.16145	5.31	0.000	0.5341
Tree cutting	1.87526	0.32353	5.80	0.000	0.6784
Farm activities leading to soil erosion	3.76161	0.29843	12.60	0.000	0.6110
Constant	0.89385	1.46460	0.61	0.543	
Observation Number	120				
LR chi^2	126.34				
Prob>ch^2	0.0000				
Log likelihood	-120.35058				

Source: Authors Computation from Computer Printout of Tobit Regression Analysis

Probit Regression Analysis of the Factors influencing Households' Food Security in Limpopo Province of South Africa: Table 6shows the results of the Probit regression which determined the factors influencing farming household's food security in Limpopo Province of South Africa. Test for multicollinearity among the variables was carried out with variance inflation factor (VIF) and the mean VIF of the variables was good (See Table 5). The marginal parameters were also used for interpretation of the results. In order to avoid inconsistency and biasness from the estimated parameters, the study subjected the variables to multicollinearity test using Collin command in STATA. The result shows that the model produced good fits for the data as revealed by statistical significance of the Likelihood Ratio Chi-Square ($p < 0.01$). Also, high level of tolerance computed for the variables indicates that there was absence of serious multicollinearity in the analysis. In the study, eight out of the fourteen variables analysed were found to be significantly influencing farming households' food security status in the study area. These variables include gender of the household's head, employment status, age of the household's head, experience of shock, climate change, high food price, educational status and food expenses. The parameter of household heads' gender was statistically significant (p<0.10) with a positive coefficient (0.97787) to respondents' food security status (0 if food secure and 1 otherwise) in this model. This indicates thatgender of the household's head positively influenced the probability of households' food security in the study area. This further implies that being a male headed household's category had a significantly higher probability of influencing their food security status in the study area. This could be due to the fact that male are more active head than female counterparts.

The coefficient of employment status of respondents was also found to be positive (0.39819) and significant (p<0.01) to their food security status. This indicates that the employed respondents in the study area have a higher probability of being food secured when compared with their unemployed counterpart. This is understandable in the sense that, respondents with employed status will have income and so could afford to shoulder the feeding cost of the entire household. This is contrary to the counterparts who might not be able to afford the basic necessity of the households. In addition, age of the households' head was negatively (-0.63566) and significant (p<0.01). This indicates that decrease in age of the farming household head increases the probability of farming households' food security status. This might be due to the fact that younger household head has more strength and agility to make money in other to take care of his household member thereby enhancing their food security unlike their older counterparts in the study area. Experience of shocks (captured in its dummy form) parameter was negative (-0.22214) and statistically significant ($p<0.05$). This means that decrease in household heads' shock experiences increases the household's probability of being food secured in the study area. This is not in line with the a priori expectation of the study. Furthermore, the coefficient of respondents' climate change (captured as generated PCA climate change index) was negative (-1.64456) and significant ($p<0.10$). This means that decrease in the climate change incidence increases the probability of the farming households' food security status in the study area. This is expected as decrease in climate change impact leads to increase in food security status and better livelihood of the farming households in the study area.

The study further observed that the parameter of high food prices captured in its dummy form was negative (-1.61965) and significant at ($p<0.05$) to respondents' food security status in the study area. This by implication means that decrease in prevailing food prices in the study area leads to increase in the probability of respondent food security in the study. This is in consonance with apriori knowledge as there is inverse relationship between high food prices and food security as increase in food prices could lead to food insecurity vice versa in the study. Educational status of the respondent was positively (2.11125) significant ($p<0.10$). This indicates that increase in the educational status of the farming households' head increases the probability of increasing their food security status in the study area. This is not in line with the apriori expectation of the study as education is a key indicator to alleviation of poverty and hunger. Finally, the coefficient of respondents cost of food expenditure was negative (-1.06089) and significant at ($p >0.05$). This indicates a negative relationship between the farming households' food expenditure and their food security status. By implication, this stands to say, the respondent's cost of nutrition has a lower probability of influencing their food security status. This could be as a result of the fact that these respondents are largely small-scale farmers who feed on their self-farm outputs or because they have other coping strategies to shortage in food in their households.

Table 5: Multicollinearity Test of Variables

Variables	VIF	Tolerance	Eigenvalue
Household size	1.72	0.5819	10.2807
Gender of the Household head	1.86	0.5374	1.1689
Employment status	1.59	0.6306	1.0623
Age of the Household's head	1.42	0.7018	1.0481
Experience of Shock	1.67	0.5989	1.0132
Theft Incidence	4.40	0.2982	0.7053
Climate change	1.57	0.6376	0.3379
High food price	1.63	0.6134	0.2735
Educational status	2.85	0.3515	0.1613
Possession of Asset	1.67	0.5980	0.1544
House materials	1.26	0.7935	0.0649
Farm size	1.21	0.8294	0.0551
Farming experience	1.12	0.8964	0.0380
food expenses	1.50	0.6682	0.0274

Source: Authors Computation from the Computer Printout of Multicollinearity Test

Table 6 : Probit Analysis of the Factors influencing Households' Food Security

Variables	Coefficient	Std. Error	Z	P>|z	M.E	Tolerance
Household size	0.16960	0.12934	1.31	0.190	.04977	0.5819
Gender of the House head	0.97787	0.52264	1.87	0.061	0.2869	0.5374
Employment status	0.39819	0.14844	2.68	0.007	0.1168	0.6306
Age of the Household's head	-0.63566	0.18906.	-3.36	0.001	-0.1865	0.7018
Experience of Shock	-0.22214	0.11021	-2.02	0.044	-0.0651	0.2982
Theft Incidence	1.6556	1.13406	1.46	0.144	0.2285	0.1987
Climate change	-1.64456	0.86143	-1.91	0.056	-0.2479	0.6376
High food price	-1.61965	0.79462	2.04	0.042	-0.4229	0.6134
Educational status	2.11125	1.16719	1.81	0.070	0.2462	0.3515
Possession of Asset	-1.6051	0.98245	-1.63	0.102	-0.5759	0.5980
House materials	0.23490	0.14275	1.65	0.100	0.0689	0.4594
Farm size	0.13405	0.12893	1.04	0.298	0.0393	0.7935
Farming experience	-0.57270	0.56644	-1.01	0.312	-0.1681	0.8294
food expenses	-1.06089	0.48671	-2.18	0.029	-0.3113	0.8964
Constant	0.67633	2.63336	0.26	0.797		0.6682
Observation Number	120					
LR chi^2 (14)	83.09					
Prob> chi^2	0.0000					
Pseudo R^2	0.5347					
Log likelihood	-36.147071					

Source: Authors Computation from Computer Printout of Probit Regression Analysis

4. Discussion

This paper examined the climate change and food security dynamics in the rural Limpopo Province of South Africa. Determinants and factors influencing rural households' food security were analyzed by the study. The descriptive results indicate Average year of formal education by the households' head was 7 years, which implies a low educational attainments of the household heads in the rural communities. Low attainment of formal education could also influence knowledge and perception of climate change and food security in the study area. Several studies have emphasized the importance of education on knowledge, perception and food security (Parry et al., 1999; Di Falco et al.,2011; Godfray et al., 2010). The result also indicated that the knowledge of climate change is still low in the study. This is obviously a reflection of low educational attainments among the rural household heads as previously reported by Sharma (Knox et al., 2012). The findings are also bringing to fore the essence of moderate household size. In some related studies (Nord 2010; Kennedy and Peters, 1992) interventions to enhance knowledge of family size should be enhanced. An average annual income of R18000 ($1325.55) was recorded in the study which was supported by the respondents' response on their possession of asset which 40% of them claimed not to have. This indicate a high level of poverty in the study area while 59.17% of the respondent were found to be food insecure. This is in line with the report by Rule et al., (2005) which confirmed that most of the households experienced lack of food or money. In conclusion, thee study revealed that majority of the respondents lack knowledge of climate change while the correlates of the determinants of climate change in the study area were knowledge of climate change, climate change adaptation, agricultural activities, bush burning practice, practice of tree cutting, farm activities leading to soil erosion, crop grown and reduction in soil moisture. The findings also showed that factors influencing households' food security in Limpopo Province of South Africa were gender of the household's head, employment status, age of the household's head, experience to react on shocks, climate change adaptation, high food price, educational status of the household head? And food expenses. It was recommended that:

- Training of extension agents should be carried out on regular bases to equip the rural farmers with the knowledge of climate change and its effect on household's food security so that they can easily help to disseminate to these rural households, in order to improve the rural farmers' agricultural production and wellbeing.

- The Premier of Limpopo Province and indeed South Africa government should improve on the socioeconomic characteristics of the rural communities by empowering them through some unskilled trainings which can be a backup off-farm activity so as to enable them to economically combat the impact of climate change to improve on food security of the nation, South Africa.
- Extension visit is recommended for farmers in Limpopo province to raise the level of perception and knowledge of farmers on the impact of climate change so that they will desist from agricultural activities such as bush burning practice, tree cutting etc. in the study area.
- The government of South Africa should endeavour to implement a more rural focused food security-climate change policy in order to help relieve the intensity of food insecurity situations among these disadvantaged rural dwellers of the province as well as to entrench a policy of long term development of agriculture.

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The Impact of Policy Uncertainty on Macro-Economy of Developed and Developing Countries

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Abstract: This paper investigates the effects of a US economic policy uncertainty shock on Indian macroeconomic variables with a number of Structural VARs. This study models the economic policy uncertainty index as constructed by Baker et al. (2013). The study also uses a set of macroeconomic variables for India such as inflation, industrial production and nominal interest rate. The objective of the study is to identify the potential impacts of economic policy uncertainty shocks from the US economy to the Indian economy. According to the SVARs, a one standard deviation shock to the US economic policy uncertainty leads to a statistically significant decline in the Indian industrial production of -0.294% and in the Indian inflation of -0.032%. India shows to be resistant to US policy uncertainty. Furthermore, the study finds that the contribution of the US economic policy uncertainty on the Indian macroeconomic variables is shown to be significantly larger than the one exerted by the Indian uncertainty shock.

Keywords: *Economic Policy Uncertainty, Structural Vector Auto-regressions, US-Indian area spillovers*

1. Introduction

The role of policy uncertainty has emerged in much of the recent economic debate in the world. It is seen to have important implications for business confidence and the investment climate. The issue of uncertainty in an economy and its consequences has had a long and distinguished recognition in the history of economic thought and policy. If outcomes occur with a probability that cannot even be estimated, the decision-maker, be it from the private or public sector, faces uncertainty. Policy uncertainty plays an important role in the policy discussion. It is prevalent to find an explicit reference to upside and downside risks to the outlook of international and national institutions. The latter takes complex policy decisions into consideration in an environment in which uncertainty about the future state of the economy can never be ruled out. Given the potentially far-reaching relevance of policy uncertainty for the future course of the economy, it is not surprising that considerable attention has been dedicated in the economic literature to characterize the effects of uncertainty on the economy. During the 2008/09 recession and financial crisis, uncertainty about growth in the United States (US) and Europe has been a key concern for policymakers. This study aims to identify the potential impacts of economic policy uncertainty shocks from the US economy to the Indian economy. The US has been selected as the developed country and India as the developing country for this study. This study investigates whether there are any effects of economic policy uncertainty on real economic activity and if so, how large is the impact of the policy uncertainty shock. The VAR model is used in this study, which includes macroeconomic variables for the US and India. The paper mainly focuses on how the effects of economic policy uncertainty has on the economic growth of the Indian economy. The study is in line with recent research that focuses on the impacts of policy uncertainty shocks on the macro economy. This paper follows the direction of Colombo (2013) and utlisesa similar methodology. However, instead of using other macroeconomic variables for the US, the policy uncertainty is utilised in order to explicitly illustrate how this uncertainty shock affects the Indian macroeconomic variables. The uncertainty shock utilised, was developed by Baker et al. (2013), the economic policy uncertainty index. Any unexpected political crisis, an act of terror or financial turmoil prompts the number of articles which deal with the economy and uncertainty to instantly rise (Doms and Moris, 2004). Thereby, providing a correct account of swings in anxiety felt by consumers and investors (Doms and Moris, 2004). It is for this reason that the newspaper coverage index is referred to as the measure of uncertainty.

2. Literature Review

The perception of uncertainty about the state of the economy among consumers and investors can hamper economic recovery and growth (Sum, 2012). Both consumers and investors become resistant towards spending and investing when they perceive higher uncertainty in the economy. High levels of uncertainty will offer firms a stimulus to freeze investments and hiring of new workers (Bernanke, 1983). Consequently, when firms postpone their levels of investment and hiring, a recession becomes more evident when the economy contracts. According to Sum (2012), the cost of financing is also associated with high uncertainty. A higher level of uncertainty tends to push up the cost of financing (Gilchrist et al., 2010), which will thus lead to lower levels of investment and a decline in the economy (Fernandez-Villaverde et al., 2012). Baker et al. (2013) took a stance that uncertainty about future taxes, spending levels, regulations, health-care reform and interest rates will force firms and consumers to postpone spending on investment and the consumption of goods. The latter links with an earlier study by Rodrik (1991) which shows that the postponement of firms to invest is associated with uncertainty. Higher monetary policy uncertainty tends to cause a greater interest rate to spread which implies a higher dispersion of inflation. For instance, if the rate at which bonds gain value due to movements in inflation, increases on average with the level of uncertainty (Mumtaz & Zanetti, 2012). Nominal interest rates decrease in response to an increase in the volatility of monetary policy. Mumtaz and Zanetti (2012) further state that if the monetary authority follows the Taylor Rule, the fall in the interest rate must be associated with a decrease in either inflation, productivity or even both. An increase in monetary policy uncertainty causes interest rates, inflation and output growth to fall. According to Bloom (2013), uncertainty does not only decrease the level of investment and staff hiring but it also forces firms to become less sensitive to business conditions factors such as productivity, demand and prices. However, this will lead to high uncertainty which then reduces the impact of stimulus policies such as interest rates and tax cuts. High uncertainty will then cause monetary and fiscal stabilization instruments to become less effective. As a result, Julio and Yook (2012) found that there is a negative relationship between policy uncertainty and investment.

The damaging impact of economic policy uncertainty on growth has been well studied. In recent years the study of this phenomenon globally has led to the new measures of economic policy uncertainty in countries such as the US, United Kingdom (UK), Japan, China and India. As a result, Baker et al. (2013) extensively developed a measure of this distinct kind of uncertainty, as they refer to it as the economic policy uncertainty index. They construct their index by combining different types of components which are proxied by a newspaper coverage. According to Baker et al. (2013), the proxy is nothing more than a representation of the degree of uncertainty felt by households, firms, consumers and producers. In this paper, this index is extensively utilised. Baker et al. (2013) state that their index shows an increase in the economic policy uncertainty around major elections, wars and the 9/11 terror attacks. Bloom (2013) argues that jumps in uncertainty in response to major economic or political shocks, such as the collapse of the Lehman Brothers, leads to a quick decrease and a rapid rebound in productivity and employment. However, policy uncertainty could be high due to the general economic activity also being high. Recent policy uncertainty has emerged from the US debt ceiling dispute and the Eurozone crisis. The macroeconomic effects of uncertainty has been the focus of existing literature (Bloom, 2009; Alexopoulos and Cohen, 2009; Leduc and Liu, 2013; Baker et al., 2013 and Colombo, 2013. All utilising numerous VARs at a macroeconomic level to measure the impact of the uncertainty shocks. Colombo (2013) extensively analyzed the response of a number of macroeconomic factors towards such a shock to a level of uncertainty which affects the economy of the US. Shocks which impact a developed country such as the US is more likely to trigger a reaction to a developing country such as India.

The role that the US uncertainty shock had on the European macroeconomic variable is quantitatively greater than the one invoked by a euro-area specific shock (Colombo, 2013). Many authors consider the harmful effects of monetary, fiscal and regulatory policy uncertainty on economic growth (Friedman, 1968; Rodrik, 1991; Higgs, 1997; and Colombo, 2013). Balcilar et al. (2016) find that economic policy uncertainty in the US collaborates with the influence of monetary policy in Europe. Policy uncertainty regarding any change in policy in the US tends to dampen the effect of monetary policy shocks, coupled with price and output which react more significantly to monetary policy shocks, should the level of US policy uncertainty be at its lowest (Balcilar et al., 2016). However, they show that the government's actions with regards to changes in policy are a source of uncertainty for the European investors. All the high levels of policy uncertainty that trigger a reaction to Europe then drive the euro investors to adopt a wait-and-see approach which leads to a weaker and insignificant response of price and productivity to monetary tightening in the euro area (Balcilar et al., 2016). This follows from the previous literature of Bernanke (1983) and Ramey et al. (2001). In an environment of heightened uncertainty, policymakers might need to implement a strong policy rate cuts or tax cuts so as to be able to successfully stimulate the economy (Bloom, 2013). While it is widely believed that variations in uncertainty can have real effects on the economy, estimating empirically such effects is far from being superficial (Berlin, 2016). This is due to the endogeneity problem. In fact, while on the one hand uncertainty generates effects on the economy, on the other hand, economic development affect uncertainty (Berlin, 2016). In order to address this endogeneity problem, the literature typically starts from vector autoregressive models that include several possible variables. These typically are a measure of uncertainty, several proxies for economic activity and a measure of monetary policy intervention. In this paper, the latter method is utilized, which is discussed further in the following section. For further research, a financial variable could be added in order to control for financial development that potentially reflects the evolution of uncertainty. 'Why does uncertainty vary?" Bloom (2013) poses this question and answers that there are two mechanisms that drive changes in uncertainty over a period of time.

Firstly, as it has been established, uncertainty shocks that often cause recessions such as wars, oil price jumps and financial consternations appear to directly increase uncertainty. Secondly, uncertainty appears to endogenously rise during recessions, as the economic slowdowns tend to increase both micro and macro volatility. It is widely believed that high uncertainty is detrimental for short-run growth, reducing firms' willingness to hire and invest and consumers' willingness to spend (Bloom, 2009). There are theories which predict the opposite: Bar-Ban and Strange (1996); Alexopoulos and Cohen (2009); Bloom (2013) and Berlin (2016) state there are some positive effects of uncertainty: uncertainty can stimulate research and development. When firms are faced with high levels of uncertainty about the future, they are willing to become more innovative. This effect is usually referred to as the growth option effects. For instance, while the development of internet raised uncertainty as it was a brand new technology, the upside potential was perceived as unbound which as a result led to higher investment in the new technology. Economic uncertainty can be linked to the stock market performance (Bansol et al., 2004). The financial market is a victim of economic policy uncertainty, and not entirely a fan of uncertainty (Sum, 2012). Favero and Giavazzi (2012) and Ehrman and Fratzcher (2009) focus on the spillover effects in the financial markets. The shortfall, however, is that such an indicator may fail to capture the full impact of uncertainty shocks on a broader economy. A paper by Kim (2001) quantifies the role that the US macroeconomic shock stimulates business cycles internationally. There are a few studies that focus on the uncertainty shock arising from the US to other economies. This paper is set up to investigate the impact of these uncertainty shocks to the economy of India. This paper seeks to contribute to a further understanding of the role of the US uncertainty shock and how it triggers a reaction tothe Indian macroeconomic variables.

3. Methodology

Data: This study aims to estimate how economic US policy uncertainty shocks impact the Indian macroeconomic variables. The study uses monthly macroeconomic data which spans the period from 2003to 2015. This period is chosen specifically due to the availability of data for economic policy uncertainty index which starts from the beginning of 2003. In order to observe economic policy uncertainty in India and the US, this paper will use two country-specific. There are three components that the policy-related economic uncertainty for the US relies on: i) a news-based component quantifying newspaper coverage on economic policy uncertainty; ii) a measure of the Federal tax code provisions and iii) a measure of disagreement among forecasters. On the other hand, the policy-related economic policy uncertainty for India relies on two components: i) a news-based component and ii) a measure of disagreement among forecasters. According to Colombo (2013), since the economic policy uncertainty indices rely on a different number of components, the paper then focuses on uncertainty indices which are solely based on the news coverage. Included in the vector Yt (which will be discussed in the next sub-section) the news-based components $NewsUS$ and $NewsIND$ as proxies for economic policy uncertainty for the US and India respectively. For the Indian economy the following macroeconomic variables were used:

- Consumer Price Inflation (CPI), as a measure of inflation;
- Industrial Production Index (IPI), as a proxy for the business cycle and
- Nominal interest rate (i), as a proxy for the monetary policy instrument.

All variables are in a logarithmic form, excluding the nominal interest rate and economic policy uncertainty which are represented in a level form. The reason why other macroeconomic variables are in a log-level form is that they provide reliable estimates of the impulse responses (Sims et al., 1990). The macroeconomic data used has been retrieved from Easy Data: Data by Quantec. The economic policy uncertainty index is obtained from the "Economic Policy Uncertainty" from [www.policyuncertainty.com].

Methodology: The study analyses the transmission of an uncertainty shock from the US economy to the Indian economy within a two-country Structural Vector Autoregressive model (SVAR). The SVAR model is employed because it treats all the variables in the system as being endogenous. Also, the use of SVAR allows the explicit modeling of contemporaneous interdependence between the left-hand side variables (Pfaff, 2008). Since the nominal interest rate is a proxy for monetary policy, the use of SVAR will assist in identifying the potential shocks which are likely to arise from monetary policy shocks. Most importantly, SVARs are considered good for short-term forecasting. A vector autoregressive equation, such as the one below in (1), is employed to explore the impulse response function of the changes in economic policy uncertainty.
The model that the SVAR renders is as follows:
$B0Yt = (K)Yt-q+\varepsilon t$ ………………………………………………………………………(1)
Where: (K) represents the autoregressive lag-polynomia and
εtrepresents the structural innovation
Then a vector of the following is assembled:
$Yt = [NewsUSCPIINDIPIINDiINDNewsIND]$……………………………………(2)

The vector in (2) includes all endogenous variables as defined in the previous sub-section. Yt depends on two blocks: the first block Colombo (2013) refers to it as the foreign variables for the US and the second block the domestic variables for India. As this paper follows Colombo (2013), in this regard a different stance is taken. The foreign variables block is changed and focus only on the $NewsUS$ variable instead of the $CPIUS$, $IPIUS$and iUS as Colombo (2013) does.
In order to explain the structure of the economy, the structural shock $\varepsilon t$is regained from (1) from:
$\varepsilon t = B0\mu t$ ……………………………………………………………………………… (3)

The variable $B0$ in (3) consists of the contemporaneous correlations between the structural shocks and reduced form. In order to identify $B0$, the Cholesky decomposition is then used which imposes a lower triangular matrix. Since the main purpose of this paper is to identify the impacts of an external policy from the US to the local macroeconomic variables of India, the introduction of a short-run restriction which follows a country-based exogenous approach. The ordering of the variables in the vector as in (2) is very important when using the Cholesky decomposition. Furthermore, it assumes that the shocks in the system can only influence the uncertainty measures with a lag. Colombo (2013) follows a study by Favero and Giavazzi (2013) in assuming that the uncertainty shocks which hit the euro area exert no contemporaneous effects on the US variables. This is the reason why the US foreign block is ordered before the Indian domestic block in (2). It is evident that both $NewsUS$ and $NewsIND$ are ordered last in the respective blocks. Colombo (2013) states that this is done so that we purge the policy uncertainty index in VAR of contemporaneous changes of macroeconomic variables. This will then improve the identification of the uncertainty shocks. Before running the SVAR, it is important to determine the appropriate lag length to be included in the model: Schwarz's Information Criteria (SC) and the Akaike's Information Criteria (AIC). The optimal number of lags in the model is selected by the combination of an initial lag selection based on both the SC and AIC. The information criteria based on SC suggests a lag of one, whereas AIC suggests a lag of two. Therefore, the results suggest two lags be included in the model. The results are observed to be robust to different lag length choices. An LMF test is performed to observe for No Serial Correlation in the error terms. The SVAR (3) includes an equation with constants and has a linear trend, hence (1).

4. Empirical Findings

Figure 1 (Appendix A) shows the Impulse Response Functions (IRF) to a one standard deviation shock to the US uncertainty index. It becomes evident that in India the responses of industrial production and inflation are statistically insignificant following a US uncertainty shock. This suggests a decline in productivity, as well as a stage of deflation after there has been an increase in policy uncertainty. The industrial production hits its lowest value after two months, reaching a minimum approximately -0.294%, whereas inflation hits its lowest value after three months, reaching its minimum approximately -0.032%. Figure 1 reports the impulse responses to an unanticipated US economic policy uncertainty shock. The columns report the IRFs for the Indian macroeconomic variables. The solid lines show the median IRFs. The red area identifies the 90% confidence intervals, referred to as the bootstrap-after-bootstrap confidence intervals in (Kilian, 1998). The economic policy uncertainty indices are expressed in levels, whereas the other macroeconomic variables are expressed in percentage form, with respect to their steady states. The horizontal axis identifies the time horizon, expressed in months.

Figure 1: Empirical Impulse Response to a US economic uncertainty shock

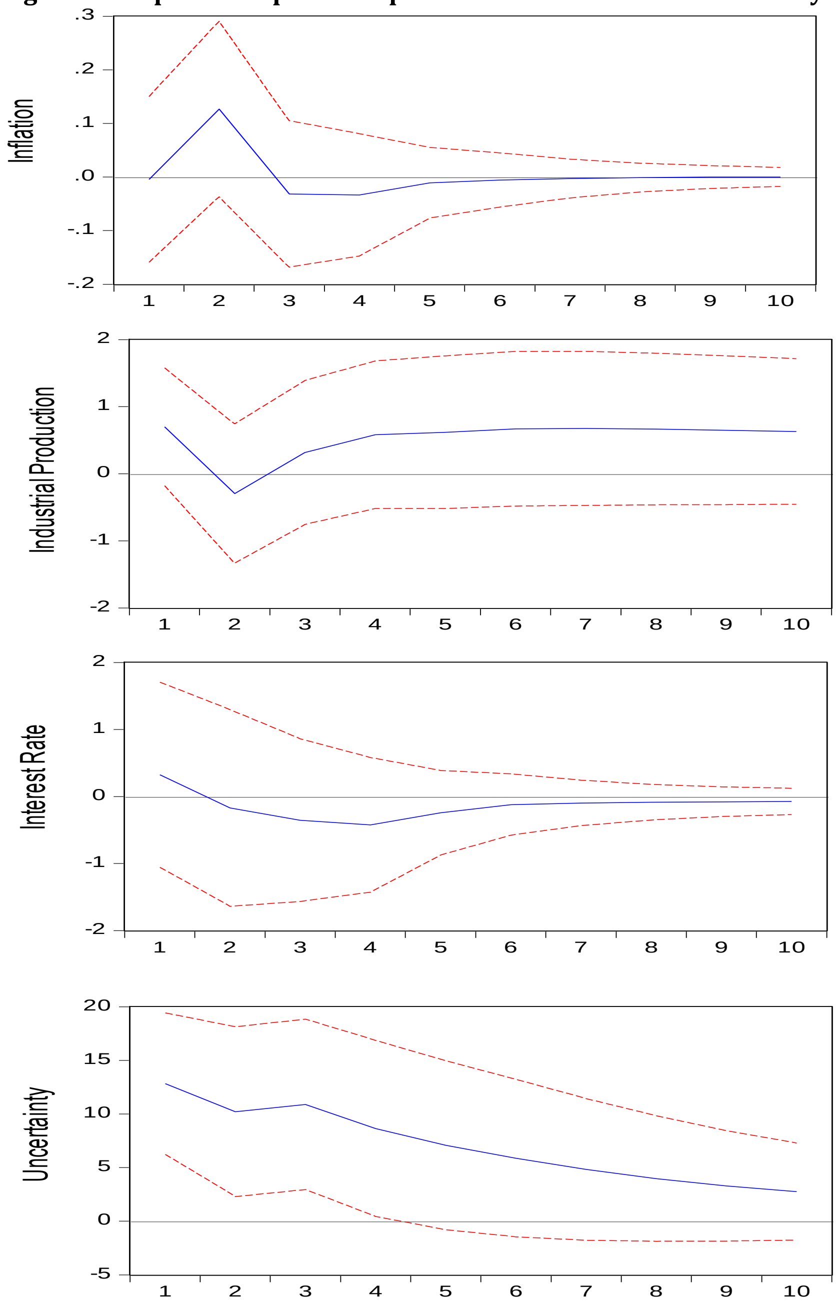

Figure 1 shows that there is a negative reaction of productivity to monetary policy shocks immediately when there is an uncertainty shock. There is a relatively larger reaction observed under high policy uncertainty. One way in which uncertainty decreases the impact of monetary policy shocks on output is that the high level of uncertainty with regards to policy changes will lead to a larger risk premium that firms require from projects. This may render these projects to be unprofitable (Balcilar et al., 2016). It is argued that high levels of uncertainty increase the value of the real-option associated with the investment projects (Aastveit et al., 2013; Balcilar et al., 2016). However, the increase in the real-option in periods of high uncertainty will lead to productivity response to monetary policy shocks to be low. It is also observed that an immediate negative reaction of prices to a US uncertainty shock.

The study finds that uncertainty shocks from the US are able to produce significant recessions. Within one month following a high, positive uncertainty shock, industrial production and inflation will fall as well as the level of investments and consumption. These findings are similar to those of Bernanke (1983); Leahy and Whited (1996) and Bloom (2009). The Reserve Bank of India reacts quickly to the economic state by introducing an expansionary monetary policy. When the economy settles on its recovery path, the nominal interest rate will return back to its original level. These results validate those as reported in the previous literature on the type of effects that are stimulated by uncertainty shocks in the euro area: Bloom (2009); Bhaghat et al. (2013); Colombo (2013) and Leduc and Liu (2013). In answering the research question of this paper, it was found that the VARs which was employed predicted an insignificant, negative and sometimes a mild reaction of the Indian macroeconomic variables to an unanticipated increase in the US policy uncertainty. With these results, India proves to be quite immune to policy uncertainty arising from the US. The industrial production drops to -0.294% two months after the shock, while inflation drops to -0.005% one month after the shock. Then both industrial production and inflation will revert back to their respective pre-shock levels.

Colombo (2013) explains that increases in uncertainty result in firms postponing investment and households postponing their consumption. This is due to a precautionary saving motive, as well as an increase in the option-value for waiting (Bloom, 2009). The decrease in demand may be accountable for the non-permanent deflation as predicted by the VARs. There is a monetary policy easing which corresponds to a temporary cut in the nominal interest rate which is in line with the inflation targeting strategy which is pursued by the monetary policymakers (Colombo, 2013). Also, Balcilar et al. (2016) observe that a large impact on interest rate in the case of high policy uncertainty may reflect the political risk premium embedded in the short-term rates due to the high level of uncertainty regarding the cost of potential policy changes. Particularly, the impulse responses indicate that policy uncertainty in India increases when there is an exogenous increase in the US policy uncertainty shock. Although, India turns out to be resistant to US policy uncertainty, at the high level of impurities which involve both the US and India at the financial and commercial levels, all the policy decisions and/or indecisions taken at the US are most likely to give rise to the anticipated insecurity encompassing policy changes in India. Certainly, the VARs indicated in this paper do not differentiate between the responses by the Indian macroeconomic variables because of an increase in the US uncertainty shocks as opposed to responses to an increase in the endogenous element of the Indian uncertainty index. Fortunately, according to Colombo (2013), this does not entirely change the main message: the US economic policy uncertainty shocks exert a higher response onthe Indian macroeconomic variables. Given this message, Colombo (2013) poses a question, “How important is a US uncertainty shock?” In answering this question, he uses a forecast error variance decomposition, which was also used to highlight the contribution of US and Indian policy uncertainty shocks to explain the short-run fluctuation in the Indian macroeconomic variables.

In Table 1, the variance decomposition presented indicates that the US uncertainty shocks have a minor effect on inflation, industrial production and the nominal interest rate within a very short period of time. Specifically, at the seventh-month horizon, approximately 5.03% of the variance in inflation, 0.24% in industrial production and 0.8% in nominal interest rate is attributable to the uncertainty shock from the US. It becomes evident from Table 1 that the US policy uncertainty shock illustrates a recognizable share of the variance of the forecast error of India, especially for inflation. Essentially, such a shock appears to be more appropriate for the Indian macroeconomic variables. The stance was taken in this paper that all the actions taken by the US government regarding policy changes in the US are the main source of policy uncertainty for the Indian investors and policymakers. However, high levels of uncertainty that spill over from the US will drive investors to take a wait-and-see approach in their investment decisions as they cannot anticipate how changes in the US economic policy will translate into potential policy change in India. High levels of uncertainty regarding policy changes in the US creates the monetary policy to be less profound in India. This is proven by a weak reaction of price and productivity to monetary tightening. The Reserve Bank of India intervenes actively to mitigate the negative effects uncertainty on the economy of India.

Table 1: US and Indian policy uncertainty shock causing the forecast error variance decomposition of the Indian macroeconomic variables (in % form)

Time Horizon (indicated in months)	CPI^{IND}		IPI^{IND}		i^{IND}	
	$News^{US}$	$News^{IND}$	$News^{US}$	$News^{IND}$	$News^{US}$	$News^{IND}$
1	1.127	0.015	1.458	0.009	0.258	0.007
4	4.073	3.134	0.105	0.108	0.252	0.304
7	*5.025*	*4.214*	*0.239*	*0.168*	*0.897*	*0.422*
10	5.099	4.430	0.404	0.309	0.894	0.498
13	5.093	4.461	0.569	0.470	0.834	0.549

5. Conclusion and Policy Recommendations

This study attempted to answer the question: "Are there any effects of economic policy uncertainty on real economic activity? If so, how large is the impact of policy uncertainty shocks?" The evidence found that there is an impact of policy uncertainty. Especially if the evidence represented changes in uncertainty felt by households, investors and firms. To determine the impact of these shocks an estimate series of VAR with a new measure of economic policy uncertainty proxied by newspaper coverage for both the US ($NewsUS$) and India ($NewsIND$) was utilized. The evidence found that an unanticipated increase in uncertainty, regardless of the measure, results in a sharp, temporary recession. Furthermore, industrial production, consumption, productivity and investment declined, whereas unemployment was likely to rise. The responses to these shocks were rapid and the recovery time thereof was relatively short. Generally, the patterns suggested a role for models of this kind as presented in Bloom (2009). The responses of investment can assist in discriminating between competing theories of how uncertainty changes investment behavior (Alexopoulos & Cohen, 2009). The impulse responses have shown that economic policy uncertainty is a very powerful index. The findings on the economic policy uncertainty suggested that other uncertainty shocks should be added such as technology shocks, oil prices and the news shock as a significant contributor to the short-run business cycle fluctuations. As such, future research should focus on identifying which types of uncertainty shocks are most damaging to the economy, and also to create models that clearly capture these shocks. Even when focusing specifically on India as a Euro area country, this papers findings also answer the question posed by Colombo (2013). Specifically, Colombo (2013) asks, "Are there any spillovers from the US economy to the Euro area due to economy policy uncertainty shocks?" But it was proven that the VARs rendered an undesirable, mild and insignificant response of the Indian macroeconomic variables to an unanticipated surge in the US policy uncertainty.

The results found that the impact of the US policy uncertainty shock on the Indian macroeconomic variables has been found to be significantly higher than the impact by the Indian variables. Policymakers should be mindful of the results presented in this paper. The results suggest that any policies or delays in action that increase the level of uncertainty in the economy can be very harmful. Many international companies which were considering India for both their services and manufacturing supply chain, were willing to expand in the country but an unfriendly business environment and high policy uncertainty held them back from investing (Spagnol, 2014). Labor cost remained the most attractive asset, while business investment, Foreign Direct Investment (FDI) regulations and taxation policy are key challenges. This is why, in most cases, investment has been deferred until after the parliamentary election (which was held in 2014) so investors can assess the path of economic policy and reforms under the new government. Once the elections were held, the measures of uncertainty rapidly increased, and were consistent with the empirical results presented in this paper. The most recent statistics reveal that the economy is slipping deeper into a recession. Policymakers should aim at maintaining monetary and financial stability in order to reduce policy uncertainty.

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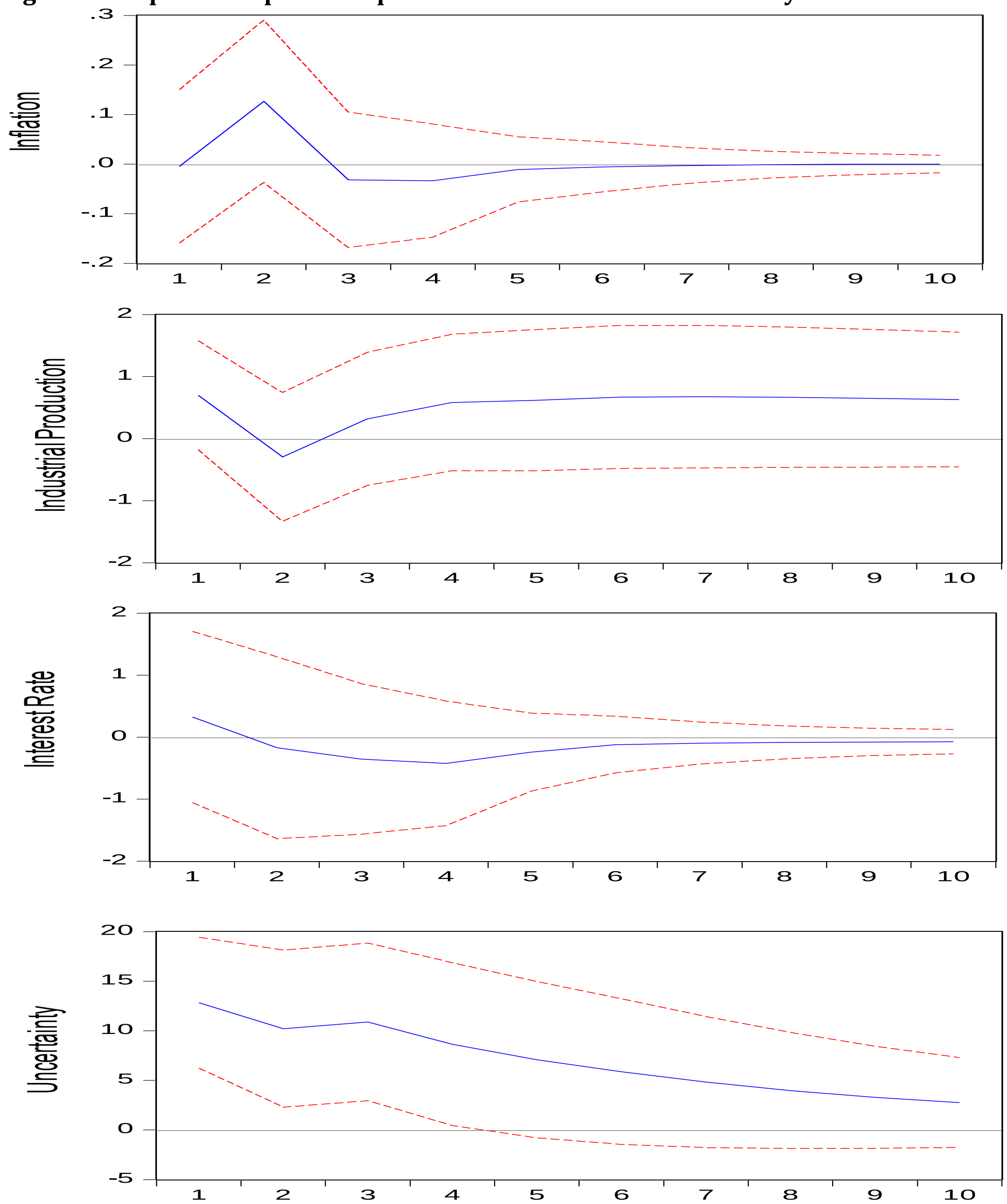
Appendix A

Figure 1: Empirical Impulse Response to a US economic uncertainty shock



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Zimbabwean Manufacturing Firms' Propensity and Intensity to Export in the Post Zimbabwean Dollar Era

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Abstract: After the adoption of the multicurrency system in 2009 Zimbabwe's macroeconomic environment stabilized but the new economic order exposed the economy to a crippling liquidity crisis. Exports remain the only sustainable solution to Zimbabwe's liquidity crisis in the short to medium term given the current sanctions that limits other international capital flows. This study sort to understand the factors that determine Zimbabwean manufacturing firms' likelihood and intensity to export. The study a was based on panel data from a 19 manufacturing firms listed on the Zimbabwe Stock Exchange over the period 2009 to 2017. The propensity and intensity to export was estimated using the logit and Tobit regression models respectively. Bigger firms and firms that engage in research and development had a high propensity to export. Foreign owned firms and firms that engage in research and development had a high intensity to export, while those with high domestic turnover tended to export less. The appreciation of the USD increased Zimbabwean manufacturing firms' propensity and intensity to export. We urge the policy makers to design investment laws that attract foreign investors, and managers to prioritize research and development. We also recommend firm managers to take advantage of periods of currency appreciation to recapitalize at a cheaper cost and export more goods since Zimbabwe's manufacturing production is highly import dependent.

Key words: *Export intensity, export propensity, manufacturing firm, Zimbabwe, multicurrency system*

1. Introduction

After embarking on the fast track land reform program in year 2000 to redress the land distribution imbalances, Zimbabwe's relations with the Western countries deteriorated rapidly, culminating to the imposition of sanctions on Zimbabwe and withdrawal of balance of payment support. This triggered an economic meltdown which resulted in an economic contraction of over 40% between year 2000 and 2008 due to a myriad of challenges which included hyper-inflation, company closures, and political crisis. Zimbabwe's hyper-inflation reached a record level of 231 million per cent by mid-2008. In February 2009, Zimbabwe abandoned its own currency and adopted a multicurrency system after episodes of currency competition and asset substitution. Five foreign currencies namely the US dollar, the British pound, the South African rand, the EU euro and the Botswana pula, were adopted to replace the Zimbabwe dollar. Ever since the adoption of the multicurrency system, the economy turned around and the macroeconomic environment stabilized. The new economic order however exposed the economy to serious liquidity challenges (Mugumisi & Ndhlovu, 2015). The liquidity crunch limits banks' ability to fund firms' working capital and equipment requirements, and seriously constraints the public ability to transact especially in emerging economies where payment platforms are traditional. Within the auspices of a multiple currency system, the central bank does not issue currency, liquidity sources are limited (RBZ, 2012). Under the MCS money supply is a function of the performance of the export sector, international capital inflows (foreign direct investment and portfolio investments), diaspora remittances, external lines of credit and donor funds (RBZ, 2012). In this respect the Zimbabwe's liquidity situation is a function of developments in the external sector.

Given the sanctions imposed on Zimbabwe since the turn of the century, exports remain the most viable panacea to Zimbabwe's liquidity problems. Zimbabwe has however perennially suffered a balance of payment deficits that preludes the multicurrency system. Zimbabwe's trade deficit worsened from US$1.1 billion in 2008 to reach a peak of US$5 billion in 2011 before slightly improving to US$3.9 billion in 2013 and US$3.3 billion in 2014 (RBZ, 2015). Manufacturing export performance between 2014 and 2015 indicated a declining or shrinking capacity to export, RBZ statistics show that manufactured exports declined by 7% from 2014 to 2015 (www.zimtrade.co.zw, March 2016). In a bid to boost export performance, reverse the widening trade deficit, and arrest the crippling liquidity crisis, the government of Zimbabwe implemented a number of initiatives. One of the key initiatives is the Export Incentive Scheme (EIS) introduced in May 2016 to enhance export competitiveness and boost export earnings. Under the EIS, the government, through the

Reserve Bank of Zimbabwe, would pay up to 5% bonus to exporters of goods and services. The 5% was payable in Bond notes backed by the US$200 million African Export Import Bank Nostro Stabilization and Export Finance Facility. According to the RBZ midterm monetary policy review 2017 of August 2017, Zimbabwe experienced a 4% increase in foreign currency receipts and a 14% increase in exports since the introduction of the EIS. Although the government has implemented various initiatives to stimulate exports, no formal inquiry has been made on factors that determine both the manufacturing firms' propensity and intensity to export in Zimbabwe. Besides being potentially a major solution to Zimbabwe's current liquidity crisis, an understanding of the determinants of export performance is particularly important in today's business environment given the steady rise in global business and the intensification of global competition, (Sousa, 2004). Exporting activities have become increasingly important for the survival, growth and long-term viability of firms (Dana & Wright, 2005; Knight & Kim, 2009; and Muzychenko, 2008). There is a need therefore to carefully examine the factors that that influence both the propensity and the volume of exports.

Objectives: The objectives of this study are to;

- What determines the propensity and intensity to export of Zimbabwean firms in the multicurrency system?
- To provide evidence based policy recommendations on ways to improving the export performance of Zimbabwean manufacturing firms.

2. Literature Review

Theoretical literature on international trade patterns can be traced back to the neoclassical models on comparative advantage. According to the Hecksher – Ohlin model, countries export goods whose production is intensive in factors with which they are abundantly endowed. Labor abundant countries are therefore expected to have a relative advantage in labor intensive commodities. Hence, capital abundant countries would, therefore, export capital intensive goods, while labor abundant countries would export labor intensive goods. Self-selection models posit that only the efficient firms will participate in export markets. The reason for this expectation is that there are additional sunk costs of selling goods in foreign countries (Haidar, 2012), which forms a barrier that only efficient firms may overcome. Empirical literature has also investigated the impact various firm specific and business environment factors on firm export performance. Firm specific or organizational characteristics play a significant role in determining the success or failure of a company's export efforts (Muranda, 2003). Empirical literature has extensively studied the impact of firm age on firm export performance. Age captures the extent of a firm's learning through experience but its impact on export propensity and intensity is unclear *a priori*. Majocchi, Bacchiocchi, &Mayrhofer (2005) found that age had a positive association with export intensity, and likelihood to export in the Finnish Electronics Industry.

There are mixed results in literature on the effect of financial leverage on export performance. Bernini et al. (2013) found that the financially healthier firms export expensive varieties in export markets; Akarim (2013) found no significant relationship between leverage ratios and export decisions in Turkey. Studies have also focused on Research and Development (R&D) as a driver of export performance. R&D measures the firms' potential to innovate, introduce new products or improvements of a firms' product range, which are critical in determining competitiveness. Roper & Love (2002) found that product innovation (measured by R&D) had a positive effect on firm probability and intensity to export in the United Kingdom and in Germany. Harris & Li (2008) found that R&D increases firms' propensity to export but did not increase the intensity to export in the UK. Firm size has also been studied as a potential driver of exports in empirical literature. Large firms are likely to be competitive through the benefits of economies of scale, a fuller utilization of specialized executives, and the benefits from bulk purchasing (Wagner, 1995). However, beyond a certain optimal point, size can create dis-economies of scale. Serra, Pointon & Abdou (2012) found that large firms had a higher propensity to export than smaller firms in the UK and Portuguese textile industry. Harris & Li (2008) found that size had a positive impact on propensity to export and a negative effect on intensity to export in the UK.

Firm ownership has also been cited and studied a key export driver. Multinational firms are expected to have more information about foreign markets (Fakih & Ghazalian, 2013) which enhances their export performance. Moreover, MNC tend to have strong business relationships with firms located in foreign countries, especially those belonging to the same multinational group. Okado (2013) found that firms with some measure of foreign ownership had a higher propensity to export in Kenya. Exchange rate levels and volatility have also been cited as drivers of export performance. The use of the strong US dollar has been alleged to make Zimbabwe's export products uncompetitive. A major concern has been the exchange rate volatility between the US dollar and the South African Rand in view of the fact that South Africa is a Zimbabwe's major trading partner. The rand has been unstable and this has had negative effect on pricing of goods and competitiveness of Zimbabwe's manufactured goods in regional markets.

3. Methodology

The study was based on secondary firm level data from published financial reports of manufacturing firms listed on the Zimbabwe Stock Exchange. The study was based on longitudinal data with a cross section of nineteen (19) manufacturing firms over the period 2009-2017. Financial statements were accessed from the INET BFA Expert data base and from the Zimbabwe Stock Exchange. Only listed manufacturing companies were selected because they produce financial reports annually. Export performance in this study is reflected by two decisions; the propensity or probability to export, and the intensity to export, which is the relative share of exports in the total sales of a firm. The likelihood or propensity to export is a binary variable taking a value of 1 - if the firm exports and zero if otherwise, while intensity to export is a fractional value between zero and one. Propensity to export is often estimated using the binary choice models like linear probability models, logit or probit models, while the intensity to export has been estimated by Tobit models and fractional regression models. The propensity to export was estimated using the logit and the Tobit model was used to estimate Zimbabwean firms' intensity to export, with the ratio of exports to total sales censored on the left.

The empirical model for propensity to export was;

$$EXP_{it} = \alpha + \beta_1 Size_{it} + \beta_2 RD_{it} + \beta_3 Age_{it} + \beta_4 Leverage_{it} + \beta_5 Exrate_{it} + \beta_6 Ownership_{it} + \varepsilon_{it} \quad \text{……………………………………… (1)}$$

The empirical model for intensity to export was;

$$EX_{it} = \alpha + \beta_1 Size_{it} + \beta_2 RD_{it} + \beta_3 Leverage_{it} + \beta_4 Ownership_{it} + \beta_5 Exrate_{it} + \beta_6 turnover_{it} + \beta_7 Labourintensity_{it} + \varepsilon_{it} \quad \text{………………………... (2)}$$

Definition of variables used in the estimation

EXP	Is firm propensity or likelihood to export, it takes a value of 1 if the firm exports and zero otherwise
EP	Is the fraction of exports to total sales for firm i at a given time.
Exrate	Is the South African Rand to USD exchange rate
RD	Is research and development, it assumes a value of 1 is a firm is conducting research and development and zero otherwise
Leverage	Is the ratio debt to total assets of a firm
Age	Is the number of years of operation.
Turnover	Is log of domestic sales
Labor intensity	Is the percentage of labor cost to book value of plant & manufacturing equipment
Size	Is the logarithm of total assets including intangible assets

4. Results and Discussion

The study was based on ten variables with an average of 144 observations per variable save for firm ownership and labor intensity. The mean age of the sampled firms was 61 years; the minimum age was 9 years and the maximum age was119 years.

Table 1: Summary statistics.

Variable	Observations	Mean	Std. Dev.	Min	Max
Exports propensity	144	0.5578	0.4983	0	1
Export intensity	144	0.1726	0.2440	0	.9213
Size	144	7.3864	0.9179	4.8121	8.8476
R & D	144	0.0833	0.2774	0	1
Age	147	61.9116	27.9407	9	119
Leverage	144	0.5130	0.1983	0.1246	0.9603
Ownership	74	17.6688	23.1197	0.02	80.33
Turnover	148	7.6487	0.5796	6.3094	9.0047
Labor Intensity	139	1.1993	1.9203	0.0394	16.0976
Exchange Rate	146	9.7423	2.4314	7.292	14.6969

Table 2: Multicollinearity Test: Variance Inflation Factor

Variable	VIF
Size	1.51
R & D	1.61
Age	1.75
Leverage	144
Ownership	1.65
Turnover	1.67
Labor Intensity	1.16
Exchange Rate	1.05
Mean VIF	1.49

Table 3: Logistic and Tobit estimation of export propensity and intensity

Predictor variable	Export propensity (logit)	Export intensity(Tobit)
Size	1.6964**	0.0022
	(0.4467)	(0.0351)
R & D	3.6530**	0.4492***
	(2.3526)	(0.0741)
Exchange rate	1.2858**	0.0266**
	(0.1363)	(0.0171)
Age	0.9902	-0.0005
	(0.0103)	(0.0012)
Leverage	1.6371	0.1298
	(2.1323)	(0.1527)
Ownership	1.0216	0.0027**
	(0.0156)	(0.0013)
Labor Intensity	-	-0.0172
		(0.0141)
Turnover	-	-0.1399**
		(0.0672)
Constant	-	-0.3138
		(0.2802
Wald χ^2 (6)	0.0003***	
LR χ^2 (8)		0.0000***
Observations		101
Censored		37
Uncensored		64

Robust standard errors in parentheses. Log odds ratios are presented for logit model.
Significant at 10%: *, Significant at 5%: **, Significant at 1%: ***

The ZAR/USD exchange rate depreciated from 7.25 to 14.70 over the period under consideration. On average 17.26% of Zimbabwe's manufactured goods are exported while 82.74% are sold domestically. A test for multicollinearity was done using the Variance Inflation Factor (VIF), and results are presented in *Table 2* above. The results show that there are no linear relationships among the independent variables of this study. A mean VIF of less than 10 indicates no multicollinearity; therefore, all explanatory variables of the model were maintained. A logit model for the propensity to export was estimated, the results are shown in column 2 of *Table 3* above. The Wald Chi-square test shows that the populated model for propensity to export is statistically significant at 1%. Firm size, research and development and exchange rate have a positive and significant impact on Zimbabwean manufacturing firms' likelihood to export. Age, leverage and foreign ownership are statistically insignificant, suggesting that they possibly dot not play an important role in manufacturing firms' decision to export.

The results indicate that firms with a large asset base (size) are more likely to export, possibly because they benefit from economies of scale and fuller utilization of specialized executive which makes their products more competitive on the international market. The results are in line with findings of Harris & Li (2008) and Serra, Pointon & Abdou (2012) found that large firms had a higher propensity to export than smaller firms in the UK and among UK and Portuguese textile industry respectively. Results also indicate that firms that engage in research and development are more likely to export than those that do not engage in research and development. Research and development enables firms to improve their product ranges which is critical in determining competitiveness. The results are consistent with that of Roper & Love (2002) who found that R&D had a positive effect on firm probability to export in the United Kingdom and in Germany. Haris & Li (2008) also that R&D increases firm propensity to export.

The results also indicate that appreciation of the USD tends to increase Zimbabwean firms' probability to export. The results indicate that that due to the high reliance on imported inputs /high import content (e.g. electricity, raw material, intermediate goods, spares and new machinery) in Zimbabwean manufacturing sector, exports are not adversely affected by currency appreciation. Lower import prices due to appreciation of the USD reduce the cost of export production, and thus increase the likelihood to export. The results are similar to that of Abeysinghe & Lin Yeok, (1998) who found that the appreciation of the Singapore dollar improved Singapore's export performance in the high import content export sectors. Results of the Tobit model for the intensity to export are presented in column 3 of Table 3 above. The results show that research and development, firm ownership, exchange rate and turnover are significant in determining the volume of exports of Zimbabwean manufacturing firms, while labor intensity, firm age and size were insignificant. The results show that firms that engage in research and development tend to export 0.4492more than firms that do not do research and development. The findings are similar to those of Zhao & Li (1997) who found that high level of investment in R&D induced higher volumes of exports in Chinese manufacturing firms. Research and development also give firms a temporary monopoly on the new or differentiated product which enhances export volumes in the short to medium term period.

Although foreign ownership did not affect the propensity to export, a unit increase in foreign ownership of a firm increases the volume of exports by 0.0027 units. Firms with foreign ownership are expected to have more information about foreign markets and stronger business relationships with firms located in foreign countries which enable them to sell more volumes in international markets. The results are similar to those of Rankin, Soderbom & Teal (2004) and Fakih & Ghazalian (2013). The volume of domestic sales was found to have a negative and significant impact on the volume of exports, a unit increase in domestic sales resulted in 0.1399 units decrease in volume of exports. The results indicate that firms that have established themselves and can sell large volumes in the domestic market may opt to concentrate on the domestic market thus reducing their volume of exports. Moreover, considering the current pricing distortions and the rampant profiteering that characterize Zimbabwean markets, firms find it more attractive to sell domestically than to export. The results are similar to the findings of Fakih& Ghazalian (2013). Finally, a unit increase in the appreciation of the USD against the South African Rand increases the volume of exports by 0.0266 units. This indicates that as the cost of imported inputs go down due the appreciation of the USD against the South African Rand, Zimbabwean manufactured products become more competitive and thus higher volumes can be sold in international markets. The results are similar to that of Abeysinghe& Lin Yeok, (1998) who found that appreciation of the Singapore dollar improved Singapore's export performance in the high import content export sectors.

5. Conclusion

This study shows that investment in research and development increases both the firm likelihood to export and the volume of exports. Bigger firms are more likely to export than small firms, but firm size does not affect volume of exports. Firms with higher domestic turnover tend to export less as they can make more profit by exploiting the current pricing distortions in Zimbabwe, firms with higher foreign ownership tend to have better knowledge of international markets and export more goods. Moreover, contrary to widely held notions the appreciation of the USD actually increases the propensity and volume of exports for Zimbabwe by making imported inputs cheaper.

Policy recommendation: The findings of this study have important policy implications for both management practice and public policy. Managers of firms should prioritize allocation of resources for research and development as it improves both the likelihood and intensity to export. Public policy makers should design investment laws that attract foreign investors who bring valuable information about international markets and increase export volumes. Lastly we recommend firm managers to take advantage of episodes of USD appreciation to recapitalize (import new machinery and spare parts) at a cheaper cost and export more goods since the economy's manufacturing production is highly import dependent.

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Do Internal Control Activities Adversely Influence the Profitability and Solvency of South African SMMEs?

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Abstract: Internal control activities should provide reasonable assurance surrounding the attainment of business objectives in the foreseeable future, be they financial or non-financial in nature. Recent studies suggest that internal control activities used within South African Small, Medium and Micro Enterprises (SMMEs) are inadequate and/or ineffective – they do not provide reasonable assurance surrounding the attainment of relevant objectives. For this study emphasis was placed on whether internal control activities used by South African SMMEs had an adverse influence on their profitability and solvency. Data were obtained from 119 members of management of South African SMMEs, which allowed a total of14 relationships to be tested. Only four relationships were found to be statistically significant which led to the rejection of the two developed hypotheses. Stemming from the results, it appears that there may be a need for the development of formal policies pertaining to internal control within a South African SMME dispensation.

Keywords: *Solvency, profitability, South Africa, SMMEs, internal control*

1. Introduction

Small, Medium and Micro Enterprises (SMMEs) play an important socio-economic role in both developed economies and developing economies around the globe, mainly by means of assisting with the distribution of wealth, the eradication of poverty and the decreasing of unemployment (Hill, 2001) (Wren & Storey, 2002) (Chepurenko, 2010). In a South African dispensation these business entities are believed to add approximately 57%[1] to the national Gross Domestic Product while providing employment opportunities to at least 61% of the national workforce (Naidoo & Urban, 2010) (Swart, 2011) (Ngary, Smit, Bruwer, & Ukpere, 2014). Albeit the socio-economic value which South African SMMEs add to the national economy, prior research (Fatoki & Odeyemi, 2010)(Cant & Wiid, 2013) (Moloi, 2013) suggests that 75% of these business entities fail after being in existence for less than four years – a statistic believed to be among the worst in the world (Fatoki, 2014). This is concerning as an estimated 90% of all business entities which operate on South African soil can be classified as SMMEs (Mouloungui, 2012). According to previous studies (Van Eeden, Viviers, & Venter, 2003)(Radas & Božić, 2009)(SAICA, 2015) the failure rate of South African SMMEs is directly linked with their ability to manage economic factors[2] and the risks associated with these factors.

One manner in which economic factors and their associated risks can be managed is through the implementation of a sound system of internal control. A system of internal control is a structured process that comprises five integral and inter-related elements which should assist in the mitigation of risks which, in turn, should provide reasonable assurance that relevant business objectives will be attained in the foreseeable future(COSO, 1992)(COSO, 2012). The five inter-related elements of a system of internal control pertain to (Coetzee, 2006) (Abu-Musa, 2009) (COSO, 2012) (McNally, 2013); (Martin, Sanders, & Scalan, 2014): 1) control environment (the overall attitude of management towards internal control), 2) risk assessment (the identification and evaluation of risks), 3) internal control activities (the activities which prevent, detect and correct risks), 4) information and communication (the dissemination of information to allow relevant stakeholders to achieve their individual objectives to, in turn, help a business entity achieve its objectives), and 5) monitoring (ensuring that all elements in the system of internal control are adequate and effective). Although all of the five aforementioned inter-related elements are essential for a system of internal control to operate adequately and effectively, this study placed focus on the element of internal control activities within a South African SMME dispensation.

[1]This monetary value is estimated to be around US$ 168.04 billion.
[2]Economic factors comprise of micro-economic factors (factors which can generally be reasonably controlled by management) and macro-economic factors (factors which are generally beyond the control of management).

According to two previous local studies (Siwangaza, 2013)(Bruwer, 2016) it was found that South African SMMEs make use of inadequate and/or ineffective internal control activities which, in turn, do not provide reasonable assurance regarding the attainment of business objectives in the foreseeable future. This view is supported by a recent study (Bruwer & Coetzee, 2017)which points out that implemented internal control activities in South African SMMEs do not provide reasonable assurance surrounding the financial sustainability[3] (the attainment of financial objectives) of these business entities. Taking into account the aforementioned, including the fact that no formal policies exist on internal control which should be evident in South African SMMEs, it becomes apparent that the implemented internal control activities in South African SMMEs do not necessarily add value to the overall sustainability of these entities at all; possibly also associated to their extensive failure rate.

In order for any business entity to remain in existence, it needs to be financially stable[4](Jeon, Amekudzi, & Guensler, 2010). Otherwise stated, reasonable assurance should be provided that the business entity has more assets than liabilities (be solvent) which should result in the earning of more income compared to expenses incurred (be profitable). Thus, for this study focus is placed on whether implemented internal control in South African SMMEs adversely influenced these business entities' profitability and solvency. For the remainder of this paper relevant discussion takes place under the following headings: 1) theoretical discussion and hypothesis formulation, 2) research design, 3) results and discussion, 4) recommendations, and 5) conclusion.

2. Literature Review

Theoretical discussion and hypothesis formulation: Considering that this study makes use of multiple regression analyses (see Section 3), discussion takes place below to clarify the dependent variables (profitability and solvency) as well as the independent variable (internal control activities), after which the two formulated hypotheses for this study is stated.

Solvency and profitability: In order for most business entities to remain in operation in the foreseeable future a favourable financial position and a favourable financial performance are required ((Jeon, Amekudzi, & Guensler, 2010)(Lebacq, Baret, & Stilmant, 2013). In layperson's terms the concept "financial position" pertains to the values of assets[5], equity and liabilities[6] while "financial performance" relates to the values of income and expenses (Beck, et al., 2016)(Flynn, et al., 2016). In order to measure the financial performance and financial position of a business entity, solvency and profitability are often used as yardsticks, respectively(Kiyosaki & Lechter, 2003) (Kew & Watson, 2012); (Bartlett, et al., 2014).Solvency has to do with the comparison between the size of assets and liabilities. If a business entity's assets are larger than its liabilities it is deemed to be solvent; if not, it is deemed as insolvent. In turn, profitability has to do with the comparison between the size of income and expenses. If a business entity's income is larger than its expenses, it is deemed to be profitable; if not it is deemed as non-profitable. In addition, the concepts of "solvency" and "profitability" are essentially intertwined with one another(Sowden-Service, 2006)in the sense that assets should generate income (e.g. sales, interest income, rent income, etc.) while liabilities normally result in expenditure (e.g. interest expense).

Internal control activities: Internal control activities are those activities which provide reasonable assurance, to management that relevant business objectives will be achieved in the foreseeable future by means of preventing, detecting and correcting risks which may have an adverse influence on these business objectives (McNally, 2013). Such activities can be automatic and/or manual in nature, as supported by formal policies and procedures, and are generally grouped into five categories(Frazer, 2012)(McNally, 2013) (Ejoh & Ejom, 2014) (Halonen, 2014), namely: 1) document usage and design (relevant transactions and activities

[3] In the particular study, financial sustainability was conceptualized as the attainment of relevant financial objectives.
[4]Financial stability generally pertains to the phenomenon where a business' assets are larger than its liabilities (solvency) which, in turn, will allow for the same business to generate more income (stemming from assets) than incurring expenses (stemming from liabilities).
[5]An asset is a resource which an entity controls, resulting from a past event, which will result in an inflow of economic benefits. These economic benefits should have a cost and/or value and a probability of an inflow.
[6]A liability is a present obligation of an entity, resulting from a past event, which will result in an outflow of economic benefits. These economic benefits should have a cost and/or value and a probability of an outflow.

should be formally documented in a user-friendly manner to serve as an audit trail), 2) independent checks (objectively inspecting transactions and activities for *inter alia* accuracy, occurrence, validity and completeness), 3) safeguarding of assets (ensuring that both non-current assets and current assets are protected physically and/or virtually), 4) segregation of duties (the person that authorises transactions should be different to the person that records transactions; should be different to the person that executes transactions), and 5) proper authorisation activities (only members of management should be allowed to "green-light" transactions before they may take place).

Regardless of the type of internal control activities which are implemented in business entities, these activities need not only to function appropriately, but should also be adaptable to changes in applicable environments (e.g. economic environments, political environments and technological environments) to optimally mitigate risks (Agbejule & Jokipii, 2009). By doing so, these activities will reasonably assure management that the relevant business entity will attain its objectives in the foreseeable future which, in turn, relate to the fulfilment of associated economic responsibilities, social responsibilities and/or environmental responsibilities (Rodgers, 2010) (Buys, 2012)(Bechtold, et al., 2013).In most cases, the manner in which economic responsibilities are fulfilled will ultimately determine whether a business entity will fail or not (Amendola, Giordano, Parrella, & Restaino, 2017) (Small, Smidt, & Joseph, 2017).Notwithstanding the above, in a South African SMME dispensation, two local studies (Siwangaza, 2013)(Bruwer, 2016)(Bruwer, Coetzee, & Meiring, 2017) found that internal control activities are regarded as ineffective and/or inadequate as they do not provide reasonable assurance surrounding the attainment of relevant pre-determined business objectives in the foreseeable future. This view is further supported by (Bruwer & Coetzee, 2017)who found that implemented internal control activities within these business entities do not provide any assistance toward the financial sustainability of these business entities. Thus, it becomes apparent that although internal control activities should allow members of management of these business entities reasonable assurance surrounding the attainment of their objectives in the foreseeable future, previous studies suggest the contrary.

Hypotheses developed and tested in this study: Using the above as a basis, especially taking into account previous studies surrounding the inadequate and/or ineffective internal control activities in South African SMMEs, the following two hypotheses were developed through placing emphasis on "what should happen" according to theory within the ambit of this study:

H_1: The internal control activities deployed by South African SMMEs have a statistically significant negative influence on this business entities' profitability.
H_2: The internal control activities deployed by South African SMMEs have a statistically significant negative influence on this business entities' profitability.

3. Methodology

The research design pertaining to this study is covered under the following three sub-headings below: 1) data and participants, 2) summary of valid demographical data, and 3) model specification.

Data and participants: This study was empirical in nature and fell in the positivistic research paradigm as it constituted quantitative research. Survey research was used whereby a questionnaire was disseminated to glean primary quantitative data from 119 South African SMME members of management (i.e. owners and/or managers). The questionnaire comprised mostly five point Likert-scale questions (1 = "strongly disagree", 2 = "disagree", 3 = "neither agree nor disagree", 4 = "agree", 5 = "strongly agree").

The targeted sample population was South African SMME members of management that had to adhere to a strict set of delineation criteria, namely: 1) they had to have decision making power in their SMMEs, 2) their SMMEs should have operated in the Fast Moving Consumer Goods industry[7], 3) their SMMEs should have been regarded as either sole traders, partnerships, close corporations or private companies, 4) their SMMEs

[7]The Fast Moving Consumer Goods industry is characterized by high levels of competition and is based in the wholesale and retail industry (Bank, 2011).

should have been regarded as a non-franchised business entity, 5) their SMMEs should have existed for at least 1 year, 6) their SMMEs should have employed less than 50 full-time employees, and 7) their SMMEs should have been based in the Cape Metropole, Western Cape, in South Africa. Non-probability sampling was used to target 150 South African SMME members of management, particularly a mixture of purposive sampling (see delineation criteria) and convenience sampling (the researcher was based in the Cape Metropole while the study was conducted).

Summary of valid demographical data: Out of the 150 targeted respondents, only 119 valid responses (79.33%) were recorded as these respondents adhered to the strict set of delineation criteria. A summary of the valid demographical data, pertaining to the 119 respondents, is provided below:

- *Position of respondents*: 40.34% were owners; 32.77% were managers; 26.89% were owner-managers.
- *Managerial experience of respondents*: 48.74% had less than 6 years' managerial experience; 51.26% had at least 6 years' managerial experience.
- *Highest qualification of respondents*: 18.49% had a partial secondary education; 48.74% had a secondary education; 32.77% had a tertiary education.

In addition, a summary of the valid demographical data, pertaining to respondents' SMMEs, is provided below:

- *Type of SMMEs*: 77.30% were sole traders; 9.2% were partnerships; 10.1% were close corporations; 3.4% were private companies.
- *Operational methodologies of SMMEs*: 80.67% operated on a "cash only" basis; 19.33% operated on a "cash and credit" basis.
- *Description of SMMEs*: 43.70% were retailers/wholesalers; 21.85% were restaurants/caterers; 31.93% were convenience stores/cafés; 2.52% were pharmacies.
- *Employees employed by SMMEs*: 87.40% employed 10 or less full-time employees; 12.6% employed between 11 and 50 full-time employees.
- *Existence of SMMEs*: 24.37% existed for less than four years (but at least one year); 75.63% existed for at least four years.

Moreover, when respondents were asked whether their respective SMMEs were perceived as profitable a mean score of 3.66 was calculated (translating to a response between "neither agree nor disagree" and "agree"). When respondents were asked whether their respective SMMEs were perceived as solvent a mean score of 3.45 was calculated (translating to a response between "neither agree nor disagree" and "agree"). A total of 43 items were used to measure both the independent variable (internal control activates) and the dependent variables (profitability and solvency), however only the number of items used to measure the independent variable were reduced through principle axis factoring[8]. Specifically, a total of 41 items were reduced to four factors and three items; as summarised per Table 1.

Table 1: Summary of reliability tests on items measuring internal control activities

Factor tested	Number of items	Cronbach's Alpha	KMO test score
Document*	11	0.867	0.853
Safeguard*	10	0.804	0.817
Independent*	14	0.839	0.793
Authorisation	3	0.380	0.574
Segregation*	3	0.829	0.718

* Legitimate factor
Source: Researcher's own construct

[8]If the calculated Cronbach's Alpha value and KMO value of a factor is 0.600 or higher, such a factor is deemed as a legitimate factor(Field, 2009)(Cohen & Sayag, 2010).

Model specification: In this study, multiple regression models were developed to determine the relationships which exist between the implemented internal control activities in sampled South African SMMEs and their profitability and their solvency. The following models[9]were used:

$$PROFIT = \alpha + \beta_1 DOCUMENT + \beta_2 SAFEGUARD + \beta_3 INDEPENDENT + \beta_4 SEGREGATION + \beta_5 AUTHORMAN + \beta_6 AUTHOREMPP + \beta_7 AUTHOREMPM + \varepsilon.$$

$$SOLVENT = \alpha + \beta_1 DOCUMENT + \beta_2 SAFEGUARD + \beta_3 INDEPENDENT + \beta_4 SEGREGATION + \beta_5 AUTHORMAN + \beta_6 AUTHOREMPP + \beta_7 AUTHOREMPM + \varepsilon.$$

All variables that were applied in the model above, including their measurements are described in Table 2.

Table 2: Description and measurement of variables used in this study

Variable	Description	Measurement
Dependent		
PROFIT	Profitability	It measures the profitability of SMMEs. It assumes a value between 1 and 5, where 1 indicates "strongly disagree" and 5 indicates "strongly agree".
SOLVENT	Solvency	It measures the solvency of SMMEs. It assumes a value between 1 and 5, where 1 indicates "strongly disagree" and 5 indicates "strongly agree".
Independent		
DOCUMENT	Adequate document usage and design	It shows whether documents used by SMMEs are adequately used and designed. It assumes a value between 1 and 5, where 1 indicates "strongly disagree" and 5 indicates "strongly agree".
SAFEGUARD	Safeguarding of assets	It shows whether assets are safeguarded in SMMEs. It assumes a value between 1 and 5, where 1 indicates "strongly disagree" and 5 indicates "strongly agree".
INDEPENDENT	Independent checks	It shows whether independent checks are used by SMMEs. It assumes a value between 1 and 5, where 1 indicates "strongly disagree" and 5 indicates "strongly agree".
SEGREGATION	Segregation of duties	It shows whether duties are segregated in SMMEs. It assumes a value between 1 and 5, where 1 indicates "strongly disagree" and 5 indicates "strongly agree".
AUTHORMAN	Only management can authorise transactions	It shows whether transactions are authorised only by management. It assumes a value between 1 and 5, where 1 indicates "strongly disagree" and 5 indicates "strongly agree".
AUTHOREMPP	Employees can authorise transactions based on policies	It shows whether transactions are authorised by employees, as supported by policies. It assumes a value between 1 and 5, where 1 indicates "strongly disagree" and 5 indicates "strongly agree".
AUTHOREMPM	Employees can authorise transactions only with management's permission	It shows whether transactions are authorised by employees only with the approval of management. It assumes a value between 1 and 5, where 1 indicates "strongly disagree" and 5 indicates "strongly agree".

Source: Researcher's own construct

[9] The symbols "α" and "ε" represent the constant(s) and error(s) in each model.

4. Results and Discussion

Out of 14 tested relationships only four were found to be statistically significant– equivalent to 28.57% of all tested relationships. A summary of the results from the multiple regression analyses performed is shown in Table 3. Stemming from the results, the R^2 was calculated at 12.70% for relationships pertaining to PROFIT and at 11.20% for relationships pertaining to SOLVENT. These R^2 values can be interpreted as indications of very weak explanations of the variances which existed among relevant variables. Otherwise stated, out of the 14 tested relationships there were very few relationships that were statistically significant – justified by three that could be used to predict the dependent variable PROFIT and one that could be used to predict the dependent variable SOLVENT. Out of the four statistically significant relationships, two were positive (one at the 5% level and one at the 10% level) and two were negative (one at the 5% level and one at the 10% level). Three of the four statistically significant relationships pertained to PROFIT; the following statistically significant predictions could be made in relation to hypothesisH_1:

- At a 90% confidence interval, if SAFEGUARD is used as internal control activity, it will result in a decrease in PROFIT of sampled South African SMMEs (β = -0.287).
- At a 90% confidence interval, INDEPENDENT are used as internal control activity, it will result in an increase in PROFIT of sampled South African SMMEs (β = 0.263).
- At a 95% confidence interval, if SEGREGATION is used as internal control activity, it will result in an increase in PROFIT of sampled South African SMMEs (β = 0.306).

Table 3: Summary of multiple regression analysis performed

		PROFIT	SOLVENT
Independent variables	R^2	0.127	0.112
	F	2.309	2.004
	Sig.	0.031	0.061
DOCUMENT	Std β	-0.131	**-0.286****
	Sig.	0.343	**0.041**
SAFEGUARD	Std β	**-0.287***	-0.232
	Sig.	**0.074**	0.151
INDEPENDENT	Std β	**0.263***	0.149
	Sig.	**0.087**	0.334
SEGREGATION	Std β	**0.306****	0.203
	Sig.	**0.017**	0.114
AUTHORMAN	Std β	0.056	0.170
	Sig.	0.598	0.112
AUTHOREMPP	Std β	-0.079	0.048
	Sig.	0.407	0.617
AUTHOREMPM	Std β	-0.023	0.005
	Sig.	0.817	0.958

* = Statistically significant at the 10% level
** = Statistically significant at the 5% level

Source: Researcher's own construct

One of the four statistically significant relationships pertained to SOLVENT; the following statistically significant predictions could be made in relation to H_2:

- At a 95% confidence interval, if DOCUMENT is used as internal control activity, it will result in a decrease in SOLVENT of sampled South African SMMEs (β = -0.286).

Although internal control activities should provide reasonable assurance to management that relevant business objectives will be achieved in the foreseeable future, it appears that one internal control activities had a negative statistically significant relationship with the PROFIT of sampled South African SMMEs; one had a negative statistically significant relationship with the SOLVENT of sampled South African SMMEs. In the same vein, two internal control activities were found to have a positive statistically significant relationship with the PROFIT of sampled South African SMMEs. Thus, since the bulk of internal control activities did not have a negative statistically significant relationship with the PROFIT and SOLVENT of sampled South African SMMEs, enough evidence was provided to reject both hypotheses H_1 and H_2. Below, discussion takes place surrounding the results pertaining to the PROFIT and SOLVENT of sampled South African SMMEs, respectively.

Discussion of results pertaining to PROFIT: In relation to SAFEGUARD, on the one hand it is highly probable that that these internal control activities were lax in sampled South African SMMEs as they were not necessarily working as indented. On the other hand, it may be possible that there was an overabundance of such internal control activities (e.g. key-card access panels at access points, sign-in books, safety gates and locked doors which require keys, etc.) which may have resulted in a decreased morale of stakeholders as it may be synonymous with a type of “danger zone”; impacting negatively on the PROFIT. Moreover, the maintenance of such excessive internal control activities may also have resulted in expenses of sampled South African SMMEs to increase. With independent being a relatively cheap type of internal control activity to implement, it may be the case that management of sampled South African SMMEs made proper use of this internal control activity to mitigate risks, especially in relation to having overstated expenses and/or understated income. Such initiatives may have included *inter alia* random cash counts, inventory counts and regular reconciliations (debtors, creditors and bank). Despite the fact that the bulk of sampled South African SMMEs employed 10 employees or less, it appears that those business entities which made use of SEGREGATION were better off in relation to PROFIT than those that did not make use thereof. It is highly probable that when SEGREGATION was evident, the risk of fraud (e.g. theft of inventory, misappropriation of cash, understatement of income, the overstatement of expenses, etc.) was minimised.

Discussion of results pertaining to SOLVENT: One of the four statistically significant relationships pertained to SOLVENT; the following statistically significant predictions could be made in relation to H_2:

- At a 95% confidence interval, if DOCUMENT is used as internal control activity, it will result in a decrease in SOLVENT of sampled South African SMMEs (β = -0.286).

In relation to DOCUMENT, members of management in sampled South African SMMEs may have made use of excessive paperwork when transactions were went on (e.g. procurement documentation, intent to purchase documentation, goods received note and pro forma invoice, quality check document, good received note, duplicate delivery note, confirmation of receipt etc.). When there is an overkill approach with any internal control activity may result in decreased productivity and/or reduced focus of employees (being overwhelmed). Alternatively, it may be the case that relevant DOCUMENT was just badly designed which may have led to employees committing irregularities (e.g. collusion, theft, white collar crime, etc.) which, in turn, could have adversely influence the size of assets (goods).

Recommendations: In any business entity, the responsibility of implementing adequate and effective internal control activities rest with management. From the study conducted, it is clearly evident that the implemented internal control activities in sampled South African SMMEs are not adequate and/or effective as they do not contribute to the PROFIT of these business entities; minimally to their SOLVENT. As such, it is strongly recommended that members of management of sampled South African SMMEs re-evaluate their implemented internal control activities and ascertain: 1) whether it is needed, 2) whether is enough, 3) whether it is working as intended, and 4) whether it helps with the provision of reasonable assurance surrounding relevant business objectives. It is also recommended that national government draws up a green paper with the intent to spur on discussion between applicable stakeholders to enhance the (financial and/or non-financial) sustainability of South African SMMEs. This green paper should pertain to, *inter alia*, formal guidance documentation (user-friendly) for South African SMMEs to enhance their overall sustainability (e.g. free step-by-step guidebooks, information on free skill development programmes) while simultaneously also giving members of management of these business entities incentives for contributing to the achievement of socio-economic objectives (e.g. employing x-amount of people, distributing x-amount of profits in the form of donations, etc.).

5. Conclusion

According to scholarly literature, internal control activities should provide reasonable assurance surrounding the attainment of a business entity's objectives in the foreseeable future. When taking into account the results from the study out of the 14 tested relationships, only four were statistically significant –three related to the PROFIT (one negative and two positive) and one related to the SOLVENT (negative) of sampled South African SMMEs – the inference was made that implemented internal control activities in sampled South African SMMEs are not necessarily adequate and/or effective. This sentiment is further supported by the fact that ten tested relationships (71.43%) were not statistically significant in relation to both the PROFIT and SOLVENT of sampled South African SMMEs. Thus, both H_1 and H_2 were rejected. It may be the case that implemented internal control activities, were not meticulously evaluated before being implemented and/or that these activities were not periodically monitored by management to ascertain (and evaluate) their adequacy and/or effectiveness. In conclusion, the results from this study reaffirm the findings made by previous studies that South African SMMEs make use of inadequate and/or ineffective internal control activities as they do not all provide reasonable assurance surrounding the attainment of these business entities' financial objectives, at least, in the foreseeable future.

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The Analysis of the 2008 US Financial Crisis: An Intervention Approach

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Abstract: The current study investigates the impact of the 2008 US financial crises on the real exchange rate in South Africa. The data used in this empirical analysis covers the period from January 2000 to June 2017. The seasonal autoregressive integrated moving average (SARIMA) intervention charter was used to carry out the analysis. Results revealed that the financial crises period in South Africa occurred in March 2008 and significantly affected the exchange rate. Hence, the impact pattern was abrupt. Using the SARIMA model as a benchmark, four error metrics; to be precise mean absolute error (MAE), mean absolute percentage error (MAPE), mean error (ME) and mean percentage error (MPE) was used to assess the performance of the intervention model and SARIMA model. The results of the SARIMA intervention model produced better forecasts as compared to that one of SARIMA model. Furthermore, the results of this empirical analysis provided practical information for the monetary policy committee of SA to make informed policy decisions related to exchange rate movements and we further give sound relevance in using the intervention model to model interrupted time series such as exchange rates.

Keywords: *Real exchange rate, SARIMA intervention, South Africa, Financial crisis*

1. Introduction

The 2007-2008 worldwide financial crisis was an astonishing and multifaceted process. According to Orlowski (2008), the financial crises came as a result of surplus liquidity of which the Federal Reserve Chairman Ben Bernanke had excess savings that were used in the worldwide financial markets as well as on mortgage markets in the United States (US). Moreover, insufficient assets and liability and risk management practices of financial organizations resulted in the advancement of the 2007-2008 financial crisis. The widespread density of this crisis had spillovers that affected many areas in the economy such as financial markets, commodity markets and real economy (Orlowski, 2008). Chung, Ip and Chan (2009) emphasized that during 2007-2008, the national government altered endeavours not to significantly disturb mortgage markets. For that reason, the crisis had gone through five distinct stages. As stated by Orlowski (2008), the first stage occurred when the US fall into the housing bubble, which was bloated by significant mortgage lending. The second stage identified other types of assets that were covered by this crisis. This stage not only impacted mortgage companies but also investment banks together with other banks worldwide. The third stage represented a colossal addendum of the liabilities from exposed banks which prompted the international liquidity crisis. This triggered anxiety about possible credit contagion as of the same risk on the universal scale. The fourth stage was the disintegrating of investment product structures which eliminates the comprehensive liquidity provisions into an article of trade, causing the bubble effect in this area. Lastly, a zenith was reached in September 2008 with massive shifting of funds into risk-free securities, as Lehman Brothers filed for bankruptcy protection and US investment banking system faced its ultimate demise (Chung, Farrish and Wang, 2009).

The empirical study conducted by Naudé (2009) exposed that the 2007-2008 financial crisis was of a vast magnitude and significantly affected worldwide economies. Most economies started to recognize the effect of this crisis in March 2008. Therefore, the rationale of this study was to evaluate whether the 2007-2008 financial crisis had a transitory or long-term effect on the South African economy utilizing the SARIMA intervention procedure. The study utilises the intervention model to assess the patterns and duration of the financial crisis on SA real exchange rate of South Africa. Furthermore, to appraise whether the crisis had a transitory or permanent effect on the economy of South Africa. The empirical analysis utilized in this study is divided into three stages. Firstly, the SARIMA model was used as a benchmark to describe the SA exchange rate. Furthermore, an intervention analysis is performed to appraise the effects of the 2008 financial crisis and further gives a formal test to assess the effect. This will assist the Monetary Policy Committee (MPC) of SA to understand systematically the linear co-movement of the exchange rate in SA. Lastly, a comparative analysis was directed to survey whether the intervention analysis successfully represents the waves of 2008 financial crisis contrasted with SARIMA. This study will add to the existing literature since there are limited studies that fully utilize the intervention models in South African context.

2. Review of Supporting Literature

The structural breaks in the data can be examined exogenously by assessing their impacts with an ARIMA model that is developed on the bases of a time series. The difference between the actual data and the data without the bearing is known as the degree of the power of an exogenous event. According to Zheng (2014), the amount of data fluctuations that is more than or less than expected is based on the data trends before the intervention event. Utilisation of the intervention in analysis can determine the statistical influence of an exogenous intervention on a given time series and measure the magnitude of the impact if any (Zheng et al., 2013). Many researchers have used the intervention model to analyse a variety of time series that are prone to structural breaks. This includes among others Coshall (2003), who examined the impact of the September 11 terrorist attacks on international travel flows. Further, Lai and Lu (2005) quantified a significant decline in the demand of the air transport passengers in the US after the terrorists attack on September 11. Eisendrath et al. (2008) measured the waves of the September 11 terrorist attack on Las Vegas strip gaming volume. Min et al. (2011), used an intervention model to analyze the consequence of Severe Acute Respiratory Syndrome (SARS) on Japanese tourism demand for Taiwan. Zheng et al. (2013) examined the impact of the 2007 recession on US restaurant stocks by employing an intervention model.

SARIMA model with the intervention was a used by Ebhuoma, Gebreslasie and Magubane (2017) to model the end product of the re-introduction of dichlorodiphenyltrichloroethane (DDT) on confirmed monthly malaria cases. Results revealed that both sudden and a perpetual monthly decline in malaria. The cause of this decline was the aftermath of implementing the intervention policy on malaria disease. According to Ebhuoma et al. (2017), there has been a long period observation of low malaria which advocates that the continual treatment of DDT did not result in insect repellent as predicted. Therefore, the feasibility of reducing malaria transmission to zero in KwaZulu Natal (KZN) requires other reliable and complementary intervention resources to optimize the existing ones Mayosi et al. (2012). To arrange for the evidence that is related to the waves of inaugural of the demand changes of the new railway line in Seoul, Park, Eom, Heo and Song (2016) used a public transport smart card data to apply the intervention model to assess the demand travel patterns on the changes at the transfer station. Their results proved that the new line opening has evocative effects on passenger demand and furthermore, substantial changes were latent in all stations. This implies that the trends have been changed structurally and the changes may last for a long time. For more readings see Xie, Sun, and Chen (2010), Zhang et al. (2011), Ye, Szeto and Wong. (2012) and Lippi, Bertini and Frasconi (2013).

Moreover, Etuk and Eleki (2017) in their study used a monthly Central African Franc (CFAFr or XAF) and Nigerian Naira (NGN) exchange rates from January 2004 to January 2017, and their results revealed that June 2016 is identified as the intervention period. This is the time Nigeria fall into a recession. The pre-intervention period proved to be nonstationary and becomes stationary after the first differencing. If a time series can be dominated by an intervention over a certain period, two distinct components in the model exist which are the deterministic part and the response. According to Tiwari et al. (2014), modelling strategy is to develop a sound exemplifications for both modules and iterate of the mode adequacy that is centred around the intermediate estimation, model diagnostics and interpretation. The overall series effects affect the model for the response term hence it becomes difficult to identify the model (Tiwari, Ram and Srivastava, 2014). One strategy is to use either of the series to model depending which portion of the residual N_t is provided in the analysis. Alternatively, one can also model with the generalized series by comparing the distinct periods. A composite choice of model can then be obtained during the process of checking for adequacy of the model based on possible changes made, external effects and on the series residual Etuk and Eleki (2017).

3. Methodology

Box et al. (2011) invented two models which are proposed for the current study. These models are known as SARIMA intervention and SARIMA respectively. Additionally, SARIMA model in this study serves as a benchmark model with which Makatjane and Moroke (2016) revealed that the multiplicative SARIMA model denoted by SARIMA $(p, d, q)x(P, D, Q)_S$ follows this mathematical form:

$$\Phi(L)\Phi_S(L^S)(1-L)^S((1-L)^D X_t = \Theta(L)\Theta_S(L^S)\varepsilon_t \tag{1.1}$$

Where $\varepsilon_t \sim i.i.d(\mu, \sigma_t^2)$ and S is the seasonal length while L is the lag operator. Tsay (2014), emphasized that there should be no common factors between the polynomials of seasonal autoregressive (SAR) and seasonal moving average (SMA); if not the order of the model must be in a reduced form. Moreover, SAR polynomials should acquaint with the characteristic equation of SARMA because that is the duty of SAR model Moroke (2015).

A SARMA model with weak stationarity is satisfied only if the absolute values of the solutions for the characteristic equation are less than one as it was discovered by Moroke (2014) and Tsay (2014). Ensuing Box et al. (2011), the general intervention model as emphasized by Montgomery et al. (2015) is presented by:

$$X_t = (\omega)(L)L^b/\delta(L))Z_t + N_t \tag{1.2}$$

Z_t is the intervention variable that occurred at time T and it is demarcated in equation (1.3)

$$Z_t = \begin{cases} 1, & \text{if } t \geq T \\ 0, & \text{if } t < T \end{cases} \tag{1.3}$$

Therefore, ω is the unknown permanent change in the mean due to the intervention while δ is the unknown intervention parameter. Along with Lai and Lu (2005), the first term in (1.2) epitomizes the consequence of the intervention event in terms of the deterministic input series Z_t and N_t is the noise series which represents the background of observed time series X_t without the intervention effect (Montgomery et al., 2015). Nonetheless, the assumption here is that $N_t \sim SARIMA(p, d, q)$ or $N_t \sim SARIMA(p, d, q)(P, Q, D)_S$ models respectively. For further reading on intervention models, see also Oduro-Gyimah et al. (2012) and Otu et al. (2014). Because the 2008 financial crisis is unique, the intervention variable Z_t symbolized some discrete event in which $Z_t = 1$ denotes international financial crisis while $Z_t = 0$ is otherwise. This is also evident by Montgomery et al. (2015).

Development of the model: In this section of the study we present the general development of the SARIMA model which is made up of the following three stages:

a) Unit root test and identification of the order of difference, i.e. *d*. pre-differencing a time series helps in reducing the variance of the data and makes the series ready to be modelled by a stationary S(ARIMA) model. Usually, Augmented Dickey-Fuller (ADF) is applied for the unit root test. The hypothesis tested is:

$H_0: \rho = 0$
$H_1: \rho < 0$ also see Mushtaq (2011) and Moroke (2014) respectively. Makatjane and Moroke (2016) have accentuated that the ADF test which was derived by Dickey and Fuller (1979) is used for linear time series models and the test follows some sort of linear regression as:

ADF equation with no intercept and no trend: $\Delta X_t = \rho X_{t-1} + \sum_{i=1}^{p} \delta_i \Delta X_{t-i} + \epsilon_t$ (1.4)

ADF equation with intercept: $\Delta X_t = \beta_0 + \rho X_{t-1} + \sum_{i=1}^{p} \delta_i \Delta X_{t-i} + \epsilon_t$ (1.5)

ADF equation with intercept plus trend: $X_t = \beta_0 + \beta_1 t + \rho X_{t-1} + \sum_{i=1}^{p} \delta_i \Delta X_{t-i} + \epsilon_t$. (1.6)

Δ is differencing operator, t is time drift; ρ designates the selected maximum lag based on the minimum information criteria such as Akaike's information criteria (AIC), Schwartz Bayesian criteria (SBC) or Hannan-Quin criterial (HQC) values and $\varepsilon_t$is the error term despite the fact that β and δ are the bounds of the model. Contingent on the results, the intercept, and intercept plus trend may be included in the model. The ADF test is computed by:

$$\tau = \frac{\hat{\gamma}}{se(\hat{\gamma})} \sim t_{\alpha, n-p} \tag{1.7}$$

Where the ADF test statistic is τ and $\hat{\gamma}$ is the process root coefficient. If the observed $|\tau|$is greater than the critical value, no simple differencing is required since the series has been rendered stationary. For model selection, the AIC and SBC are employed in this study. With this regard, the SBC measure is estimated as follows:

$$SBC = -2[\ln \hat{\varphi} + k * \ln(n)], \tag{1.8}$$

where n is the sample size, k is the number of parameters to be estimated, $\hat{\varphi}$ is the likelihood function of the estimated model (M) which is $\hat{\varphi} = p(x|\hat{\theta}, M)$, x is the observed data and θ is the parameter of the estimated ADF model.

The study further uses the AIC for lag length selection of the ADF model. According to Pan (2001), AIC is most powerful widely used by most researchers:

$$\mathrm{AIC} = \mathrm{nlog}\left(\frac{\mathrm{RSS}}{\mathrm{n}}\right) + 2\mathrm{k}, \quad (1.9)$$

In this case, n is the sample size, RSS residual sum of squares from the fitted ADF model while 2k is the variance of the same model, hence, the model with least AIC is the one selected to be the best model.
The Hanan Quin (HQ) is asymptotically efficient in estimating the best model because it produces fine turning criterion results which in practice it has the term $\log\log(n)$ which process small values even if the sample size n is very large (Hjort, 2008). Then the procedure is as follows:

$$\mathrm{HQ} = -2\log\tilde{\mathrm{L}}_{\mathrm{n}}(\theta_{\mathrm{n}}) + 2\mathrm{ck}_0\mathrm{loglogn}, \mathrm{c} > 1, \quad (1.10)$$

Where k_0a number of estimated parameters of the model is, n is the sample size and $\tilde{L}_n(\theta_n)$ is the likelihood function.

b) Estimation and determination of the parameters of the intervention function and SARIMA, i.e. p and q. and or P and Q. According to Box et al. (2011), the autocorrelation function (ACF), partial autocorrelation function (PACF) and cross-autocorrelation function (CACF) are dynamic to tentatively identify the parameters of the model. Nonetheless, statistical measures generally give an outstanding proof to provision the determination of an appropriate intervention function. Furthermore, the theoretical characteristics of the ACF and PACF for a stationary SARMA process are presented in table 1. In order to attain robust results, the ACF and PACF patterns must cup tie with this theoretical patterns (Montgomery et al., 2015).

Table 1: Behavior of Theoretical ACF and PACF for stationary SARMA process

	$\mathbf{SARMA(P,0)_s}$	$\mathbf{SARMA(0,Q)_s}$	$\mathbf{SARMA(P,Q)_s}$
ACF	Tails off at lags ks	Cuts off after lag Qs	Tails off at lags k
PACF	Cuts after lag Ps	Tails off at lag ks	Tails off at lag k

Source: Montgomery et al. (2015)

Therefore, Jonathan and Kung-Sik (2008) have shown that the ACF can be derived from:

$$\rho_k = \frac{\rho_k}{\rho_0} = \frac{\mathrm{cov}(X_t, X_{t-k})}{\mathrm{Var}(X_t)}, \text{ k=0, 1, 2, 3,...} \quad (1.11)$$

Where, ρ_0 is the autocovariance which is computed as $\mathrm{cov}(X_t, X_{t-k}) = E(X_t^2) - \left(E(X_t)\right)^2 = \mathrm{Var}(X_t)$. Normally, a correlogram is used and it is a graph of ρ_k against k. The PACF is computed as:

$$a_{kk} = \begin{cases} \rho_1 & , k = 1 \\ \dfrac{\rho_k - \sum_{j=1}^{k-1} a_{k-1,j}\rho_{k-j}}{1 - \sum_{j=1}^{k-1} a_{k-1,j}\rho_j} & , k = 2,3,4,\ldots,\rho \\ 0 & , k > \rho \end{cases} \quad (1.12)$$

c) Residual or noise diagnostic check. The correlogram of Q-statistics based on the ACF and PACF of the residual is generally used for residual analysis and further the statistical tests such as the Jarque-Bera test for the normality of residuals, the Lagrange multiplier for the heteroscedasticity of the residuals and finally, Breusch-Godfrey test is also used to test the correlation of the residuals.

4. Empirical Analysis

To execute the analysis, the study used a time series data of real exchange rate for the period of January 2000 to June 2017 which is accessed from the South African Reserve Bank database. The considered 2008 financial crisis is hypothesized to be a significant event in influencing exchange rate movements in SA. For the statistical analysis, R 3.4.3 programming is utilized. Nevertheless, figure1 parades the properties of the time series from the specified period. By visual examination, the series shows some upward and downward trends in conjunction with seasonal components. This implies that the real exchange rate in South Africa is not constant over the sampled period. The formal statistical test for the presence of seasonal components is reported in table 2.

Figure 1: Real exchange rate

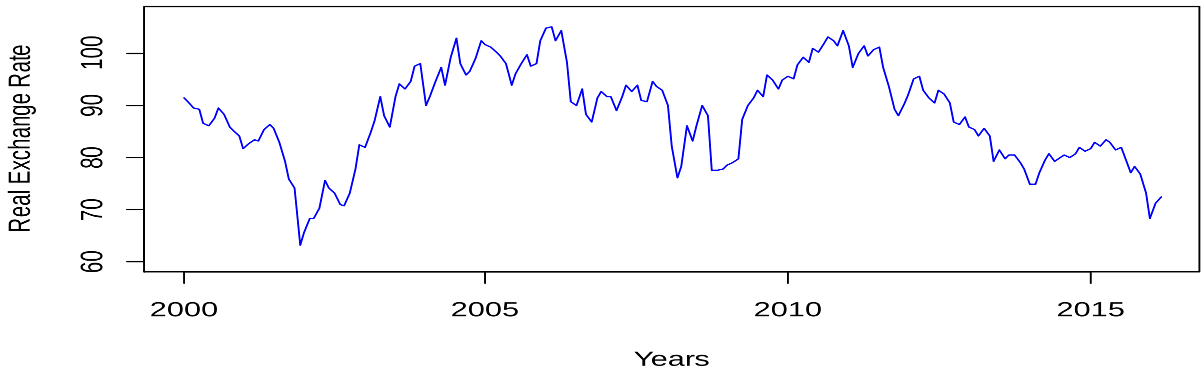

Table 2: Nonparametric Test for the Presence of Seasonality

Kruskal-Wallis Statistic	DF	Sig
38.19472	11	***

Sign. Codes: *** 0.001 ** 0.01 * 0.05

Revealed in table 2 is the Kruskal-Wallis (KW) statistic test for the presence of seasonal components. As observed in table 2, there is a huge significant evidence that the exchange rate holds the seasonal properties as the KW test rejects the null hypothesis of no seasonal components over the alternative if there are seasonal components in the exchange rate series. Hence we proceed with the proposed SARIMA and SARIMA intervention models.

Results and Analysis of SARIMA Model: The ADF test is applied to the time series as the purpose to accommodate both the Box-Jenkins and intervention proposed in this study. The results of the ADF test provided a sufficient evidence that the exchange rate series contains unit root with both seasonal and nonseasonal differencing of order one. i.e. d=1. The ADF model with three features discussed in section two is the one to be used as its $\Pr(\tau) = 0.01$. Therefore, a stationary time series is achieved. In model selection, the ACF, PACF, SBC and AIC congruently advocate that the SARIMA model is of the form of $\text{ARIMA}(2,1,0)(2,1,0)_{12}$ in which the model is formulated below.

$$X_t = \left[1 - 0.22\Phi *** (1)\left(1 + 0.15\Phi *** (2)\right)\left(1 + 0.61\Phi *** (12)(1 + 0.38\Phi *** 13)\right)\right]\varepsilon_t$$

While diagnosing the estimated$\text{ARIMA}(2,1,0)(2,1,0)_{12}$, all the estimated parameters are significant at 1%, 5% and 10% level of significance. Additionally, the estimated Q-statistics also gave a vast significant evidence that the estimated model is a white noise process with $\Pr(Q_{statistic} = 0.1732\ )$ and $\varepsilon_t \sim \text{i.i.d}(0,0.02978)$. Yaffee and McGee (2000) have suggested that model parameter estimates must be less than one as to deem them to be sufficient and significant. The same results are also obtained by Makatjane and Moroke (2016) in their study of comparative of Holt-Winters triple exponential smoothing and Seasonal ARIMA models.

SARIMA-Intervention Results: The intervention model is explored with the 2008 financial crisis being the intervention period. Due to the reason that in March 2008 this financial crisis protracted to SA, then Z_t is initiated during this period. Before estimation of an intervention model, ADF test with the pre-mentioned three features is applied and delivers much evidence that pre-intervention time series has no unit root as the $\Pr(\tau) = 0.032$ which is less than the observed probability of 5% when the order of integration is zero i.e. d=0. The intervention model is estimated by firstly identifying the order of intervention parameters by utilizing the ACF and PACF and further selects the best model by SBC and AIC. And finally, the diagnostic checks that are executed for the noise proves that it is a white noise process and hence the estimated model is valid.

$Y_t = \frac{(1-0.033)}{(1+0.743)} Z_t + \left[\left(1 - 0.403\theta *** (1)\right)\left(1 + 0.999\Theta *** (12)\right)\right]\varepsilon_t, \varepsilon_t \sim \text{i.i.d}(0, 0.00404).$

The cross-autocorrelation function (CACF) shows a significant spike in lag 0 $\hat{\rho}_0 = 0.998$ and a decay pattern after lag 1 indicating that the2008 financial crisis did directly distress the SA exchange rate which brought a significant drop in import and exports of goods and services in SA the month after the event. The intervention effect is computed as an asymptotic change of 17%. This implies that the effect of the intervention had caused a drop of 17% in exchange rate hence the same decline in the SA economy.

Table 3: SARIMA and SARIMA Intervention model estimates

SARIMA model			
Parameter	**Estimate**	**Standard Error**	**Z value**
ϕ_1	0.21814	0.07328	2.9769***
ϕ_2	-0.14772	0.07358	-2.0077***
Φ_1	-0.60886	0.06961	-8.7463***
Φ_2	-0.37643	0.07246	-5.1951***
SC	-94.74	**AIC**	-110.76
SARIMA Intervention model			
Parameter	**Estimate**	**Standard Error**	**Z value**
θ_1	0.403	0.078	5.190**
Θ_1	-1.000	0.073	-13.76***
March08-AR1	-0.743	0.076	-9.810*
March08-MA0	-0.033	0.009	-3.610***
SC	-426.923	**AIC**	-445.288

Sign. Codes: *** 0.001 ** 0.01 * 0.05

Comparative analysis: The purpose of this section is to determine the model which best mimics the data and produces fewer forecasts. With the extension to Makatjane and Moroke (2016) methodology, the current study follows up with the application of four error metrics which are a mean error, mean absolute error, mean percentage error and mean absolute percentage error to measure the performance of each model and results are summarized in Table 3. The results indicate that the model with intervention has the smallest values of all the proposed error metrics. Hence the conclusion that this model dominates the counterpart SARIMA model. The same conclusion is made based on the values of SBC and AIC reported in table 3 where SARIMA model with the intervention has the smallest of both the SBC and AIC as compared to the model without the intervention suggesting that the model with intervention is the best model. According to Lai and Lu (2005), the SARIMA produces a delay forecast regarding the sudden occurrences of the intervention in the data.

Table 4: Performance model selection Criteria

Performance Criteria	**SARIMA**	**SARIMA Intervention**
ME	0.0023	0.0011
MAE	0.1247	0.0451
MPE	0.0222	0.0106
MAPE	1.3377	0.5052

Figure 2: Actual VS Conditional Mean

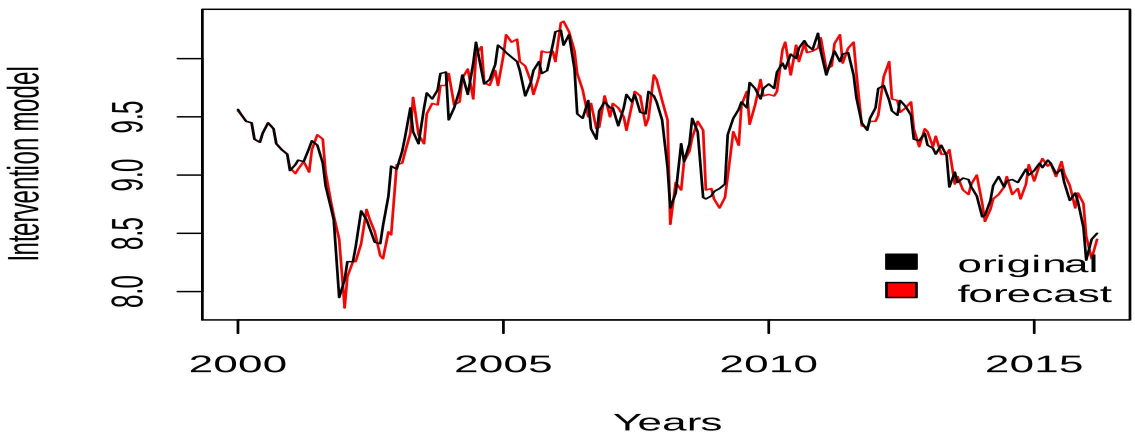

Figure 2 presents the fitted conditional mean for the SARIMA intervention model. By eye inspection, the model seems to fit the exchange rate data well. This suggests that the SARIMA intervention model has performed relatively well in tracking the exchange rate movement for the specified intervention period.

5. Conclusion and Recommendations

The U.S. financial crisis was triggered in July 2007; however, it did not affect SA's economy until later, when it became a disaster and turned into a global economic problem. The intervention effect of the global financial crisis that began in March 2008 in SA, as measured in this study, is immediate and alarming. This significant negative effect has led to a dramatic decline in SA output value since March 2008, which is likely to have continued throughout 2008 and 2009 before reaching a steady state. Moroke et al. (2014) reported that during this period, resources were downgraded, companies were shut down causing unemployment rates to accelerate with the overall diminishing of the country's economic growth. For the comparative results, the study has found that the SARIMA model with intervention out-performed the SARIMA model and the application of SARIMA intervention models is appropriate for explaining the dynamics and impact of interruptions and changes of time-series in a more detailed and precise manner. This study provides practical information for the monetary policy committee of SA to make informed policy decisions related to exchange rates. It further gives sound relevance in using the intervention model to model interrupted time series such as exchange rates. To other scholars, the study had shown that a seasonal time series that is interrupted by policies in a financial crisis can be modelled by the SARIMA intervention model. However, other scholars should also extend this empirical analysis to the multivariate modelling by using the determinants of the exchange rate and utilize the SARIMAX model with intervention to give more understanding on the linear relationship and co-movement of the exchange rate in South Africa.

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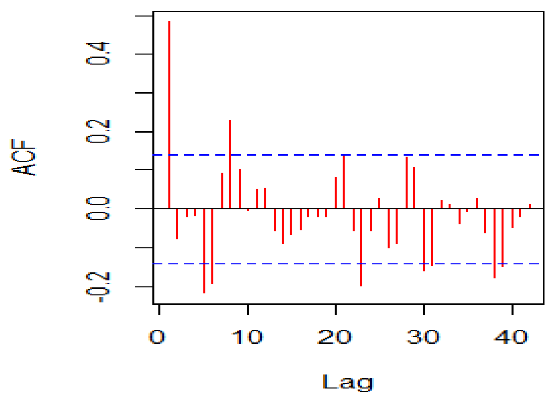
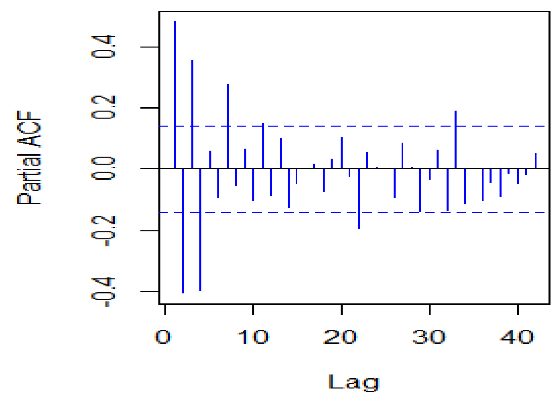
Appendix

First Seasonal Augmented Dickey-Fuller Test

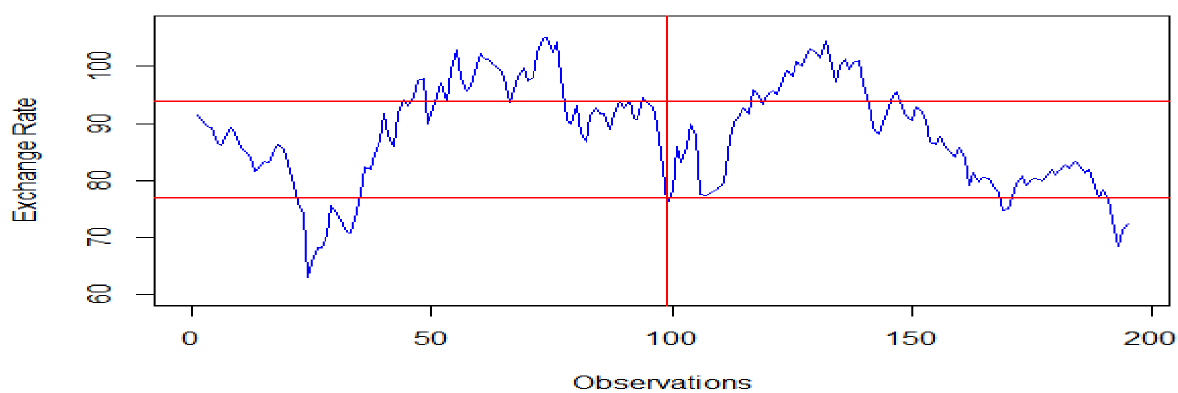
Type	Lag Order	Dickey-Fuller	P Value
no intercept and no trend	2	-7.4594	0.01
Intercept	2	-7.4391	0.01
Intercept plus Trend	2	-7.4156	0.01

First Seasonal differencing ACF and PACF plots





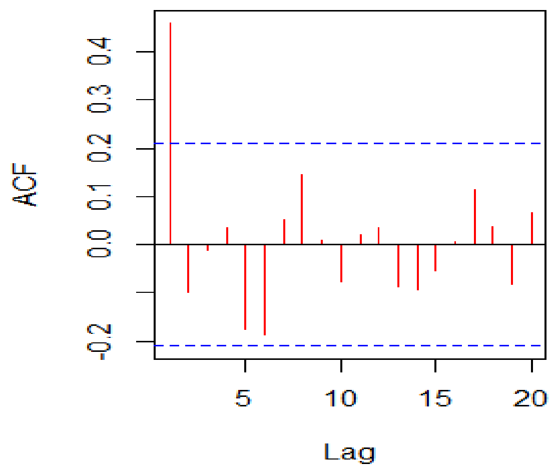
Intervention Period

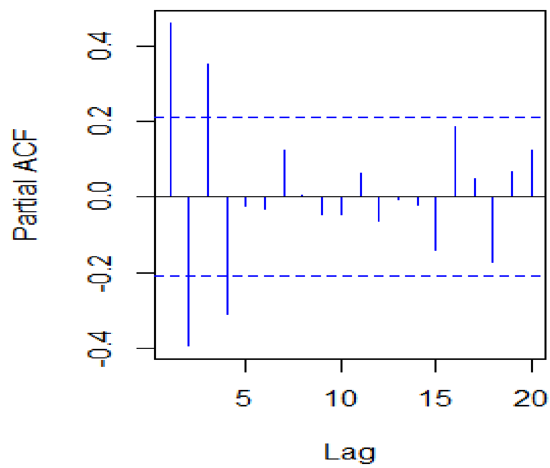


Pre-intervention ADF test

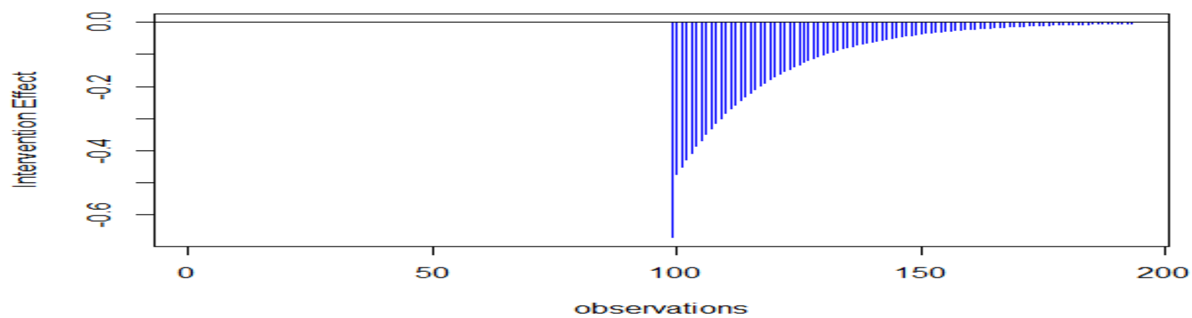
Type	Lag Order	Dickey-Fuller	P Value
no intercept and no trend	2	-3.7368	0.032
Intercept	2	-3.7141	0.032
Intercept plus Trend	2	-3.717	0.032

Pre-intervention ACF and PACF plots





Computation of Intervention Effect



[South] Africa's Health System and Human Rights: A Critical African Perspective

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Abstract: For more than two decades, 21st March has been canonised and celebrated among South Africans as Human Rights Day. Earmarked by the newly democratic and inclusive South Africa, it commemorates the Sharpeville and Langa massacres. As history recorded, on the 21st March 1960, residents of Sharpeville and subsequently, Langa embarked on a peaceful anti-pass campaign led by the African National Congress (ANC) breakaway party, the Pan Africanist Congress of Azania (PAC). The pass (also known as *dompas*) was one of the most despised symbols of apartheid; a system declared internationally as a crime against humanity. In the post-apartheid era, it is expectedthat all South Africans enjoy and celebrate the full extent of their human rights. However, it appears that the envisaged rights are not equally enjoyed by all. This is because widening inequalities in the health-care system, in schooling, and in the lucrative sporting arena have not been amicably and irrevocably resolved. Furthermore, it is still the norm that the most vulnerable of South Africans, especially rural Africans, find it difficult, and sometimes, impossible to access adequate and even essential healthcare services. Central to the possible questions to emerge from this discourse are the following(i) What is the current state of South Africa's health system at the turn of 23 years of its majority rule? (ii) Why is the South African health system still unable to sufficiently deliver the socioeconomic health rights of most South African people? It is against this background that this article uses a critical discourse analysis approach in its broadest form to provide a nuanced Afrocentric assessment of South Africa's human rights record in the health sector since the year 1994. Data for this article is generated through the review of the cauldron of published and unpublished academic, official and popular literature.

Keywords: *Afrocentricity, health system, human rights, South Africa*

1. Introduction

The 21st March non-violent campaign against pass laws in South Africa was initially planned to take place on the 31st March 1960 under the guidance of the ANC. This date was chosen for the purpose of giving more meaning and expression to the 31stMarch anti-pass campaign that took place in the year 1919. However, when information about the ANC's plan to embark on a campaign for the total abolition of the pass laws on the 31st March 1960 leaked and reached PAC members, the leadership of PAC and its constituency decided to stage its own opportunistic campaign ten days before the ANC. This was done in order to take advantage of its tactical, strategic and political significance for the growth of the party that was founded in 1959. Despite the peaceful nature of the 'hijacked' campaign by the PAC, the police in both Sharpeville and Langa meted out violence by firing live ammunition on the protesters. As a result, 69 people were reportedly killed, and 180 others severely wounded in Sharpeville. In the case of Langa, three people were left dead while 26 others suffered serious injuries. There have been competing explanations by scholars and government officials about the Sharpeville and Langa massacre. An official account by the apartheid regime has been that the campaign in question agitated for violence and instability against the security establishment. It added that the chaotic manner in which police were provoked left them with no option but to crush the protest ruthlessly. On the contrary, the fact that the majority of the victims of Sharpeville and Langa massacres were not armed and were shot on their backs is evidence that they were peaceful. As a results, when charged with a harsh response, they also opted to run for cover, instead of fighting back(Pahad, 2014). While the dynamics of crucial historical events such as the Sharpeville and Langa massacres are contested across the political and academic divide, a quick cursory overview of the academic and popular literature reflects competing positions about post-apartheid South Africa's human rights record in the health sector.

Globally, South Africa features prominently in most health care problems such as HIV/AIDS, Tuberculosis, maternal and child mortality, as well as obesity. These remain the leading cause of death (DEA, 2013).[10] In South Africa, the health burden mostly affects the poor, with the majority of those affected unable to afford private health care services and therefore having to rely on the government for health care support. In over two decades of post-apartheid era, South Africa's mortality and morbidity profile of infectious and non-communicable diseases have worsened considerably among all age groups(Kahn, 2011). Clearly, this calls for a rethinking of the philosophy underpinning the delivery of health care in South Africa and Africa generally. Admittedly, the National Development Plan 2030makes laudable recommendations on how to effectivelyimprove the socioeconomic determinants of health, address the imbalance that has resulted in unforgivable historical injustices and bridge the embedded inequality in the provision of health care(National Planning Commission, 2012). However, despite annual budgetary expenditure, little has been done to change the status quo in ways that guarantee the human rights of South Africans in such critical arenas as the health sector. It was envisaged that the political progress experienced in South Africa with the enthronement of liberal democracy in 1994 should ultimately translate into significant transformation in all aspects of societal life including the health sector. As Litch and de Villiers (1994, p. 1)projected, "the evidence of progresswe now see ranges from disheartening to uncertain". The present article considers the extent to which health care delivery is a guaranteed human right in South Africa.

As a socioeconomic right, health care is secured in the South African Constitution. Evans (2002, p. 197)explains that health as a human right is captured in the Tavistock Group's principle that, "the right to health cannot be bought and sold in the marketplace like other commodities. Nor can the right to health be limited by the ability to pay". Some scholars proffering a liberal consensus argue against a human right to health(Barlow, 1999). They contest the "definition and extent of both human rights and health care"(Evans, 2002, p. 197). The dominant narrative within the academic circles and the mainstream media is that South Africa's health system is in a crisis. The current crisis with the Life Esidimeni tragedy, which resulted in the death of over 94 mental health patients, is a constant reminder of a failing public health system (Kahn, 2011). Furthermore, in Africa, the Ebola virus disease (EVD) outbreak that started in the year 2013 and lasted until 2016 raises serious human rights question about the rife perception of the need to curb diseases originating in the global South from spreading to more prosperous regions and the powerlessness of the former to address this. Durojaiye and Mirugi-Mukundi (2015, p. 23) warn that Africa's right to health, guaranteed in several human rights instruments, is further compromised by the slowness of pharmaceutical companies in industrialised countries in developing a cure or vaccine for Ebola which "confirms the fact that these companies hardly invest in tropical or neglected diseases that may benefit millions of people in poor regions". The first part of this article details the general orientation of the study. Secondly, the methodological component of the study is advanced. Further sections reviewthe relevant literature on health and human rights focusing on South Africa. It also presents the legal framework in which health care is delivered in the country. The fourth section appraises South Africa's health sector in terms of securing the socioeconomic claims of health as a human right. The final part is the conclusion and policy implications.

2. Methodological and conceptual issues

It should be emphasized that the epistemic location of thisarticle is the Afrocentric paradigm, as propagated by scholars such as Asante (2003), Mazama (2003), Modupe (2003) and Alkebulan (2007). Afrocentricity is relevant for this discourse because most studies on this subject stem from a Euro-American standpoint and do not often correctly capture the qualitative imagery of the human rights discourse of Africa and very often neglect the political history of its people in general. This less considered missing link (Afrocentric perspective) offers deeper analytical rigour for understanding the policy machinery of African countries(Shai & Molapo, 2017). Thisshould be understood within the context that policy analysis (and monitoring in particular) requires relevant, reliable and valid information. Flowing from this, Don K. Price makes a distinction between scientific estate, which seeks only to discover knowledge, and the professional estate, which strives to apply scientific knowledge to the solution of practical problems. Based on the foregoing, it is proposed that the African situation should be perceived, interpreted and understood in the first instance

[10]According to the NDP 2030 report, between 1998 and 2008, notification of deaths doubled, reaching a staggering 700,000 per year (NPC 2012).

through an indigenous theoretical lens, tools and standards, if Africa is to find lasting solutions to challenges faced by its people and countries. This proposition finds a true and perhaps honest expression in the works of many African-centred scholars. For example, Richards (1979, p. 249)lends credence to the theoretical attitude and exposition of this article when she asserts that:

It would be the mission of African social scientists, at home and in the Diaspora, to devote their energies to the radical reconstruction of the disciplines in which theywere trained. Without such an approach, African peoples run the risk of incorporating the theoretical, mythological and ideological models of white social science into their own methodologies, thereby unknowinglyinternalisingthe values of western European society, including the negative image of Africa which white racialism and culturalism has created.In terms of the research design, this article is largely based on document analysis. Equally important, the current article emphatically projects human rights as the inherent and inalienable rights of the people in order for them to be treated with equality, dignity, and respect. Human rights are normally entrenched in law – whether international or national law – with the United Nations (UN) as the custodian for their promotion, protection, and realization.[11] States, on the other hand, have a responsibility to ensure the enjoyment of human rights by all citizens. In essence, they are expected to make provision for the respect, promotion, and adherence of human rights into their domestic laws and policies. It should be taken into consideration that it is not every country in the world where these rights are respected and preserved(Shai & Mothibi, 2015). As such, the analysis of this article deliberately uses South Africa as a test case to provide a nuanced Afrocentric appraisal of Africa's health system, as well as its connection with human rights in the post-Millennium Development Goals (MDGs) era. Although the focus of this article is on South Africa, it is argued that the country's human rights record in the health sector can be well understood if it is located within a broader African context.

Legislative frameworks on Health Care: Between Theory and Practice

There are widespread claims in the literature that there has been tremendous progress in the protection of human rights since the establishment of the UN and the Commission on Human Rights over 65 years ago(Evans, 2002). However, this discourse is often challenged by the reality of the deplorable health conditions in many African countries. Within government circles, it is believed that major strides have been made to provide better health services for all. Nevertheless, despite numerous policy provisions and budgetary spending on health care, as well as the guarantees of the Constitution enshrining basic health care as a fundamental human right, inadequate health care remains a lingering problem for many South Africans. Based on the preceding polarised views about these public health and human rights, this article seeks to expand the disciplinary engagement of South Africa's human rights record in the health sector using an Afrocentric perspective.

Chapter 2 of the South African 1996 Constitution, the Bill of Rights entrenches human rights in the country's national law. In terms of the provision of health, as part of these rights, Act 108, section 27 provides that: Everyone has the right to have access to – (a) health care services, including reproductive health care;The state must take reasonable legislative and other measures within its available resources, to achieve the progressive realisation of each of these rights.Read with section 9:(3), the supreme law of the country further asserts that"The state may not unfairly discriminate directly or indirectly against anyone on one or more grounds, including race, gender, sex, pregnancy, marital status, ethnic or social origin, colour, sexual orientation, age, disability, religion, conscience, belief, culture, language, and birth; No person may unfairly discriminate directly or indirectly against anyone on one or more grounds in terms of sub-section (3)".A number of policies further corroborate the constitutional provision guaranteeing the equality of health care access to South Africans. For instance, Chapter 10 of the National Development Plan 2030on "Promoting Health" articulates reform strategies aimed to achieve nine long-term health goals for South Africa, which includes the following:

- Increase average male and female life expectancy to 70 years
- Progressively improve TB prevention and cure
- Reduce maternal, infant and child mortality

[11] Article 12 of the International Covenant on Economic, Social and Cultural Rights (ICESCR)makes broad provisions guaranteeing the right to highest attainable standard of physical and mental health of every individual.

- Significantly reduce prevalence of non-communicable chronic diseases
- Reduce injury, accidents and violence by 50 percent from 2010 levels
- Complete health systems reforms
- Primary healthcare teams provide care to families and communities
- Universal health care coverage
- Fill posts with skilled, committed and competent individuals(National Planning Commission, 2012)

However, the distinct overlap between equality and health rights immediately exposes ethical dilemma for an economically, culturally and sexually diverse society such as South Africa. As the NDP 2030 outlines, "The performance of South Africa's health system since 1994 has been poor, despite good policy and relatively high spending as a proportion of GDP"(National Planning Commission, 2012, p. 331).It is for this reason that part of the nine challenges that necessitated the development of the NDP 2030 included the failure of the public health system to meet the demand of the country and sustain quality. Related to this has been dwindling funding of the health sector, which shows a lack of prioritization of health as a critical aspect of national well-being. For example, budgetary allocation to health care relative to GDP over a period of seven years shows a declining trend of a chronically underfunded sector (see Table 1).

Table 1: South Africa's Government Health Expenditure 2007 – 2014

Year	Total (Rand million)	% of GDP	% of total government expenditure
2007/08	71,439	3.4	13.9
2008/09	85,154	3.7	14.0
2009/10	99,468	4.1	13.8
2010/11	109,769	4.1	14.1
2011/12	122,427	4.2	14.7
2012/13	132,165	4.0	14.7
2013/14	140,721	4.0	14.6

Source: Authors' compilation; see(National Planning Commission, 2012).

There is no gainsaying that like everyone else Lesbian, Gay, Bisexual, Transgender and Intersex (LGBTI) groups are also entitled to benefit from these rights and others, as enshrined in the Constitution and related laws of South Africa. However, the realities and practicalities in South Africa show a widening chasm between theoretical prescriptions of health delivery and practice in this regard. Indeed, despite extant laws guaranteeing the rights of the LGBTI community, it is common knowledge among most South Africans that the LGTBI populace in South Africa is often subjected to unfair discrimination, persecution, and violence for merely expressing who they are and who they choose to love. The foregoingshould be understood within the context of the Rational Comprehensive model of policy analysis; which explains that there are usually no societal values agreed upon. On the contrary, there are only benefits to specific groups and individuals, many of which are conflicting(Dunn, 2015).Since conflictingbenefits and costs cannot be compared or weighed, it is significant for the society, in general, to make certain ethical sacrifices and compromises for the sake of mutual and peaceful co-existence, stability, security, and development (Maake, 2009). While the literature on health and human right is rife and its study in South Africa is not new, not much research has been undertaken in this respect. For instance, scholars have researched on the dimension of South Africa's response to HIV as a human right issue. This raises the need for social and economic rights of the people to be promoted on the same level as the civil and political rights guaranteed in the Bill of Rights (Heywood & Cornell, 1998).

3. South Africa's health sector: Comparative national, continental and global prognosis

The contemporary society and the Africa-West praxis manifest a double-edged sword. However, unlike the post-independent African state, the West and the United States of America (US) tendto interfere unnessarily in the affairs of other countries, as were the cases in Iraq (2003) and Libya (2011) (Poopedi, 2014; Shai, 2010). However, when it comes to their nationals, the US and other Western countries are generally delicate, kind and careful. In contrast, most African leaders are directly (and in complicit) cruel to their people. For example, Swaziland (current), Zimbabwe (2008) (Dzimiri, Runhare, Dzimiri, & Mazorodze, 2014; Maleka &

Shai, 2016). This is an important point that distinguishes African leaders from Western leaders. The above discussion is corroborated by Onyeani (2012, p. 38)in his claim that “in Africa, we are totally undisciplined. We have leaders who are not ruthless with themselves in pursuit of excellence but who are quick being ruthless to their citizens”.

Contextually, nationalist leaders have tried to win the hearts and minds of the masses to support the cauldron of the struggle against the inhumane and brutal systems of colonialism, imperialism and apartheid. In order to do so, these leaders made promises ranging from better education, gainful employment and decent medical health care in post-independence era and new democratic dispensation (as in the case of South Africa) (Khapoya 2010). It is for this reason that education, labour and health rights have been effected in the policy framework of the post-independent African state(Shai & Molapo, 2017). Despitethis, severe contradictions are evident regardingthe seriousness of African states and governments in rolling out health services. Admittedly, health is an essentialsocioeconomic service in South Africa. However, in Africa as a whole, the health sector is riddled with structural problems relating to innovation, accessibility, and trade. In the African situation, respective national and provincial governments usually only show real commitment to the provision of health services when the effects of disasters such as HIV/AIDS and Ebola reach alarming proportions. Even then, Westerners typically lead mitigating efforts for addressing worsening health situations in South Africa and elsewhere in Africa. To make matters worse, even essential amenities used in South Africa/Africa’s health facilities (such as antibiotics, injections and intravenous infusions) are often imported and without any remarkable effort to produce the same within the continent (Onyeani, 2012).

Lack of political will: The deplorable situation of Africa’s health security is compounded by an already worse situation, exemplified for instance inlimited progress relating to the establishment of the only medical school to be established in the new democratic dispensation. Following the detachment of the Medunsa campus from the University of Limpopo, the new medical school was scheduled to be attached to the latter. According to government reports, the University of Limpopo medical school was opened for its first intake during the 2016 academic year(Quintal, 2016). However, as recent media reports about the medical school indicate, it is safe to state that there are serious structural weaknesses that make it impossible for the University to produce globally competitive medical doctors, at least in the short run. This distasteful situation is a disservice to aspiring medical doctors registered at the institution. It is also a dream deferred for the communities in Limpopo province, who had pinned their hopes on the University of Limpopo’s medical school to produce locally relevant and globally competitive medical doctors, to ameliorate the critical shortages of senior medical staff at public hospitals.It would appear that the failure of the government to ensure that the medical school at the University of Limpopo (a 2nd historically disadvantaged university earmarked for the training of medical doctors) is established to the level of full functionality can be partly attributed to the fact that the manner in which it was launched was driven by less political will and developmental commitment. Furthermore, its establishment was prompted by a desperate desire to score cheap political points for the governing ANC and quench the selfish interests of certain individuals who stood to financially benefit from this project by doing business with the University either legally or illegally. It is also not a far-fetched idea that the performance bonuses of the university’s senior administrators and the Public Relations rewards cannot be wholly de-linked from the speed at which the medical school at the University of Limpopo was pre-maturely operationalised.

Burdening Health Insurance: Meanwhile, it is also interesting to note that in South Africa, a health insurance policy is expensive while a funeral cover policy is comparatively cheap. For instance, the lowest monthly premium for health cover is around R600 per person (depending on the benefits)(Bonitas, 2015). On the other hand,it is possible to secure a funeral cover policy for as little as R120.00 per person (but also depending on age and benefits)(Clientele Life Insurance, 2015).What can be deduced from this contradiction is that while South Africa’s government and the private sector seem to be concerned about giving decent funerals to the people, there is a small premium for preserving their health conditions.By logical corollary, this unfortunate trend should be worrying to all; considering the fact that health is a crucial pillar of socio-economic development. The irony is that while South Africa is internationally lauded for having one of the best Constitution and laws, especially in terms of guaranteeing people’s rights, with a ranking of 131st, its workforce is undoubtedly one of the unhealthiest globally(World Health Organisation, 2015).

It is interesting to note that South Africa's developmental state is modelled along China, where it takes only 10 minutes to see a medical doctor in a private health facility(Xi, 2014). This is a situation that is highly commendable about the communist society of China and which is hardly observable in African countries, including South Africa. In contrast, the depth of the disappointing state of South Africa's health system is also reinforced by the fact that in South Africa, as it is with many African states, pizza delivery is often faster than an emergency callout for an ambulance. A narrow view of the sorry state of South Africa's health sector attributes this to rampant corruption. However, a sober reflection of the state of governance in South Africa *vis-à-vis* China shows that corruption knows no boundaries. In fact, corruptionin China is rife or worse than in African countries. To add to this heated scholarly and policy discourse, Nkondo (2012) observes that:

Corruption knows no bounds. It does not disappear as economies grow. Instead, it assumes new forms. For corruption is symptomatic of a deeper systemic problem, the failure of the public-private-partnerships that African governments have sought to mediate the contradictory claims of democracy and the market, a failure that has created a virtual collusive system between political and business elites.

Confused declarations: Central to the problems faced by post-independent African states is the tendency to make 'declarations without real action'. Moreover, the deplorable working conditions in most African states naturally pushes medical doctors and other health professionals to go and serve in countries such as Australia, US and Britain. Unfortunately, this trend results in brain drain for South Africa and other African countries. But it can also be understood as 'brain gain' for the receiving industrialised countries. It is therefore not surprising that globally, Africa has the second-worst shortage of health workers at 4.2 million, compared to Europe's 100,000 (World Health Organisation, 2017). Despite the complex web of political and socioeconomic challenges faced by South Africain particular and Africa in general, the exiled President of the ANC, Oliver Tambo (as cited by(Pahad, 2014, p. 80) advises that "[T]o be true to history, we must concede that there have been difficulties as well as triumphs along our part …".Flowing from this, it is indeed necessary to appreciate the achievements regarding South Africa's political transition. However, itmust also be honestly acknowledged that there are persistent challenges in health, economy, and society in general. Sadly, in the recent past, several leaders of African states have died either in domestic private hospitals or outside their countries in their search for better health service. Examples include Michael Sata of Zambia who died in Britain; Umaru Yar' Adua passed away in 2010 after months of hospitalisation in Saudi Arabia; Meles Zenawi of Ethiopia died in Belgium while the former President of South Africa, N. Mandela died a few months after being discharged from Mill Park private hospital. In relation to this, Motshegoa (2014)accounts that the recent death of Michael Sata brings 'the number of African presidents dying in foreign hospitals to nine'.As Kazeem (2017)notes, "Indeed, in the last decade, six of the 12 African leaders who have died while in office did so while seeking treatment abroad". It is the conviction of this article that the passing away of most African leaders outside their countries and/or in private hospitals is a tragic acknowledgment of their inability and/or unwillingness to adequately address the health needs and demands of their down-trodden and impoverished civilian populace.

Table 2: African Presidents that died in foreign private hospitals

President	Country	Died
Michael Sata	Zambia	London (2014)
MalamBacaiSanhá	Guinea Bissau	France (2012)
MelesZenawi	Ethiopia	Belgium (2012)
Omar Bongo	Gabon	Spain (2009)
Levy Mwanawasa	Zambia	France (2008)
BinguwaMutharika	Malawi	South Africa (2013)

Source: Kazeem (2017)

The preceding narrative of the sad reality of the status quo of African health sector affirms this article's argumentthat inadequate health services in the public sectordeny the majority of people the opportunity to enjoy their health rights and human rights broadly. Historicising the negative state of health in South Africa and elsewhere in the continent reflects a mixed bag of both internal and external factors. These factors have contributed to the appalling situation (Chazan, 1988). At the root of this problem is neo-colonialist tendencies, championed by the West, to the disadvantage of African nations. For example, in the post-independence era, most African states signed some agreements with the West, which continue to deprive the African masses of what is due to them. An example are the agreements that have produced the unpopular Structural Adjustment Programmes (SAPs) and Poverty Reduction Papers (PRPs) of both the International Monetary Fund (IMF) and World Bank, which have further deepened Africa's developmental crisis as opposed to their envisaged goals(Shai, 2013). These agreements have provided a safe passage for African states to access foreign aid (either in the form of loans or grants), but with stifling conditions. This aidwas meant to help Africa address its political, economic and social problems. However, conditional aid has generally failed to emancipate Africa from the shackles of poverty and under-development. Hence, foreign aid has been abused by the West to eschew the policy content and direction of many of the African states towards a particular agenda. Often this agenda does not serve the interests of the local people. In post-apartheid South Africa, for example, the Mandela Administration was compelled by the Western capitalist donors to ditch the socialist orientated Reconstruction and Development Programme (RDP), as the macroeconomic policy framework of the country(Shai, 2009). As a result, in 1996 the ANC-led government switched the RDP in favour of the more liberal flavoured Growth, Employment, and Redistribution (GEAR) strategy to please the West and ultimately gain foreign investor confidence.

As in other African countries, South Africa's decision to conform to demands of the globalising economy has literally undermined the legitimate aspirations of the locals to receive adequate health care. Hence, South Africa's government was discouraged by the donor community from making huge investments to provide free social services such as adequate health care and decent education. Consequently, there is an evolving contradictory trend which has produced a crisis in public health services for the majority and decent private health services for the few, privileged minorities[12] suggest that human rights have been *commodified*in the new South Africa. Undoubtedly, skewed imbalances in spending in both private and public sectors has led to increased costs and adversely affected the distribution of services. This has further conscripted the delivery and guarantee of socioeconomic human rights of the people, as provided for in the Constitution (National Planning Commission, 2012). This article further argues that progress inthe recognition ofinternational human rights must transcend beyond the ratification of international treaties and regimes. In addition, more attention needs to be focused on the massive population of the African people that remain secluded from decent health care delivery as a result of prevailing neo-liberal imperatives that dictate national priorities. Thistherefore calls for a need to secure the acceptance of health and reproductive rights as critical components of human rights.

Clearly, as Evans (2000) also believes, the dominant discourse in the international literature is still staged by a liberal consensus on human rights. Thus the securitization of health in Africa can only be guaranteed when the physical health conditions of its people improve in ways that equally progress their socioeconomic conditions. This Afrocentric narrative perhaps presents a critical alternative argument on the discourse of health as a human right, which is often silenced in popular literature on public health and human rights. Surely, the right to health cannot remain an aspirational claim to human rights, as the liberal consensus school wants us to believe. However, the health consequences of globalisation brought about by the liberal, free market economy continues to dictate "health markets, technologies, science, drugs and the global organisation of business and finance", to the detriment of Africa(Evans, 2002, p. 213). Pointedly, the intervening features of today's globalised world persist in forms that limit Africa's capacity to secure the socioeconomic rights of its people especially in the area of health care. As Evans (2002, p. 213)concedes, "Like all other socioeconomic rights, the right to health cannot be realised unless the institutions of the current global order have the capacity to intervene in the activities of those who currently exercise their freedoms to increase their wealth, no matter the social conditions that others must suffer".To this end, (reproductive) health rights of women must be safeguarded through policy initiatives and adequate budgetary allocation. It is in this context that the World Population Report (2017) calls for the development of legislation on affirmative action, to ensure the prioritization of women's human rights, especially in Africa. Affordability and equality in health care support will continue to remain a huge problem for South Africa and indeed the rest of Africa, until critical reforms are introduced which prioritize Africa and holistically cater for the massive black

[12]The NDP 2030 reports that the country's public sector serves 83 percent (41.7 million) of the population compared to the private sector's 17 percent (8.3 million) (NPC, 2012).

population that remains in the periphery of health care delivery. Critical to this is the need to comprehensively address the socio-economic determinants that affect health care delivery in South Africa.

4. Conclusion and Policy Implications

In the final analysis, it is needless to mention that in the new democratic dispensation, South Africa has been able to steer the political transition successfully. This is due to the reasons outlined in this article; namely, that the South African government has not been able to revolutionizeits society, including the health sector. As such, human rights are not equally enjoyed by all, as envisaged in the Constitution. While institutionalized racism has been officially abolished in the early 1990s, its manifest challenges continue to persist to date, and remain evident in gaining access to health care. This limitation must be understood within the context that the majoritarian poor and downtrodden civilian populace are still subjected to poor conditions of health services in the public sector while the minority segment of the middle class and wealthy people (who are mostly white) have unparalleled access to decent health services in private facilities. To this end and no matter what the dictates of the international economic and political system project, it is quite important for South Africa to engage robustly on the mobilisation of both economic and human resources, to effectively address its health crisis and enforce equity in the provision of health services. This is a measure that will go a long way in ensuring that the South African state lives up to the people's rights, as enshrined in its Constitution. Lastly, the critical study of this article has revealed that South Africa's health system still faces challenges relating to financing inequalities, health literacy and *inter alia*. Equally, there have been improvements in terms of health infrastructure and access to primary health care. Therefore, based on the combination of the above, it is safe to state that South Africa's human rights record in the health sector is at crossroads, but more still needs to be done.

Based on the findings of this study, the following policy recommendations are proposed for consideration by decision makers:

- There is an urgent need for the establishment and tangible support for domestic pharmaceutical companies which will prioritise the needs and interests of the local masses, as compared to their commercially-driven and exploitative Western counterparts.
- While it is useful for South Africa to benchmark globally, it is also important to contextualise such in the African continent, with countries that have common political and socio-economic history with the former.
- Practical measures to contain the scourge of systemic corruption must be considered. This is because corruption eats away from budgets meant to benefit the masses for the benefit of the politically connected few.
- Government must re-prioritize health as a critical aspect of national well-being in terms of quality, budgeting, skills development, recruitment and retention.
- Tangibly criminalise the collusion between the political and business elites in view of gradually untangling democracy from the market.
- Decision makers must be flexible enough to embrace African-centred, emerging and alternative ways of viewing, thinking and acting.
- As a socio-economic right, health must be elevated to the status of civil and political rights that warrant international intervention whenever they are seriously abused.
- Finally, it is strategically and ideologically crucial for [South] African decision makers to transcend political populism in order to stay relevant to the transformation agenda of their society.

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Does Psychological Ownership of Knowledge Matter? Servant Leadership and Knowledge Hiding in Organizations: AProposed Framework

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Abstract: Knowledge hiding can have many adverse effects on organizational development, and it is consequently important to look at its various causes, and also the impact such activities haveon targets, perpetrators, and organizations as a whole. Various studies investigate the effects of knowledge hiding on organizations, and the employees surveyed in these studies have identified some of the possible drivers of knowledge hiding to be: a lack of employee trust; poor employee incentives; employee retaliation; employee insecurity; the intentional withholding of knowledge; the workplace environment; a craving for competitive advantage over fellow staff members; and also, feelings of psychological ownership. This paper investigates the influence of servant leadership on knowledge hiding, and proposes a mediating variable: that of the influence of psychological ownership of knowledge on the relationship between servant leadership and knowledge hiding attitudes in staff within organizations. A model is therefore proposed to achieve this, since it could be argued that increased servant leadership, through the psychological ownership of knowledge, can have a positive effect on staff attitudes towards knowledge hiding, and can also be used to encourage them to share knowledge to improve their overall performances, and the competitive advantages of organizations. The proposed model can also be used to assist managers in developing strategies for motivating staff to become more committed to the visions of organizations, in order to improve the performances of both themselves and their organizations overall.

Keywords: *Servant leadership, knowledge hiding, psychological ownership of knowledge, mediating, performance*

1. Introduction

Knowledge management has recently gained wide attention globally due to its impact on organizational competitiveness (Algere, Sengupta, & Lapiedra, 2011); (Emadzade, Mashayekhi, & Abdar, 2012). According to *The Business Dictionary* (2017), knowledge management is comprised of "strategies and processes designed to identify, capture, structure, value, leverage, and share an organization's intellectual assets to enhance its performance and competitiveness based on two critical activities: (1) capture and documentation of individual explicit and tacit knowledge, and (2) its dissemination within the organization". Knowledge management is defined by Davenport and Prusak (1998) as "a fluid mix of framed experience, values, contextual information and expert insights that provides a framework for evaluating and incorporating new experience and information". Furthermore, knowledge management is the creation, identification, collection, organizing, sharing, adaptation and use of internal knowledge and best practices. Attention is frequently drawn to the positive advantages organizations are able to gain from effective knowledge management (Liang, You, & Liu, 2010). Less attention has, however, been paid to the possible negative impactswhich knowledge hiding, or the withholding of knowledge, can have on companies (Peng, 2013); (Connelly, Zweig, Webster, & Trougakos, 2003).

Servant leadership has long been practiced in the African context, and is confirmed asbeing effective in communities where it has been adopted (Mibigi & Maree, 1995). Nelson (2003) promotes the model for servant leadership theory proposed by Patterson (2003), which focuses on how servant leaders perform within their organizations, to confirm whether this impacts positively on the performance of both staff and of organizations themselves. It is, hence, argued that servant leadership can exerta positive influenceon the overall performance of organizations. The intention of this paper is to extend the discussion on the subject of how a particular leadership style can assist staff to desist from knowledge hiding through the adoption of servant leadership. Using the premise of psychological ownership of knowledge as a mediating factor between knowledge hiding and servant leadership, a framework can be proposed and tested. This is important in being able to ascertain whether servant leadership truly encourages staff to abstain from knowledge hiding attitudes. Identifying psychological knowledge ownership in employees as a mediating mechanism could, in addition, improve upon a rational understanding of the influenceof servant leadership on employeeknowledge hiding behaviors, and also assist management in developing and embracing useful management interventions to improve their overall organizational performance.

2. Literature Review

Knowledge Hiding: Knowledge hiding by individuals with in organizations presents cause for concern due to its impact on both organizations, and also its intended targets. Knowledge hiding, as defined by Connelly et al. (2012), is the process of intentionally not sharing information, data or knowledge by perpetrators within organizations with their intended targets. This phenomenon has also been defined as releasing insubstantial information, or important information only as andwhen required (Lin & Huang, 2010).A review of available literature on the subject reveals that some of the drivers of knowledge hiding can be identified as:a lack of employee trust towards leaders and organizations; poor employee incentives; employee retaliation; employee insecurity; the intentional withholding of knowledge; and feelings of psychological ownership (Černe, Nerstad, Dysvik, & Škerlavaj, 2014); (Peng, 2013); (Connelly, Zweig, Webster, & Trougakos, 2012).Important to note, however, is that knowledge hiding is not influenced by only these factors.

In studies conducted by Černe et al. (2014), and Kilduff et al. (2010), on the antecedents for knowledge hiding in performance-based organizational cultures, their findings reveal the further drivers of knowledge hiding to be: a desire for competitive advantage over colleagues; obtaining maximum benefit from the withholding of knowledge; slavishly following the instructions of managers;a fear of being excluded;and also the possible negative effects on employee careers or work positions caused by the disclosure of knowledge. The issue of knowledge hiding behaviors remains prevalent within modern-day business environments, according to Connelly et al. (2012), who argue in a study survey conducted in the Unites States of America, that a substantial number of respondents admitted to having, at one time or another, engaged in such activities. Connelly et al.'s (2012) finding is supported by the result of a survey conducted by Peng (2013)in a working environment in China, which shows that 46 percent of respondents attested to having previously engaged in knowledge hiding. Thus, the influence of leadership on staff knowledge hiding, more importantly with regard to the practice of servant leadership, should be regarded as crucial, since it could well be used to assist in reducingacts of knowledge hiding within organizations.

Leadership: Leadership concerns the manner in which people are cared for by those leading them. There are many types of leadership theory, with diverse foci, although many of the attributes associated with the various leadership styles display similarities in both content and nature. Few differences exist, however, in what these leaders believe, and in their mission and vision, with some of them concentrating firston the overall mission of their organizations, towhich they then align their leadership style in guiding people, while others focus primarily on the feelings of the employees they manage, whichthey then align with the overall organizational vision.The primary motive of the various types of leaders remains to ensure that the people they manage are well-treated and mentored, and also given ample opportunity to develop in order to be effectiveincontributing to the overall goals of their organizations. Many authors discuss the servant leadership style of management with regard to how it can assist staff to be more open amongst themselves within organizations, andalso encourage themto share knowledge and information freely (Greenleaf, 1977); (Park, Yoon, Song, & Kim, 2013); (Hess, 2013); (Northouse, 2015); (Iarocci, 2017).

Servant Leadership: Servant leadership theory, according toGreenleaf (1977), is embodied bythe type of leader concerned with the wellbeing of staff before their own. Servant leaderstend to relate more to people at grassroots level, and align employee wellbeing with the overall vision of organizations. Thus, a servant leader is someone who ensures that their staff is well cared forthrough a shared vision, and through trust and collaboration aimed at the achievement of the overall organizational mission. Yukl (1998), furthermore, mentions that because increased organizational success generally indicates greater responsibility in managing others, the possibility exists for the growth and development of staff through servant leadership, because such leaders do what is best for organizations and not themselves. In addition, they constantly 78 engage with their followers to discuss their needs, and how these can best be met by assisting them appropriately. When trust is built, and there is mutual respect between managers and staff, employees generally feel more at liberty to communicate with their leaders concerning how they can also be served in various ways (Tufail et al., 2016).

Servant leadership has been practiced over the years in the USA, and its effects are proven to be positively related to enhanced organizational performance; for example, some Fortune 500 Companies, such as TD Industries, South West Airline and Synoves Financial, attest to having achieved success with its use over the years (McLaughlin, 2001). Moreover, servant leadership is concerned with community participation, where everyone is considered important, and where they are included in the decision-making processes of organizations without discrimination ("fear or favor"). Servant leadership has long been practiced in the African context, where it is referred to as "Ubuntu" (Mibigi & Maree, 1995), and this principle can be seen to have worked effectively for the various communities practicing it. In a study conducted by Nelson (2003), who interviewed South African leaders, whilst using as a model the servant leadership theory of Patterson (2003), which focuses on how servant leaders perform within their organizations, and whether this impacts positively on the performance of staff and companies, it isarguedthat servant leadership can have a positive effect on the overall performance of organizations. Nelson regards this as being especially prevalent where those required to relate to customers are staff at various organizational levels, who also need to be cared for and motivated to deliver on their various commitments, and the achievement of this through the servant leadership style adopted is therefore emphasized (Nelson, 2003).

3. Theoretical Framework- Servant Leadership and Knowledge Hiding

Yukl (1998) describes leadership as "the process by which a person exerts influence over others and inspires, motivates and directs their activities to help achieve group or organizational goals". Moreover, he indicates that the influence effective leaders exert on their followers can lead to their increased performance, and the achievement of overall organizational goals. Effective leadership is also regarded as useful in assisting organizations to achieve competitive advantage, and improve on their ethical behavior and fair dealings with staff (Park, Yoon, Song, & Kim, 2013); (Bass & Riggio, 2006).The application of the servant leadership style creates opportunities for followers to excel in communal environments where they willingly serve the needs of others(Melrose, 1995). Similarly, because of nature of the service such leaders bestow, this results in earning their followers' trust (Lee & Zemke, 1993),since they also strive to ensure that their followers grow both personally and professionally (Connelly, Zweig, Webster, & Trougakos, 2003). Servant leaders possess the following attributes: the ability to serve (Turner, 2000); (Batten, 1997); (Greenleaf, 1977), (Pollard, 1997); listening skills; empathy; awareness; persuasion; conceptualization; foresight; stewardship; commitment to individual growth; and community building (Greenleaf, 1998).

Hence, servant leaders listen to their followers, encourage them, praise them, coach and mentor them, and also point them in the right direction when they deviate from the goals agreed upon (Blanchard, 1997). These leaders are constantly evaluating the work environment to ensure that their followers' needs are successfully beingmet; anddo not believe their staffneed to be micro-managed in order to perform, but rather that, bycreating the right values and culture, they will perform beyond the expectations set. Thus, with the right attitude and behavior from leaders, followers can be motivated to achieve higher work performance (Hess, 2013).Few empirical studies existon the relationship between servant leadership and knowledge hiding. As a result of the limited resources linking these two areas together, what literature is available suggests that the raising of both staff morale and ethical levels within organizations can effectively be achieved through servant leadership, whereby it is possible to ensure that all role-playersareincluded, without discrimination, during the decision-making process (Zeigler-Hill, Southard, Archer, & Donohoe, 2013).Moreover, servant leaders care about the needs of their followers, and also exhibit trust; and these attributes exert a positive influence on the ability of followers to share knowledge without fear of recrimination, which can lead to the achievement of common goals through improved organizational performance (Russell & Stone, 2002).

Contrarily, knowledge hiding does not encourage honesty, care for others, good ethical behavior or collaboration within organizations (Černe, Nerstad, Dysvik, & Škerlavaj, 2014); (Peng, 2013); (Connelly, Zweig, Webster, & Trougakos, 2012); (Lin & Huang, 2010), and has a negative impact on both individual and organizational performances, and on the achievement of competitive advantage. Thus, it can be argued that servant leadersdonot encourage their followers to engage in knowledge hiding activities, which can hinder the progress and performance of organizations. As a result of the positive correlation between knowledge sharing and servant leadership, this style of leadership could thencebe used as a catalyst in assisting to reduce tendenciesamongst employeestowards knowledge hiding attitudes, and, in view of the foregoing empirical evidence from literature and theory, it is consequently hypothesized (H1) that: "Increased servant leadership in organizations will mitigate knowledge hiding".

Servant Leadership and Psychological Ownership of Knowledge: The psychological ownership of knowledge, according to Pickford (2016), is "the feeling of possession over a target, an object, concept, organization or other person that may or may not be supported by formal ownership". Theseauthors further postulate that the psychological ownership of knowledge refers toknowledge not only as an isolatedobject, but also involves its owners. Servant leaders are those who create opportunities for their followers to excel by encouraging trust, communal relationships, and good ethical behavior in order for them to achieve an organization's desired goals, and should also implement effective approaches for achieving the collective goals of both organizations and their employees (Northouse, 2015). Servant leaders bring meaning, prosperity and contentment to the workplace, which: enables a better customer experience; inspires greater innovation; instils trust in employees; and attracts the best available talent to organizations (Iarocci, 2017). In addition, the positive impact servant leadership areobserved to have on organizational performance could draw investors to those companies practicing this leadership style. While not much research has been carried out on the relationship between servant leadership and psychological ownership, the available literature suggests that servant leadership can havea positive overall impact on staff performance, since suchleadersenact trust, care for their followers, and empathize with and provide services for them, all of which in stills confidence by encouraging them to operate at their best (Hess, 2013).

Psychological ownership concerns the attitudes employees adopt towards the disclosure of information or data, and therefore also towardsknowledge sharing in order for them to remain competitive within organizations. Such attitudes can, however, lead to distrust and consequently hinder productivity (Černe, Nerstad, Dysvik, & Škerlavaj, 2014); (Connelly, Zweig, Webster, & Trougakos, 2012); (Peng, 2013); (Li, Yuan, Ning, & Li-Ying, 2015). In a study conducted by Knipfer et al. (2015), the authors argue that any leader displaying negative behavior towards their followers there by engages in selfish attitudes; and that where leaders do not have the best interests of their employees at heart, this can result in encouraging knowledge hiding behavior within organizations. The effects of knowledge hiding behavior within organizations still lacks much in terms of empirical study, however, and it therefore remains an area in need of further research (Černe, Nerstad, Dysvik, & Škerlavaj, 2014); (Connelly & Kelloway, 2003); (Connelly, Zweig, Webster, & Trougakos, 2012); (Peng, 2013); (Webster, et al., 2008). In performance-based organizations, there is a tendency for staff to engage in knowledge hiding in order for them to remain competitive (Kilduff, Elfenbein, & Staw, 2010); (Černe, Nerstad, Dysvik, & Škerlavaj, 2014). Employees thus engage in knowledge hiding due to issues associated with ownership, and tend to view knowledge as an asset requiring disproportionate protection, and are hence unwillingto lose it, which consequently prevents them from sharing it with others (Peng, 2013).

Pierce et al. (2003), in their study, indicate that psychological ownership sometimes becomes difficult to understand, since it exerts both positive and negative influences within organizations, which makes it problematic to determine when either effect is manifesting itself. The notion is supported inliterature (Jarvenpaa & Staples, 2001); (Constant, Kiesler, & Sproull, 1994) that psychological ownership has both a positive correlation with, and a negative effect on, knowledge sharing (Li, Yuan, Ning, & Li-Ying, 2015), and can also exert a negative influence through encouraging knowledge hiding (Peng, 2013).Servant leadership is typifiedby leaderswho encourage individual and organizational performance, innovation, shared vision and trust, and who promote the achievement of the collective goals of organizations. Thus, as a result of the foregoing empirical evidence and theories, it is hypothesized (H2) that: "Higher levels of servant leadership will reduce psychological knowledge based ownership attitudes in an organization."

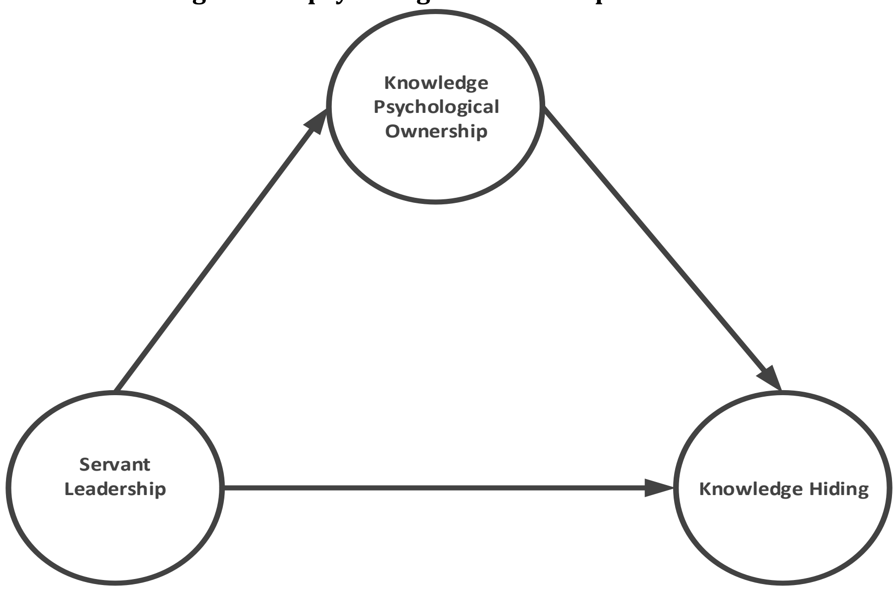
Psychological Ownership of Knowledge as a Mediating Factor: Psychologically-based knowledge ownership, according to Pickford et al.(2016), is "the feeling of possession over a target, an object, concept, organization or other person, that may or may not be supported by formal ownership". Knowledge hiding is better explained by psychological ownership theory, since psychologically-based ownership develops in individuals due to: the time they invest in acquiring knowledge; the level of control they have on knowledge hiding targets; a fear of losing control of knowledge ownership; and also possible loss of competitive advantage over workplace rivals (Pierce, Kostova, & Dirks, 2003). The inference can therefore bedrawn that psychological ownership alsohas a positive correlation with knowledge hiding. Staff with strong knowledge bases possess greater bargaining power within organizations, due to the relevance of their experience in helping companiesachieve theirgoals (Bacharach & Lawler, 1980); thisallows them tomore easily dictate the level of remuneration they receive for performing work, and also assists them in being more influential within organizations.

Thus, employees tend to develop strong levels of knowledge-based psychological ownership arising from its associated attributes; although it may also be inferred that staff with strong knowledge-based psychological ownership probably engage in knowledge hiding more often than those with weaker knowledge-based psychological ownership. In a study conducted by Li et al.(2015), however, it is argued that psychological ownership couldfacilitate in improving the positive relationship between staff commitment and their willingness to freely share knowledge within organizations. Servant leaders can play a vital role ininfluencing the attitudes of their followers towards knowledge-based psychological ownership using, for example: an open and participatory managerial style (Doh, J. & Quigley, N., 2014); profit-sharing; employee participation in decision-making; access to relevant information (Chi & Han, 2008); ensuring employee job satisfaction (Ozler, Yilmaz, & Ozler, 2008); and boosting of staff morale and productivity through strong leadership (Bernhard & O'Driscoll, 2011). All of these initiatives can exercise a positive influence on employee attitudes towards psychological ownership. Hypothesized (H3) from the foregoing, therefore, is that: "Knowledge-based psychological ownership will mediate the servant leadership and knowledge hiding relationship".

4. Conceptual Framework

It is argued that staff with higher levels of psychological ownership are more likely to engage in knowledge hiding behaviors, whilst staff with lower psychological ownership levels will probably not partake in this activity to such a great degree, whichis in alignment with the findings of studies already conducted by various scholars (Černe, Nerstad, Dysvik, & Škerlavaj, 2014); (Peng, 2013); (Connelly, Zweig, Webster, & Trougakos, 2012); (Lin & Huang, 2010).In addition, it is proposed that servant leadership canplay a vital role in ensuring that staff avoidengaging in knowledge hiding behaviors by: building trust within teams; encouraging collaboration; creating opportunities for employees to excel; communal relationships; and the promotion of good ethical staff behavior, whereby the desired goalsof both employees and organizations can be achieved. Proposed in this paper, therefore, and based on the literature reviewed and theories encountered, is a conceptual framework (Figure 1), which illustrates the mediating influence of knowledge-based psychological ownership on the servant leadership and knowledge hiding relationship. The primary motive of servant leaders is to ensure both the personal and professional development of employees in attempting to create more servant leaders amongst staff, rather than their simply remaining followers (Duhigg, 2016).

Figure 1: Conceptual framework of the influence of servant leadership on knowledge hiding and the role of knowledge-based psychological ownership



5. Conclusion

Based on the foregoing, this paper proposes a theoretical framework drawn fromboth the theoretical and empiricalevidenceavailable in literatureregarding the influence of servant leadership on knowledge hiding, and the mediating influenceexertedby psychological knowledge-basedownership. Once tested and validated, this framework is proposed as contributing to the knowledge management literature. The framework could, furthermore, assist in creating awareness concerning knowledge hiding and its impactonorganizations, especially where this is considered to havea negative effect on organizational performance.Utilization of theproposed modelcould, moreover,provide furtherinsightson the role played by servant leadership in minimizing knowledge hiding attitudes exhibited by staff, and on psychological knowledge-based ownership as a mediating factor in understanding how servant leadership can discourage staff knowledge hiding, and also be used to reduce its negative effects. The model could, in addition, assist managers to develop strategies for motivating staff to become more committed to achieving the vision of companies, in order to improve both their individual performance and that of organizations overall.

Furthermore, revealed is that staff with higher levels of psychological ownership are more likely to engage in knowledge hiding, whilst staff with lower psychological ownership levels probably do not partake as much in suchactivities. Servant leadership couldtherefore play a vital role, through building trust, collaboration, opportunity creation, and the promotion of good ethical behavior, to ensure that employees avoid engaging in knowledge hiding altogether. Although this paper remains limited to highlighting the primarily positive effects of servant leadership, and does not consider other possible leadership styles, future studies could also be conducted to test both the positive and negative influences of such styles, along with mediating instrumentsother thanthat of psychological ownershipdiscussed here.

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The Cognitive and Psychological Bias in Investment Decision-Making Behavior: (Evidence From Indonesian Investor's Behavior)

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Abstract*:* The purposes of this research were to understand and analyze the behavior of the psychological bias experienced by investors in making investment decisions. Psychological bias experienced by investors led to wrong decision making and fatal losses. This research used qualitative interpretive phenomenology method to understand the phenomenon of decision making based on the perspective of investors. The result showed that: (1) The phenomenon of cognitive bias and psychological bias behavior occur in nearly all informants, (2) The Psychology bias could be divided by two types, namely: expected emotion bias behavior and immediate emotion bias behavior, (3) experience, knowledge of the capital markets and the management of good emotions determine the level of psychological stability and reduce bias behavior that could be raising the return.

Keyword: *Cognitive bias, Psychological bias, Decision Making Behavior, Qualitative*

1. Introduction

More investment decision making is influenced by investors' psychological factors than by companies fundamental or technical analysis. Ady, Salim, & Susanto, (2010) indicates that dividend policy was not the dominant reason for investment decision making. Many studies have indicated that results analysis or psychological investors are very set against the accuracy of decisions taken (Loewenstein, 2000); (Ady, Sudarma, Salim, & Aisyah, 2013) especially active individual investors who trade short-term stocks. The results of decisions are influenced more by the conditions and situations in which the decisions are taken.Behavioral finance is the application of psychology to finance, which has become an especially hot topic since the onset of the tech stock bubble in March 2000 (Pompian, 2006). Behavioral finance is an investigative study that attempts to explain market inefficiency using theories of psychology.One example of investor bias behavior in investment is overconfidence. Cunha (2015) showed that the powerful Investors in club setting were more overconfident, Showed greater better-than-average perceptions, and were more prone illusion of control and self-attribution than investors in the powerless position. Mitroi(2014)showed that investors are not as logical and efficient as we might think. The paper shows that behavioral biases are detrimental to the investment return of individual investor portfolios. As a direct influence of behavioral biases, the intuitive correlation between risk and return does not hold. Low-risk investments have the highest returns along with all dimensions of the market. The practical findings contrast the principles of efficient markets – the high risk is not correlated with the high expected return and low risk/safe investments have highest investment returns.Ady & Mulyaningtyas, (2017)shows that if viewed from the theory of behavioral finance, efficient market hypothesis still need to be questioned because its assumption which assume investor always acting rationally, whereas in fact investor often behave irrational including in transactions of shares, although according to the result of in-depth interview to investor in capital market of Indonesia, many investors earn a return by using only technical analysis and historical data, indicating a form of weakly efficient market, with investors who invest more because of emotions.

Loewenstein(2000) divided the emotions of investors when undertaking stock transactions into two parts, namely expected emotion and immediate emotion. Expected emotion is the emotion that is anticipated to occur in investors when they are planning to buy or sell stocks. For example, when an investor buys a stock, he can imagine feeling happy when the prices of the stock bought increase as expected; similarly, he can imagine the sense of disappointment that he will suffer when the stock price falls unexpectedly. Immediate emotion is the emotion experienced directly by the investors. This emotion occurs with the emergence of news, both pleasant and unpleasant, causing panic to make purchases or sales. Both types of emotion make investors tend to behave in a biased manner, which results in them becoming unstable and acting excessively in response to an event. This study has attempted to capture the behavior of investors in response to various biases that occur when they face a wide range of events. Emotional instability causes investors to act irrational, resulting in un-optimum return, even inefficient portfolio selection, which ultimately results in not-optimal returns, even losses (Ady et al., 2013); (Han, Pereira, Santos, & Lenaerts, 2013) this led to the curiosity of researchers to explore the behavior of investors in investing, especially behavior about cognitive and psychological bias as long as they transact shares. Research on the behavior of cognitive and psychological bias as long as the researcher's knowledge was rare, if any until now more positivistic studied using quantitative methods, so the needed of that more in-depth exploration of cognitive and psychological bias behavior can provide a more real and deep picture. The purpose of this study was to gain an understanding of the behavioral form of cognitive and psychological bias, as well as the consequences of such behavior on the level of investor profits.

2. Literature Review

Behavioral Finance: Behavioral finance is the application of psychology to finance, which has become an especially hot topic since the onset of the tech stock bubble in March 2000 (Pompian, 2006). Behavioral finance is an investigative study that attempts to explain market inefficiency using theories of psychology. It is observed that people often make mistakes and use assumptions that are not logical when dealing with financial matters. Behavioral finance has become a new paradigm in finance, supplementing the standard theory of finance by introducing aspects of behavior into decision making. There are two topics in behavioral finance, including Behavioral Finance Micro (BFMI), which test the behavior or bias of the individual investors that distinguishes them from rational individuals as in classical economic theory. The other is Behavioral Finance, Macro (BFMA), which detects and describe anomaly in the efficient market hypothesis that described in behavior model (Jahanzeb & Muneer, 2012). This study is focused on BFMI that the study of the behavior of individual investors in order to identify the psychological bias and cognitive bias as well as investigating the behavior of asset allocation so that it can suppress biases in the investment process.

Expected Emotion: Expected emotion is the emotion or feelings that are expected to happen after the result of the decision taken has materialized but not at the time of decision making (Pompian, 2006). As an example, potential investors who will buy stocks can already imagine the feeling of disappointment if they had purchased stocks that declined and vice versa. Expected emotion can be prepared before the decision making, such as the mental readiness of a trader to lose his or her assets in the stock market if the stock price falls.

Immediate Emotion: Immediate emotion is the emotion experienced by investors or traders at the time of decision making. Immediate emotion is divided into two categories, namely (Pompian, 2006): a) immediate integral emotion, such as the expected emotion that comes from thoughts based on the consequences of a decision but occurs when the decision making is finished, so it causes a variety of biased behaviors as well as cognitive bias, and b) incidental emotion, which is also experienced at the time of decision making but is sourced from an objective situation that does not relate to the decisions taken. Mood misattribution often causes the occurrence of incidental emotion. The environmental factors that cause mood attribution are: a) the weather Hirshleifer & Shumway (2003), Cao & Wei (2005), Hu (2008), Yuksel & Yuksel (2009); b) the biological cycle of the body; c) sleep disorders; d) the lunar phase; and e) social relationships (Muneer et al., 2016).

The range of psychological and cognitive biases is as follows:

- *Overconfidence bias* is a belief that is not based on intuition, adjustment, or a person's cognitive ability. A survey has shown that people overestimate the capabilities of predictions and the truth of information and are likely to have difficulties in estimating the likelihood of occurrences. That is, people think they are smarter and have better information than the actuality (Daniel et al. in (Thaler, 2005); (Pompian, 2006). Overconfidence could affect investment decisions. Overconfident investors not only take wrong decision for themselves but also exert a strong effect on the overall market. Overconfident investors are likely to overtrade as a result of the belief that they possess better knowledge than others. Investors' overconfidence due to ignorance, passiveness, and a lack of understanding of the performance of the investment company might cause them to underestimate the history against the risks, resulting in a portfolio that cannot expect a bad performance.Jannah & Ady(2017)shows that research conducted on young investors in Indonesia shows an overconfidence that has an effect on investment decision making.

- *Cognitive dissonance bias*, mental or psychological discomfort, is experienced by a person when there is a discrepancy between newly obtained information and the previous understanding; it is also known as an imbalance when cognitive contradictions occur. Cognitive dissonance could lead to investors holding shares with losses that should be sold because they want to avoid the heartache associated with the recognition that they have already made a bad decision. Cognitive dissonance could lead investors to continue to invest in the securities owned despite dropping prices (average down) and could cause investors to be "behaving ducks" (herding behavior).
- *Familiarity*. When confronted by a new phenomenon that is not consistent with the classification that has been built, people still classify and represent it with information that is already owned. This case gives them a fast response to help them to survive. Sometimes, new stimuli that are similar are considered to be representative of the familiar elements or classification already formed, despite being drastically different, so this reflex classification could fool people into creating a sense of wrongness and being biased against all future interactions with the elements (Pompian, 2006).
- *Availability bias* is a cognitive bias whereby people tend to make an estimation of possible outcomes based on how close or familiar results are that occur in our lives. There are four different availability biases, namely: a) retrievability, in which the idea is to take the easiest and the most credible option; b) categorization, in which investors choose investments based on a list of categories that are easy to remember; c) a narrow range of experience, whereby investors will tend to choose investments that fit in with their life experiences; and d) resonance, in which investors tend to choose investments based on the matching of personality or characteristics that relate to their behavior.
- *Self-attribution bias* is the tendency of individuals to ascribe the success experienced to internal factors while the failures experienced are due to external factors. This bias causes investors a) to take a bigger risk after a long period of success that causes excessive self-confidence (overconfidence); b) to trade too often (overtrading) with high risk; c) to hear just what they want to hear; and d) to hold a portfolio that is under diversified, namely a simple diversified portfolio.
- *Loss aversion bias* is a type of emotional bias whereby people feel the urge to avoid greater loss than benefit. According to behavior experts, the pain caused by losses is far greater than the fun resulting from being lucky. Many experiments by Thaler and others have shown that two positive experiences are needed to overcome one negative one (Hagstrom, 2010). Investors who deny loss-making become excessively conservative, which could also affect them directly by causing them to hold onto bad shares and sell shares irrationally.

3. Methodology

Phenomenology as A Method of Understanding the Cognitive and Psychological Behavior of Investors: The paradigm that was appropriate to understand and explore the biased behavior of investors was the interpretive paradigm. The interpretive paradigm places more emphasis on one's meaning and interpretation of a symbol (Creswell, 2007). The purpose of the research in this paradigm was to understand and explore to then interpreted the meaning, not to explained and predicted a relationship as in quantitative research. In general, qualitative research aimed to understand the phenomenon of what was experienced, why he experienced it and how he experienced it.

Site, Informant, and Data Collection: The research site was an individual investor who traded shares on the Indonesia Stock Exchange. The reason of site selection was individual investors who traded stocks with online trading so that emotional upheaval will be perceived by the investor himself. Research that used the behavior of individual investors as informants in non-positivistic studies was relatively small, and there was relatively little research exploring the behavior of cognitive and psychological bias on individual investors. The informant's search was done by using sine qua non-method which selects the informant by looking at the qualification that has been determined. Informant was an active investor who had invested in shares for at least 5 years and not part of the company (insider). In-depth interviews took place in a place agreed by the informant within a period of six months. The process of collecting data in an interactive way, with a duration of 1 to 2 hours depending on the conditions during the interview. To get key informants who meet the criteria, the researchers obtained information from Indonesian Stock Exchange, next, a search for informants was conducted using the snowball technique. In-depth Interviews were conducted three to five times of in-depth interviews until they reached saturated depends on the subjectivity of the researcher and the research issues that they intended to investigate (Bogdan & Biklen, 2003; Glaser & Strauss, 1967, 1967; Egon G Guba & Lincoln, 2004).

In qualitative research it is not intended to draw conclusions in general but to explore the experience of each informant that is unique, so that the importance of qualitative research is not the size of the sample, but the depth and uniqueness of the perception and experience of each informant (differentiate the large samples of the quantitative research for the sake of generalization). In accordance with the principle of phenomenological research, the researcher must be able to dig deep with information sources as much as possible. This method also requires the participation of researchers directly on the subject in the field, therefore researchers were not enough just by interview, but become a key instrument in this study. According to Guba & Lincoln (1994), the researcher benefits as a key instrument because of its responsive and adaptable nature. Researchers as instruments will be able to emphasize holistic emphasis, develop knowledge base expansion, processual emulate, and have opportunities to classify and summarize, and can take advantage of opportunities to investigate special or peculiar responses. Data collection in this research was done by in depth-interview, observation, and documentation. The informants in this study are as follows:

Table 1: Demographic Data The Main Informant

No	Name	Age	Sex	Education	Marital Status
1.	I-1	48	M	S2	Married
2.	I-2	37	M	S2	Married
3.	I-3	55	M	S1	Married
4.	I-4	21	M	High School	Unmarried
5.	I-5	43	F	High School	Married
6.	I-6	44	F	S2	Married

Source: Processed data, 2017

The demographics of the informants are as follows. The 6 informants were investors who already have at least 5 years' experience: 4 men and 2 women, Their aged between 21 and 55 years. Their buying and selling behaviors were observed by conducting in-depth interviews (Table 1). Their buying and selling behavior was observed and the in-depth interview was conducted.

Data Analysis Technique: The methods of data analysis followed the phenomenological method of Moustakas (Moustakas, 1994). To support the validity of the data, validity, and reliability qualitative tests were performed, namely relevance or transferability, credibility or trustworthiness, authenticity or confirmability, and dependability (Shenton, 2004); Daymon & Holloway, 2007).Transferability refers to external validity. The transferability criteria derived from the results of this research are related to the academic literature in the context of investor behavior. Credibility/trustworthiness in this research was obtained by triangulation, member checking and external audit, which matches or integrates various types of data obtained from the in-depth interview, observation, and documentation. There were several kinds of triangulation conducted in this research namely: (1) triangulation of data, triangulation of data was done by two ways, that was between time data for each site and between site. Between time Data was done by matching the verbal expression obtained from the in-depth interview with each informant from time to time to produce consistent information. To conduct inter-site triangulation, the researcher combines and analyzes the information obtained from the six informants to find a match for emerging themes. (2) theory triangulation, triangulation theory was done by comparing the results obtained in the field with existing theory. (3) triangulation of data retrieval technique. Triangulation technique was done by aligning the results obtained from data collection techniques by way of in-depth interview, with observation and documentation support.

Member Checking. Member Checking conducted in this research was done by showing data or information, including interpretation of the researcher, written in the form of contact summary sheet or interview transcript to an informant to be commented, approved, and the need for additional information which was deemed necessary. Subsequent comments, reactions, reductions or additions were used to revise the contact summary sheet. The end result of this study was obtained after the approval of the informants.The external audit was asking people outside the research (those who were not involved in the entire research process) with an expert, a lecturer, peers, and so on to produce final conclusions about the observed phenomenon.

Authenticity or confirmability. Confirmability/authenticity refers to the level of research results could be confirmed by others(Emzir, 2010). Authenticity could be achieved when the research was conducted fairly and far from the bias of the researcher or called objectivity. Researchers bias attempted to minimize with epoche and bracketing. Bracketing was done by explicitly demonstrating that the resulting themes were obtained based on the statements of the informants from the interviews.Dependability, as (Guba & Lincoln, 2004)suggested that the term reliability in quantitative research means dependability in qualitative research. Shenton, (2004) states that reliability could be achieved by detailed reporting, which allows the next researcher to repeat the work, which, whenever possible, in the sameresults. The qualitative reliability aspect refers to the clarity of consistent analysis procedures and could be used by subsequent researchers.

4. Findings and Discussion

Expected Emotion: The results showed that nearly all the investors experienced a psychological bias in transacting or investing. These biases arose as a result of the existence of emotions that accompanied their stock buying and selling behavior. Loewenstein (Loewenstein, 2000) divided the emotions of investors when undertaking stock transactions into two parts, namely *expected emotion* (an emotion that is anticipated to occur) and *immediate emotion*. Expected emotion is the emotion felt by investors when about to buy or sell shares. For example, investors can already imagine the feeling of happiness if the stock price increases, although the current purchasing decision has not yet been implemented and the investor can well imagine the pain that will be experienced if the stock price decreases. Expected emotion will progressively decrease with increasing investor education and experience, especially for investors who want to learn. Expected emotion is the emotion that investors would expect when buying/selling stocks. Expected emotion occurs before the decision is made (Loewenstein, 2000). An example of an investor can imagine the pleasure he gets if the stock he buys has risen in price, or he can also imagine the sadness that will be experienced if the purchased share decreases in price. The high degree of expected emotion depends on how accurately the investor's analysis takes on the decision. The accuracy of this stock analysis is often internalized by behavioral biases such as the following:

A. Overconfidence is a belief that is not based on intuition, adjustment, or cognitive ability. The concept of overconfidence is based on cognitive psychological experiments and surveys in which someone tends to overestimate the capabilities of the predictions and the truth of the information belonging to them (Pompian, 2006). Some studies have shown that investors are likely to be overconfidence regarding their investment ability, particularly investors who make very simple predictions. This overconfidence type is called prediction overconfidence. The implication of this behavior is that investors will underestimate the risks to their portfolio, so they take decisions that involve excessive risk. They often take the wrong decision. For I-1, Overconfidence is someone who makes decisions and is often wrong or not in accordance with his predictions. For I-1, if someone is confident with the decision he takes by doing some fundamental and technical analysis and the decision is taken that is true to get the maximum return, then this is not overconfidence. As he experienced in stock transactions, I-1 has always been considered overconfidence due to overconfidence without regard to the analysis of some stock analysts. For other investors who are friends of I-1, then I-1 will be considered overconfidence. But for I-1 alone, as long as the decision is correct, it is not an overconfidence, but a reflection of the learning outcomes and financial knowledge it has. The I-1, which is an investor with an S2 education in the capital market field, has the knowledge that can be used to equip it in a stock transaction; on the other hand, twenty years of experience as a stock investor simply provides a valuable experience in various economic situations. Some of the answers from informants showing their overconfidence are:

> "People often says that I was too overconfidence. Well, sometimes, others who could only judge ourselves. Because people say, this right has not been correct, But, all of this was rational, and it was in my experience, ma'am, 80% was correct. Then I bit have made it rather conservative with an estimation. My prediction it was until (the stock price of ASTRA) 48 thousand, even reach 50 thousand, that didn't mean overconfidence, but for investors, I calculated that had said too confident, I was the one that is not too fond of online information, according to friends, it was too confident because it felt unnecessary information. Because I felt knowing their knowledge. Once again, though

> it was not 100% correct, so for me it could judge other people, I was considered overconfidence. For me, if that was correct, it wasn't. People were said to be overconfident, it means to me he was overconfident and he often damages, but if he is confident and he is fortunate, often profit rather than loss, in my opinion, it's not going in there. Because of the principle of overconfidence was a person said to be overconfidence if he trades and often trades, he is often wrong. He's against the market, he glorified his science, but it was wrong, the count was wrong. That's what, in my opinion, seems to be overconfidence. Usually, the characteristic of overconfidence is, that person does what is called an overreaction."(I-1. Wc. Ov1).

Overconfidence causes investors to feel no need to conduct further in-depth analysis so that investment decisions aren't maximized and the bias resulting in losses is overcome. Almost all investors experience overconfidence at various levels. The higher the level of overconfidence of an investor, the more frequent prediction errors, and ending to a loss. An overconfidence investor will tend to over-transact, feeling he can beat the market. This is shown on I-5 which is a day trader. Every day I-5 trading 5-10 times. With an average return rate of 30-40% per year with more than twenty years of trading experience, it shows the average performance level of its portfolio as the 21-year-old I-4 and has far less experience. Not to mention the psychological pressure is borne by the I-5 in stock trading that should monitor stocks during trading that would cause its own stress.The findings of the existence of overconfidence in the behavior of investors are the same as the findings of Yates (Yates, 1991), (De Bondt, 1998), (Campbell, Goodie, & Foster, 2004), (Ady et al., 2013), and (Ady, 2015).

B. Representativeness bias is a cognitive bias that people tend to classify objects according to what they awaken in their mind. When encountering a new phenomenon that is not consistent with the classification that was made, they still classify it according to their previous thoughts, define the categories, and form the basis of the notion of the new phenomenon(Pompian, 2006). This is a way to process new information by combining a reflex with an understanding of the relevant past experiences. Sometimes, a similar new stimulus is considered as being representative of the familiar elements of the classification that has already been formed, though, in reality, it is different, so the classification of this reflex could be deceptive, creating a sense of a new element that has always existed and caused a bias against all future interactions with the element (Pompian, 2006). Some investors from this research experience representativeness, such as I-3 which consider a big company, its shares must be good. They can not distinguish between a good company and a good stock. Good company is not necessarily good stock. Good company is a nice big company, owned by the government, has a big building, often advertised on television. But they do not see the fundamental and technical analysis. What they capture is a big company, then they buy the stock of the company. Good stock is the stock of a company that is currently good to buy is marked with a lower intrinsic value than the current market price. Or with the term "undervalue". Investors buy stocks in the hope that stock prices will rise in the future, and generally, share prices will move in line with their intrinsic value. If the intrinsic value of a stock is now below market value, then the stock price will soon fall because the stock is no longer undervalued, but "overvalue". And buying overvalued stocks will not generate any potential profits for those shareholders.

Representativeness is also associated with how familiar we are with the company. In general large companies are very familiar with the community so that stock selection is still concerned with how familiar the company is to investors, such as the results of interviews with the following I-1:

> "Some psychological aspects often appear in the behavior of investors was what we knew in representativeness bias, that was bias tended to pick great stocks, if the shares of Bank Century were wholly good if the shares of Gudang Garam was wholly good. Some types of investors, particular investors of pension funds, many of them were affected. They just wanted big company stocks. It was representativeness bias. If his company was definitely big, is nice. Or also people buy familiar stocks, stocks that he knew. He does not want to buy stocks he is not familiar with. Oh, he knew shares of *Gudang Garam* are known, Astra he knew, he chose those stocks. It had to do with that representativeness."(I-1. Wc. Rp1).

Investors should be able to tell the difference between a good company and a good stock. A good company is a company that has a good image, typically a government-owned company has a large building, and is already well-known and familiar to the community. This finding is in accordance with Shefrin (Shefrin, 2001), (Shefrin, 2005), (Lucey & Dowling, 2005), and (Ady, 2015). Meanwhile, a good stock is a company that has a good stock of current, that is, undervalued stocks. Investors who have biased behavioral representativeness tend to diversify their stocks moderately and choose a good company rather than good stocks, so they are likely to suffer losses this is also in line with the results of Badshah et al research (Badshah, Irshad, & Hakam, 2016)that also shows the representativeness bias affect the investors decision making.

C. Loss aversion is a psychological bias (emotional) whereby generally people feel a greater urge to avoid loss than gain benefit. A number of studies on loss aversion have shown that the probability of experiencing loss psychologically has twice the strength of the motivation of the probability of gaining the benefit of the same amount (Novemsky & Kahneman, 2005); (Pompian, 2006).Loss aversion bias could make investors avoid risks when evaluating the possibility of profits because avoiding losses is considered to be more important than gaining profits. When investments start to generate profits, loss-averse individuals will quickly lock in their profits and sell their shares because of their worries that the market will reverse course and take their profit. This is a problem of releasing stocks prematurely to protect the potential profit. In general, loss aversion causes investors to hold losing stocks and sell profitable stocks, making their return portfolio sub-optimal. A manager with a higher degree of loss aversion tends to take less risk, so the return obtained is also lower (Bodnaruk & Simonov, 2016). Experience of the following I-2 shows the presence of loss aversion behavior that is not realized. Here's an excerpt from an interview with I-2 when asked about the loss he has experienced:

> "Well if selling decision until now I never experience panic selling. I am indeed a trader, but I never get cut loss. After the goods down, I let it there. I never suffer loss. If I suffer loss, I never gain on realization. Yes, I have my stuff now that I let it impinged. I let it. For example, my cases, I've told you the story that in the past the trader of Cibinong's cement, ma'am, the prices were 275, I bought that time with the price 600, the price then go up, I got many profits, went up to 800, ha 1200, declined again until 300 rupiah. Finally, I saved it". (Wc. I-2. Ps6. p3).

Loss aversion causes investors to hold a loser's stock for years, because not wanting to lose, but he is not aware of the magnitude of the opportunity cost sacrificed by letting hold the wrong stock for a very long time. If the investor sells the stock then the chances of getting a better stock will be gained rather than holding stocks with high uncertainty to rise, especially for penny stocks.

D. Cognitive dissonance is a psychological bias in the form of the mental/psychological discomfort experienced by a person when there is new information mismatch in the sense that it is believed. Cognition in psychology represents attitudes, emotions, beliefs and values, and dissonance. Cognitive dissonance is an imbalance when cognitive contradictions occur.Cognitive dissonance could lead to investors: (1) holding a losing stock that should be sold, because they want to avoid the heartache associated with the recognition that they have made bad decisions; (2) continuing to invest in the securities owned despite their falling prices (average down) to confirm their earlier decision to invest in securities without adjusting the objective; and (3) behaving like ducks (herding behavior), whereby people avoid information that could thwart their earlier decision so that too much information is filtered, causing investors to listen to a shared decision and cause an abundance of information to take over their decisions (Pompian, 2006). Here are the results of interviews with I-2 that show the existence of cognitive dissonance behavior on stock investors:

> "Well, if selling decision, until now I never experience panic selling. I am indeed a trader, but I never get cut loss. After the stocks down, I let it there. I never suffer a loss. If I suffer loss, I never gain on realization. Yes, I have my stuff now that I let it impinged. I let it. For example, my cases, I've told you that in the past the trader of Cibinong's cement, ma'am, the prices were 275, I bought that time with the price 600, the price up....up.., I got many profits, went up to 800, 1200, declined again until 300 rupiah. Finally, I saved it". (Wc. I-2. Ps6. p3).

> "For example this, oh if I was lost, I suffer a loss, said that the stock price was 8000, I got in with 8000. Oh, it turned out, went down till 7800, went down 200, held down again to 7600, well, I took it again. I sold it when the prices were already 7800. It was finally a match. The first one I just let it. It

was the same, right? The stock was the same. I can get it. It is like this, I bought it in 8000. Down to 7800, down again to 7600, talking fundamentals, oh this turned out to be too cheap, I did. Let's say I bought 1000 sheets, I priced at 7600, I bought 1000 sheets more. The price of 7600, at a time when the price went up to 7800, I sold 1000 sheets. If the normal price was above 8000 I sold those more than 1000 sheets. It was no name, right whether 7600 or 8000. The important thing when I bought, I had 1000 sheets "(Wc. I-2. Ps7. p4). (Average down/cognitive dissonance type 2).

The results of this research were the same as the findings of Chang *et al*. (Chang, Solomon, & Westerfield, 2016), (Ady et al., 2013), (Ady, 2015) in that cognitive dissonance tends to appear in individual investors' behavior.

E. Availability bias is a cognitive bias that people tend to make an estimation of possible outcomes based on the closeness or familiarity of resultsoccurring in their lives.

"It was just easy, active shares traded, the shares were obvious, state-owned enterprises was definitely I bought. Obviously, it was the meaning of BCA Bank, Telkom was obvious, right? I chose companies that were already clear. In theory, we had to read his financial statement, right? If the financial statements, I were not an accountant, so I didn't read it too much if my child might be possible, yes, but I were not. But it was clear if the gas companies of the country, was presumably BCA Bank, it was indeed didn't play the feeling, but it was visible if the company was profitable, turned out to be correct also."(Wc. I-3, Ab3, p. 2)

F. Self-attribution bias is the tendency of individuals to describe the success experienced as being due to factors from inside while describing the failures experienced as being due to factors from outside.

"They did the analysis, but sometimes unrealistic. No empirical according to our view, but it was according to their view of empirical. It was indeed that we were a science which was opposite those traders. If we essentially empirical, if they didn't eh science filing, it was surely waking up because of dreaming, then trading buys immediately. Yes, it included them who likes a high risk, they looked for justification. Mother where her dream could prove him and they have the satisfaction if, oh this is appropriate to my dream. Looking for justification. In theory, it is looking for justification. It was hard." (Wc. I-2, I4, p.1)

Immediate Emotion: Immediate emotion is the emotion experienced by the investor or trader at the time of decision making. Immediate emotion is divided into two categories, namely 1) immediate integral emotion, 2) Immediate incidental emotion

Immediate integral emotion: Immediate integral emotion is the emotion that comes from thoughts based on the consequences of a decision but occurs when the decision making is finished, for example, fear that is experienced directly by investors when thinking about the decline in the value of stocks. The immediate integral emotion in this research was stimulated by rumors, the influence of friends, drastic changes to the market situation, the political situation, macroeconomics, foreign investors, and brokers. Immediate Integral Emotion is a direct Emotion that occurs during decision making, induced by a cause that is still related to the decision taken. The causes of immediate integral emotion from the results of this study are as follows:

A. Rumor is emerging news, and investors take the decision to pay attention to the news. Regarding variable rumors, among other informants I-2, I-3, I-4, and I-5 took the decision to pay attention to rumors:

"Yes we have seen in the past, who enter today, how was the volume? Still see it also, and this rumor. The thing which made that strong is the rumor, right? We read every day. Yes, we have seen our chart. If foreign companies were like go to JU, RE, JK, we just let it". (Wc. I-5, Ab1, p. 1).

B. In decision making, not a few investors rely on what is said by friends. Therefore, the influence of friends is also one form of stimulus for investors to sell or buy shares. One informant who felt stimulated by the influence of friends was I-5:

"Usually if there's any good news, we bought it. This company would like to announce the rising profits, bought it. Usually, friends do so. The announcement of a dividend."(Wc. I-5, Ps6, p. 3)

C. Drastic changes in the market are market conditions that change unexpectedly either due to a crisis in other countries or the existence of dividend announcements, which can make investors sell or buy shares. The informants who felt stimulated by this variable, among others, were I-1, I-2, I-4, I-5, and I-6:

> "Usually if there's any good news, we bought it. This company would like to announce the rising profits, bought it. Usually, friends do so. The announcement of a dividend." (Wc. I-5, Ps6, p.3)
> "Usually we lose it because of an issue, or indeed there is a crash. So the analysis is no longer valid. World stock, or world economy, like yesterday, Spain it. Spain in 2011 but not too crisis hell, which he said Spain too oversees the economy in Europe. But the profit (in stock) is pretty much, on top of inflation a lot you know "(wc.I-4.Id4.p1)

D. The political situation of a country could affect investors' behavior in selling or buying new shares. As an example, following the Bali bombing or the terrorism event at WTC, many investors sold their shares. The informants who felt that the political situation stimulates investors' behavior were I-1, I-2, I-4, I-5, and I-6:

> "Ever, how much it was, probably 10%, because of that loss is usually due to an issue, or there was a crash. So his analysis was no longer valid. The stock of the world, or the world economy, like yesterday, Spain it was. Spain in 2011 but not too hell crisis, which he said Spain was to keep an eye on the economy in Europe. But the perks (in stock) pretty much, inflation much above." (Wc. I-4, Id4, p. 1).
>
> "When WTC immediately plummeted, oh not got around to sell, miss, the next it was immediately down about 50%. We waited, not had enough time, we wanted a cut loss, but we were afraid. In 2001, it was really long, maybe, before 2007 it was severe, miss. The return of one year, after the WTC, was destroyed." (Wc. I-5, Ps4, p. 3)

E. The macroeconomics of a country will greatly affect the progress of the capital market because one of the indicators of the country progress is the level of Indonesia Composite Index or *Indeks Harga Saham Gabungan*(*IHSG)* in the capital market. The development of national income, the industrial sector, the rate of inflation, growth, and the exchange rate of the rupiah are instrumental in the development of prices in the stock market.

F. The role of macro variables in decision making by investors can be seen on the results of interviews with informants in the following:

> "Yes anyway been keen on now the rupiah strengthened. The first, the greatest was mining, it's definitely a banking drove fast. Anyway, we saw macro. " (Wc. I-5. Ab4. p3).
>
> "It used to be, now I choose stocks, I think this country is roughly what it takes. If I still have any logic. Indonesia is developing countries. So the basic needs of the industrial sector that are definitely growing. In 1996. I basically just liked that. The industry was definitely growing, definitely needed cement, needed to build it. Yes, had to need a home, right, there was properties cement, mines, gold, oil, and gas there, yes I bought all, Only logic things. That's it. I just wore my instinct, because I didn't know. I didn't know much about the fundamentals so that's how it was, just me ... how I call it, just an instinct."(Wc. I-2. Ab4. p3).

G. Foreign investors also play an important role in influencing the behavior of local investors. Most local investors use foreign investors as one of the indicators of stock selection. If the shares of a company are in great demand among foreign investors, local investors consider this to be a signal that the prices of the stocks will increase. Likewise, if foreign investors sell stocks, they will be followed by local investors, because usually, foreign investors perform transactions of purchases or sales of shares in large quantities, resulting in a large-scale decrease or increase in the stock price. The following are from the interviews with some of the informants:

> "If foreign investors came in, wow, this was a green light, miss, it means this share was interesting, yes I've adherents. Later, when the chart already at the highest point, I sold it, but at times have not been the highest point, I sold it." (Wc. I-5, Ps5, p. 4)

H. The role of brokerage companies also affects investors' behavior. Many brokers provide fundamental analysis services to assist investors in their decision making. Therefore, sometimes investors try to obtain current information from the broker, especially for traders, both day traders and swing traders:

> "When it is hot just now, I analyze it as I was a student, but the analysis is limited, oh this week how much definitely it will increase, so I was just thinking the margin only. How many downs and so on? Not using the fundamental, because my knowledge is very limited. Even children who were also in the corner was also so. It was because knowledge is limited, so. It was technical, purely technical because the timing technically was supported by the broker. This broker took over the technical, candlestick, then double head, shoulder, he proved that, in a wide variety."(Wc. I-2, Ab2, p. 2)

The results of the in-depth interviews with the informants indicated that the variables above are stimuli that encourage the emergence of integral immediate emotion, causing behaviors and irrational decisions. The political or economic events in a country have a very strong psychological effect, such as the Bali bombing and the tragedy of the World Trade Center attack in the United States, and can very easily create a sense of panic among investors, who take a massive share sale action that is particularly disturbing to the stability of the capital market as a whole.

Immediate Incidental Emotion: Immediate incidental emotion is immediate emotion experienced by investors because of the mood changes that are caused by internal and external occurrences. The stimuli that are internal in this research were triggered by 1) body condition and 2) sadness, whereas the external conditions were triggered by 1) routine work, 2) social factors, 3) family, 4) lunar phases, and 5) the weather.

Immediate-incidental emotion is a direct emotion induced by things not related to the decision taken but from the mood of the investor. Immediate incidental emotion causes mood changes that greatly affect the stability of investors' psychology. The things that cause mood changes are as follows:

A. The accumulated work routine leads investors to focus less on carrying out investment analysis so that when it is imposed it affects the return generated.

> "The mood was definitely not making the last first because my nature was not the main work, ma'am, the most influential was the influence of the main work. It was very influential. So when I was loading with my main work, so often I stopped first for trading. It was the most affected me. The second was after a considerable loss I would not want to make it riskier fare to avoid the risk intensely. For example, in 1998 I lost 80%, I had stopped two years, after that, I did it again. If I still tended to beat it, and it definitely precluded there must have been a little bit of influence." (Wc. I-1, Ps11, p. 2)

B. The condition of the body of investors who did not fit could also cause less investor focus on implementing the investment analysis.

> "After the considerable loss, usually, I have stopped first, in a long time, if I was sick, I would not play it, I was too lazy if I got sick or my son was sick." (Wc. I-5, Ps10, p. 3).

C. Social factors could also provide a stimulus for investors in decision-making. This was as described by informants as follows:

> "I talked about my friends' experience who plunges in stocks. Most of my friends were women, ma'am. My investor's friends, ma'am. Started from morning until afternoon, they were in that broker, not the broker, he invested. Thus began the morning until the afternoon they were there, came out just to eat there again, every day like that. It was usually most of the chines. And they were usually more risk-taking than I did. There I wonder, that's what I saw, ma'am was a lot more of my friends were women investors than men. When I came to the broker, ma'am, I did not say to investors outside of the broker. If the broker, it's that many were. And they were an incredible risk and most of them who played short term. Yes, I was also somewhat less plausible, but yeah that's what I see there. They were sometimes employers, have a workshop, have a shop, yes like that. Her husband may have been successful and so on. "(Wc. I-1. Ps12. p3)

D. Problems in the family could also be a stimulus for investors, leading investors to think more about the problem and focus less on taking decisions.

"...For example, in 1998 I lost 80%, I had stopped for two years, after that, I did it again. If I still tended to beat it, and it definitely precluded there must have been a little bit of influence." (Wc. I-1, Ps11, p. 2)

In general a positive mood tends to encourage investors to make a positive assessment, so instead a negative mood encourages investors to make a more pessimistic assessment than when they are in a neutral condition, in accordance with (Damasio, 2006), (Loewenstein, Hsee, Weber, & Welch, 2001), (Ady, 2015)and (Teng & Liu, 2013), who suggested that positive emotions due to the effect of a pre-holiday period produce significantly higher returns.

"If I were that if my condition was not in the mood, I was not plunging, it was influential, certainly, at least in acuity in analyzing was definitely experience the difference, we did not want to buy shares when I am in not good condition, for sure, so I would not plunge in stocks." (Wc. I-1. Ps10. p1)

E. For most people, the weather changes very influential on health and mood of the person. So also for investors, the weather changed indirectly also affected the performance of investors in the capital markets.

"It was not the weather, ma'am, as rainy season. For me, it was not. But there was actually the theory. Just used logical thinking, ma'am. If the rainy season continued, sure I bought the food and beverages company, it definitely would be a disaster. So if there was a disaster, *Indomie* was definitely the hard sell. Yeah, it had to go up later."(Wc. I-2. PS3. p3).Research on the effect of the weather against the return of shares in accordance with Hu (Hu, 2008), (Cao & Wei, 2005), (Hirshleifer & Shumway, 2003), (Dowling & Lucey, 2008).

Based on the investor behavior above, it can be suggested that investment decisions are filled with psychological bias and are therefore irrational. This bias was progressively reduced by increasing the education level, experience, and maturity of one's emotions to produce more rational investment decisions. There is important too, to pay attention to moral values in transacting shares. Ady (Ady, 2018) points out that one of the keys to successful investing is psychological calm that investors get for keeping ethical moral values in stock trading, such as not doing margin trading, short selling, false demand, and supply, etc. On the demographic side, the 48-year-old I-1 has an S2 education in capital market, having 17 years of experience as an investor will have an average annual gain of 80% -100%, while I-2, 37 years old, S2-educated and experienced for 15 years as an investor, has an average profit per year of 30% -40% per year. Both investors have an equally high education but have a very high return difference as well. Based on the observations of the researchers, these two informants have personality differences. I-1 is a very analytical and calculating investor. In every investment decision making, a thorough analysis is performed, from macroeconomic fundamentals analysis, industry analysis, company analysis to company financial analysis. From year to year based on his experience, he always evaluates the performance over the years. The magnitude of the experienced role for I-1 in the following sentence:

"So indeed if in the capital market, the experience factor is remarkable. It is also important, it is important to keep our emotions. If we are not familiar with the capital market, we can be "crazy" there. Like crazy. Why, because of the price of shares that should go up, down incredible. Not to mention we are talking fried stocks. If we are people who do not have a stand when stocks rise, we are incredibly happy, stock prices down, we are afraid extraordinary, we stress ". (Wc.I-1.Pngl.)

The experience of making an investor increasingly knows what to do in conditions that are limited. A high experience will create an intuition for a person to endure within time constraints. What is needed is a better understanding of the dynamically changing market conditions and how to make adjustments based on current conditions. Because it is important for investors to always update the science and learn from the experience in the past. Informant 1 has a better level of emotional stability than others based on experience, education so as to conduct a more rational analysis and generate an average return per year of 80% -100%.

Model of Cognitive and Psychology's Investor Behavior: Based on the results of interviews with informants can be generated a model of investor behavior as follows:

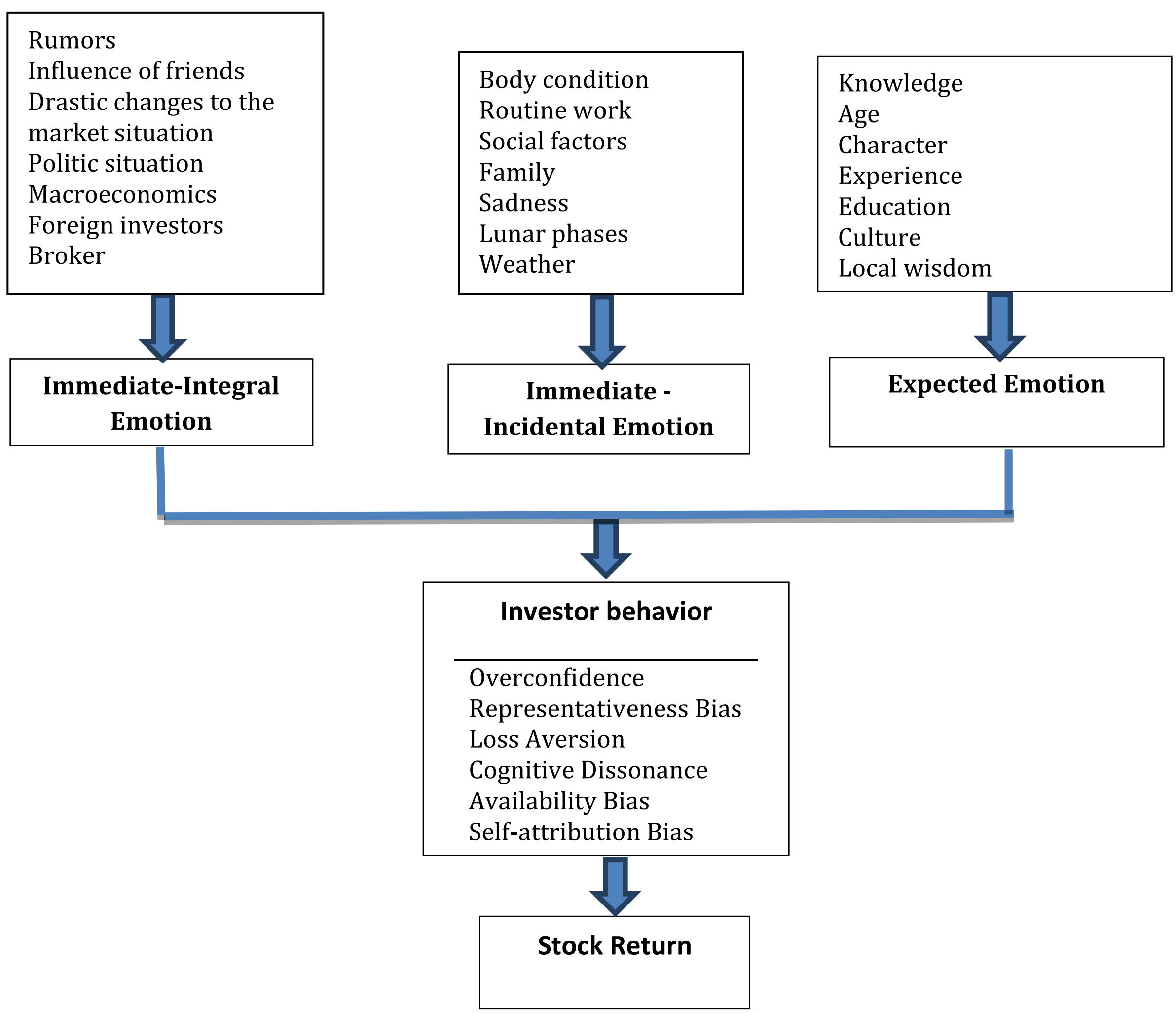
A. Immediate Integral emotion is a direct emotion that affects investor behavior triggered by events related to the decision to be taken. Investment decisions are decisions that are full of risk and uncertainty because it will require caution but also the courage to take risks. Developing rumors in the community, or deliberately launched by certain parties, the influence of friends at the time of investment decision making, drastic changes to market conditions that cause panic, political situation and conditions are less stable / changing, changes in macroeconomic conditions, the massive influx of foreign investors into the market, and the influence of brokers strongly determines the emotional state of investors.

B. Immediate Incidental emotion is a direct emotion that affects investor behavior triggered by events unrelated to the decision taken. Moderate body condition, full work routine, Social Factor, sadness, family factors, Lunar phases, and weather can make investors unable to analyze rationally because they are more influenced by emotions.

C. Expected emotion, is the emotion that develops because the distance is too far between expectations with the reality produced. Knowledge owned, age, character, experience, and education also influence how investors analyze stocks and make investment choices. Investors who have knowledge and education about finance and capital markets are low, will tend to not be able to properly analyze stock selection and overconfidence so tend to experience errors, not in accordance with predictions and expectations. Likewise, with character, experience and age will affect the accuracy of analysis conducted by investors and emotional maturity. In this case including culture, local wisdom of each investor

D. The more dominant investors are influenced by emotions in their investment behavior, tend to develop overconfidence behavior, representativeness bias, loss aversion, cognitive dissonance, availability bias, self-attribution bias and so on. The behavior of the bias will affect the return generated by investors. The higher the bias, the more irrational investors, the lower the return generated and the higher the likelihood of the investment losses.

Figure 1: Model of Cognitive and Psychology's Investor Behavior



5. Conclusion and Recommendations

The phenomenon of biased behavior among stock investors causes their returns not to be optimal. This is essentially due to fear and greed, resulting in their analysis becoming irrational. The psychological bias of the expected emotion experienced by the informants included overconfidence, representativeness bias, loss aversion, cognitive dissonance, availability bias, and self-attribution bias, while immediate integral emotion was triggered by rumor, the influence of friends, drastic changes in the condition of the market, foreign investors, and brokers. Then, immediate incidental emotion was triggered by biological factors, social factors, mainly work, family, or friends, the weather, and sadness. The experience and willingness to keep learning, always updating the science, conducting analyses in the right way, and determining the planned targets well before taking any investment decisions represent steps to reduce the biased behavior.

Recommendations: There was interesting to the investor to update the knowledge about the capital market, update news and always make the trading plan to minimize bias behavior and to be more rational. And always thank God for everything we take from investment to minimize fear and greed that it was the most factor can make instability in behavior. The second recommendation is investor should be rational.From a psychological standpoint, investors make non-rational mistakes because the inner ability of human nature prevails to any education, training and computing power. No matter how sophisticated is the financial and statistical data, the decision has to be implemented by a human being, subjected to emotions and fears, job security constraints, etc. If these biases and errors are recurrent and predictable, that means that a rational investor can profit from non-rational decisions of some noisemakers activating in the market.

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Determinants of Domestic Violence in Women of Reproductive Age in Rwanda

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Abstract: Domestic violence is a global public health problem. It is prevalent in both the developed world and developing countries. The objective of this study is to identify the factors that are associated with domestic violence against women of reproductive age in Rwanda. The data from the 2014/2015 Rwanda demographic and health survey were used. Generalized linear mixed model was used to account for random effects, over-dispersion of residual and heterogeneity. The findings of this study revealed that wealth quintiles, education level of the husband or partner, polygamy, alcohol status of husband or partner, size of the family, number of sexual partners including the husband in the last 12 months, the province the victim lived in, the ownership of an asset in the form of a house or land and the societal attitude towards wife-beating, were the determinants of domestic violence in women of reproductive age. The findings of the risk factors in the current study can help the policy makers, public health workers and institutions in charge of gender monitoring in Rwanda to come up with effective strategies to reduce the domestic violence levels directed against women.

Keywords: *Domestic violence, GLMM, Rwanda, RDHS, women*

1. Introduction

Domestic violence was defined as "any act of gender-based violence that results in, or is likely to result in, physical, sexual or psychological harm or suffering that is used towards adult or adolescent women by former or current intimate partners, including threats of such acts, coercion or arbitrary deprivations of liberty, whether occurring in public or private life''(World Health Organization, 1997).Domestic violence is a worldwide public health concern. It is prevalent in both the developed world and in those regions that are still developing. It has been found to be perpetrated by both men and women but generally women are more likely to be victims of that violence. The levels of domestic violence among women of reproductive age that become victims varies within communities and between countries and from region to region, because of certain factors associated with the cultural beliefs, socioeconomic conditions, differing religions and traditions of the various areas (World Health Organization, 1997). The lifetime risk of becoming a victim of domestic violence for women, specifically physical violence and sexual violence, in the East African community ranges from 14.1% in Kenya to 28% in Uganda and 40% in Tanzania to 56% in Uganda respectively (Ministry of Health (Tanzania) et al., 2016; KNBS, 2010; UBOS, 2012). There are many negative health consequences that result from domestic violence in women, children and the family in general. Some of these consequences may undermine the psychological or emotional well-being of the victim, and might sometimes even result in serious consequences for victims such as mental and physical health illnesses, including poor reproductive and sexual health (Amoakohene, 2004; Beydoun et al., 2012; Johnston & Naved, 2008; Kumar et al., 2005; Sinha et al., 2012). Acts of physical violence that are directed at women whilst in pregnancy are highly related to both maternal and neonatal mortality and morbidity (Pool et al., 2014).

Several studies in literature suggest a number of main factors associated with domestic violence. Sociological factors include aspects such as low levels of education, economic vulnerability, stress and a closed social network, social norms that are supportive of violence and community factors, such as feeble community sanctions against domestic violence and traditional gender stereotypes that sanction violence against women (Bhatta, 2014; Koenig et al., 2006; Krug et al., 2002) among others. The relationship factors include marital instability, economic stress and poor family functioning, while the family factors include communication problems, male dominance, and poor relationship and conflict resolution skills of the couples where domestic violence is known to occur (Khader et al., 2013; Adjah &Agbemafle, 2016; Courtenay, 2000). The government of Rwanda has legislated many initiatives to help prevent and eradicate gender-based violence. A few of these initiatives are listed at national police stations, in the offices of prosecuting authorities, in the Ministry of Defence and in gender monitoring and evaluation, among others (Holmes, 2014). The government has also made many reforms and laws condemning all forms of domestic violence; included in this is the issue of marital rape and gender inequalities that are discriminatory towards women, amongst others (Official Gazette of the Republic of Rwanda, 2009). In order to complement the government's efforts to respond to gender-based violence, in 2009 the Isange One-Stop Centre was founded (Holmes, 2014; Immigration and Refugee Board of Canada, 2013; Ward, 2013). This centre provides free services for the survivors of child domestic abuse and gender-based violence and is available to victims countrywide. The lifetime prevalence of physical or sexual violence against women of reproductive age in Rwanda continues to be high, but of recent times a decreasing trend has been seen to be emerging; for instance in 2005 the rate was 33.6% of women but in 2010 it soared to 56.4% but then it dipped down in 2014/15 and was 34.4 % (National Institute of Statistics of Rwanda et al., 2015). As can be seen, this prevalence soared and almost doubled between 2005 and 2010. This may have been due to many reforms and transformations done at this period, especially in landownership and gender inequality, among others (Holmes, 2014; Official Gazette of the Republic of Rwanda, 2009).

Many authors have assessed the determinants of physical and sexual violence, for instance (Adjah & Agbemafle, 2016)but the novelty innovation in this research is the inclusion of the psychological forms of abuse such as emotional violence. In addition, most of them used logistic regression models (Adjah &Agbemafle, 2016; Audi et al., 2008) among others to analyse the data. These models are very useful when their assumptions are not violated (for instance, assumption of independence of observation among others). Consequently, when the data comes from a complex survey design, the measurements from the same cluster may be correlated and then the assumption of independence is violated. Therefore, the current study addressed the issue via a generalized linear mixed model (GLMM) that accounts for random effects, correlation, over-dispersion and heterogeneity. In addition, previous studies on domestic violence in Rwanda have been restricted to physical and sexual domestic violence (Thomson et al., 2015) or to provincial level (Ntaganira et al., 2008). Therefore, the current study considers physical, sexual and emotional violence nationwide. To the best of our knowledge, there was no study in literature considering physical, sexual and emotional violence and using GLMM to identify the factors associated with domestic violence against women of reproductive age in Rwanda. It is hoped that the findings from this study will help the policy makers and other public health related institutions to properly understand the determinants of domestic violence among women of reproductive age in Rwanda.

2. Methodology

Data source: The current study used the datafrom the 2014/2015 Rwanda Demographic and Health survey (RDHS). The survey was conducted from 9th November 2014 to 8th April 2015, where 12792 households were selected for the survey. The survey used the sampling frame from the 2012 population and housing census and the sampling was done in two stages. In the first stage, 492 villages known as clusters or enumeration areas were considered with probability proportional to the number of households residing in the village. In the second stage, systematic random sampling was used among the selected villages and 26 households were selected in each village. The survey included a module on domestic violence for both men and women aged between 15-59 and 15-49 years of age respectively. The survey used questionnaires to be answered by the men and women of each household. The RDHS 2014/2015 provided women dataset among others and this was used in this study. More details on sampling techniques used in the survey and data collection can be found in National Institute of Statistics of Rwanda et al. (2015).

Outcome measure: The dependent variable was whether or not the respondent experienced domestic violence. Domestic violence was defined as physical violence, sexual abuse and/or emotional and psychological violence. Physical violence was measured from the response to the question as to whether the respondent had experienced at least one of the subtypes of physical violence such as shaking, pushing, having something thrown at them, slapping, twisting one's arm, pulling one's hair, being beaten up, being hit with an object, burning on purpose, shocking, stabbing, dragging, knife threat, gun threat or threat with any other weapon. Any positive answer to the aforementioned was considered as the respondent having experienced physical violence. Similarly, sexual violence was measured from the response to the questions as to whether the respondent had experienced at least one of the subtypes of sexual violence such as the respondent being forced against her will to have sexual intercourse with a husband or partner and being forced to perform any sexual acts that the wife or partner did not consent to. A positive answer to any of these questions was characterised as a positive answer to being a victim of sexual violence. Finally, emotional or psychological violence was measured from the response to the questions related to all the different types of emotional violence, for example, saying something that serves to humiliate the wife or partner in front of others, threatening to hurt or harm someone close to the wife or partner, insulting or making the wife or partner feel bad about themselves. A positive answer to any of the above questions was considered as the respondent having experiencing emotional violence or psychological violence. In conclusion, any woman who responded positively to at least one of the aforementioned forms of abuse was recorded as that woman having been a victim of domestic violence.

Independent variables: The explanatory variables used in the current study were also used in various studies modelling domestic violence against women (Adjah & Agbemafle, 2016; Beydoun et al., 2012; Bhatta, 2014; Koenig et al., 2004; Kumar et al., 2005; Pool et al., 2014; Sahn and Stifel, 2003) among others. It looked at whether the incidence of violence was related to the wife or her partner, or husband or his partner, and whether the community and family were involved. The socio-demographic characteristics of the women were recorded as to age group in years, education level attained, working status, number of sexual partners including husband in the last 12 months, ownership of an asset such as a house and/or land, the woman's earnings as compared with that of her husband or partner, the woman's perception of wife beating attitude was measured by combining all the different questions from RDHS of 2014/15. Each was recorded as a "0" for a negative answer and a "1" for a positive answer. If the beating was justified by the wife and she said she did things like going out without telling her husband, or if she argued with her husband, or neglected the children, or refused to have sex with husband, or she burnt the food. Any positive answer to any of these questions was considered to be an accepting of the wife-beating attitudes and not otherwise. The socioeconomic and demographic characteristics of the husband or partners was also viewed, such as their education level, their working status, drinking status, whether there is polygamy, and the husband or partner's earnings. The community and family characteristics that were looked at were: the size of the family, wealth quintile, place of residence, region or province, person who usually decides on visits to family or relatives, on the large household expenses for the household, on the wife's health care, and on what to do with the money the husband earns.

Statistical methods: The survey was done based on multi-stage sampling, stratified sampling, cluster sampling with unequal probability of selection for elements known as complex survey design. In these surveys the cluster incorporated in the sample represents only a random sample from the populations of the clusters. When modelling the data collected from these surveys, the sampling design must be taken into consideration. The RDHS data as described in the source of data is also among complex surveys. Therefore, modelling these data based on generalized linear models may not be valid because measurements from the same cluster are correlated and therefore the assumption of independence for generalized linear model (GLM) is violated. But there are many other models in literature that can deal with this problem; for instance survey logistic regression (Habyarimana et al., 2014; Heeringa et al., 2010) and the GLMM (Ayele et al., 2012; Heeringa et al., 2010) among others. GLMM extends classical generalized lineal models by including random effects or correlation in the linear predictor. This model has many advantages over the classical generalized linear model. GLMM also allows the researcher to account for over-dispersion, heterogeneity between clusters and also to examine various sources of variation. The current study used a GLMM framework and this model is well documented in literature, for instance model building and inferences (Breslow & Clayton, 1993; Molenberghs & Verbeke, 2005).

Model formulation: Let Y_{ijk} be the domestic violence status of women i from jth household and kth cluster and $Y_{ijk} = 1$ if the women i responds positively to domestic violence and zero otherwise, x_{ijk} be the ith row matrix for the fixed effects of independent variables; and z_{ijk} be the ith row matrix of the random effects.
Therefore, the basic formulation of GLMM in matrix form is given by
$g(\mu) = logit(\mu) = \mathrm{X}\beta + \mathrm{Z}u(1)$,
where g(.) is the link function, β is a vector of fixed coefficients, u is a vector of the random effects and u is assumed to be normal distributed, and μ is the conditional mean of Y_{ijk} given by

$\mu = E(Y_{ijk}|\mathrm{u}, \mathrm{X})$ (2).

PROCGLIMMIX from SAS 9.4 was utilized in the analysis of the data. In order to avoid the confounding effect, the model was fitted to each explanatory variable, one at time. Furthermore, all significant variables at 5% were fitted in multivariate GLMM. The two-way interaction effect between explanatory variables was considered in the analysis. The model goodness-of-fit was assessed based on-2 Log likelihood and chi-square test and the statistical inference for the covariance parameters were performed based on the likelihood ratio test.

3. Results

The current study used the survey weights for domestic violence provided by the Rwanda Demographic and Health Survey data set in order to ascertain a national level representation. Table 1 shows the prevalence of domestic violence among ever married women of reproductive age in Rwanda by each category of indicator variable and their p-value. It is observed from Table 1 that prevalence of domestic violence was 40%, 39.1%, 27.2% and 13.5% among women with no level of education, with primary education, with secondary education and tertiary education respectively (p-value<.0001).

Table 1: The prevalence of domestic violence among ever married women of reproductive age by category of indicator variable

Indicator	Category	Domestic violence		P-value
		Yes N (%)	**No** N (%)	
Wife/partner education level	No education	96 (40.0%)	144(60.0%)	<.0001
	Primary	436(39.1%)	678(60.9%)	
	Secondary	43 (27.2%)	115(72.8%)	
	Tertiary	5 (13.5%)	32(86.5%)	
Wife/partner perception on wife-beating attitude	Not acceptable	318(32.6%)	658(67.4%)	<.0001
	Acceptable	262(45.7%)	311(54.3%)	
Number of partners including husband in last 12 months	0	7 (36.8%)	12(63.2%)	.340
	1	568(37.3%)	954(62.7%)	
	2 and more	5(62.5%)	3(37.5%)	
Home ownership by wife or partner	Does not know	119(36.4%)	208(63.6%)	.334
	Alone only	24(30.4%)	55(69.6%)	
	Jointly alone	431(38.1%)	701(61.9%)	
	Both alone and jointly	6 (54.5%)	5(45.5%)	
Landownership by wife or partner	Does not know	162(35.5%)	294(64.5%)	.050
	Alone only	30 (30.6%)	68(69.4%)	
	Jointly alone	381(38.7%)	604(61.3%)	
	Both alone and jointly	7 (70.0%)	3(30.0)	
Wife/partner age group	15-24	82(32.8%)	168(67.2%)	.149
	25-34	274(37.1%)	464(62.9%)	
	35-49	224(39.9%)	337(60.1%)	
Husband/partner's education level	No	111(46.1%)	130(53.9%)	<.0001
	Primary	419(37.5%)	699(62.5%)	
	Secondary	45 (31.5%)	98(68.5%)	
	Tertiary	5(10.6%)	42(89.4%)	
Husband/partner Drinks alcohol	Yes	447(45.6%)	533(54.4%)	<.0001
	No	133(23.4%)	436(76.6%)	
Number of wives/partners	1	533(36.6%)	925(63.4%)	.004
	2 and more	47(51.6%)	44(48.4%)	
Wife or partner currently working	No	69 (31.4%)	151(68.6%)	.044
	Yes	511(38.4%)	818(61.6%)	
Person who usually decides on visits to family or relatives	Respondent alone	116(50.7%)	113(49.3%)	<.0001
	Respondent and husband or partner	364(32.9%)	744(67.1%)	

	Husband or partner alone	100(47.2%)	112(52.8%)	
Person who usually decides on large household purchases	Respondent alone	81 (56.3%)	63(43.8%)	<.0001
	Respondent and husband or partner	288 (29.7)	682(70.3%)	
	Husband or partner alone	209(48.3%)	224(51.7%)	
Person who usually decides on what to do with the money the husband earns	Respondent alone	28(49.1%)	29(50.9%)	<.0001
	Respondent and husband or partner	350(31.2%)	773(68.8%)	
	Husband or partner alone	202(54.7%)	167(45.3%)	
Person who decides on the wife/partner's health care	Respondent alone	142(47.7%)	156(52.3%)	<.0001
	Jointly	328(33.1%)	663(66.9%)	
	Husband or partner alone	110(42.3%)	150(57.7%)	
Contraceptive method use	Yes	336(40.5%)	493(59.5%)	.007
	No	244(33.9%)	476(66.1%)	
Size the household	1-2	16 (22.9%)	54(77.1%)	.009
	3	96(32.7%)	198(67.3%)	
	4	133(38.3%)	214(61.7%)	
	5 more	335(40.0%)	503(60.0%)	
Place of residence	Urban	70 (27.8%)	182(72.2%)	.001
	Rural	510(39.3%)	787(60.7%)	
Provinces	Kigali	53(28.8%)	131(71.2%)	.006
	South	139(37.4%)	233(62.6%)	
	West	123(35.9%)	220(64.1%)	
	East	143(37.2%)	241(62.8%)	
	North	122(45.9%)	144(54.1%)	
Wealth quintile	Poorest	134(47.2%)	150(52.8%)	<.0001
	Poorer	124(39.5%)	190(60.5%)	
	Middle	131(38.1%)	213(61.9%)	
	Rich	115(38.3%)	185(61.7%)	
	Richest	76(24.8%)	231(75.2%)	

It was observed from the Table 1 that the widespread presence of domestic violence was 32.6% of the women who do not tolerate a wife/partner-beating attitude and 45.7% among women who do tolerate it (p-value <.0001). The prevalence of domestic violence among women whose husband or partner drank alcohol was 45.6% and 23.4% among women whose husband or partner did not drink alcohol (p-value <.0001). It was also seen from the above table that 38.45% of women who were formally working and 31.4% of women who did not work experienced domestic violence (p-value=0.044).It is observed from the Table 1 that 51.6% of women whose husband or partner had more than one wife or partner and 36.6% of women whose husband or partner had only one wife or partner have experienced any type of domestic violence (p-value=0.004).Table 1 reveals that the percentage of women who had experienced domestic violence was higher among women from rural areas than women from urban areas (39.3% and 27.8% respectively) (p-value=0.001). The province of residence of the respondent was also considered. It was shown in Table 1 that the percentage of women who had experienced domestic violence was highest in the Northern Province where the rate was 45.6% of the women in the study compared to the other provinces. The lowest rate was in Kigali city with a 28.8% response rate confirming that they had experienced some form of domestic violence (p-value=0.006). Socio-economic factors were also considered; for instance, wealth quintile and home ownership of the wife or partner were aspects that were investigated in this study. It was seen from the results that the percentage of women who have experienced any type of domestic violence was lower among women from richest households and higher among women from poorest households (p-value <.0001).

The indicator related to decision making was also considered. This refers to the person who usually decides on how to spend, for example, the earnings of the husband or partner. This variable was categorized as respondent alone (wife or partner), respondent and husband or partner and husband or partner alone. From Table 1 the findings show that the prevalence of domestic violence was 49.1%, 31.2% and 54.7% respectively among women who decide how to spend the earnings of their husband or partner alone, jointly (wife and husband or partner) and the husband or partner making that decision on their own respectively (p-value<.000). The prevalence of domestic violence was 50.7%, 32.9% and 47.2% among women who decided alone on visits to family or relatives, women who decide jointly with husband or partner, and among women whose husband or partner decided alone whether to visit the family or relatives respectively (p-value <.0001). In multivariate analysis the model was fitted with various covariance structures in order to choose the best. In SAS, variance component (VC) was the default and was the first to be fitted, also compound symmetry (CS), autoregressive (AR1), and unstructured (UN) were fitted to the data. We examined the value of Akaike Information Criterion (AIC) for each variance structure and the VC was found to produce the smallest AIC and it was then used in the analysis. In order to avoid possible confounding effects, the two-way interaction effect between the potential variables (wife or partner perception on wife-beating attitude and wealth index, wife or partner perception on wife-beating attitude and education level) was used in the analysis but none was found to be significant and therefore it was excluded from the analysis and the final model is shown in Table 2. The fixed effects of explanatory variables used in the model are shown in Table 2 along with their p-values; this gives us an indication of their influence on the response variable.

Table 2: Type 3 tests of fixed effects

Effect	NumDf	F value	Pr>F
Wealth quintiles	4	4.2	0.0022
Partner/husband drinking status	1	64.57	<.0001
Provinces	4	2	0.0924
Partner/husband's level of education	3	3.88	0.0089
Woman's perception of wife/partner- beating attitude	1	13.50	0.0002
Size of the family	3	5.58	0.0008
Number of wives	1	4.55	0.0332
Respondent owns a house alone or jointly	3	3.2	0.0226
Number of partners in last 12 months including husband	2	2.12	0.1206

NumDf=number of degree of freedom

The fit statistics is summarized in Table 3, where twice the negative of the residual log likelihood or deviance in the final pseudo-model is 7055.29. It is also observed from Table 3 that the ratio of generalized chi-square statistics and its degrees of freedom is 0.95 which is very close to 1 and this is evidence that the residual variability in the data has been suitably modelled and therefore there is no residual over-dispersion.

Table 3: Fit statistics

-2Res Log-pseudo-likelihood	7055.29
Generalized Chi-square	1481.28
Generalized Chi-square/Df	0.95

The results from multivariate GLMM for fixed effects are summarized in Table 4. Further it was noted that the wealth quintile had a significant effect on domestic violence levels. The relationship is inversely proportional. The risk of a woman experiencing domestic violence in the poorest family was two times (OR=2.3, p-value=0.0002) more than that of a woman from the richest family. The results of this study also revealed a significant association between polygamy and domestic violence. The risk factors of a woman whose husband or partner had no other wife or partner was 0.61 less likely to experience any type of domestic violence than a female whose husband or partner had more than one wife or partner (OR=0.61, p-value=0.0332). The study revealed that the domestic violence levels found in women of reproductive age were inversely proportional to the husband or partner's level of education. The risk of women whose husband had no formal education, of suffering from any form of domestic violence, was five times more than that of women whose husband or partner had a tertiary education (OR=5.388, p-value=0.0014). The risk of experiencing domestic violence for a woman whose husband or partner had primary or secondary school education level was four and three (OR=4.064, p-value=0.0056 and OR=3.426, p-value=0.0199) times more than a woman whose husband or partner had tertiary education, respectively. The woman or partner's perception of wife/partner-beating attitude is shown to be significantly associated with domestic violence in women. The risk of experiencing domestic violence for a woman who does not accept the attitude of wife/partner-beating was almost 0.7 (OR=0.665, p-value=0.0005) times less than that of a woman who accepted the attitude of wife/partner-beating.

Table 4: Parameter estimates of factors associated to domestic violence of women of reproductive age from multivariate GLMM

Indicator	Estimate	Odds ratio	P-value
Intercept	0.6872	-	0.4661
Partner'sdrinking (yes=reference)			
No	-1.0226	0.36	<.0001
Partner'sdrinking (yes=reference)			
No	-1.0226	0.36	<.0001
Number of wives/partner (2 and more=reference)			
1	-0.4951	0.61	0.0332
Partner's education level(tertiary=reference)			
Secondary	1.2315	3.426	0.0014
Primary	1.4022	4.064	0.0056
No education	1.6842	5.388	0.0199
Woman's perception on attitudes towards wife beating (acceptable=reference)			
No	-0.4418	0.643	0.0002
Size of the household (5 and more=ref)			
1-2	-0.7951	0.452	0.0072
3	-0.5463	0.579	0.0005
4	-0.1336	0.875	0.3465
Province (North=reference)			
Kigali	0.09065	1.095	0.7235
South	-0.3643	0.695	0.0506
West	-0.4034	0.668	0.0348
East	-0.2365	0.789	0.2084
Respondent owns a house alone or jointly(jointly=reference)			
Alone only	-0.822	0.44	0.0042
Both alone and jointly	0.6324	1.882	0.4101
Does not	0.0663	1.069	0.658
Number of partners including husband(2 and more=reference)			
0	-1.2716	0.166	0.1442
1	-1.5065	0.136	0.0458

The number of household members also significantly affects any type of domestic violence levels of ever married women of reproductive age. The findings of the present study show that domestic violence increases with an increase in the size of the household. The likelihood of experiencing domestic violence by a woman whose household consisted of one to two people was 0.45 (p-value=0.0072) times less than a woman whose household consisted of five or more people. A woman from a household of three people was 0.579 (OR=0.579, p-value=0.0005) times less likely to experience domestic violence than a woman whose family consisted of five or more people. Alcohol status of the partner is significantly associated with domestic violence of women. A woman whose husband or partner does not drink was 0.36 (OR=0.361, p-value <.0001) times less likely to experience domestic violence than a woman whose husband or partner does drink alcohol. Having multiple sex partners was also found to significantly affect the domestic violence levels suffered by women of reproductive age in Rwanda. A woman who had only one sexual partner or husband in the last 12 months was0.136(OR=0.136, P= 0.045) times less likely to experience the domestic violence compared to a woman who had two or more sexual partners, including the husband, in the last 12 months.

The province the woman resided in was also found to significantly affect the domestic violence levels of women of reproductive age in Rwanda. The findings from the results showed that a woman residing in the Northern Province was found to experience domestic violence at a higher rate than any woman from Southern and Western provinces. For instance, a woman from the Western Province was 0.668(OR=0. 0.668, p-value=0.0348) times less likely to experience domestic violence than a woman from the Northern Province. Nevertheless, the current study did not find a statistical significant difference between a woman from Northern and Eastern province (p-value=0.2084). The ownership of a house was also found to be an important factor of domestic violence against women of reproductive age in Rwanda. The likelihood of experiencing any type of domestic violence for a woman who owned a house alone was 0.44 (OR=0.44, P=0.0042) times less than that of a woman who jointly owned a house.

Discussion: The factors associated with any type of domestic violence against women of reproductive age may differ across countries, religion, culture, beliefs and traditions. The findings of this study showed that there is, in fact, a significant association between socio-economic characteristics and the levels of domestic violence that are suffered by women of reproductive age in Rwanda. Women from poorest households in the country were found to be at very high risk compared to those of the richest households. This finding concerning socio-economic factors playing some sort of important role was found elsewhere (Bamiwuye & Odimegwu, 2014; Oduroet al., 2015; Tran et al., 2016). However, in the study carried out by Bamiwuye and Odimegwu (2014) on spousal violence in six countries from sub-Saharan Africa, it was found that domestic violence was higher among women from the rich families in Mozambique and Zambia, it was also higher from the middle classes in Nigeria and Cameroon, and it was higher from the poor families in Zimbabwe and Kenya. This disparity across the countries investigated in Africa would indicate that certain factors, unique to each country, are the driving force behind domestic violence against women in these particular countries. These factors would include cultural beliefs and policies that are associated with genders that are specific to each country or region or community.

The findings of this study showed a higher rate of prevalence of domestic violence among women whose husband or partners consumed alcohol. This finding is similar to other findings from previous studies (Ali et al., 2014; Gage, 2005; Koenig et al., 2006; Mandal & Hindin, 2013; Semahegn & Mengistie, 2015; Sinha et al., 2012). A number of authors, for instance Moraes and Reichenheim (2002) believe that alcohol intake causes episodes of domestic violence in a household by degrading the behaviours of the partner who is doing the drinking and creating uninhibited irrational conditions for the starting of arguments that then include insults and threats, poor judgment and impulse control, which may then result in some form of physical, sexual and/or psychological violence that is directed at the female partner. The findings of this study showed that the lower the level of the husband or partner's education, the higher the risk that his wife or partner may experience domestic violence perpetrated against them. This finding is similar to other findings(Mohamadian et al., 2016; Rada, 2014). Therefore, higher levels of education may be one of the key factors for protecting women against domestic violence. This study also examined whether the level of education of the women was associated to domestic violence and it resulted in non-significant effect. It is very difficult to measure emotional and sexual violence in women because of the cultural and traditional restraints preventing women from openly reporting abuse. However, the results of this study would indicate that as the gender inequalities that exist are reduced in ways such as poverty alleviation, and the victims become educated to know their rights better, the levels of domestic violence based against women should reduce.

The size of the household was shown to be one of the significant risk factors of domestic violence in women of reproductive age. This finding was also found by Ali et al. (2014) and Mahapatro et al. (2012). The current study considered the attitudes of both husband or partner and women, but only the women's attitudes were statistically significant. The findings from this study showed that women who said no to the acceptance of domestic violence against their gender were less likely to experience domestic violence. Polygamy was found to significantly affect the domestic violence levels of women of reproductive age in Rwanda. This result was also found by the National Institute of Statistics of Rwanda et al. (2015) and Ali et al. (2014). It was found that polygamy increases domestic violence mostly in the aspect of physical violence and this, in most of the cases, was accompanied by psychological or emotional violence. Polygamy may also be associated with economic violence (this violence includes the prevention of the wife or partner from making a choice about their occupation, the withholding of money for essential things such as food and medical treatment, the manipulation of family members for financial gain, and stealing from the wife or partner, among other things).The current research setting revealed a significant effect between the province which the women were from and domestic violence of women of reproductive age in Rwanda. Domestic violence levels were higher among women from the Northern Province. This finding is similar to that of the National Institute of Statistics of Rwanda et al. (2015) . This might be due to the high rates of polygamy in this particular province compared to other provinces. Homeownership by the woman alone is a pivotal factor related with lower levels of domestic violence in women of reproductive age in Rwanda. This finding was found elsewhere, for instance by Oduro et al. (2015). This shows that empowering women may offer a protective effect against domestic violence in women of childbearing age. The analysis also included land ownership but this variable was not significant in multivariate GLMM. The female ownership of properties increases a woman's economy security and reduces the willingness of that woman to tolerate violence.

Study limitations: The current study used a cross-sectional data from RDHS and this data may not be able to address causality. Therefore, longitudinal studies that will solve this problem are suggested for future work. In addition, the researchers suggest DHS to include data on economic violence.

4. Conclusion

The risk factors related with domestic violence in women differ both regionally and with that of other countries. In most of the cases this is a consequence of the specific cultural beliefs, traditions and policies of the particular region or country in which the woman lives. In addition to the flexible statistical modelling of the GLMM to the analysis of the RDHS data, the results of our study highlight new findings, such as the significant role of polygamy, ownership of house by wife or partner and the wife or partner's perception of the wife/partner-beating attitude. The study also revealed that other determinants of domestic violence against women of reproductive age in Rwanda were the household's wealth quintile, the size of the household, the husband or partner's education level, the province they lived in, the drinking status of husband/partner, and the number of sexual partners, including husband, the woman had in the last 12 months. The findings from this study suggest improvement on gender-based sensitization for both males and females to be better informed about the aspect of emotional or psychological violence, as well as knowing the aspects of physical, sexual and economic violence, and to continue to educate both females and males about their rights. The findings also suggest that polygamy, multiple sexual partners should continue being discouraged and policymakers and stakeholders should continue encouraging women to make their own money, in order to empower themselves economically.

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Green Marketing Trek: Drivers, Challenges and Future Directions in Emerging Markets- A Systematic Literature Review

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Abstract: Green marketing is growing in importance as it is tied to the universal goal of sustainable development. Although green marketing is gaining in prominence as a strategic imperative, mixed accounts a bound on its ability to create sustainable competitive advantage. Against this backdrop, this conceptual paper discusses the concept of green marketing, its drivers, challenges and future directions in the context of emerging markets. With the aid of a systematic literature review, this paper discusses market opportunities and challenges, implementation gaps, future directions and misconceptions associated with the adoption and implementation of green marketing. Results of literature review showed that the adoption of green marketing is driven principally by market opportunities, environmental legislation, operating efficiencies and improved profitability. Literature reviewed also notes challenges associated with green marketing implementation such as consumer cynicism, variability in demand of green products and exorbitant investment costs related to green technologies. This paper concludes that successful implementation of green marketing depends on a green vision that meticulously counterbalances the vested interests of key stakeholders in the value chain such as suppliers and customers. Effective green marketing implementation is also contingent on the ability of top management to integrate, coordinate and re-configure corporate competences to achieve green marketing goals. This paper recommends that marketers should resist the green marketing bandwagon but rather focus on understanding implementation imperatives that are preconditions for creation of sustainable competitive advantage. Marketers should also note that green marketing is not a panacea to all marketing challenges as it needs to be supported by sound marketing acumen.

Keywords: *Green marketing, drivers, challenges, future directions, developing countries*

1. Introduction and background to the study

A host of environmental problems such as climate change and depletion of natural resources confronting humanity makes the adoption of green marketing imperative (Polonsky, 2011). Increasingly, green marketing is growing in prominence as a strategy to promote environmental sustainability (Ottman, 2011). In what has been dubbed the green 'trek' (Ottman, 2008), an increasing number of companies are incorporating green marketing principles in corporate strategies as a way of creating competitive advantage (Polonsky, 2011). Although this trend is encouraging from an environmental sustainability perspective, there are mixed reports on the success rate of companies that are going green (Dauvergne & Lister, 2012). For this reason, Ramirez, Gonzalez and Moreira (2013) note that some companies are adopting an ambivalent posture towards green marketing. There are also growing concerns that green marketing is failing to achieve its potential for enhancing environmental sustainability and sustainable competitive advantage for adopting companies (Polonsky, 2011). Polonsky (2011) further notes the inherent failure by marketers to integrate green marketing strategies into marketing strategy in a coherent manner. In addition, Borin, Cerf and Krishnan (2011) note the existence of divergent views on the characterization of green marketing in the marketplace. Against this background, this conceptual paper sets out to answer the following pertinent questions: (1) what is green marketing? (2) What are the drivers, challenges and future directions of green marketing? The significance of this paper emanates from its contribution in delineating the concept of green marketing, including its role in promoting sustainable development. As green marketing evolves in research and practice, it is important to note where it stands in emerging markets and possible future directions in order to inform marketing strategies. Green marketing implementation requires massive investment hence this paper also suggests best practices for effective implementation. The remainder of this paper is organized as follows: The first section provides the research methodology employed in this study. This is followed by a discussion of results of the study. The last section discusses the future prospects of green marketing.

2. Methodology

In order to identify the drivers, challenges and future directions of green marketing in emerging markets, a systematic literature review was done. Following the approach used by Polonsky (2011) as well as De Medeiros, Ribeiro and Cortimiglia (2013) this paper reviewed literature on green marketing published in peer reviewed journals and textbooks. The systematic literature review was conducted following a five-stage process recommended by Tranfield, Denyer and Smart (2003), Jones (2004) and Thorne, Jensen, Kearney, Noblit and Sandelowski (2004) which involve: (1) problem definition, (ii) selection of articles, (iii) selection of relevant studies, (iv) critical analysis and evaluation and (v) synthesis. Consistent with the primary objective of this study, the purpose of the literature review was to identify the drivers, challenges and future directions of green marketing. The literature search was limited to peer-reviewed journals and books because, according to De Medeiros et al. (2013), they are considered as validated and reliable data sources. Literature reviewed was then synthesized with the objective of providing qualitative insights on the drivers, challenges and future direction of the field of green marketing. Following the example of Tranfield et al. (2003), an aggregative approach was used to categorise synthesised literature into broad themes.

3. Results and Discussion

This section discusses the main themes that emerge from literature reviewed as follows:

Green Marketing Concepts and Definitions: There are many terms in literature that are used to refer to green marketing (Dangelico & Pontrandolfo, 2010). According to Saleki and Seyedsaleki (2012), the increase in terms associated with the concept of green marketing such as biodegradable, environmentally friendly, organic, planet-friendly, natural, recyclable, compostable and ozone-friendly, have given rise to a wide array of green marketing definitions and conceptualizations. Green marketing researchers (e.g. Ahmed, Kamalabhan & Chih, 2001; Mourad & Ahmed, 2012) contend that the proliferation of green marketing terms indicates the evolving nature of the concept over the last decades. This being the case, the major concern however for marketers and policy makers is that, the aforesaid terms are incorrectly interpreted to be synonymous with green marketing which often results in the concept to be perceived narrowly as the marketing of products with pro-environmental attributes (Dhar & Das, 2012; Kinoti, 2011; Mohajan, 2012). The wide array of green marketing terminologies in extant literature has also resulted in every company having its own "green story", thereby jeopardizing efforts to standardize green marketing practice (Rettie, Burchell & Riley, 2012). As a result, a variety of green marketing conceptualizations has led to the lack of a universally acceptable definition, further complicating efforts to harmonies green marketing practice (Kinoti, 2011). This view is affirmed in a study conducted by Dangelico and Pontrandolfo (2010) which found that, in addition to causing confusion, the different conceptualization of green marketing acts as a barrier to companies intending to effectively implement green strategies.

In extant literature, green marketing is also known as ecological marketing, environmental marketing, organic marketing, responsible marketing, sustainable marketing and ethical consumption (Horne, 2009; Mohajan, 2012; Polonsky, 2011). In addition, green marketing is classified as a sub-component of the corporate social responsibility, a subset of the marketing concept and a tool for enhancing sustainable development (Jamge, 2012; Shrikanth & Raju, 2012; Verma, Agarwal & Srivastava, 2012). Henion and Kinnear's (1976) definition of green marketing guided early debate on its role. They define green marketing as the study of the positive and negative impacts of marketing activities on pollution, energy depletion and non-energy resource depletion. It is important to note that Henion and Kinnear's (1976) definition has since evolved in tandem with the growth of green marketing in modern day theory and practice (Rakhsha & Majidazar, 2011). Researchers Shrikanth and Raju (2012:8) defined green marketing is a holistic and strategic marketing management process that identifies, anticipates, satisfies and fulfils stakeholder needs for a reasonable reward without adversely affecting the environment. Awad's (2011) definition regards green marketing as a management process responsible for identifying, anticipating and satisfying the needs of customers and society in a profitable and sustainable manner. This paper adopts the definition by Tiwari, Tripathi, Srivastava and Yadav (2011) who comprehensively defined green marketing as the marketing of products that are presumed to be environmentally safe (retailing perspective), the development and marketing of products designed to maximize customer satisfaction and improve the quality of the environment (consumer perspective) and the efforts by the organization to produce, promote, package and reclaim products in a manner that is sensitive or responsive to ecological concerns (environmental perspective).

Green Marketing Drivers: In today's marketplace, going green is considered an important imperative and an opportunity for corporates (Dangelico & Pontrandolfo, 2010). The growing impetus towards the adoption of green marketing is driven principally by market opportunities, environmental legislation, competitive pressures and social responsibility (Chen, 2010; Deshwal, 2012; Mishra & Sharma, 2010). In addition, McKinsey's (2011) report revealed that other drivers for the adoption of green marketing include cost reduction, operating efficiencies, improved profitability, market share growth potential and improved value chain performance. At corporate level, the concept of green marketing is gaining prominence as a strategic tool for enhancing competitive advantage (Smith & Brower, 2012). For example, Accenture's (2010) survey revealed that 93 percent of chief executive officers of top global companies now consider implementation of green marketing strategies as a key success factor. Similarly, a Boston Consulting Group (2011) survey found that 60 percent of global companies increased their green marketing investments in 2010 in spite of the economic downturn. The main sources of competitive advantage that accrue to companies that implement green marketing strategies include cost reductions in raw material, energy usage and waste disposal (Mishra & Sharma, 2010; Mohajan, 2012). The cost savings attributed to investment in green marketing initiatives offer tangible benefits that translate into bottom-line gains (Smith & Brower, 2012). For example, investments in green supply chain processes such as ecological product design, eco-procurement and reverse logistics significantly reduce operating costs (Fraj, Martinez & Matute, 2011). According to the Boston Consulting Group (2011), following an initial investment of US$187 million in energy saving initiatives between 2005 to 2009, Johnson & Johnson achieved a 19 percent internal rate of return. Similarly, Marks and Spencer's (2011:1) projects aimed at reducing packaging and energy usage resulted in cost savings of over £70 million in 2010-2011, up from £50m in 2009-2010, an increase of 40 percent. In South Africa, Woolworths' Good Business Journey resulted in technology innovation, cost savings and operational efficiencies and positioned the company as an investment option for environmentally conscious investors (Woolworths Holdings Limited 2011:2).

Apart from good financial returns, if successfully implemented, green marketing also results in enhanced corporate image, supply collaboration, ethical procurement of raw materials, environmental risk management and an increase in consumer trust (Fraj, Martinez & Matute, 2011). For example, the use of reverse logistics enables manufacturers, wholesalers and retailers to develop symbiotic relationships whereby the waste generated by one company is used by another as a cost-cutting measure (Mishra & Sharma, 2010; Mohanasundaram, 2012). A typical example is the South Africa retail giant Woolworths, which is running recycling projects with Nampak, Engen, Gusco and Isikhwama that, translate in cost savings in packaging (Woolworths Holdings Limited, 2012). In a nutshell, the implementation of green marketing improves supply chain productivity and performance through the use of the 3R typology, that is, reduce, re-use and recycle, as the guiding philosophy (Lee, Park & Trimi, 2013). However, Owen (2012) cautioned marketers about the likelihood of the "green marketing conundrum" whereby efficiencies reaped from green marketing implementation may unintentionally result in more consumption and production which ultimately translate into a larger carbon footprint. Besides cost reduction, companies are also embracing green marketing as a growth strategy (Mishra & Sharma, 2010). Growth opportunities are particularly being realized in sales of green products, green product innovation, market share acquisition and market development (Dauvergne & Lister, 2012). For example, Mishra and Sharma (2010) note a surge in the demand for green products as a key driver in the adoption of green marketing practices. Across the globe, it is estimated that 82 percent of consumers now prefer green products to conventional ones (Tinne, 2013), thereby positioning the green market as a growing attractive market segment. Some of the companies that were successful in implementing green marketing initiatives and improve their market shares include Toyota (Toyota Pirus), Coca-Cola (PET Project), Woolworths (Good Business Journey), Walmart (Organic product range), and Xerox (recycled paper photocopier) (Mishira & Sharma, 2010).

Another driver of the adoption of green marketing initiatives is social responsibility (Mishra & Sharma, 2010). To support this view, Babiak and Trendafilova (2011) are of the view that "the natural environment is increasingly being viewed as a pillar of social responsibility." In addition, Mohajan (2012) notes that more organizations than before are warming to the fact that they have a moral obligation to protect the environment. In line with the triple bottom line concept, investments in green marketing initiatives that benefit communities enhances the legitimacy of corporates as this demonstrates that they accept their obligation to protect the environment (Dhar & Das, 2012; Sarkar, 2012). The elements of corporate social responsibility within the sustainable marketing debate include responsible procurement, fair operating practices and responsible disposal of wastes (Kumar & Christodoulopoulou, 2013). Apart from enhancing an organization's environmental legitimacy, marketers also use social responsibility as a marketing tool (Dhar & Das, 2012). To this end, most companies are publicizing their green marketing initiatives in order to propel their corporate image (Hillestad, Xie & Haugland, 2010). Substantiating this view, Kumar and Christodoulopoulou (2013) note that the market value of an organization tends to increase following environmental philanthropy announcements and the awarding of environmental certifications.

At a macro-level, government regulations are also pressuring companies to adopt green marketing practices (Hale, 2011). Government regulations related to green marketing are designed to protect consumers by reducing the production and consumption of products that cause environmental harm, as well as assisting consumers in evaluating the environmental composition of green products (Mishra & Sharma, 2010). Although national governments have made remarkable strides in promulgating and enforcing environment laws, Simuka et al. (2009) warned that the lack of a global framework for enforcing environmental regulations and standards tends to negate the progress of individual governments. In the absence of a well-enforced global environment regulatory framework, Dauvergne and Lister (2012) note that global companies such as Walmart, Coca-Cola, McDonald's, Toyota and Nike, among others, are branding themselves as "global sustainability champions" and acting as global environmental regulators in the process. The inherent danger of this self-regulation approach, according to Do Paco and Reis (2012), is the likelihood of selective adoption and implementation of environmental regulations. In addition to government pressure, market opportunities, competitive pressure and social responsibility, other factors that drive the adoption and implementation of green marketing practices include the company's strategic thrust, corporate size, company resources and core competencies (Fraj et al., 2011).

Challenges Associated with Green Marketing: To successfully implement green marketing initiatives, marketers need to grapple with a host of challenges. Ramirez et al. (2013) note that, in spite of a general consensus of the benefits of green marketing, some corporates are still reluctant to adopt it due to several implementation challenges. Other researchers such as Polonsky (2011) are of the view that green marketing appears to be failing to achieve its expected potential of enhancing sustainable development. This view gains support from Dauvergne and Lister (2012) who argue that, globally, environmental problems continue to escalate as the desire for economic growth continues to pose a threat to green marketing efforts. Additionally, environmental problems tend to be compounded by the lack of a universally acceptable perspective regarding the causes and consequences of climate change (Polonsky, 2011). Against this backdrop, Hale (2011:91) opines that the solution to environmental challenges is more likely not going to be realized in the immediate future because of a lack of consensus on the causes of climate change and the slow implementation of international environmental agreements. One of the major problems that inhibit attempts to address environmental problems is the micronisation of environmental problems (Polonsky, 2011). Although supply chain members understand the importance of the systems approach in the exchange process, its application in the implementation of green marketing is not evident (Polonsky, 2011). The failure to adopt a broader systems approach in green marketing implementation results in green marketing practitioners perceiving a disconnection between macro-marketing and micro-marketing, which inhibits the implementation of transformative green strategies (Russell & Russell, 2010). To address this challenge, Polonsky (2011) suggests the need to integrate green marketing implementation with macro-marketing objectives. At micro-level, companies intending to implement green marketing initiatives encounter numerous challenges which include consumer cynicism, failure to structure effective green marketing messages, inability to measure environmental performance, variability in demand of green products, failure to manage the transition towards sustainability and exorbitant investment costs in green technologies (Polonsky, 2011; Chen & Chai, 2010). A discussion of the challenges associated with the implementation of green marketing initiatives follows.

Lack of standardization: Lack of universally acceptable standards that authenticate green marketing claims is cited as one of the major challenges obstructing the market appeal of green products (Mishra & Sharma, 2010; Van Wyk & Deegan, 2009). For this reason, Mishra and Sharma (2010) emphasize the need for universally acceptable standards to monitor the use of green marketing tools such as environmental adverts, environmental labels, eco-brands and green product certifications (Mishra & Sharma, 2010). In the absence of green marketing standards, Ramirez et al. (2013) warned that consumer skepticism will continue to negatively affect the purchase of green products and derail progress towards effective green marketing implementation. To address consumer skepticism, Chen and Chai (2010) emphasize the need to integrate environmental attributes with traditional product attributes such as convenience, price, quality and performance. Sinnappan and Rahman (2011) add that, to create sustainable competitive advantage, marketers need to properly segment the green markets and position green products competitively in the consumers' psyche. In the absence of green product standards, Ottman (2011) suggests that marketers need to be guided by the tenets of the marketing concept to enhance the credibility of green products. Since this is a new concept in developing countries, Mishra and Sharma (2010) stress the importance of investing in green consumer education by incorporating consumers in green initiatives. Other challenges faced by marketers include negative attitudes towards green product quality and justifying the premium prices associated with green products (Singh & Pandey, 2012). Quality-related perceptions can be addressed by aligning green product attributes with consumer needs (Mishra & Sharma, 2010; Tiwari et al., 2011). The quality of green products can also be enhanced through the use of endorsements and environmental certifications from trustworthy independent third parties (Ottman, 2011).

Structuring green marketing messages: Apart from lack of green product standards, marketers are also confronted with the challenge of structuring green marketing messages in terms of tone, style and appeal (Smith & Brower, 2012). This challenge was also confirmed in a by Sampei & Aoyagi-Usui (2009) which found that framing effective environmental messages that have the potential of enhancing environmental knowledge, pro-environmental attitudes and sustainable consumption patterns remains a challenge for marketers. The Centre for Research on Environmental Decisions (CRED) (2009) also acknowledged that it remains a challenge to frame environmental communications because of the complexities, confusion and uncertainties associated with potential of green marketing to address environmental problems.

Credibility of green marketing tools: Positioning green products effectively in the marketplace is another challenge facing marketers (Chatterjee, 2009). In essence, the credibility of green marketing tools is singled out as the major obstacle that limits the adoption of green marketing practices by consumers (Belz & Peattie, 2009). To characterize this concern, in 1986, Westerveld, an avid environmentalist coined the term "green washing" to refer to the act of propagating misleading information about the environmental practices of the organization (Orange, 2010). Greenwashing is also defined as the intentional or unintentional act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service (Fernando, Sivakumaran & Suganthi, 2014). In practice, greenwashing denotes the practice of falsifying, omitting and presenting ambiguous environmental claims in green marketing messages (Tschupp, 2012). According to the green marketing firm Terrachoice (2010), the risks of greenwashing include misleading consumers, jeopardizing consumer trust, increased competitive pressure from illegitimate green products, poor corporate image and reduced market share as a result of consumer cynicism. Overall, greenwashing has a cumulative negative effect of spoiling the market for genuine green products and dilute the competitive edge associated with the adoption of green marketing strategies (Delmas & Burbano, 2011; Fernando et al., 2014). Although the threats of greenwashing are evident, there is no consensus in marketing literature on what constitutes greenwashing (Alves, 2009). Thus, Durif et al. (2010) and Tinne (2013) contend that the high number of greenwashing cases seems to be linked to the lack of clarity on the definition of green products. In an attempt to clarify the concept of greenwashing and the practice of green marketing, the Terrachoice 2008-2009 research culminated in the identification of the following forms of greenwashing as shown in Table 1:

Table 1: Sins of greenwashing

Type	Description
Sin of the hidden trade-off	Involves portraying products as "green" based on a narrow set of attributes without paying attention to important environmental issues
Sin of no proof	Involves the use of unsubstantiated environmental claims
Sin of vagueness	Committed through the use of vague environmental claims such as "all-natural"
Sin of worshipping labels	Outright misrepresentation of green product labels (for example fake labels)
Sin of irrelevance	Emphasizing insignificant environmental claims in green marketing messages (for example CFC-free)
Sin of lesser of two evils	Involves a deliberate attempt to distract consumers from product attributes that have a significant negative effect to the environment
Sin of fibbing	Involves the use of false environmental claims

Source: Terrachoice (2010)

Environmental performance measurement: In addition to concerns about the credibility of green marketing tools, the attainment of green marketing objectives remains a challenge owing to because of the problems associated with the measurement of the environmental impact of green practices (Dangelico & Pujari, 2010). The challenge emanates mainly from the lack of consensus on what should be measured and how (Delai & Takahashi, 2011). This has resulted in the use of various sets of environmental performance measures, making it difficult to come up with best practices in assessing the success of green marketing initiatives thereby limiting environmental performance improvements (Delai & Takahashi, 2011). This view was confirmed in a study conducted by Epstein and Buhovac (2010) which concludes that the subjective nature of social and environmental impact assessments makes it difficult to quantify in objective terms the return on green marketing initiatives. In addition, a study by Delai and Takahashi (2011) also note the difficulty of promoting environmental accountability among employees owing to the challenge of integrating green marketing performance targets in their day-to-day operational activities (Delai & Takahashi, 2011).Although there is a plethora of green marketing metrics used in the marketplace, Singh, Murty, Gupta and Dikshit (2009)note that very few follow an integrated approach of incorporating environmental, economic and social dimensions. Given this background, Epstein and Buhovac (2010) note that the lack of an integrated approach to sustainability measurement has the potential to dilute the long-term commitment of key stakeholders in the implementation of green marketing initiatives.

The success rate of green products: Green product functionality is another potential obstacle, as some non-green products are perceived to have attributes that are superior to those of green products and consumers are usually not prepared to trade off quality and functionality (Ramirez et al., 2013). Perceptions of the poor quality of green products make it a challenge to set a competitive price and generate market demand for sustainable offerings (Nidumolu, Prahalad & Rangaswami, 2009). Another challenge is the unwillingness of some consumers to pay the higher prices associated with green products (Awad, 2011; Carrete, Felix, Centeno &Gonzalez, 2012). Taking into consideration the high development costs of green products, it is a challenge to sell these products in price-sensitive markets, as in the absence of government subsidies they will not be able to compete with the cheaper conventional products (Dangelico & Pujari, 2010). In most developing countries, green marketing is still at a developmental stage and more needs to done to generate awareness of environmental problems and the benefits of green products (Kiran, 2012; Sarkar, 2012). Although eco-labels are instrumental in creating consumer awareness of green products, not all green product categories have credible eco-labels (Dangelico & Pujari, 2010). In addition, eco-labels are plagued by the time-consuming challenges of the coordination and negotiation processes involved in the certification process (Dangelico & Pujari, 2010).

Green marketing cost: Although the implementation of green marketing has the potential to enhance the bottom line of organizations, not all firms have enough capability to undertake green marketing strategies (Chen & Chang, 2012). The implementation of green marketing strategies has a substantial impact on the financial resources of the organization because of expenditure on green infrastructure, training and development, research and the development of green marketing policies (Dauverge & Lister, 2012). In particular, the high initial cost of financing green infrastructure and the long payback periods are singled out as the main challenges faced by marketers (Vermillion & Peart, 2010). For instance, Wal-Mart spends $500 million annually to improve its supply chain and General Motors is estimated to be spending upwards of $2.5 billion a year on research and development for vehicles using alternative energy (Gleim, Smith, Andrews & Cronin, 2013). In South Africa, the new green hotel, Hotel Verde, cost about R20 million more than would a conventional hotel of its size (Hirsch, 2013). The contracting global economies make it difficult to invest in green marketing processes, considering the high initial investments required. In addition, the global economic downturn also affects the demand for green products as the majority of consumers are not willing to pay the premium associated with green products (Kiran, 2012; Singh, 2012). Sustainable marketing will succeed only if shareholders consider green marketing as a long-term commitment and are prepared to forgo short-term financial gains (Mohanasundaram, 2012; Sarkar, 2012). In view of the costs associated with green marketing, Leonidou, Leonidou, Fotiadis and Zerit (2013) suggest that going green imposes a financial burden on the firm and is one of the major obstacles to the practice of green marketing. The huge investments made by firms, coupled with the variability of demand for green products, are the major challenges for companies (Gleim et al., 2013). Globally, financial markets continue to be fragile, owing to the prolonged effects of the financial crisis that has resulted in a downturn in green marketing investments (World Economic Forum, 2011). Another challenge is designing a system that accurately assigns the environmental costs to specific participants causing environmental harm within the supply chain (Polonsky, 2011).

Change management: The implementation of green marketing requires a radical change in organizational culture and operations (Linnenluecke & Griffiths, 2010; Peattie & Peattie, 2009). The change process involves a paradigm shift from the conventional linear cradle-to-grave operational model to the more holistic cradle-to-cradle model (Borland, 2009). The necessity for wholesome changes in the operating philosophy of the organization is supported by a study conducted by Ginsberg and Bloom (2004), which cautioned against a piecemeal approach to green marketing implementation. Part of the challenge is to manage the change process, especially gain the support of internal stakeholders of the organization such as top management, shareholders and employees (Leonidou et al., 2013). Some of the major challenges include such factors as culture misalignment with sustainability values, lack of employee awareness and fear of change (Belz & Peattie, 2009; Ramirez et al., 2013). In particular, cultural changes present the biggest challenge to marketers if sustainability values are not part of the operating philosophy and core ideology of the organization (Crittenden et al., 2011). Changing the ideology of the organization is a transformation change process that requires employees to be aware of sustainability issues beyond their work responsibilities (Haugh & Talwar, 2010). To make meaningful strides towards sustainability, there is a need to integrate green marketing principles in the vision, mission and core values of the organization (Crittenden et al., 2011). To cultivate a sustainability-oriented culture is usually a challenge in large organizations, owing to the existence of various sub-cultures that may negatively affect the commitment of employees to the achievement of sustainability goals (Linnenluecke & Griffiths, 2010). Gaining employee commitment to sustainability objectives may prove to be a challenge, especially if employees are highly unionized and when the business case for sustainability needs to be justified (Ramirez et al., 2013). To foster employee, buy-in, green marketing needs to be implemented in a manner that involves employee participation and empowerment to enhance internal legitimacy and co-ownership of green marketing objectives (Frandsen, Morsing &Vallentin, 2013).

Policing the value chain: The greening of the supply chain is a strategic imperative for the achievement of green marketing objectives (Belz & Peattie, 2009). Increasingly, it is important for marketers to evaluate suppliers on the basis not only of lead times and cost but also of their commitment to enhancing the well-being of the environment (Kung et al., 2012). For instance, there is a need to know whether the products or raw materials were sourced ethically and fairly along the supply chain (Walker & Jones, 2012). The need to check the environmental credentials of value chain partners stems from the realization that the behavior of supply chain members may influence the reputation of the organization (Keating, Quazi, Kriz & Coltman, 2008). For instance, Nestlé's image was negatively affected by the practices of its key supplier of palm oil (Nothhaft & Akerstrom, 2012). In practice, it is difficult to develop effective tools to evaluate the performance of key members in the value chain (Walker & Jones, 2012). Although it is important to track the environmental performance of suppliers, the main challenges include the development of an integrated sustainable supply chain tracking system, gathering data on the performance of suppliers, pressure to reduce operating costs and screening of potential suppliers (Keating et al., 2008). The development of a green supply chain management monitoring system is a challenge because of problems in maintaining the environmental awareness of suppliers, complexities in measuring and monitoring the environmental practices of suppliers and the lack of effective environmental measures (Mathiyazhagan, Govindan, Noorulhaq & Geng, 2013).

Although environmental assessment strategies such as carbon management, analysis of carbon and energy footprint and lifecycle analysis are useful in measuring the environmental performance of companies, they are usually too complex (Nidumolu, Prahalad & Rangaswami, 2009). As a result, the sustainability performance of an organization depends largely on the activities of independent stakeholders of the organization that are beyond the control of marketers, such as the actions of investors, suppliers and competitors (Belz & Peattie, 2009). Hoejmose, Grosvold and Millington (2013), for instance, are of the opinion that the unevenness of the bargaining power among buyers and suppliers tends to limit the extent to which marketers influence suppliers to comply with sustainability principles. However, marketers need to understand that green marketing implementation challenges are not insurmountable. A well-articulated green strategy supported by a green corporate culture, green marketing core competencies and ideal competitive conditions is central to the achievement of sustainability objectives (Baverstam & Larsson, 2009). It is also important to note that green marketing challenges tend to vary by industry and early adopters of green marketing have the potential to create sustainable competitive advantage (Rakhsha & Majidazar, 2011). To be effective, green marketing needs to be supported by appropriate organization structures, systems and policies (Epstein & Buhovac, 2010). The achievement of green marketing objectives requires a systems approach in the implementation process, whereby all organizational functions, such as accounting, operations management and human resource management, are integrated into the overall corporate sustainability strategy (Belz & Peattie, 2009).

Future Prospects of Green Marketing: There is general consensus that green marketing is increasingly becoming a viable strategy to address the scourge of climate change (Rahbar & Wahid, 2011; Ramirez et al., 2013). With sustainability emerging as the dominating theme in the twenty-first century, green marketing is expected to continue to influence marketing strategy and practice in the long term (Ottman, 2011; Young et al., 2010). At corporate level, it is predicted that companies will initiate global green marketing strategies in order to expand their markets, increase market share and take advantage of the positive image of their initial successful green brands (Young et al., 2010). For emerging markets such as China, Brazil, South Africa and India, among others, the adoption and implementation of green marketing will enable them to integrate their budding economies into the mainstream global economy (Nkamnebe, 2011). It is also envisaged that global warming, climate change and the trend towards green consumerism will continue to spur interest in environmentalism and direct efforts towards the harmonization of green marketing practices (Lee et al.,2013; Ottman, 2011). Foreseeing the potential growth of green marketing, marketers are investing in long-term green marketing initiatives to capacitate them to provide innovative green products (Smith & Perks, 2010). With the expected growth in demand for green products (Chen, 2008; Mazar & Zhong, 2010; Lin, Tan & Geng, 2013), marketers are re-positioning their marketing strategies to tap into the green market by seeking to understand the factors that influence the purchase of green products (Rahbar & Wahid, 2011).

It is also anticipated that the concept of green marketing will change the future outlook of global economic systems, with the transition towards green economies an expected megatrend (Belz & Peattie, 2009). The United Nations Environmental program (UNEP) (2011) defined a green economy as one that results in improved economic growth and socially equity while significantly reducing environmental risks. Green economies are expected to stimulate economic growth through the creation of green jobs and to shift the global economy towards ecological balance (Belz & Peattie, 2009). With calamities induced by climate change projected to account for 500 000 deaths and $340 billion in damages globally by 2030, the green market is expected to grow, mature and influence the rules of exchange in the marketplace (Ottman, 2011). The forecasted trends in population growth, poverty and climate change all point to the relevance of green marketing in the long term (Belz & Peattie, 2009). Overall, it is expected that green marketing will continue to be relevant in the coming decades as a result of the factors presented in Table 2.

Table 2: Factors influencing future directions in green marketing

Driving factors	Implications
Population growth	The global population is expected to reach almost 9 billion by the year 2050 putting further strain on the environment.
Unemployment	Approximately 1.3 billion people globally working in environment-related jobs such as agriculture and fisheries are likely to lose jobs as a result of environmental degradation, droughts and climate change.
Health	Health remains a key indicator of the quality of life and the demand for organic food is expected to grow.
Ecosystems damage	Increasing environmental degradation, if not addressed, will affect the welfare of future generations.
Food shortages	Climate change may reduce developing countries' food production by 16 percent, resulting in food shortages pushing up global food prices.
Fuel prices	Depletion of fossil fuels will limit economic growth.

Source: Belz and Peattie (2009).

4. Conclusion

Literature reviewed defined green marketing as a broad marketing concept that involves the production, marketing, consumption and disposal of products in a way that is less harmful to the natural environment. The overriding premise towards the adoption of green marketing is to enhance customer satisfaction in a manner that safeguards the well-being of the natural environment. The main drivers that explain why companies embrace green marketing practices include compliance with environmental laws, the desire to create sustainable competitive advantage, fulfilment of corporate social responsibility imperatives, pressure from environmental activists and green consumerism. Literature reviewed also emphasized that green marketing should not be construed as only not limited to environmental protection but rather as also an integral element of the marketing strategy. Literature reviewed also notes that the adoption of green marketing is costly in the short term due to variation in demand of green products, consumer skepticism towards green products, and exorbitant initial capital investment required for n green technology, research and development. However, literature reviewed acknowledges that, in the long term, green marketing may prove to be a viable strategy as it enhances corporate image, reduces wastage, increases market share and often results in improved financial performance. Top management commitment, stakeholder involvement, communication, supportive organizational structure and a systems approach are identified as critical success factors in green marketing implementation. Literature reviewed also notes that in its holistic application, green marketing is a broad macro-marketing concept with important implications for all activities of the value chain, including procurement, production, marketing and consumption. To sustain competitive advantage, literature reviewed emphasized the need by marketers to deliver products with tangible environmental benefits, understand the drivers of green purchase behavior and adopt a transformative approach in green marketing implementation. The relevance of green marketing in emerging markets can be enhanced by adopting transformative green marketing strategies that enhance the well-being of the natural environment and key stakeholders in the value chain such as suppliers, manufacturers and consumers. Overall, although this study identified challenges that impede the implementation of green marketing, there is still more research efforts needed to find ways of addressing such challenges.

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Consumer Buying Behavior at Shopping Malls: Does Gender Matter?

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Abstract: The development of shopping malls is a major social and global phenomenon that has unearthed a novel facet for customer satisfaction and their consequent or relative buying behavior. The aim of his paper was to explore the gender differences in consumer buying behavior at selected Durban shopping malls. It is an observational cross-sectional study carried out on 700 randomly selected respondents to study buying capacity, buying behavior and shopping experience of male and female consumers at shopping malls in the city of Durban, South Africa. Data was collected through pre-tested semi-structured questionnaire with closed ended questions. The study revealed that there are notable gender differences, which shape shopping behavior among men and women. Time and money spent at the mall was significantly high among female as compared to male consumers. Consequently, the results attributed that personal attributes and shopping mall attractiveness factors played a crucial role in influencing customer shopping behavior amongst the mall shoppers. The study concludes that gender differences are prevalent in the buying behavior of customers at the select shopping malls in Durban, South Africa. Average time spent by female is high as compared to male which also affect their average money spent at shopping mall. Psychological, Social and Cultural factors are highly influencing customers' buying behavior at shopping malls.

Keywords: *Gender differences, Customer buying behavior, Shopping mall attractiveness, Ambiance, Personal attributes*

1. Introduction

Over the last few decades, the retailing sector in South Africa has witnessed tremendous growth with the country's GNI (gross national income) per capita hitting US$ 6,100 (Piotrowicz & Cuthbertson, 2015).The entry of the country into the BRICS (Brazil, Russia, India, China, and South Africa) coupled with a population of over 50 million has provided a platform for the rise and flourishing of economic mercantile activities ranging from multinational corporations to shopping malls in its major cities (Ushakov, 2017). South Africa's retailing sector's context is characterised by the escalation in the number of shopping malls to meet the needs of the population segmented with high disposable income, high rates of urbanization, and trends of rapid economic growth patterns (Human Sciences Research Council., 2003). In the current business environment, shopping malls in the retail sector play a key role, as they expose consumers to a variety of products mostly under one roof (Gomez, Isakov, & Semansky, 2015). According to Ozturk (2014), the business environment is continuously becoming more competitive, an aspect that is forcing shopping malls to adopt strategies to meet the diverse needs of their respective consumers. Despite the adoption of these strategies, many shopping malls have failed to understand the implication of consumers' buying behaviour, personal variables, and the overall gender differences on the shopping experience (Ismail & Sohail, 2015). In this study, the focus is placed on seven shopping malls in Durban City. Durban City provides consumers with the exciting experience of shopping with diverse products ranging from domestic appliances, foodstuffs, and other variety of services (Turner, 2017). Given the diverse implications attributed to gender differences, it is inexcusable to disregard the significance of shopping malls in retail research. Therefore, the increase in the number of shopping malls has aggravated competition in respective contexts purposely to retain and attract new consumers (Ozturk, 2014).

Valentine and Powers (2013) identified the characteristics of the millennial generation that marks them as an important market segment that needs understanding from the marketers and mall managers. In addition to this, many studies place their focus on mature men and women who might be attracted to the mall based on their innovative design ideas, for example, furnished waiting areas, parking lots, and children's' playing areas (Giampino, Picone, & Schilleci, 2017). Hami, Fazle, and Emami (2016) attribute the implication of socio-demographic factors on the case of interior landscape design in shopping malls as an influence to shopping behaviours manifested amongst female and male mall shoppers. Similarly, the studies of (Miremadi and Faghanie, 2012) revealed the influence of mall factors such as ambiance, services, and assortment amongst consumers' mall shopping behaviour. Existing research attributes the disparity between the shopping behaviour of men and women based on diverse factors. For example, Kushwaha, Rao, and Ahmad (2015) posit that the advancement in technology, diverse cultural and social factors are some of the factors harnessing and impacting the shopping behaviour of men and women. Within this context, researchers continue to pursue the causal links between gender differences, customer shopping behaviour, personal variables, and their respective capacities in shopping malls. This study, therefore, aims to explore the gender differences in shopping experience through an empirical investigation of the shopping malls in Durban City.

2. Literature Review

Shopping behaviour: In his study, Sohail (2015) explored the differences in the shopping behaviour of men and women in malls located across Saudi Arabia. The sample consisted of 513 shoppers who were recruited using a non-probability convenience sampling method. The results of the study revealed differences in shopping behaviour between gender and variables such as price and service quality (Sohail, 2015). In this case, it is imperative to note that consumers are exposed to diverse products and social amenities that not only define their shopping behaviour but also influence their shopping habits. Therefore, mall managers must ensure that their respective malls match the right pricing policies, significant lifestyle trends, socio-economic levels, to the shoppers' needs and attitude. Similarly, Kraljevic and Filipovic (2017) conducted a study amongst the millennial who are posing a challenge for shopping malls. Shopping malls are striving to strategies to match millennials shopping. Their study adopted an empirical analysis with the objectives of the study centred on the gender differences manifested in purchase behaviour, loyalty, pricing sensitivity, and unique shopping habits. Findings from the study revealed that women are more sensitive to pricing and preferred loyalty programmes when compared to the men. Similarly, Sohail (2015) accounts for the relationship manifested between women and shopping, for example, women having a high likelihood of shopping for a gift when compared to the men. Men living with their spouses tend to leave shopping such as household groceries to their spouses (Anne, Bisakha, Kilgore, and Locher, 2014). However, Emine and Fatma (2016) found that men's behaviour towards shopping has changed significantly. Trends that were earlier reserved for women, for example, buying clothes that involve careful comparison of prices and time taken to a make a purchase have now been adopted by men. The implication of such shopping trends augers well with the role of the socio-demographic factors and their influence on shopping behaviour noted through studies carried out by Bai, Yao, and Dou (2015), and Miremadi and Faghanie (2012).

Personal attributes: The ever-growing competition in the business environment has led marketers to research on strategies for identifying various personal attributes that influence consumer purchasing behaviour. According to Dobre and Milovan-Ciuta (2015) note that personality is often linked to instances where consumers are influenced to purchase and consume products. Shopping mall managers and marketers are aware of the personality linked characteristics and their role in forming patterns of life manifested through lifestyles, identify, and social relations amongst different customer segments. The relevance of communication with women is likely to require attention and mall attendants should be ready to offer them assistance on the assortment of items available at their disposal. Gohary and Hanzaee (2014) conducted a study to understand the influence of personality traits with shopping motivation amongst a group of college students. The study reported existing significant differences amongst males and females on openness, hedonic shopping behaviour, and neuroticism. Maximising on personal characteristics as manifested amongst men and women differently is an implication of the resulting shopping experience amongst the shoppers. Moreover, men are guided with one purpose; shop for the intended items and leave a store while women take time to scan the store as they maximize their shopping experience. Similarly, the findings of a study by Rehman, Yusoff, Zabri, and Ismail (2017) revealed the implication of personal factors as evidenced on shoppers' buying behaviour in the fashion industry. As an integral component in the shopping experience, malls have adopted marketing techniques that enable them to match the personal characteristics of shoppers – for example, interactions with sales attendants in a shopping mall elicits different reactions from men and women. Men view sales attendants to be there to help get their shopping done in a timely manner, while women prefer to get help on different products and in the case of fashion, trying on clothes. Given that shopping malls in Durban city offer a range of products and services, consumers are likely to be influenced differently and their shopping experience shaped differently. Furthermore, the evolving nature of the mall shopping experience characterised by new innovative ideas and technological advances plays a critical role in motivating and shaping individual shopping behaviour attributes (Prasad, 2012).

Shopping mall experiences: The increase of shopping malls in major cities is a significant improvement away from the traditional markets that did not offer such a range of diverse products in a sophisticated manner. Nevertheless, competition amongst shopping malls continues to impact consumers' behaviour and respective shopping experiences amongst male and female shoppers. Whereas women enjoy the shopping experience, men understand shopping differently as they take it as a task that needs to be completed (Sohail, 2015). Numerous studies have been conducted regarding the development of malls with attention drawn on their design, inside and outside ambiance and other pleasant stimuli, for example, the use of videos, refreshments, promotional activities, and their relevance in enhancing shopping experience amongst the shoppers (Mittal and Jhamb, 2016). Khare (2012) found that these strategies not only enhance positive buying decisions but also shape and influence different customer buying behaviour amongst male and female shoppers. Shukla and Babin (2013) investigated the impact of psychographic variables and store characteristics in motivating and influencing consumer shopping behaviour. Their study that the context of shopping stores' characteristics was manifested through assortment, after sales services, sales associates, and ambiance generates better consumer experience. The study also dealt with the differences of consumer buying behaviour between gender and their respective holistic assessments regarding the characteristics of the shopping malls.

The evaluation of shopping mall consumers indicates that most of consumers with strong shopping motives inevitably make decisions based on what appeals to them and this fostered by the mall environment that elicits and perpetuates their shopping behaviour and experience (Tandon, Gupta, and Tripathi,2016). For example, sales persons observe that men seldom ask where items they need are and where they cannot find them, whereas women will readily approach the sales person for help (Sigal Tifferet and Ram Herstein, 2012). Existing studies revealed the influence of shopping mall attractiveness in attracting consumers from different social classes (Mittal and Jhamb, 2016). Findings from a study conducted by ElAdly (2007) that explored attractiveness factors of shopping malls in the United Arab Emirates and their implication on shoppers' perspective revealed that comfort, diversity, convenience, luxury, and entertainment shaped their buying behaviour. Mittal and Jhamb (2016), and Makgopa (2016) echo similar thoughts in their studies with additional factors such as; mall location, parking spaces, and entertainment as traits shaping shopping experience and different customer buying behaviour amongst the men and women. Shopping malls that provide designated areas for children to play tend to attract more female consumers with those with parking lots also venturing into diverse customer segment. For example, men are likely to be appealed to a certain shopping mall because they have a parking, for the case of women, they simply love shopping. The ever-changing consumers' habits and attitudes account for the embrace of these insights by shopping malls through a change in strategies.

3. Methodology

Present research is an observational cross-sectional study. All consumers of shopping malls in Durban city formed the study population for this research work.

Objectives: The objectives of this study were as follows:

- To study role of gender on consumers' buying behavior in select shopping malls in Durban
- To compare buying capacity of male and female consumers at selected shopping malls in Durban.
- To study gender differences in shopping experience at selected malls in Durban.

Null Hypotheses: To make study more scientific and to achieve the above objectives, the following proposed null hypothesis has been tested using appropriate statistical techniques.

- H_{01}: There is no role of gender on consumers' buying behavior in shopping malls.
- H_{02}: Buying capacity of male and female consumers is not significantly different.
- H_{03}: There is no gender difference in shopping experience at shopping malls.

Target population: All persons visiting malls for shopping at Durban city were the target population for this study.

Sample: The study was undertaken on 700 consumers of seven shopping malls in Durban city, Kwa-Zulu Natal, South Africa. From each selected mall100 consumers were randomly selected.

Data Collection Producer: From each selected shopping mall, one hundred customers were selected using Simple Random Sampling. Researcher had visited each mall personally and talked about the survey with the customers who were passing from him in the mall. Customers who had given oral concern to participate in the survey were selected for the study. In selection procedure, there was no restriction on ethnic groups, race, age, income and gender of the customers. The questionnaire was handed over to selected customer and got back filled questionnaire.

Data Collection Tool: The questionnaire consisted of closed-ended questions that included a 5-point Likert scale. To collect data from the source (customers of shopping malls), Pre-Tested, Close-Ended questionnaire was developed. Questions related to consumer buying behaviour, social factors, cultural factors, psychological factors and shopping experience at malls were included in the questionnaire.

Validity and Reliability: Internal reliability of the scores was checked using Cronbach's Alpha statistics. To validate the questionnaire, it was sent to four subject experts. Their opinion / suggestions was incorporated to finalise the tool. Thus, the questionnaire had "Content Validity" and "Reliability".

Data Analysis: Once the questionnaires were completed, it was coded, and data captured in Microsoft Excel. Once this was complete, the data was cleaned by cross verification before transferring it "STATA/MP version 13", statistical package for further analysis. Descriptive statistics were calculated to summarize nominal and categorical data using frequency and percentage whereas continuous data were summarized using mean, SD and CI. Mean scores of various factors were compared between male and female consumers using Independent t-test. Categorical and Normal data were compared using Pearson's Chi-Square test. Discriminant Function Analysis was carried out to predict gender from set of variables. Statistical significance was set at 5% level. Ethical clearance was taken from institutional ethical committee.

4. Results

This section presents the findings and discussion of the findings. Continuous data are summarized in form of mean±SD throughout this discussion. Table 1 presents the demographic details of the respondents. It is clear from Table 1, that 53% of the respondents are female. The mean age of the respondents was 37.17 years. The majority of the respondent's (36.6%) had a metric and 26.9% a diploma. Of the respondents, 45.3% were employed in the private sector and 32.6% in the public sector. With regard to respondents' income level, 21.9% had monthly income less than R 5000, 30% earned between R 5000 to R 10000, 26.3% earned between R 11000 to R 20000, 12.4 of the respondents earned between R21000 to R30000, whereas remaining 8.4% earned above R30000.It is clear from Table 2, that 12.3% of the respondents visited the mall daily whereas 51% visited it once a week. The proportion of male respondents who were visiting malls daily is high as compared to female respondents. There is no statistically significant association between frequency of visiting mall and gender of respondents (chi-square value = 8.641, p-value = 0.071).

Table 1: Profile of Respondents

Characteristics	Frequency(N=700)	Percentage (%)
Gender:		
Females	336	48
Males	334	52
Age:		
15 – 25 years	144	20.6
26 – 35 years	202	28.9
36 – 45 years	150	21.4
46 – 55 years	116	16.6
Above 56 years	88	12.5
Educational Qualification		
Below Matric	55	7.9
Matric	256	36.6
Diploma	188	26.9
Graduate	96	13.6
Post Graduate	105	15.0
Sector in which employed		
Private sector	317	45.3
Public sector	228	32.6
Self employed	126	18.0
Other	29	4.1
Monthly Income		
<R 5000	153	21.9
R 5000 to R 10000	210	30.0
R 11000 to R 20000	184	26.3
R 21000 to R 30000	87	12.4
>R 30000	66	9.4

Table 2: Association of frequency of visit and at mall with Gender

Variables		Male (n=336)		Female (n=364)		Total (n=700)	
Frequency of visit mall	Everyday	47	14%	39	10.7%	86	12.3%
	Once in a week	174	51.8%	183	50.3%	357	51%
	Once in a fortnight	50	14.9%	52	14.3%	102	14.6%
	Once in a month	40	11.9%	70	19.2%	110	15.7%
	Rarely	25	7.4%	20	5.5%	45	6.4%

Gender Difference in factors affecting buying decisions: To know what the factors are affecting buying decisions of male and female consumers in shopping malls at Durban city, 22 different questions were asked to selected consumers for rating it in four-point Likert scale as 1: Highly influence to 4: Not at all influence. It should be noted that the lower the mean value, the greater the importance placed on the buying decision making factor. Table 3 provides mean scores given by male and female consumers for each question. To check gender difference in factors affecting buying decision, Independent t-test was used, and its p-value was obtained which is presented in the table. Using independent t-test the difference of mean score of each factor was compared between male and female respondents. Results show that mean scores of factors. "Mall Image and Popularity", "Evacuation Path" and "Information Booth" are significantly high among female as compared to male respondents (p-value <0.05). It indicates that these factors are more important for females compared to males. On the remaining buying decision-making factors though, there were no significant differences between males and females meaning that both male and female customers place similar emphasis on such factors.

Table 3: Gender difference in factors affecting buying decision in shopping malls

Sr. No.	Factors	Male	Female	t-value	p-value
1	Mall Image and popularity	1.13±0.374	1.26±0.595	-3.420	0.001*
2	Spacious shop floor	1.16±0.371	1.21±0.485	-1.542	0.124
3	Billing and checkout time	1.26±0.445	1.24±0.441	0.512	0.609
4	Employee/Staff Behaviour and service	1.49±0.512	1.42±0.5	1.926	0.055
5	Amenities	1.5±0.513	1.46±0.51	1.214	0.225
6	Customer service quality	1.49±0.535	1.46±0.505	0.530	0.596
7	Safety and Security	1.38±0.556	1.42±0.526	-0.823	0.411
8	Atmosphere	1.37±0.559	1.42±0.562	-1.075	0.283
9	Parking	1.38±0.572	1.4±0.559	-0.402	0.688
10	Play area for children	1.46±0.64	1.51±0.686	-0.938	0.349
11	Temperature control	1.48±0.593	1.43±0.578	1.076	0.282
12	Attractive interior decor	1.49±0.66	1.48±0.614	0.209	0.834
13	Elevators and escalators	1.49±0.655	1.52±0.632	-0.757	0.449
14	Marketing communications/Promotions	1.49±0.665	1.57±0.687	-1.571	0.117
15	Cleanliness	1.44±0.616	1.48±0.577	-0.828	0.408
16	Operating time	1.45±0.621	1.48±0.572	-0.690	0.490
17	Flexibility in payment mode	1.47±0.622	1.45±0.575	0.622	0.534
18	Product return and exchange services	1.48±0.66	1.47±0.627	0.254	0.799
19	Brand reputation of products	1.52±0.673	1.52±0.661	-0.136	0.892
20	Toilet/Washroom/ Baby room facility	1.62±0.681	1.64±0.757	-0.390	0.697
21	Information booth	1.88±0.788	2.06±0.801	-3.035	0.002*
22	Evacuation path	2.21±0.839	2.4±0.809	-3.090	0.002*

* denotes significance at 5% level.

Table 4: Ranks given to factors on the basis of their importance on buying decision

Sr. No.	Factors	Rank by Males	Rank by Females	Rank by Total Sample
1	Mall Image and popularity	1	3	2
2	Spacious shop floor	2	1	1
3	Billing and checkout time	3	2	3
4	Employee/Staff Behaviour and service	13	7	8
5	Amenities	18	11	14
6	Customer service quality	14	10	12
7	Safety and Security	6	6	6
8	Atmosphere	4	5	5
9	Parking	5	4	4
10	Play area for children	9	16	16
11	Temperature control	11	8	7
12	Attractive interior decor	15	15	15
13	Elevators and escalators	16	17	17
14	Marketing communications/Promotions	17	19	19
15	Cleanliness	7	13	10
16	Operating time	8	14	11
17	Flexibility in payment mode	10	9	9
18	Product return and exchange services	12	12	13
19	Brand reputation of products	19	18	18

20	Toilet/Washroom/ Baby room facility	20	20	20
21	Information booth	21	21	21
22	Evacuation path	22	22	22

Table 4 gives ranks allotted to factors on the basis of mean score given by respondents. As per the table, top five important factors for decision making are "Spacious Shop Floor", "Mall Image and Popularity", "Billing and Checkout Time", "Parking" and "Atmosphere" whereas bottom five (least important) factors are "Evacuation path", "Information Booth", "Toilet/Washroom/Baby room facility", "Marketing communication / Promotion" and "Brand Reputation of Products". There are few factors in which females were more concern than males, like... "Employee/Staff behaviour and service", "Amenities", "Customer Service Quality" whereas in factors like ... "Play Area for children", "Cleanliness" and "Operating time", males are more concern than females. It is further reported that mall attractiveness also plays a key role in influencing gender differences amongst the mall shoppers.

Cronbach's Alpha was obtained as a measure of internal consistency of scales related to factors influencing consumers' buying decision at shopping malls(Table-4). The value of Cronbach's Alpha was 0.752 which infers that the scale had high internal consistency. Above factors were grouped in three broad categories as follows. Factor number 1-4, 12,16-17 and 22 were grouped as "Psychological Factors" whereas number 5-8, 11,15, 20-21 were grouped as "Cultural Factors" and remaining factors were grouped as "Social Factors". Overall responses for all groups were obtained by calculating mode value of factors under them. After getting mode values, final data were converted in binary answer as "High Influence" and "Moderate/Low Influence". Further analysis was carried out to check association of gender with these three groups as follows.

Table 5: Association of gender with Psychological, Cultural and Social factors

		Male (n=336)	Female (n=364)	Total (n=700)	Chi-square (p-value)
Psychological Factor	High Influence	227(82.4%)	295(81%)	572(81.7%)	0.228 (0.633)
	Moderate / Low Influence	59(17.6%)	69(19%)	128(18.3%)	
Cultural Factor	High Influence	209(62.2%)	222(61.6%)	431(61.6%)	0.109 (0.742)
	Moderate / Low Influence	127(37.8%)	142(39%)	269(38.4%)	
Social Factor	High Influence	237(70.5%)	245(67.3%)	482(68.9%)	0.849 (0.357)
	Moderate / Low Influence	99(29.5%)	119(32.7%)	218(31.1%)	
Overall Experience at Mall	Good	221(65.8%)	243(6.8%)	464(66.3%)	0.076 (0.783)
	Neutral / Bad	115(34.2%)	121(33.2%)	236(33.7%)	

To check association between gender and views on influence of Psychological, Cultural and social factors, Pearson's Chi-Square test was applied, and its p-value was obtained which are presented in Table 5. It infers that there is no significant association between gender and view regarding influence of Psychological, Cultural and Social factors on buying decision of selected respondents (p-value > 0.05). Among the three factor groups, respondents mean that compared to Cultural and Social, Psychological factors are more influencing on decision making. When they asked for their overall experience in shopping malls, male and female showed almost equal view (65.8% male and 66.8% female said it was good). Thus, no significant difference was found in views regarding overall experience at mall between male and female respondents (p-value = 0.783).

Table 6: Money and Time spent at shopping mall by male and female respondents

		Male (n=336)	Female (n=364)	Total (n=700)	Chi-Square (p-value)
Time spent	<2 hrs	198(58.9%)	161(44.2%)	359(51.3%)	15.108
	>2 hrs	138(41.1%)	203(55.8%)	341(48.7%)	(<0.001)
Money spent	< R 200	92(27.4%)	63(17.3%)	155(22.1%)	10.284
	> R 200	244(72.6%)	301(82.7%)	545(77.9%)	(0.001)

One of the aims of present study was to know buying capacity of male and female at shopping malls. To test difference in time & money spent by male and female customers, Pearson's Chi-Square test was applied, and its p-value was obtained which are given in Table 6. Female respondents spent significantly more money at malls then males (82.7% v/s 72.6%) (P-value = 0.001). Time spent at mall is an important parameter to know the shopping behaviour of consumers. In present study 138 (41.1%) male and 203 (55.8%) female respondents had spent more than two hours at mall. It concludes that females spent significantly more time at shopping malls compared to males (p-value <0.001) (Table 5). Gohary and Hanzaee (2014) and Rehman et al. (2017) attributed factors that differentiate men's shopping habits to those manifested by women. There were 14.3% male and 4.4% female respondents who spent less than one hour in a mall whereas 22.5% female and 17.6% male respondents spent more than four hours. Time spent at mall by respondents and their gender are significantly associated (Chi-Square value = 27.581, p-value <0.001).

5. Conclusion

This study evidences the existence of significant gender differences of customer shopping behavior amongst the mall shoppers. Understanding the aspect of the gender differences from the shopping experience of mall shoppers provides mall managers with rich information of approaching different customer segment with appropriate strategies. The findings of this study provide an insight in understanding the impact of gender difference in shopping mall experience. Thus, the study concludes that there is gender difference in shopping behavior in Durban city. Average time spent by female is high as compared to male which also affect their average money spent at shopping mall. Psychological, Social and Cultural factors are highly influencing customers' buying behavior at shopping malls. Male and female customers have almost similar views on influencing factors for shopping behavior except for few factors like mall image, information booth and evacuation path.

Suggestions: On the basis of above results, following suggestions has been given to managers / managements of shopping malls.

- Mall managers should pay more attention on customer's service counters to satisfy customers' quarries.
- Mall location and image is more important for customers for shopping experience. Hence management should give more emphasis on factors which improves image of the mall like quality of service, brand of items, tagging the items, parking facility and entertainment area.
- As time spent by female customers is high as compared to male, special attention on things which attract and give more options in shopping items like brand, style, new fashion, competitive rates, etc. It results in spending more time at mall which indirectly convert in high rate of shopping.
- There are good number of customers who are happy with shopping with experiencing good food and entertainment. They come to mall in week end to spare time with family. Looking at this scenario, managers should provide children pay area, food carts and cinema in mall so that majority of the requirement will satisfy. It can be results as increase in income of the mall.
- There may be additional factors that could contribute towards shopping experience. For instance, some shops or shopping centers provide additional entertainment during festive seasons (such as Diwali, Christmas, Thanks giving, and Easter and during Public holidays).
- To get more in-depth knowledge regarding factors which influence consumers' behavior towards shopping at malls, a qualitative research, in form of focused group discussion or personal interview, should be proposed.

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South African Economic Development in SADC Sub-Regional Integration

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Abstract: Following the end of colonialism in the Southern African sub-region, the SADC has experienced a thorough rearrangement with South Africa as the front-runner as opposed to her pre-1994 stance on integration. African regional cooperation has nevertheless been revitalised in some ways as a result of the two major events which started in the beginning of the 1990s that include the abolition of the apartheid regime in South Africa, and the eventual stabilisation of both political and economic relationships in the Southern Africa sub-region. This study employs the use of content analyses to assess the position of South Africa investments in SADC. Through the use ofregional integration, the studyfurther examined various South Africa's Key Economy Performance since 1994 which are the main contributing factors to South African economic growth; furthermore it looks at her material, commodity and political investment in the sub-regional integration process to determine if it serves as the strategy for National Economic Development for South Africa.The paper find out thatregardless of South Africa's economic clout within the SADC region, its Foreign Direct Investment is predominantly from its investment and market penetration of Southern Africa region while maintaining constant economic growth.

Keywords: *Economic development, Integration, Regional cooperation, National development*

1. Introduction

Broadly, African regional cooperation has been revitalised in some ways as a result of the two major events or developments which started in the beginning of the 1990s, this includes the abolition of the obnoxious apartheid regime in South Africa and eventual stabilisation of political and economic relationships in the Southern Africa sub-region. Overtly, this helped to strengthen the already existing regional integration in the Southern Africa States. Since the end of the Cold War (a state of geopolitical strain between the U S and the former Soviet Union after the Second World War over which of the two countries would hold economic and ideological influence over the world. The war lasted from 1947 – 1991. Ironically, there was no military engagement between the two states rather it was all a proxy war where the third -world countries were seen as "the pawn on the geopolitical chess board of the two superpowers")and with the rise of capable exchanging coalitions, there has been a renewed interest in South Africa regarding the need to create strong Regional Economic Integration (REI) mechanisms to promote economic growth for the region and by implication foster South Africa's National Development (SAND) trajectory.

The SADC appears to be among the best-integratedsub-regional organisation in Africa aided largely by South Africa's material, commodity and political investment in theregion. However, a comparison study done by Fall, Vachon and Winckler (2014), showed that general economic execution of Regional Economic Cooperation (REC) does not efficiently convert into expanded intra-regional exchange. While transforming exports by sorts of goods, differences between levels of industrialization and improvement of RECs become more notable. SADC has all the earmarks of being less regionally incorporated and is more open to worldwide trade. Conversely, Economic Community of West African States (ECOWAS) and West African Economic and Monetary Union (WAEMU) are more coordinated territorially yet less integrated into global trade. But beyond a political procedure argued Fall, Vachon and WincklerDiery, (2014), intraregional exports appear to be in this way to be a moment best solution for SADC states. Therefore, the extent to which these investments aid South Africa's National development needs to be fully understood, hence, questioning the position of South Africa in the current SADC integration.

In terms of socio-political and economic stability, the Southern Africa is a highly fragmented sub-region in Africa; a political and economic situation that has made South Africa to see itself as the regional arbiter and why she has always support regional integration. Regional integration is said to be established when a group of countries come together and develop a formal agreement by way of treaties regarding how trade and economic activities will be conducted and exchange with each other. Hans (1978:12-21), defines integration as "the process whereby political actors in several distinct national settings are convinced to move their loyalties, desires and political exercises toward a new centre, whose institutions possess or demand jurisdiction over pre-existing national states". For Chingono and Nakana (2008:2), the final product of a procedure of political combination is another political group, superimposed over the pre-existing ones. Regional integration has showed itself verifiably in Africa, America and Europe as a bureaucratic push to encourage political unification and expansion of capitalism".

2. Theoretical explanation

At the centre of international relations is the nation-state and because nations have been affected by many transnational phenomena, there is need for state actors, political scientists as well as humanist to formulate the means to smoothen relationship among nations while helping to establish a long-lasting peace. The theory of regional integration was the brainchild of the functionalists. The functionalist approach according to Bolaños (2016:5) considers that nations maximize their [economic and political] interest owing to the assistance of international organizations based on functional rather than territorial principles. From the functionalists approach, this theory can be explained from two perspectives; political and economic which falls under the purview of this work. Bolaños (2016:10) however argues that regional integration can simply not exist if the involved countries are not physically interconnected.

Economic integration: Historically, economic integration among nations can be traced back to the period of World War II when the market economics of Western Europe were destroyed, hence the assertion that economic integration is a post-War phenomenon which came to official use following the Marshal Plan for the reconstruction of Europe after World War II. Debatably, the perception of integration after World War II as a tool within a regional development strategy has always been applied to developing regions with such approaches as integration by the market; complex integration, the functional approach, and the structural approach (Muneer et al., 2016). Economic integration, therefore includes different degrees or stages of integration preferential trade agreements, free trade areas (FTAs), customs unions (CUs), common markets (CMs), and economic and monetary unions (ECLAC, 2009) thus, making [economic and political] integration within the context of SADC either as a process or as a goal. To Balassa (1961), economic integration is both a process and a state of affairs. As a state of affairs, it is the absence of various forms of discrimination between national economies. As a process, it includes measures designed to abolish discrimination between economic units belonging to different nation states thus leading to formation of a political union (Bolaños, 2016; Etzioni, 1965).

Political integration: Political integration is the process whereby nations forgo the desire and ability to conduct foreign and key domestic policies independently of each other, instead; make joint decisions or delegate such process to new central organs; which implies greater depth, coordination, and harmonization of [economic and political] actions among members in the governmental and institutional spheres. In essence, new regional governance where political actors are severally persuaded to shift their political expectations based on the rule that guides the new regional organization emerged (Lindberg, 1963, ECLAC, 2009). One of the features of such integration is physical integration, featuring regional infrastructure projects as the key drivers of the organization. From the above, international political and economic integration can be understood as a characteristic aspect of regional integration through which groupings such as SADC are created between nations without the use of violence. Lindberg (1970) reinforced this assertion that nations group together because of feelings of good relations, confidence, and expectations that common economic and political problems will be resolved without recourse to conflict but engender a passionate concentrations of economic exchange of productive factors. Debatably, political integration occurs if there are linkages that elicit joint participation in decision making within the region. It therefore translates to mean that, as part of an inclusive process, regional integration to Lindberg (1970) can be explained as the development of a collective decision-making system among nations. Regional integration in relation to SADC for that reason can be treated as a means to improving regional economic development by removing trade inhibitions between SADC states while establishing certain elements of economic cooperation. To Schmitter (1970:836) regional integration is about how national units come to share part or all of-their decisional authority with an emerging international (sub-regional) organization

South Africa and the Regional Economic Integration: Within Southern Africa, South Africa has the most firmly robust economy and by extension at continental level. Her regional and overall interests, however, lies at the heart of South Africa's remote approach in achieving the need to make deals that may inconvenience other SADC members. The financial and political quality of South Africa in the sub-region is unquestionable; perhaps the reason while South Africa is the present chair of the regional body and therefore its management position or role in the SADC as a sub-regional organisation is very important (SAnews, 2016). This also gave the right to South Africa to host the 37th Ordinary SADC Summit that took place in August 2017 as the chair of the organisation. This has earned the country an accolade of been described as the access-way to foreign direct investment to Africa. Institutional expansion has been progressively known to be essential to the integration course of the Southern African, the important character of these organisations in creating the correct system to regional integration has additionally been acknowledged.

The utmost vital systems aiding as regional integration schemes for Africa include the treaty creating the African Economic Community (AEC), and the Constitutive Act of the African Union (UNECA, 2009). The Abuja Treaty which creates the African Union affirmed that RECs shall be the structure of the African Union and RECs the foremost integrative fundamentals in Africa. However, the truth of RECs may likely keep researchers/academia curious about the place of the role played by organisations in regional integration. Coordination and harmonisation among RECs in Africa generally would therefore beseen as key to the socio-economic development of the region. Practically, a well-coordinated and harmonised regional economic integration will probablyguarantee that both internal and external powers impacting Africa's integration are measured and addressed. Besides, RECs will take a similar step or may be capable of gaining from each other without re-evaluating the wheel each time such harmonisation is realised.

The Abuja Treaty concentrates on the noteworthiness of building the African Economic Community (AEC) through harmonisation, coordination, and dynamic incorporation of the activities of RECs (SAHO, 2015). It is additionally rehashed in article 3 of the Constitutive Act of the AU that basically highlights the importance of arranging and fitting approaches among surviving RECs for the continuous acknowledgement of the Union (PVW/South Africa, 2016). Following the demise of apartheid, the SADC has experienced a thorough rearrangement with South Africa turning into its true front-runner as opposed to her essential aim. Amongst the fundamental goals of SADC are to accomplish advancement and monetary development, lighten neediness, improve the standard and personal satisfaction of the general population of Southern Africa and support the socially disadvantaged through territorial integration.

It also pursues other objectives such as propelling basic socio-political and economic qualityframeworks and foundations, progressing and ensuring peace and security. It also works towards strengthening and joining the long-standing historical, social and cultural affinities and connections among the general population of the area. South Africa, being the key regional influence on board in the Southern Africa integration, has turned out to be fairly more viable in terms of its security and economic functions within the SADC. In 2007, the SADC member states built up a reserve negotiation powerthrough whichthe association had achieved some level ofsuccess in intervening clashes in the Comoros and the Democratic Republic of Congo (Mutisi, 2016). Notwithstanding, over 66% of the SADC conventions on territorial integration have gone into drive and most substantive arrangements of the regional integration approach are on different levels of execution. As anintegrating organisation, the SADC has recorded accomplishments on structure and restoration of transportation connection concerning its member states. In respect of exchange, the SADC aimed at accomplishing a Free Trade Area by the end of 2008 and furthermore start a SADC Customs Union by 2010 (Department of Economic Affairs, African Union, 2008), however the free trade area was only accomplished on August 2008 as expected, unfortunately after missing the 2010 deadline for the establishment of custom union, the SADC met in 2015 to negotiate a new target date for the transformation of the organisation into a Customs Union (CU), up until 2015 Ordinary Summit, SADC has yet to achieved the establishment of custom union in the sub-region by the end of 2016.

Notwithstanding its achievements, the SADC has its share of difficulties. For instance, withits blueprints to have a Free Trade Area (FTA) and a Customs Union in the year 2010, it therefore meant that it must have a framework for recollecting a definitive target to finish it on time, but for the socio-economic and political trauma facing some its member states reverse has been the case. It is essential to note also that within the

SADC there is South African Custom Union (SACU), which is at a struggling condition of coordination as well as the Customs Union. There is a requirement to get all the SADC states to the level of Customs Union. However, the dual membership of some SADC states as members of the COMESA (Common Market for Eastern and Southern Africa) is making it difficult for SADC states to have its own particular Customs Union in 2008.

The World Trade Organization (WTO) rules which stipulate that nations cannot have a place with more than one Customs Union poses a serious challenge to nations (such as Tanzania) that are in cooperation with both the SADC and the COMESA. Jonathan (2004:1) saw that as for its objective of guaranteeing peace in the zone, the SADC has been moderately speculative about wielding its political muscle. The deteriorating political situation in Zimbabwe where the military has threatened to intervene in the ongoing political imbroglio is evidence (The Telegraph, November 13, 2017). Another challenge experienced in the Southern Africa region which has negative impact on the promotion of economic development with integration is the case of xenophobic assaults in South Africa. These attacks are perpetrated by black South Africans who spun against black non-nationals from different parts of Africa and the world and especially from other SADC states including Mozambique and Zimbabwe. Such attacks are contrary to the SADC's target of joining the long-standing historic, mutual and social similitudes and relations between the general populations of the sub-region. The recent approach and strong commitment to the actualisation of the SADC's integration programmes by South Africa is highly commendable. The evolution of its relationships with its neighbours on the African continent is worth pondering (Omoro, 2008). South African remains an economic powerhouse in the Southern Africa and Africa at large. Relations between South Africa and other countries on the continent have been far from cordial for the most part of the past century. South Africa's transition from apartheid to democratic rule 23 years ago has had far-reaching implications for Sub-Saharan Africa as the fall of communism in the former Soviet Union had on the Eastern European bloc.

The Southern African Development Coordination Conference (SADCC) whichwas formed in 1980 under the arrangements of the Lusaka Declaration like the OAU's Lagos Plan of Action formed in 1980; to stimulate the establishment of local monetary groups as building alliances for an inevitable continental financial union(the Abuja Treaty of 1991),was formedgenerally, as a political and protective reaction by the Frontline States - Angola, Botswana, Lesotho, Mozambique, Tanzania, Zambia, and Zimbabwe – to PW Botha's grandiose conception of the 'Constellation of Southern African States' (Jephias and Muyengwa, 2014) in the region. The SADCC wished to decrease economic dependency on South Africa through infrastructure security –especially of transport and particularly for the land-bolted nations in the region. In addition, the SADC adopted a Program of Action identifying and allocating a particular improvement or development projects to be sought after and led by specific countries. For instance, Mozambique coordinates transport, while Angola coordinate energy and Swaziland was given the responsibility for human capital development. Lamentably, this has centred party states' consideration around the coordination of national development rather than on a regional economic scheme.

The SADCC being transformed into the SADC through the 1992 Windhoek Treaty was obviously much more focused on economic issues than the former which was basically political security considerations. Debatably, what led to the transformation of the new institution of SADC into a Regional Economic Cooperation Economic was the increase in globalisation and liberalisation of trade apart from the increased in the proliferation of Regional Economic Cooperation and the rise of global value chains which played a key role in the transformation of the new institution of SADC, hence, its continuum moves up from regional cooperation to regional integration. Shortly after South Africa joined the SADC, South Africa was charged with the responsibility for coordination of the Finance, Investment and Health sectors. This is because South Africa has the most sophisticated financial and capital markets in the region and on the continent in general. At the end of the 1990s, the country led the development of the Protocol on Finance and Investment (FIP) and has additionally been giving key meeting and advice on the development of the Model SADC BIT – despite the centralisation of all functions, duties inside the SADC Secretariat in Gaborone.

South Africa is committed to the Regional Indicative Strategic Development Plan (RISDP) which is the SADC Blueprint for regional integration and improvement. This has been under survey since 2011 with this process being finalised earlier in 2013 (SADC, 2016). The SADC currently introduced the SIRESS (SADC Integrated

Regional Electronic Settlement System) which processes high-value transactions, furthermore the region will soon also be able to accommodate low values; for example, EFTs (Electronic funds transfer -EFT). This payment system consists of an arrangement of instruments, saving money systems and interbank finance exchange components that guarantee the circulation of money regionally in the SADC and worldwide. Again, South Africa's skilled and experienced central bank authorities and the large commercial banks have assumed a noteworthy part in electrifying backing for this critical activity in the region. Absolutely, it certainly underlines South Africa's undeniable influence in the sub-region. South Africa is the financial hegemon in the locale – perhaps a reluctant hegemon. As the only African G20 member and the only BRICS member, it is an influential actor in both regional and international geo-legislative issues. It is by a long shot the locale's most industrialised member.

The consideration gets on the worldwide front helps to intensify the locale's issues, challenges and potential. Moreover, there is South Africa's perceived obligation towards African countries, counting Tanzania, Zambia, Mozambique, Zimbabwe, Guinea and even the littler land lock kingdoms of Lesotho and Swaziland for providing support to the anti-apartheid movement and a refuge to anti-apartheid activists. The principal equitable organisations of Nelson Mandela and Thabo Mbeki (between 1994 and 2008) in essence defined South Africa's character as a new democracy. While President Mandela underscored the advancement of human rights in Africa and South Africa's part in this, President Mbeki focused on the Pan-Africanist vision of the African renaissance (SAnews, 2016).

Since 1994, South Africa has organised the SADC offering to it the spirit and embodiment of the RISDP (Regional Indicative Strategic Development Plan). SACU provides the best example of the difficulty of South Africa's hegemonic position due to the contrast between its history of regional destabilisation and its repositioning post-apartheid. Nevertheless, the customs union was created in 1910 to make customs administration in the British territories and protectorates in Southern Africa less demanding to oversee – in this way a comfort for the colonial administration of the time, rather than a tool for economic development. Common customs policy within the region was dictated from Pretoria and the free internal trade encouraged the predominance of South African industry within the union. The apartheid government's import-substituting protectionism was designed to stimulate industrialisation in South Africa – however, this was to the detriment of the other nation's modern development.

As a result, compensatory payments were made to Botswana, Lesotho, Namibia, and Swaziland (BLNS) as an incentive for the exchange redirecting impacts of South Africa's protectionist tariff structure. There was a political imperative to securing the BLNS' participation in SACU on account of South Africa's seclusion amid politically-sanctioned apartheid government. This brought about over-pay in the updated SACU revenue sharing agreement of 1969. A post-politically-sanctioned racial segregation South Africa (post-apartheid) renegotiated SACU's income sharing understanding in 2002 by which time the BLNS were heavily dependent on the customs revenue to fund their fiscal operations; the 2002 agreement being much more democratic and developmental. It included the redistribution of a large portion of South Africa' customs revenue to the smaller states (SADC, 2016).

With the strain on South Africa's monetary spending plan after the worldwide money related emergency and the developing levels of South Africa's public debt, there have been calls from many quarters within South Africa to recover a great part of the traditions income which is right now conveyed to BLNS. Be that as it may, the smaller SACU members are adamant that this redistribution is necessary to compensate them for the special access South African companies have had to their business sectors especially during South Africa's colonial and apartheid eras. Contrariwise, South Africa had argued that SACU's income pool should be moved towards financing modern advancement, and also cross-cutting infrastructural needs, rather than funding national fiscal budgets. However, as long as Swaziland and, Lesotho, for instance, get 60% of their GDP through SACU incomes and no differentiation in their tax base, SACU will never be a meaningful regional development organisation with SADC (SADC, 2016).

The degree of regional economic integration in SADC is frequently thought to be truly falling behind other RECs in Africa. While the SADC has committed to following a linear economic integration plan, moving from an unhindered commerce area to a customs union, and in the long run finishing in a common market with a single currency, it has consistently missed its convergence targets and there has been a lack of serious engagement in pursuing the RISDP integration plan. However, the linear integration path is based on the EU integration model and the wholesale application in an African context is questionable at best. Debatably, SADC's intra-regional trade has not performed significantly well as expected since 2008 as a free trade area. Alternatively, South Africa has developed its own model of regional economic integration which it trusts fits the African setting better. This is called a functional regional integration; a model takes a lateral approach and focuses on consolidating the free trade territory in SADC by tending to non-tax barriers to help market integration and creating regional trade infrastructure. This is a positive development since the lack of success of the organised commerce territory in opening regional exchange or trade is demonstrative that non-levy hindrances are more culpable in stifling intra-SADC trade than tariff barriers. The Non-tariff barriers (NTBs) can range from costly and burdensome customs proceduresto regulatory red-tape, to bribery and corruption among customs and immigration officials, to health and safety standards which are sometimes applied to protect local industry.

The Southern Africa's colonial history put its transport and trade infrastructure largely on getting primary commodities from the point of extraction to the coast for exportation to Europe or North America, rather than facilitating trade among Southern African countries (Austin, 2010). Unfortunately, despite the sense in this argument, it has not received the needed political buy-in from SADC states, and on-the-ground implementation of its associated policies has been slow. This is partly due to a mistrust of regional economic integration among stake holders and policy-makers in the SADC. It therefore means that convincing member states to sign onto the free trade area would be a herculean task for the SADC. According to the Institute for Global Dialogue (2008) and up to early 2017, Angola, DRC and Seychelles are still not signatories, as they have asked for more time. When it became evident that the free trade area did little to boost regional trade and increase the rate of economic development, member states began reneging on the provisions of the agreement and erecting other non-tariff barriers to trade. Despite the SADC (and two other RECs) having set up an online monitoring mechanism which allows the private sector to register the Non-Tariff Barriers (NTBs) they experience, SADC's decision to reject litigious dispute settlement means that there is no recourse to be taken against an offending country unwilling to cooperate. This is indicative of a broader issue within SADC. While SADC heads of state often pay lip service to the importance of deepening regional integration, there is an unwillingness to sacrifice national sovereignty to the regional body. SADC has a central secretariat without the necessary institutional bolstering, and many of the regional bodies such as the SADC Tribunal, are either powerless to enforce regional policy or have completely failed. As such, it seems as though the regional economic integration agenda is not going to be driven by the public sector whether at national or regional level. Rather, attention has shifted to the role of the private sector in driving regional integration in the SADC.

The business sector has shown a keen interest in being involved in regional policy-making and aiding in eliminating NTBs. With the private sector's access to expertise, experience and resources, a greater level of public-private engagement is called for. Unfortunately, in the SADC this engagement is low partly because organised business in the SADC is weak (Lesley, n.d). Whereas other RECs in Africa have strong regional business apex bodies that can distill private sector representation into a single platform, organised business in the SADC is fragmented and partial to being captured by sectorial interest. It is also because many Southern African states see the private segment as a source of income gathering instead of as important improvement partnership. The various licenses and administrative charges connected to cross-border transporters speak to charges on working together instead of financial arrangement tools intended for attractive results. Tripartite Free Trade Area (TFTA), negotiation around Africa's own mega-regional trade agreement started in 2008. Just as the WEF (World Economic Forum), question whether mega-regionals are global economic game-changers or, in fact, costly distractions, the Tripartite Free Trade Area will bring together 26 Member States in one market of nearly 600 million people. The TFTA makes up 57% of the population of the African Union (AU) and just over 58% in terms of GDP - approximately $ 624 billion. The launch of a regional free trade area has remained something of a moving target since 2011 when the tripartite agreement was adopted. The Tripartite FTA should have been officially launched in June 2014. However, this deadline was missed owing to the closure of its erstwhile secretariat, Trademark Southern Africa perhaps for [economic] reason on the part of South Africa; the launch later took place in December, 2014 (SADC, 2016).

South African policy makers see the T-FTA against a type of 'developmental regionalism' which focuses on poverty reduction through industrialisation and economic growth. Nonetheless, Trans-regional transport infrastructure and the coordination of economic policy are essential. The T-FTA is based on three pillars: Market integration, Infrastructure development and, Industrialisation. These pillars are relied upon to address the key difficulties which oblige the intensity of African businesses and consequently limit Africa's integration within the global economy. The T-FTA priorities also find resonance in South Africa's own policy documents such as The New Growth Path, the National Development Plan (NDP) and the IPAP 1&2 (Industrial Policy Action Plans), -The Medium-term Strategic Framework (MTSF) 2014-2019 of South Africa has therefore been seen to position the Industrial Policy Action Plan (IPAP) as one of the key mainstays of radical change in South Africa, in view of comprehensive development in the gainful areas of the economy (DTI, 2016). The various attempts made to encourage economic integration in Africa have led to countries belonging to multiple regional economic communities implying competing priorities and conflicting requirements – characterised by contested implementation schedules and commitments of the different trade regimes, which fundamentally undermine their effectiveness. To enable greater competition with other strong economies in the regions such as Kenya and Egypt, South Africa's role in the region has transformed profoundly where various groups – public, private and civil society have sought new forms of collaboration and cooperation, for Instance, poverty reduction, economic development, peace and security and governance support. Moreover, South Africa's dominance in the Sub-Saharan African region also calls into question whether regional integration will show any significant progress without the commitment from South Africa – and we all wait to see exactly what level of commitment this actually is (SADC, 2016).

Promoting South African National Development: The consistency and relevance of REI for South Africa or Southern Africa in the future is another matter for discussion. The future of the Southern Africa sub-region would depend on choices made in South Africa. A leading South African scholar stated that 'irrespective of the political introduction of a future South African government, all aspects of regional interaction are bound to undergo far-reaching change' (Leistner, 1992b:10). Debatably, the issue has gotten to be not whether the region ought to incorporate monetarily but rather the coordination – who, how and when. Robert (1994) while expressing a fundamentally alternate point of view argued that various powers in South African approach on the terms, standards, and approaches to govern a programme of closer regional economic cooperation and integration after apartheid for the perpetuation of self-interest. The South African future policy on this issue can thus be expected to depend on a considerable extent on the balance of forces established in the negotiation process.

The South Africa's National Economy Development Policy: Apparently, it has been argued that the approach to national economic development by various powers in South African has been on the terms, standards, and approaches to govern a programme of closer regional economic cooperation and integration after apartheid for the perpetuation of self-interest (Robert, 1994). The South African future policy on this issue can thus be expected to depend on a considerable extent on the balance of forces established in the negotiation process. Currently the only African member state in the Group of 20 (G-20) according to Jonas (2012), is South Africa, and in this manner conveys the weight of its own national advantages as well as of being a voice for the concerns of African and low wage nations (least developed nations). While South Africa has no official command to represent any other member but itself in the G-20, there is verifiable weight to guarantee that those nations and foundations who take part in the G-20 forms at any rate see a portion of the effects that their choices may have on African non-state members. This has been reflected in the dynamic part South Africa has played in the G-20 on improvement, International Monetary Fund (IMF) change and all the more as of late tax collection. South Africa works intimately with other developing nation entities from the group to guarantee that there is an adjusted plan and a scope of alternate points of view set forward on issues of specific significance to the worldwide south.

3. South Africa Key Economy Performance since 1994

Economic Performance: It is true that the South African economy has experienced a substantial change in the recent period since the appearance of democracy. The nation has recorded a normal rate of economic development and growth of 3.3% annually in genuine terms over the period 1994 to 2012. This growth rate was a momentous change from the 1.4% typical yearly advancement enlisted in the midst of the periods of

1980 to 1993. In any case, the pace of development missed the mark regarding the 3.6% average as recorded by the world economy. South Africa's total national output (GDP) by 2012 was 77% or greater compered to 1994 and an increment 90% compared with the global economy (IDC, 2013). On per capital premise, the country's genuine GDP was 31% higher before the end of the period. Advancement has, in light of current circumstances, been very unstable and firmly connected to the global monetary performance. The period depicted by the East Asian economic recession around 1998 mirrored a more amazing downturn for South Africa's economy as it was at the same time adjusting to its reintegration into the world economy. This event began a disparity between the whole deal GDP execution cases of the household and overall economies (IDC, 2013).

Manufacturing sector of the economy: The manufacturing sector's relative commitment to the general South Africa GDP and business declined in the course of the past two decades as South Africa formally entered a technical recession. As indicated by Sunita Menon on Business Day (2017), the GDP (Gross Domestic Product) shrunk by 0.7% quarter on quarter in the 1st quarter of 2017 — a stun as the consensus among financial specialists was a bounce back to 0.9% development or growth. The rand debilitated more than 1% against real exchanging monetary forms, tumbling to R12.84 against the dollar, R14.45 against the euro and R16.59 against the pound at 11.41am. A technical recession depends on two sequential quarters of negative growth. Gross domestic product in the final quarter of 2016 shrunk by 0.3%. The biggest negative supporters of development were the exchange, providing food and housing industry which dropped by 5.9% and diminished 0.8 of a rate point from GDP development (around R16bn to R148bn) and the assembling part shrunk by 3.7%, down 0.5 of rate point from GDP development (around R4bn to R129bn). Mining was around R14bn to R129bn while government consumption was around R2bn to R170bn (Business Day, 2017).

Gross domestic product is up 1% contrasted with a similar period a year ago. Joe de Beer, Statistics SA appointee executive general of monetary insights, said on Tuesday: "We have officially entered a recession. The last time we entered a recession was 2008-9 when we had three consecutive quarters of negative growth." He added: "There's a clear link between the fall in household consumption expenditure and the decline in trade. "Family utilization consumption was down 2.3% quarter on quarter. Stanlib boss business analyst Kevin Lings said it was particularly worried that since the global financial market crisis in 2009, the rate of monetary development in South Africa had not figured out how to pick up force and had not been sufficiently vigorous to prompt boundless occupation creation in the private division. This is in spite of government obligation practically multiplying since 2009. There needs to now be a genuine hazard that South African duty income gathering fails to meet expectations considerably all the more, putting the monetary specialists under critical pressure,' he said (Business Day, 2017).

In spite of the fact that it attested the overarching position in the economy in 1994, when it represented up to 21% of GDP at current costs, the part accordingly turned into the fourth greatest by 2012 (12.4% of GDP). Be that as it may, a contracting offer does not imply a decrease in yield in certifiable terms producing GDP extended by 61% from 1994 to 2012. The sector additionally turned out to be progressively exports-oriented with its share of aggregate stock exports remaining considerably higher in 2012 (IDC, 2013). The manufacturing industries, broadened generally, were dominated by a couple of substantial sub-sectors, particularly chemicals, metals and apparatus, and in addition food processing. Nevertheless, both the chemicals and food industries amplified their different shares of manufacturing value since 1994 while that of machinery and metals remained fundamentally unaltered. Furthermore, the textiles and clothing sector contracted substantially, but many other manufacturing sub-sectors are mainly domestic market oriented while others are profoundly dependent on export markets. Intensity is basic to their prosperity as rivalry prevailed in all cases. Performance was influenced by various elements after some time, including both domestic and external demand state of affairs, currency developments, input expenses and pricing practices - for example; import equality valuing or pricing, mechanical redesigning, policy support, infrastructure and coordination, administrative aspects and tax insurance or tariffs, and issues with competition/concentration, among others. They were profoundly advocated and supported for a long period of time by industrial policy initiatives while the transport equipment sector reliably by-passed the manufacturing industries (IDC, 2013).

According to report by the Industrial Development Corporation (2013), the machinery and metals industries posted a reasonably solid execution from 2002 to 2008. This was unequivocally reinforced by development and different types of fixed venture activity and its fair introduction. Be that as it may, the sectors' contribution was negative in 2009 when a 20% decline was recorded. Since the start of the economic recession, the non-metallic mineral items industries saw a negative average development which was influenced by weaker development. In addition to that, in the sub-sectorial level, the biggest picks up at the end of the recession in actual value added over the period 1994 to 2012, among the greatest industries of manufacturing were recorded with the accompanying: petroleum items; engine vehicles, parts and frill; "diverse chemicals"; equipment and equipment or machinery; essential chemicals and electrical hardware. The food handling enterprises contributed 11.2% to the manufacturing sector's GDP at an advanced rate over this period which was indistinguishable to the economy's 77.1% development (IDC, 2013).

Services Delivery sector of the economy: Government and the exercises its administrative cum political power are the consequence of political progression. The administration is the support of lawfulness, the resistance of society against outer adversaries and the headway of what is thought to be the welfare of the gathering, group, and society or state itself. The government, is in this way, in charge of making laws and guaranteeing that there are establishments to actualize its laws, and giving the administrations and items that these laws are implemented. It is the implementation of laws and the real planning of governments that constitute administration. The government's projects ought to, in this manner, contribute towards an enhanced personal fulfilment for all.

Tourism: Tourism is another key area where revenues are generated by most advanced countries. Currently, tourism is viewed as an engine or instrument of development and has become one of the biggest enterprises universally. One of the benefits of tourism as an export recipient is that it is less unstable than the product sector. Tourism has been reserved as a development industry in South Africa as the business is in a perfect world suited to enhancing the nation's numerous normal, social and different assets. As indicated by the World Travel and Tourism Council (2017) report, tourism constitutes roughly 7% of GDP and work in South Africa. Somewhere in the range of 74% of all guests in 2006 were from Africa and around 26% from abroad. Around 7.9 million of the 8.5 million remote explorers (92%) went to the nation for an occasion and roughly 196 951 (2.3%) for business in 2006.

It was likewise reported by the World Tourism Organization (WTO), sub-Saharan Africa pulled in 2.9% of the world's travellers in 2005. Of this rate, South Africa has around 20.5% of a piece of the pie. South Africa's global tourism earnings added up to $7.3-billion in 2005. Its share of aggregate African traveller landings and tourism receipts was more than 34% in 2005. Nevertheless, in a more recent report according to the WTTC 2016 Economic Impact report, Iceland's Travel and Tourism add up to commitment was expected to ascend by 1.7% from 2015 to 2016. In spite of the fact that information demonstrates that business development has hindered, this is just a transitory marvel. The standpoint for the fate of the industry or sector was certain, particularly bearing in mind the impact of the 2010 FIFA World Cup held in South Africa. The development to the occasion, and the introduction that South Africa brought previously, then after the fact the occasion, had undoubtedly brought about forceful development in foreign tourism. This became a demonstrated reality in each nation where the occasion has been held over the past years. It was anticipated that in 2010 the South African tourism industry had utilise more than 1.2 million individuals whichever directly or in the public sector either directly or indirect way (MCSA, 2016).

Local business in South Africa: Insights South Africa delivers a regular assessment of the retail trade business with local industries covering different retail exchange activities. The overview for the most part covers retailers in specific items of trade including food, beverages, beauty care products and toiletries, pharmaceutical, general merchants, tobacco, and therapeutic merchandise, materials, garments, footwear, cowhide products, family unit furniture, machines and gear, equipment, paint and glass, and also other distinctive shippers in irregular items. Since the year 2000 it was accounted for that retail trade or exchange bargains was at a steady cost, in the year 2006, it showed increase of 9.7% from 2005 which recorded 7.2%. According to Statistics on South Africa, this is the greatest addition, together with the 2004 augmentation, and this was additionally 9.7%, for any year since 2000. According to a survey by to Statistics SA, general traders, diverse retailers and retailers in materials, attire, footwear and cowhide items were the genuine patrons to the extension in retail trade bargains. Bona fide retail arrangements' advancement decreased in the last quarter from the second last quarter of 2006 from 10.7% to 9.1% year-on-year. Among the huge retailing groups are Edcon, Massmart, Pick 'n Pay, Shoprite Checkers, Mr Price Group, Foschini Group, JD Group and Ellerines Holdings (MCSA, 2016).

4. Conclusion

As earlier said, African regional cooperation has nevertheless been revitalised in some ways as a result of the two major events or developments which started in the beginning of the 1990s which include the obliteration of the apartheid regime in South Africa and eventual stabilisation of political and economic relationships in the Southern Africa sub-region. This, debatably, helped to deepen the already existing regional integration in the Southern Africa States. Since the end of the Cold War, and with the rise of capable exchanging coalitions, there has been a renewed interest in South Africa regarding the need to create strong REI mechanisms to promote economic growth for the region and by implication foster South Africa's National Development trajectory. After becoming democratic in 1994 and subsequent acceptance into the SADC, the South African economy has achieved both social and economic development within the last two. There are few factors considered to be responsible for the economic development of South Africa. The economy became stabilised in the mid-2000s as the country experienced an improved social development. Nevertheless, from a policy perspective, South Africa has fallen short significantly particularly in relation to economic reforms. Economic reform has been weakened as a result of poor policy development which lacks the right vision for the economy.

Broadly speaking, South Africa in the past few years has experienced a continuous successive growth its economy, thus regarded as the long-lasting and sustained economic development in its recent history. The continued growth and sustainability is a result of prudent fiscal and monetary management with her increased participation of the corporate sector in overall economic activity. Regardless of the economic challenges and policies implementation faced by the South Africa since 1994, South Africa has played a very vital role in the Southern Africa sub-regional integration since her acceptance into the SADC. Her role in the SADC has transformed profoundly whereby different groups both public, private and civil society sectors sought new forms of partnership and cooperation in the area of poverty reduction, peace and security, governance support, and economic development. Having carefully examined the various key economic performance of the economy of South Africa since 1994, it is, therefore, safe to conclude, that, regardless of its political and economic management of SADC through her various international companies all around the region, South African FDI is mainly contributed by her heavy investment and market penetration in Southern Africa region, nevertheless South Africa also depends heavily on her foreign investment for its continued growth. The injection of investment funds (FDIs) from abroad is essential to guarantee the best possible operation of the nation's unlimited assets which has contributed to continued growth of the economy. These investments returns are the functions and basis of South Africa's national development today.

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Relationship between Real Exchange Rate and Economic Growth: the case of South Africa

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Abstract: The objective of this study was to investigate the relationship between real exchange rate and economic growth in South Africa. Using time series data, the period from 1980 to 2015 was covered in the study. Data was collected from the South African Reserve Bank, the International Monetary Fund and International Financial Statistics. The Johansen cointegration and the Vector Error Correction Model estimation techniques were employed in the study, followed by VEC Granger causality test, variance decomposition and impulse response function. The long-run results revealed a negative and significant relationship between real exchange rate with export and economic growth. On the other hand, money supply and foreign direct investment have a positive and significant relationship with real exchange rate. Only export was significant and positively related to real exchange rate in the short-run. Results of granger causality showed that only export granger causes real exchange rate thus, a unidirectional causality exists between export and real exchange rate. Results of variance decomposition revealed that the real exchange rate is highly affected by shocks from economic growth. The impulse response functions showed that real exchange rate responds positively to shocks from real exchange rate and money supply. On the contrary, real exchange rate responds negatively to a shock from economic growth. There is, therefore, a need to increase exports, money supply, foreign direct investment and economic growth as these would lead to an increase in the Rand and consequently, appreciation of the Rand.

Keywords: *Real exchange rate, Economic growth, South Africa, VEC Granger Causality and VECM*

1. Introduction

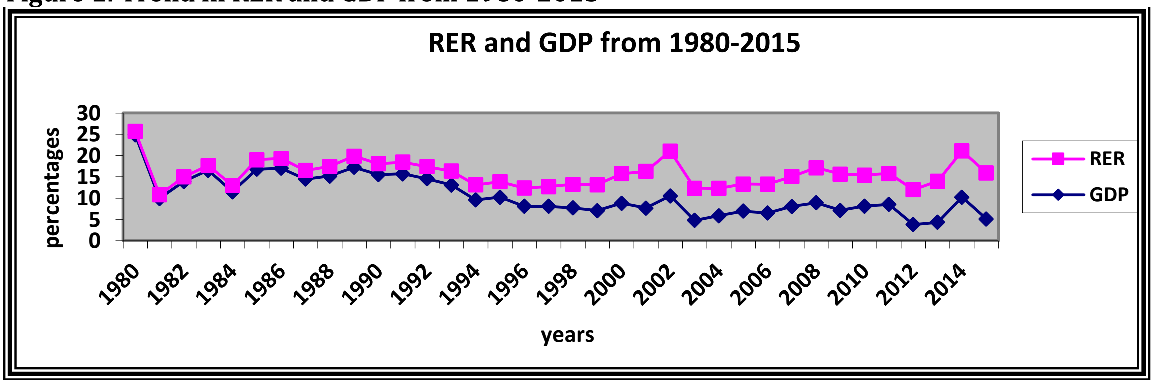
The relationship between exchange rate (ER) and economic growth (EG) has remained a controversial subject. A number of economists believe ER is an endogenous variable, whose influence on growth may be tough to separate (Habib, Mileva and Stracca, 2016). In terms of a country's level of trade, exchange rate plays an essential role. Thus, its importance allows exchange rate to be among the most observed, evaluated and governmentally influenced economic measures. Exchange rate fluctuations have been considered a problem in developing countries (Frankel, 2003). Fluctuations of exchange rate started occurring when most countries adopted the free float regime, after the change from global fixed exchange rate. South Africa is one of the countries that switched to a free floating system after 2000 (Van der Merwe, 1996). The value of the Rand has been going through a series of fluctuations recently. During the 2012 financial year, the Rand began to decrease against the United States Dollar; depreciating at 9 % average level rate of exchange (Census and Economic Information Centre Data, 2016). Moreover, in the 2015 financial year (between January and March), the decrease in the value of the currency was recorded at a rate of 12.45% (Trading Economics, 2015). In January 2016, it took a hard hit when it recorded its all-time high of R16.84 to the Dollar (Maepa,2015). This was mainly due to South Africa's political instability and the replacement of the Finance Minister, Nhlanhla Nene, with African National Congress (ANC) Member of Parliament, David Van Rooyen on 9thDecember 2015. Since South Africa is an open economy, real exchange rate (RER) is an essential factor and determines the development of a country. The exchange rate, therefore, has to maintain its stability for the economy to gain from international trade and also to increase the growth rate of the economy.

This study will add value to the current discussion on exchange and growth rates in South Africa as well as assist other students and researchers on information on the topic. It will also assist local policymakers in terms of formulating suitable policies. The study will also add value to available literature on the relationship between exchange and growth rates of the economy. This study is unique because of the chosen variables. Several studies have been conducted on the same topic; however, the variables chosen in this study are different from other studies. Furthermore, the methodology used in the study is very diverse. VEC Granger causality was employed in the study since most studies have only used the Vector Error Correction Model, variance decomposition and impulse response function.

2. Literature Review

Trend in RER and EG in the South African economy: A nation's currency value is considered to be an essential factor in determining growth (Walters and De Beer,1999). Thus, it is very important for a country to choose an appropriate exchange rate system since it offers a foundation for a nation to become competitive, especially in developing countries (Yagci, 2001).

Figure 1: Trend in RER and GDP from 1980-2015



In Figure 1 above, the graph shows the trend from 1980 to 2015, between real exchange rate and economic growth. The graph shows that from 1980 to 1995, economic growth was stable compared to the fluctuation in the real exchange rates. In 2001, the Rand was at its historical level of R13.84 to the dollar. However, in 2005, the currency softened and traded around R6.35 to the dollar. Nevertheless, South Africa, for the first time in 17 years, experienced a recession from 2008-2009, by going through three consecutive quarters of negative growth (Business live, 2017). In the fourth quarter of 2009, the weighted average exchange rate of the Rand increased by 1.2% (SA News, 2016). An appreciation in the exchange value of the Rand was due to improvement in the position of external trade, the constant increase in international commodity prices and positive sentiments towards the 2010 World Cup hosted by South Africa. However, since 2012, the Rand has been fluctuating, and lost its value for about 9.5% from December 2013 to December 2014 (Matlasedi, Zhanje and Iiorah, 2015). The Rand performed at its worst level in 2014 against the US dollar and decreased by 3.5% from the beginning of the year. However, the value increased by 2.5% by the end of the first quarter of 2014 (Twala and Mchunu, 2014). In 2015, the Rand hit to R15.38 (BusinessTech, 2016) and thenreached a level of R16.84 (Maepa, 2015), caused mainly to the political instability in the country. In 2015, GDP growth was 1.3%, an indication that economic performance remained challenging. By August 2015, the Rand dropped nearly 15% against the dollar due to South Africa's current deficit and slow growth. Since then, the Rand has been experiencing fluctuations, and concerns have been raised as the Rand may remain weak for at least the next five years (from 2014 to 2018) (Mittner, 2014).

Theoretical framework: This section is dedicated to theories on exchange rate. The Traditional approach implies that RER enhances EG, while the Structuralist approach implies that RER discourages EG. These two theories are applicable to the study as the main purpose is determine the relationship between RER and EG for South Africa.

The Traditional approach: The traditional approach holds that devaluation increases the growth rate of a country. This implies that when the exchange rate is devalued, domestic goods become inexpensive overseas, which in turn, raises their demand, thus resulting in a growth in exports (Salvatore, 2005). According to this method, aggregate demand determines output whereby, depreciation positively influences and encourages aggregate demand and output (Genye, 2011). Moreover, depreciation of a currency improves trade balance along with balance and expands output and employment (Acar, 2000). However, depreciation of a country's currency can only improve its trade balance and economic growth in the long-run when the Marshall-Lerner condition is satisfied. Thus, the traditional approach entails that real exchange rate enhances economic growth, implying a positive relationship (Sibanda, 2012).

The Structuralist approach: Contrary to the traditional approach, the structuralist approach maintains that currency devaluation may contain a contractionary outcome on output and employment. It shows that currency devaluation might cause a decrease in output. Krugman and Taylor (1978) state that devaluation encourages increase in returns share of gross domestic product thus, imposing a negative influence on aggregate demand if the saving propensity of firms and capital owners is greater than the wage of employees. In order for the structuralist approach to hold, a number of channels must be satisfied. The channels show that ER devaluation results in a decrease in aggregate demand and eventually general output. Furthermore, the contractionary effect is mainly caused by a rise in price levels. With this theory, a strategy to devalue money could result in challenging macro polices that strive to stabilize the macro-economy through a decrease in inflation (Sibanda,2012). Thus, a negative relationship exists between real exchange rate and economic growth. For the purpose of this study, the structuralist approach was considered more appropriate in terms of the situation in South Africa and thus, was adopted in the study; an indication that depreciation discourages economic growth.

Empirical literature: The purpose of this section is to examine studies conducted by other researchers with regard to exchange rates and economic growth, and to highlight the different methods of estimation employed by these researchers depending on their of country and period of study. Empirical evidence shows that results obtained differ from one study to another, thus, mixed results are found. Alawin, Sawaie, Al-Omar and Al-Hamdi (2013) examined the influence of real effective exchange rate (REER) in Jordon through the aggregate demand-supply theoretical framework. The researchers used the improved OLS method. Financial variables such as narrow monetary supply (M1) and broad money supply (M2) and GDP were employed. Data was obtained from the Central Bank of Jordon and the Department of Statistics. The theories are based on aggregate demand and aggregate supply to test the relationship. Considering the fact that the researchers used the traditional theory in their study, the results revealed that the appreciation of REER does not reflect international competitiveness of Jordanian goods, which is an indication that the Jordanian economy should maintain stability in RER. The empirical evidence showed that the impact of RER works through aggregate supply and a rise in REER enhances EG. In contrast, it was found that narrow money supply was more effective and because total price elasticity of exports and imports were found to be less than 1, the Marshall-Lerner condition was not obtained. It was recommended that real rate of exchange be used as one of the macroeconomic policies and maintain a fixed rate of exchange and as an active variable focus on narrow money supply in the Jordanian monetary policy.

Uddin, Rahman and Quaosar (2014) examined the relationship between ER and EG in Bangladesh. The study covered the period from 1973 to 2013 and employed a times series econometric technique, such as the Augmented Dickey-Fuller test (ADF), Granger causality test and Johansen cointegration model. Data was collected from the Bangladesh Bank, the Bangladesh Bureau of Statistics, the Asian Development Bank, the International Financial Statistics and World Development Indicators. The empirical results showed a significant positive relationship between ER and EG. The Granger's causality test proved that a bi-directional causality runs through exchange rate to economic growth and vice versa, which is an indication of the existence of a long-run equilibrium relationship between ER and EG. Aman, Ullah, Khan and Khan (2013) examined the link between exchange rate and growth rate of the Pakistan economy. The study covered the period from 1976 to 2010 and data was collected from the database of the World Bank and Pakistan economic surveys. An indirect approach was used in the study since theoretical literature is inadequate to clarify the correct link. Moreover, most academic literature emphasizes an indirect relationship since ER encourages growth through export, investment and internal trade. Hence, the simultaneous equation model with two and three stage least square techniques was employed in the study. A positive relationship between ER and EG was revealed in the study. Although a positive relationship was found, exchange rate cannot be applied as a strategy tool to boost growth with regard to Pakistan.

Tarawalie (2010) investigated the impact of REER on EG in Sierra Leona. The author used quarterly data from 1990Q1 to 2006Q4. Data was obtained from the International Financial Statistics (2007), published by the IMF and the Bank of Sierra Leone Bulletin. The Johansen cointegration technique and bivariate Granger causality were used in the study. The empirical results obtained revealed a positive relationship between REER and EG supported by statistically significant coefficients. The results also showed that in the long-run, the monetary policy was somewhat more efficient than the fiscal policy, which is in line with the basic

Mundell-Fleming model. For policymakers, it was recommended that in order to obtain macroeconomic solidity, monetary and fiscal policies should be in consonance. Importantly, it is essential to keep ER stable by letting it to depreciate within a given band as well as maintain a stable political environment in order to recover investment. Ayodele (2014) studied the impact of exchange rate on the Nigerian economy from2000 to 2012. Inflation and exchange rates are factors measured in changes in GDP. Secondary data was collected from Annual Reports of the Central Bank of Nigeria, the Nigerian Stock Exchange and Nigeria Securities and Exchange Commission. The study used multiple regression models. It was found that as exchange rate increased, it negatively affected growth while inflation rate exerted a positive impact on growth. The negative effect of the rate of exchange did not allow the economy to boost as anticipated, although the economic growth rate increased every year in Nigeria. It was suggested that to accelerate economic growth through a favorable exchange rate and to decrease the pressure of the dollar, the government should make the investment climate friendly in the Nigerian economy by reinstating safety of lives and property, infrastructural growth and development in local production.

Wong (2013) examined RER misalignment and EG in Malaysia. The study focused on the period from 1971 to 2008. An Autoregressive Distributed Lag Model (ARDL) and Generalized Forecast Error Variance Decomposition (GFEVD) approach were applied. The results obtained revealed that in the long-run, a rise in real interest rate differential, productivity differential and real oil price or reserve differential will cause an increase in RER. It also showed that an increase in RER misalignment would cause a reduction in EG. Particularly, devaluation will promote economic growth while appreciation will hurt economic growth. The GFEVD outcome showed that variables are important in determining RER. According to the fundamentals, real exchange rate misalignment should be evaded in order to facilitate the allocation of resources in the economy. It was, therefore, concluded that government intervention is necessary during the short-run to minimize real exchange rate misalignment and to smooth down fluctuations, while in the long-run, markets and financial organizations should be strengthened.

Basirat, Nasirpour and Jorjorzadeh (2014) studied the effects of instability of the rate of exchange on economic growth, taking into account, the speed of growth of financial markets in developing countries. The authors analyzed panel data of 18countries from 1986 to 2010. The 5-year mean was used for each of the variables in order to eliminate the effects of short-term cycles as well as to avoid fluctuating annual data from denting the results. The World Development Indicator from the World Bank website was used to obtain statistics for all the variables. From the results revealed a negative and significant effect of financial development and exchange rate fluctuation on economic growth. Whereas, a positive effect was obtained from the mutual effect of exchange rate fluctuations and financial development on economic growth, although it was not statistically significant as the effect in the studied countries was small.

Bibi, Ahmad and Rashid (2014) investigated the role of exchange rate, trade openness, inflation, imports, exports, real exchange and foreign direct investment which improve economic growth. The period of study was from 1980 to 2011 using times series data. The methods used to determine stationarity were: ADF; Philips Peron (PP); Dickey-Fuller Generalized Least Square (DF-GLS); and cointegration and Dynamic Ordinary Least Square (DOLS) estimation techniques. The results of cointegration showed that a long-run relationship existed between the variables. On the contrary, inflation and trade openness imposed a negative impact on economic growth, which is supported by the results of DOLS and due to depreciation in the ER along with huge volume of importing resulting in trade deficit while FDI, imports, exports and exchange rate positively influenced EG. Although a positive relationship was shown between ER and EG, there was no significant relationship as the local economic performance of economic growth is much complex to the deviation in ER in the long period. It was recommended that policymakers should take the occurrence and amount of ER instability into account as well as the effects of changes on each macroeconomic factor of trade policy and foreign direct investment.

Kandil (2004) studied the outcomes of exchange rate fluctuations on real output growth along with price inflation for a sample of 22 developing countries. The author argues that a depreciation of a domestic currency all the way through initial rise in the price of foreign goods relative to home goods could stimulate economic activity. A theoretical model was employed, which decomposes the movements of ER into expected and unexpected mechanisms. The impact of expected exchange rate shifts in the long-run is assessed through a significant decrease in output growth and a significant rise in price inflation. On the other hand, unexpected exchange rate shifts during the short-run, affect fluctuation in output growth and price inflation. Through the demand and supply channels, in the face of unanticipated currency depreciation, there is proof of a significant contraction of output growth as well as price inflation determined by demand expansion and supply contraction. It was, therefore, concluded that in a range of developing countries, exchange rate fluctuations generate unfavorable consequences on economic performance; these outcomes are clear by means of output contraction and price inflation during a phase of currency devaluation. There is a need for exchange rate policies to aim at minimizing unanticipated currency fluctuations in order to insulate economic performance from unfavorable outcomes of inconsistencies in developing countries. Moreover, evidence from empirical data suggests that the exchange rate should be stabilized at a level that is reliable with difference in macroeconomic fundamentals over time.

3. Methodology

The Structuralist approach, the Johansen (1995) cointegration technique, the Vector Error Correction Model (VECM), VEC granger causality, variance decomposition and impulse response function were adopted in this study. Different diagnostic and stability tests such as heteroscedasticity, serial correlation, normality and AR root graph were also used in the study.

Model specification: The dependent variable was real exchange rate (RER) and the explanatory variables were gross domestic product deflator (GDPD), foreign direct investment (FDI), export (EXP) and money supply (MS). The model according to Sibanda (2012) was adopted in the study.
The model was modified and estimated as follows:

$RER = \beta_0 + \beta_1 GDPD + \beta_2 FDI + \beta_3 MS + \beta_4 EXP + \varepsilon$ ………………………………………… (1)

It is significant to change the regression equation into natural logarithm since it brings a stable trend and eliminates the tendency of fluctuations over time (Mah, 2012). Therefore, the regression equation now becomes:

$\ln(RER) = \beta_0 + \beta_1 \ln(GDPD) + \beta_2 \ln(FDI) + \beta_3 \ln(MS) + \beta_4 \ln(EXP) + \varepsilon$ …… (2)

Stationarity test: In order to avoid the generation of spurious regression and determine whether cointegration exists among the results of the variables, it is important to test for stationarity. Stationarity tests include both visual inspection and Augmented Dickey-Fuller (ADF) and Phillips Perron (PP) unit root tests. Once the stationarity test has been done, the next step is to choose an appropriate lag length in order to see which lag fits the best.

Lag order selection criteria: It is important to have a good lag since variables that are omitted affect the lag length, which in turn, affects the behavior of the model. For the purpose of this study, FPE was chosen as the best criteria. Liew (2004) states that the FPE lag length is good for a small sample of 60 and below.

Johansen cointegration test: The Johansen technique applies the greatest likelihood evaluation towards VECM, together, they determine the short and long-run determinants of the dependent variable. There are two methods: The Maximum Eigenvalue test and the Trace test that determine the number of cointegrating vectors (Asteriou and Hall, 2006). In the Maximum Eigenvalue test, the null hypothesis (H_0) states that there are r cointegrating relations and the alternative hypothesis (H_1) states that there are r + 1 cointegrating relations.

$J_{\max Egen} = -T\ln(1 - \lambda_{r+1})$ ……………………………………………………… (3)

With regard to the trace test, the H_0 is r cointegrating vectors and the H_1 is n cointegrating vectors.

$J_{trace} = -T \sum_{i-t+1}^{n} \ln(1 - \lambda_i)$ ……………………………………………………… (4)

Lukephol (1993) suggests that the Trace test executes well than the Max-Eigen value. Once the existences of cointegrating relationships are determined, VECM could be applied. This is done by the vector auto regression (VAR) of order P (Sibanda, 2012):

$Y_t = A_1 Y_{t-1} + BX_t \text{ …. } A_p Y_{t-p} + \varepsilon_t$ ……………………………………………… (5)

Where by, Y_t is a k- vector of I (1) variables, X_t is a d-vector deterministic variable and ε_t a vector of innovations. The equation above is rewritten into a VECM specification to employ the Johansen technique (Brooks, 2008). Thus, the VAR is rewritten as:

ΔY_t = $\prod Y_{t-1}$ + $\sum_{i-1}^{p-1} i\Delta Y_{t-1}$ + BX_t + ε_t ………………………………………… (6)
where: $\prod$ = $\sum_{i-1}^{p} Ai$- I and i = - $\sum_{j=i+1}^{p} A$j …………………………………… (7)
When the coefficient matrix $\prod$ has reduced rank, then m × r matrices α andβ exist. Moreover, $\prod$ = $\alpha\beta'$ and β' Y_t are stationary and r is the number of cointegration, each column of β is the number of cointegrating vector and α adjustment parameters in the VECM (Sibanda,2012).

Vector Error Correction Model: VECM is simply an idea when part of the disequilibrium from one phase to the next phase is corrected. This entails assessing the first differenced form (in equation 1) model by including an error correction term (ECT) as an explanatory variable. Thus, ECM is estimated as follows:
Δln (RER_t) = β_0 + $\sum_{i-n-1}^{n} \beta_1$ ln ($GDPD_{t-1}$) + $\sum_{i-n-1}^{n} \beta_2$ Δln (FDI_{t-1}) +$\sum_{i-n-1}^{n} \beta_3$ Δln (MS_{t-1}) + $\sum_{i-n-1}^{n} \beta_4$ ln (EXP_{t-1}) + $\beta_5 EC_{t-1}$ + v ………………………………… (8)
where n is the value selected using the Aikaike's Information Criteria (AIC) and Schward Information Criterion(SC). ECT represents the error correction term and V represents the Random error term. ECT is defined as the lagged values of the error term that has been developed from the regression mode. When the ECT is negative and statistically significant, it is an indication that part of the disequilibrium in RER is accurate in the next phase (Hassan, 2003).

Diagnostics and Stability tests: The diagnostic and stability tests help in electing whether or not a model has been correctly identified. The diagnostic test consists of Heteroscedasticity, Autocorrelation Lagrange Multiplier (LM) and Normality test. Under the stability test, the autoregressive (AR) root graph is employed, this test determines whether the model is stable or not.

VEC Granger causality test results: VEC granger causality is used to regulate whether present and lagged values of one variable affect one another. When X is said to Granger cause Y, then the historical and current values of X help to predict Y Granger (1969).

Variance decomposition results: Andren (2007) explained the significance of variance decomposition by maintaining that it offers a way of defining the comparative significance of shocks in enlightening differences in the variable of interest. Henceforth, it provides ways of defining comparative significant of shocks to RERs with the intention of explaining variations in economic growth.

Impulse Response Analysis: This technique traces the responsiveness of the dependent variable to shocks in each of the other variables in a study. It is normally related to VECM, given that shocks related to VECM slowly deter away after a while (Brooks, 2014).

4. Results and Interpretation

Stationarity: Figure 2 shows graphical representations of all the variables at first difference, indicating that both mean and variance are constant over time, thus stationarity has been achieved at first difference. A formal method to present results of unit root (ADF and PP unit root tests) has been conducted in order to support the graphical findings in Table 2.

Table 1: Unit root at intercept

Variables	ADF test t-statistic	Probability	PP test t-statistic	Probability	Order of integration
LNGDPD	-8.298	0.000***	-3.014	0.043**	I(1)
LNRER	-4.370	0.002***	-4.194	0.002***	I(1)
LNFDI	-4.732	0.001***	-4.633	0.001***	I(1)
LNMS	-5.007	0.000***	-9.439	0.000***	I(2)
LNEXPO	-5.603	0.000***	-6.344	0.000***	I(1)

***stationary at 1%, **stationary at 5%, *stationary at 10%

From the Table above presented reveals the unit root test for all the variables at first difference and second difference. Based on the probability values LNGDPD, LNRER, LNFDI and LNEXPO are stationary at first difference while LNMS is stationary at second difference.

Table 2: Lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ	Conclusion
0	-15.14	NA	2.25e-06	1.185	1.409	1.261	Not good
1	169.4	304.0*	1.92e-10*	-8.202	-6.856*	-7.743*	Good
2	194.9	34.42	2.07e-10	-8.228*	-5.759	-7.386	Not good

Lag order selection criteria: Table 2 presents the lag length selection criteria. Lag one is found to be the best lag for the data with regard to the case of South Africa as indicated by FPE, majority of the criteria also suggest lag 1.

Table 3: Trace test and Max-Eigen test

Hypothesized no. of CE(s)	Eigen value	Trace test: Trace statistics	0.05 critical value	Prob.**	Max-Eigen test: Max-Eigen statistics	0.05 critical value	Prob**	Conclusion
None*	0.682	82.09	69.82	0.004	38.98	33.88	0.011	Reject H_0
At most 1	0.466	43.11	47.86	0.120	21.35	27.58	0.256	Do not reject H_0
At most 2	0.308	21.76	29.70	0.312	12.40	21.13	0.499	Do not reject H_0
At most 3	0.172	9.264	15.49	0.342	6.421	14.26	0.550	Do not reject H_0
At most 4	0.080	2.844	3.841	0.092	2.842	3.841	0.092	Do not reject H_0

Results of Johansen Cointegration test: Table 3 presents the results of the Trace and Max-Eigen tests. The trace statistics at none is 82.09; it is more than the 5% critical value of 69.82. The$H_0$of no cointegrating vectors is, therefore, not accepted at none and suggests that there is cointegration at none. The Max-Eigen test at none is 38.98, which is more than the 5% critical value of 33. 88. This implies that there is cointegration and, therefore, theH_0 is rejected. Both Trace and Max-Eigen indicate 1 cointegration equation at none.

Table 4: Results of Long-run relationship

Variables	Coefficient	t- statistics	Standard error	Conclusion
Constant	-1.538	-	-	
LNRER	1.000	-	-	
LNGDPD	0.878	5.523	0.159	Negative and significant
LNFDI	-0.518	-3.032	0.518	Positive and significant
LNMS	-0.868	-2.326	0.373	Positive and significant
LNEXPO	1.266	2.909	0.435	Negative and significant

The long run equation is presented as follows:

LNRER = 1.538 – 0.878 LNGDPD + 0.518 LNFDI + 0.868 LNMS – 1.266 LNEXPO……………………………………………………………………………… (9)

Results of Vector Error Correction Model: The results of the long-run relationship of VECM show that if all the independent variables are held constant, LNRER will rise by 1.538 unit. A negative and significant relationship between LNRER and LNGDPD exists in the long-run. A 1 unit increase in LNGDPD will cause

LNRER to decrease by 0.878 unit. These results are in line with those obtained by Ayodele (2014) and Wong (2013) who also found a negative relationship between real exchange rate and economic growth. Therefore, it could be concluded that if LNGDPD increases, then it leads to a depreciation of the Rand. Also, LNFDI shows a positive and significant relationship on LNRER in the long-run. A 1 unit increase in LNFDI will cause LNRER to increase by 0.518 unit. These results are similar to those of Bibi et al. (2014) who found that foreign direct investment is positively related to economic growth. However, there is no significant evidence. This implies that if LNFDI increases, then the Rand will appreciate. An increase in foreign direct investment attracts more investors to invest in the country and boosts business confidence in the market thus, encouraging economic growth and has a positive influence on the Rand.

A positive and significant relationship was also found between LNMS and LNRER. A 1 unit increase in LNMS will cause LNRER to increase by 0.868 unit. Also, with LNMS, if increased, then the Rand will appreciate. Contrary to this, Sibanda (2012) found a negative relationship between money supply and economic growth. Finally, a negative and significant relationship exists between LNEXPO and LNRER. A 1 unit increase in LNEXPO will cause LNRER to decrease by 1.266 unit. LNEXPO is negative, an indication that a decrease depreciates the Rand. Bibi et al. (2014) found a positive relationship between real exports and economic growth. The results are contrary maybe due to effects of international financial instability.

Table 5: Results of Short-run error correction model

Variables	Coefficient	T-statistics	Standard error	Conclusion
CointEq1	-0.305	-4.051	0.075	Negative and Significant
D(LNEXPO(-1))	0.591	2.404	0.246	Positive and Significant
R-square	0.557			
Adj R-square	0.459			

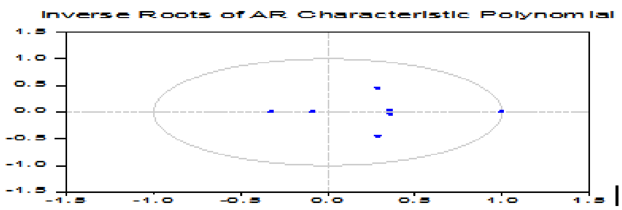
The error correction term is negative (-0.305) with an absolute t-statistics of 4.051. This proves that only 30% equilibrium is corrected in the next period as it moves towards restoring equilibrium. D (LNEXPO (-1)) has a positive relationship and is statistically significant in determining LNRER. This means that an increase in export leads to an increase in real exchange rate or vice versa. The R-square value is 0.56, which suggests that only 56% of the deviation in LNRER is explained by the independent variables. Also, the Adjusted R-square is 0.46, which provides evidence that 46% of the independent variables explain the variation of the dependent variable.

Diagnostics and stability tests: This section focuses on the results of the diagnostics and stability tests. The probability value of 0.05 or 5% level of significance was used to decide whether the null hypothesis should be accepted or rejected.

Table 6: Summary of all diagnostic tests

Test	Null hypothesis	Chi-square/ LM statistic	Probability	Conclusion
Heteroscedasticity	No heteroscedasticity	169.4	0.703	No evidence of heteroscedasticity.
Serial correlation LM	No serial correlation	21.04	0.690	No evidence of serial correlation
Normality	Residuals are normally distributed	7.695	0.659	Normally distributed

Figure 3: AR autoregressive root graph



Stability test: The AR root graph in Figure 3 is used to detect whether the model is stable for South Africa or not. All the unit root points lie inside the unit circle which implies that the model is stable.

Table 7: VEC Granger Causality test

Dependent variable: D(LNRER)				
Excluded	**Chi-square**	**Degree of freedom**	**Prob.**	**Conclusion**
D(LNGDPD)	0.013	1	0.908	Do not Reject H_0
D(LNFDI)	0.489	1	0.484	Do not Reject H_0
D(LNMS)	0.741	1	0.389	Do not Reject H_0
D(LNEXPO)	5.781	1	0.016	Reject H_0
ALL	8.719	4	0.069	Do not Reject H_0
Dependent variable:	D(LNGDPD)			
Excluded	Chi-square	Degree of freedom	Prob.	Conclusion
D(LNRER)	0.479	1	0.489	Do not Reject H_0
D(LNFDI)	0.395	1	0.520	Do not Reject H_0
D(LNMS)	0.576	1	0.448	Do not Reject H_0
D(LNEXPO)	0.000	1	0.987	Do not Reject H_0
ALL	1.421	4	0.841	Do not Reject H_0
Dependent variable:	D(LNFDI)			
Excluded	Chi-square	Degree of freedom	Prob.	Conclusion
D(LNRER)	0.773	1	0.379	Do not Reject H_0
D(LNGDPD)	0.607	1	0.436	Do not Reject H_0
D(LNMS)	2.950	1	0.086	Do not Reject H_0
D(LNEXPO)	0.114	1	0.736	Do not Reject H_0
ALL	4.614	4	0.329	Do not Reject H_0
Dependent variable:	D(LNMS)			
Excluded	Chi-square	Degree of freedom	Prob.	Conclusion
D(LNRER)	2.073	1	0.140	Do not Reject H_0
D(LNGDPD)	0.853	1	0.356	Do not Reject H_0
D(LNFDI)	3.084	1	0.079	Do not Reject H_0
D(LNEXPO)	1.101	1	0.294	Do not Reject H_0
ALL	7.370	4	0.117	Do not Reject H_0
Dependent variable:	D(LNEXPO)			
Excluded	Chi-square	Degree of freedom	Prob.	Conclusion
D(LNRER)	0.437	1	0.509	Do not Reject H_0
D(LNGDPD)	0.159	1	0.680	Do not Reject H_0
D(LNFDI)	0.573	1	0.449	Do not Reject H_0
D(LNMS)	0.170	1	0.670	Do not Reject H_0
ALL	1.667	4	0.797	Do not Reject H_0

Results of VEC Granger causality test: The probability values are used to evaluate the casual relationship among variables. The results are evaluated at 5% level of significance. When the probability value is more than 5%, then H_0 is accepted and if it is less than 5%, then H_0 is not accepted instead, H_1 is accepted. From the results obtained, only LNEXPO granger causes LNRER since the probability value is less than 5%, an indication that changes in LNEXPO do affect LNRER. LNGDPD, LNMS and LNFDI do not granger cause LNRER. On the contrary, Tarawalie (2010) performed a bivariate granger causality test and found that REER does granger cause real GDP in the case of Sierra Leone.

Table 8: Variance Decomposition of LNRER

Period	S.E.	LNRER	LNGDPD	LNFDI	LNMS	LNEXPO
1	0.100	100.0	0.000	0.000	0.000	0.000
2	0.156	76.17	19.42	0.152	3.320	0.919
3	0.198	53.16	41.78	0.097	4.373	0.592
4	0.237	38.10	56.23	0.192	3.754	1.735
5	0.260	30.02	63.20	0.335	3.128	3.326
6	0.296	25.52	66.96	0.411	2.75	4.365
7	0.320	22.69	69.44	0.437	2.535	4.898
8	0.342	20.61	71.34	0.445	2.411	5.193
9	0.363	18.952	72.87	0.449	2.321	5.409
10	0.383	17.59	74.11	0.454	2.245	5.597
11	0.40	16.47	75.13	0.459	2.179	5.761
12	0.419	15.54	75.97	0.463	2.123	5.899
13	0.437	14.77	76.68	0.466	2.077	6.015
14	0.453	14.10	77.28	0.469	2.037	6.113
15	0.469	13.52	77.81	0.472	2.004	6.197

Results of Variance decomposition: Table8 shows the forecast error variance for LNRER is 100%, an indication that in the first period, to explicate its own shocks, 100% of RER variance is explicated through its individual innovations. While it moves on to the 5th period, it decreases to 30.02 % and 17.59% in the 10th period. After the 5th period onwards, variations in real exchange rate are more influenced by LNGDPD and accounts for 77.81% in the changes contrary to 13.52% in LNRER itself. This is an indication that LNGDPD is the highest variable in explaining variations in LNRER for the South African economy. On the contrary, Sibanda (2012) revealed that EG describes most of its variations along with real interest rates while exchange rate does not explain much variation in economic growth.

Impulse response analysis: Figure 4 shows the response of LNRER to LNRER at an increasing positive effect to a decreasing positive effect on itself. This suggests that a shock to LNRER will cause an increase in LNRER in the South African economy. Also, a positive response of LNRER to LNMS means that a shock to LNMS causes LNRER to increase. If the response of LNRER to LNGDPD is negative, it is an indication that a shock to LNGDPD causes LNRER to decrease. If the response of LNRER to LNFDI is negative than positive, this is an indication that a shock to LNFDI will cause LNRER to decrease than increase. On the contrary, if the response of LNRER to LNEXPO is positive than negative, this shows that a shock to LNEXPO will result in LNRER to increase than decrease. If the response of LNGDPD to LNRER, LNFDI to LNRER and LNMS to LNRER are negative, this implies that a shock to LNRER will cause LNGDPD, LNMS and LNFDI to decrease. If the response of LNEXPO to LNRER is positive than negative, it is an indication that a shock to LNRER will cause LNEXPO to increase than decrease. These results are different from those obtained by Sibanda (2012), who found that all variables are significant even though they are not tenacious. Since REER shock encourages growth, however, from 8 quarters, it has a negative impact.

5. Conclusion

The results obtained in this study revealed a negative and significant relationship between RER and EG. Also, RER does not granger cause EG or vice versa, instead, EXPO was one variable that granger causes RER. This is confirmed by the results of VEC granger causality test. Meanwhile, the results of variance decomposition and impulse response function showed that RER does respond to shocks from EG as well as from FDI, MS and EXPO. It is, therefore, concluded that an increase in growth will strengthen the Rand. Variance decomposition confirmed the results, an indication that variations in real exchange rate are highly explained by shocks from economic growth. On the other hand, there is a need to attract foreign investors and increase business confidence in the markets. There is need for government and individuals to promote investment and to create a peaceful environment for investment which will enhance the Rand to appreciate. Furthermore, if money supply increases, then interest rates are likely to decline thus, increasing investment and economic growth and hence, an appreciation of the Rand. There is need for South Africa to diversify its products in order to increase international trade and to encourage export promotion. This will expand the market and economic growth will be achieved. Reducing its imports will go a long way in expanding and developing a trade balance.

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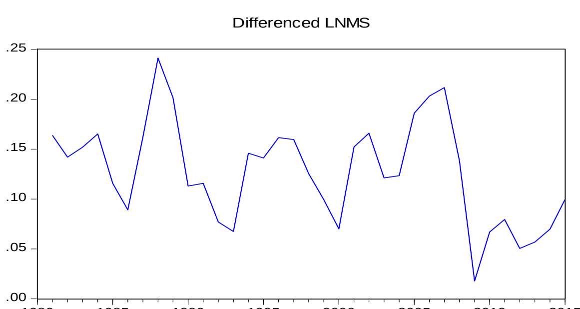
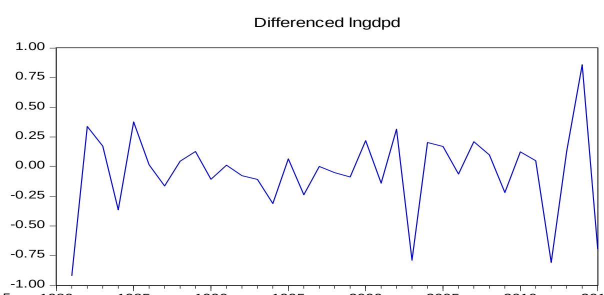
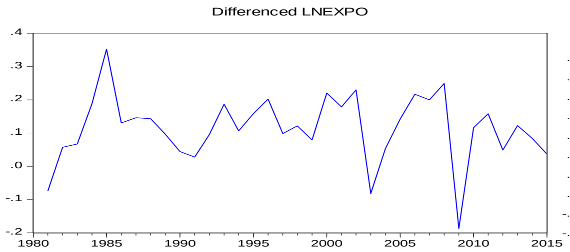
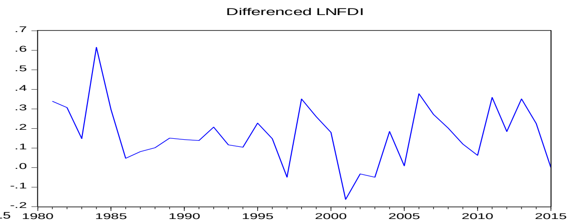
Appendices

Figure 4: Visual inspection at differenced form









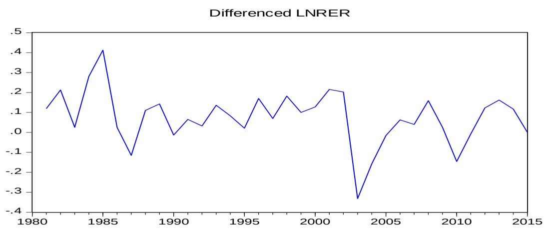
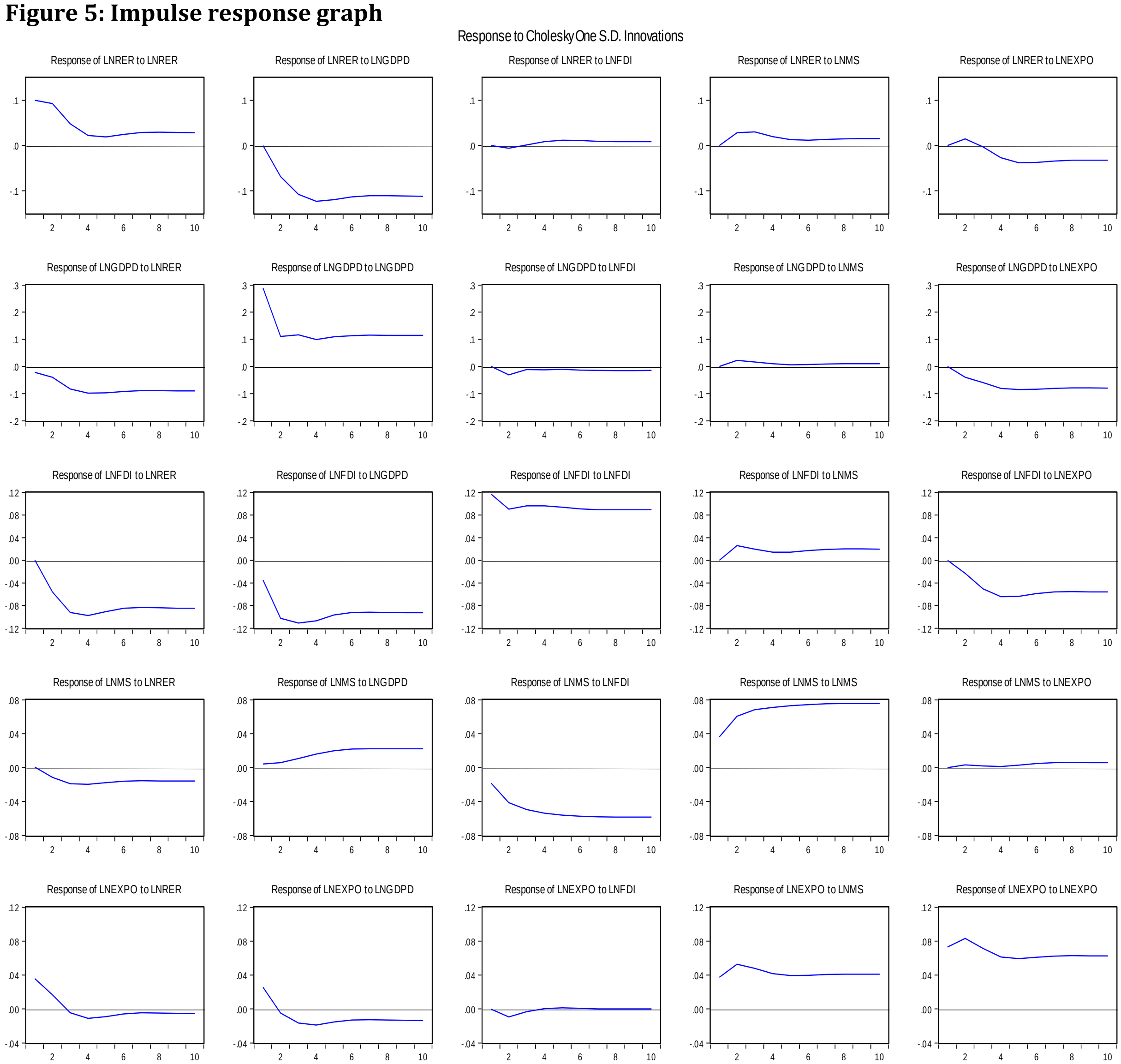


Figure 5: Impulse response graph



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The Paradox of Emerging Technologies in Playing Fundamental Role on Administration Employee's Roles and Responsibilities

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Abstract: This article aims to put forward the imperatives of emerging technologies in playing fundamental role on administration work effectiveness and efficiency. The nature of office work has changed through time due to the emergence of new technologies that are adopted and implemented in the government departments. The emerging technologies are the heartbeat of any organisation and simultaneously they are the structure and thread holding it all together. With this study, a survey design was adopted and data collection was done through structured questionnaire. The study argues that the influx of emerging technologies increases the relationship with stakeholders and shareholders, responsiveness, transparency and accessibility of quality service delivery. This has resulted in government departments enhancing the effective communication between government and citizens, while it creates opportunities for government employees. Therefore, the study concludes that with the emergence of technologies, it is important for government departments to initiate new technologies in the departments to faster transactions, provide excellent service delivery to citizens of South Africa and as well as improving mass communication.

Keywords: *Emerging technologies, administrative employees, fundamental role*

1. Introduction

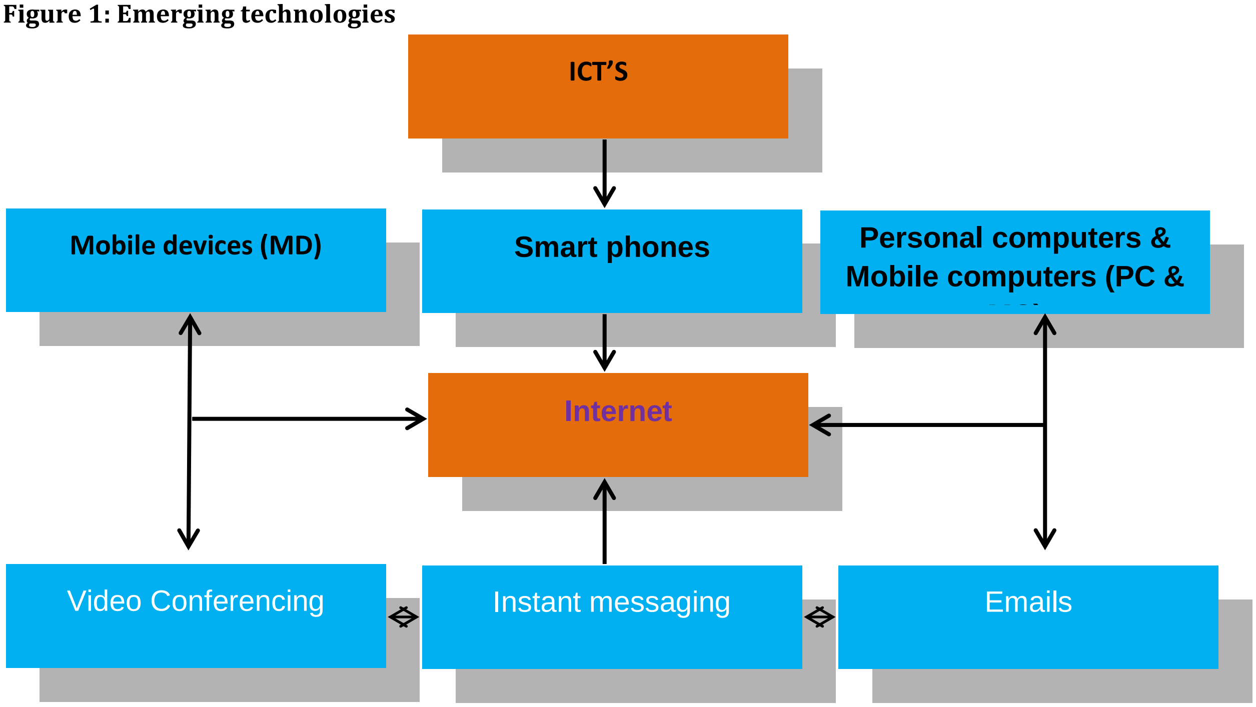
Emerging technologies have evolved rapidly and they have essentially re-shaped the workplace and how work is executed. Taking into account the future endeavours, emerging technologies could have major implications for the business models and how the work is arranged in order to be more aligned to the new technologies. In the context of this evolution, employers make decisions about investing in skills to ensure that the employees are versed with the emerging technologies. This is as a result that emerging technologies change the roles and responsibilities and competencies in various positions. This phenomenon has attracted the attention of scholars worldwide in terms of the development of automation enabled by emerging technologies which had a broad impact on jobs, skills and the nature of work. Research revealed that the use of emerging technologies has fundamentally changed the practices and procedures of nearly all forms of endeavour within organisations, governance and civil service (Adeoye, Oluwole & Blessing, 2013). The nature of office work has changed over time due to the emergence of new technologies that are adopted and implemented in the government departments and other organisations. According to Gravens (2000) cited by Irungu (2012) the drivers of change in today's world include, deregulation, global excess capacity, global competition, changing customer expectations, information and communication technologies (ICTs), demographic shifts and changing work and lifestyles. As change continues to reshape our lives, the old office equipment such photocopying, telephones, computers, information processing, furniture and other office machinery have shifted away from industrial to office automation as new technologies are ever-increasing. Therefore, latest technologies will make existing machines redundant to use resulting in organisations investing on latest technologies available in the market. In this instance, it becomes important to adopt the new technologies in the work environment. As a results of these paradigm shift, it is imperative for the users to adapt and use these latest technologies.

2. Literature Review

Emerging technologies relate to information and communication technologies continued to rapidly evolve, changing the way people communicate and information flows (Radniecki, 2013). These technologies have influenced organisations and government departments in a variety of ways for instance changing the ways of service delivery, providing information and how tasked are performed. In other words, emerging technology influence how functions are executed; people interact; information is managed and delivered within the organisation. Meijer and Boves (2005) observe that ICTs have influenced five accountability relationships (organisational accountability, political accountability, legal accountability and administrative accountability) in different ways and public managers have to deal with all of these types of accountability. They maintain that this types of accountability shapes relations and information exchanges between managers and civil servants within government organisations and form a linkage between practices within government organisations and the relevant environment of these organisations. Furthermore, Sharma and Chandel (2013) assert people are shifting their work methods from traditional ones to technology based work. Therefore, new skill-set is critical to keep up with ways of doing things that add value to the work environment and the adoption of emerging technologies.

Over the past few years, different types of emerging technologies are rapidly introduced at an alarming rate, which are adopted by many organisations to strengthen their accountability, transparency and increase its operational process. Most of these emerging technologies are already in use. They allow people to plan, and share data and enable government departments to improve their service delivery, efficiency in problem solving and effectiveness in access to information. Technologies include products and services such as desktop computers, laptops, hand-held devices, wired or wireless intranet, business software, network security among others (Binuyo & Aregbeshola, 2014). Meijer and Bovers (2005) state that ICTs are used to support the key functions of government and ICTs are both used within government organisations and in linking between the organisation and the outside world such as citizens, companies and other organisations. They further stressed that database systems, workflow management systems, email systems and web technology systems are all used to support government operations, engage citizens and provide government services. Figure 1 below presents some of the common emerging technologies used in many organisations and government.

Figure 1: Emerging technologies



Technologies presented in figure 1 provides significant improvements with programmes such as word processing; communication in the form of electronic mail, database in improve business efficiency, eliminating unnecessary delays in communication between routine filling and correspondence (Ogbonna & Ebimobowei, 2013). For example, in the government sectors technologies play a major role in accelerating service delivery. ICTs are being introduced to an organisation in order to increase operational efficiency, quality, and transparency (Zimmermann & Finger, 2005). South African government departments have embraced the use of technology in all spheres. Olufemi (2012) contends that governments that adopted technology have the opportunity to achieve high efficient service delivery. There is no doubt that the use of technologies plays a critical role in improving efficiency and effectiveness of any organisation. This notion is corroborating with what Pirzada and Ahmed (2013) found in their study that every organisation uses the common technologies which in some way contribute in achieving organisational objectives easily. Similarly, Ayandele and Adeoye (2010) revealed that technology is fast becoming an important tool of growth for the world's economy, creating countless opportunities for many enterprising individuals, organisations and communities globally. They serve to enhance the organisation's communication, reduce human labour, support short and long-term organisational goals and distribute complex information to appropriate people when necessary (Kumar, 2014). Therefore, the use of emerging technologies for basic service delivery is improving and government departments continue to adopt them for various reasons such as: (i) to improve socioeconomic condition, (ii) internal and external communication, (iii) to faster service delivery, (iv) to improve decision making process, (v) sustain organisation performance and (vi) to promote economic growth.

However, the implementation of emerging technologies to many organisations is sometimes complicated and requires extensive training. What is the more critical is organisational culture and behaviours of employees that can enable or constraint the utility of these technologies in organisations (Naghibi & Baban, 2011). A well designed system based on collaborative effort will improve organisational effectiveness. This will assist organisations and government departments included to provide quick services, anytime and anywhere (Abbas et al., 2014).

Administrative employees: According to Ngcobo et al. (2006) administrative employees are usually responsible for many tasks in the organisation, which includes choosing office furniture, office design and layout, office automation, telecommunication technology, application software, and forms design and control among others. The roles listed above require skill-set and average educational background which is important in enabling administrative employees to carry out their roles and responsibilities effectively (Igbinedion, 2010). Acquiring latest skills on technology will contribute positively to the administrative employee capability to be an innovator, problem solver, competitive and good thinker. Even though administration roles have advance in a massive way through time as the world keeps changing and innovative ways of thing that made the job of administrative employees more easily and less stressful such as technological devices which they can store, keep information and other resources flowing from one position to another and distribute information to the appropriate people. Ezenwafor (2013) in his article reveal that functions of administrative employee in an organisation cover production of different types of documents for the office, proofreading the document for accuracy, disseminating, storing (traditionally or electronically) and retrieving stored documents when needed. Administrators play a major role in the efficiency of any organisation. Badenhorst et al. (2005) asserts that there are certain duties and functions that are found in every organisation, the so-called generic functions (communication, reception and filing). Table 1 below reflects the administrative duties in different divisions and with different titles respectively.

Table 1: administrative duties in different divisions

General office	Accounts departments	Purchases and sales department
Telephonists/receptionists	Costing clerks	Order clerks
Word processing operators	Cashiers	Sales clerks
Filing clerks	Credit control clerks	Warehouse clerks
Correspondence clerks	Accounting clerks	Delivery clerks
Mailroom clerks	Bookkeepers	
	Debtors and creditors clerks	
	Salaries clerks	

Source: Badenhorst et al*.,* 2005)

In every organisation administrators are assigned to different roles and responsibilities. It is clear from table 1.1 above that administrative duties may vary from divisions, departments and organisations. All that is required is the right people at the right positions to perform administrative tasks. These people according to Ezenwafor and Okeke (2011) need administrative competencies, human relation competencies, communication competencies, personality competencies, and office technology management competencies for effective performance in today's office.

Benefits of emerging technologies: The adoption and use of emerging technologies holds benefits for organisations and individuals as identified by Pirzada and Ahmed (2013) namely, (i) With technology people are getting help in every department, (ii) it saves time, It has made our life easier and people are making fewer mistakes, (iii) it has brought the world closer together, we share information quickly and efficiently from phones, internet and fax machines and (iv) organisation know the taste of customer. Technology will continue to improve public administrative efficiency by making information accessible, reduce administrative activities and lastly enhance good governance. Good governance is generally characterised by participation, transparency and accountability. According to Kumar (2014), using information system can enable an organisation to streamline its operations into a cohesive functioning unit. Ojo (2014) stated that the discovery of ICT has made the activities of government more accessible to the government while the traditional barrier of distance becomes surmountable through the modern approach of communication. He further maintains that the recent advances in communication technologies and the Internet provide opportunities to transform the relationship between governments and citizens in a new way, thus contributed to the achievement of good governance goals. Sarrayrih and Sriram, (2015) posit that the aim of ICTs in government (ICTs) is to promote more efficient and effective government, facilitate more accessible government services, allow greater public access to information, and make government more accountable to citizens (Working Group). Pirzada and Ahmed (2013) further assert that technology provides unique way for organisations to develop a distinct advantage in a competitive market and to outperform their competitors. Organisations are able to meet their obligations through technology which allows for a paradigm shift in the business vision. Advantages of technology for the government involve that the government may provide better service in terms of time, making government more efficient and more effective.

Disadvantages of emerging technologies: Emergence and innovation in technologies is dividing the universe in different dissection (Beena & Mathur, 2012). South Africa is experiencing an ICT skills shortage (Lotriet, Matthee & Alexander, 2010). Technology has brought massive enlightment in every government department since it has emerged. It challenges office managers and administrative employee's designers to address a host of vital socio-economic issues such as reliable infrastructure, skilled human resources, open government and other essential issues of capacity building (Amiaya, 2014). As the information technology evolve to meet the technology demands of today's workplace, different challenges are arising such as skill-set, governance of information among others and information technology (IT) users are striving to meet them (Kumar, 2014). According to Pirzada and Ahmed (2013) the disadvantage of advance technology is that machines are complex and complicated and people who are responsible they don't operate the machines properly. Organisations and government departments are challenged to keep up with the emerging technologies that can enable them to survive in this digital society.

Government departments heavily rely on various technologies in carrying out administrative duties. In government departments various types of data and information are processed and stored using these technologies. Ojo (2014) explains that this could be easily achieved through the adoption and application of ICT at national level. This information can be accessed by every person(s) including unauthorised people compromising confidentiality. To achieve security of government data and information, one should have awareness and knowledge of that technology. Network security is by far the greatest concern for many organisations and they rely heavy on their IT staff to prevent or stop these system breaches (Kumar, 2014). Kumar (2014) further suggested that IT professionals are the ones responsible for assisting others get their work done efficiently without the complex jargon of the technology world. However, Ayandele and Adeoye (2010) maintain that proper management of ICT is a major challenge for managers and organisations should ensure that it has the capability, capacity and need for technology before using or embarking on it. They further assert that employee's skills and competence have to be improved and management to be developed to innovate and to manage performance for sustainability. Kumar, Sharma, Agarwal and Kumar (2011) outlined the disadvantages of ICT on governments: (i) an electronic government is to move the government services into an electronic based system. This system loses the person to person interaction which is valued by a lot of people, (ii) the Implementation of an e-government service is that, with many technologies based services, it is often easy to make the excuse (e.g. the server has gone down) that problems with the service provided are because of the technology, (iii) the implementation of an e-government does have certain constraints. Literacy of the users and the ability to use the computer, users who do not know how to read and write would need assistance and (iv) studies have shown that there is potential for a reduction in the usability of government online due to factors such as the access to internet technology and usability of services and the ability to access to computers.

The impact of ICT in government administrative environment: Information and Communication Technology (ICT) have a definite effect on an individual and organisational structure. According to Naghibi and Baban (2011) changes already affect top to bottom of the organisation at most of the time and administrative environments are no exception. These challenges are characterised by change in nature of work, responsibilities and roles. Technologies include products and services such as desktop computers, laptops, hand-held devices, wired or wireless intranet, business software, network security among others (Binuyo & Aregbeshola, 2014). These technologies are utilised by administrative employees on daily basis to carry out their roles and responsibilities. The use of ICT has become very important to all organisations that intend to remain competitive in the market (Irungu, 2012). However, significant changes have been taking place in the office environments and this characterised by change in office work. The nature and background of office work is no longer the same as the one of the past. The advent of emerging technologies has totally revolutionised the way government access, process, stores, retrieve and disseminate information both within and outside organisation or across the globe (Adegbemile, 2012). Organisations around the globe and government included are undergoing unprecedented change (Patrick & Kumar, 2011). Employees in government departments are considerably affected by innovations that are becoming pervasive. These innovative ways of doing things has influenced many organisations across the world "to rely increasingly on the use of ICTs for the internal dissemination of key corporate information, whether this is via email, intranet, mobile technologies, or multimedia applications" (Greenwood & Cooke, 2008).

In this digital era ICTs have changed the scope of work. The world of work will never be the same again. In spite of these changes Beena and Mathur (2012) point out that "ICT is the driving force in the world and intensely making impact on economy, development and social growth of any nation". This is confirmed by Ghodbane (2008) when acknowledging that ICT is the driving force of the new economy. However, some organisations and governments resist change because their perception of technology is that, it will negatively influence the effectiveness of an individual performance work. Other business environments may perceive evolving technologies as contributing significantly to organisation and individual work and most importantly provide more efficient and effective service delivery to the right people on time. The primary objective of the study was to determine how emerging technologies enable or constrain employees in carrying out their roles and responsibilities within the South African government departments.

3. Methodology

Research design and approach: In this study, a cross-sectional design was used where a quantitative approach was followed. A survey was conducted among the administrative employees from the two selected government departments namely, Department of Education and the Department of Transport. This design was used as researchers wanted to reach many people and it is cost effective. Using a convenient sampling, 247 administrative employees were sampled from the two departments.

Data collection: Data was collected using a structured questionnaire where the researchers personally distributed questionnaires by visiting the two departments and the respondents were allowed ample time to complete the questionnaires and return. This method allowed respondents to ask possible questions in case they had some doubts on the questionnaire.

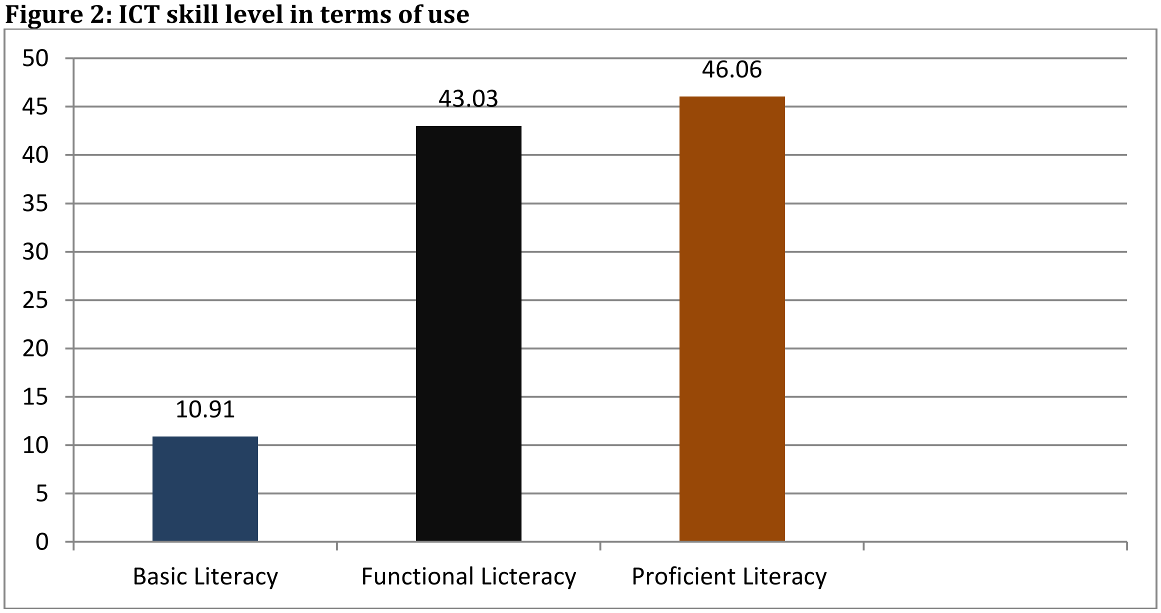
Data analysis and management: Prior to data analyses primary researcher populated data on MS Excel spread sheet and further analysed through SPSS version 24. The summary statistics are given as frequencies and proportions (converted to percentages), and the test for association between a pair of categorical variables was accomplished through the employment of Pearson chi-square test wherein the interpretation of results was performed at $\alpha = 0.05$ error rate. In other words, the association was declared significant when$p < 0.05$.

4. Results and Discussion

Sample realisation: A total 247 questionnaires were distributed to the two government departments by the researchers. Of great importance is that of the 247 questionnaires distributed, 165 (58%) were returned which were duly completed. From the data collected, it emerged that 88(53.33%) of the participants from both Department were females, while 77(46.67%) were males. This result is a true reflection of the administrative environment which is a female-dominated field as noted by (Van Antwerpen & Ferreira, 2010). These percentages indicated that the majority of the administrative positions in the government sector were occupied by females. The majority of the participants were in assistant director 35(24.14%), senior administrator positions 33(22.76%) and other designations that did not form part of the list 30(20.69%). Regarding the number of years of service in their current positions, 62(37.58%) of the participants had between five and eight years' work experience in their respective departments. It can be discerned that both departments were well equipped with experienced administrative employees who had been holding their respective positions for years. A total of 85(65.38%) indicated that they were in a possession of degree certificates as their highest educational qualifications. This was followed by 28(21.54%) participants who had attained other qualifications and 11(8.46%) who are in possession of a grade 12 certificate only. A significant majority 72(57%) of administrative employees were between the ages of 31 to 40 years. The above demographics were deemed critical and relevant to this study as it gave a clear picture of the type of population that participated in this study to obtain rich information for the analysis of the primary data that is presented below.

ICT skill level in terms of use: It is critical in this technological era that organisations move from ancient ways of doing things to more innovative ways. The years of handling office roles and responsibilities pushing paper are gone. In this 21st century technology plays a critical role for any organisation in order to achieve their strategic goals and to mark its presence in this competitive innovative century. In support of the aforesaid statement, Berisha-Namani (2010) reveals that information has become essential to make decisions and crucial asset in organisation in organisation. The ICT skill levels are required in all government departments in order for the administrative employees to present information in the required format. It is critical that social workers have both competency and literacy with ICTs (Perron, Taylor, Glass & Margerum-Leys, 2010). Therefore; organisation should be moving with times in terms of ICT skill level and technology that they use. Administrative employees must possess different types of literacy in order to be competent in their working environment such as proficiency, functional and basic literacy. When utilising technologies, various skill-set and is required in order to operate different office machines. From the figure 2 below it was clear that majority of staff members from both government departments do have different skill level in terms of use.

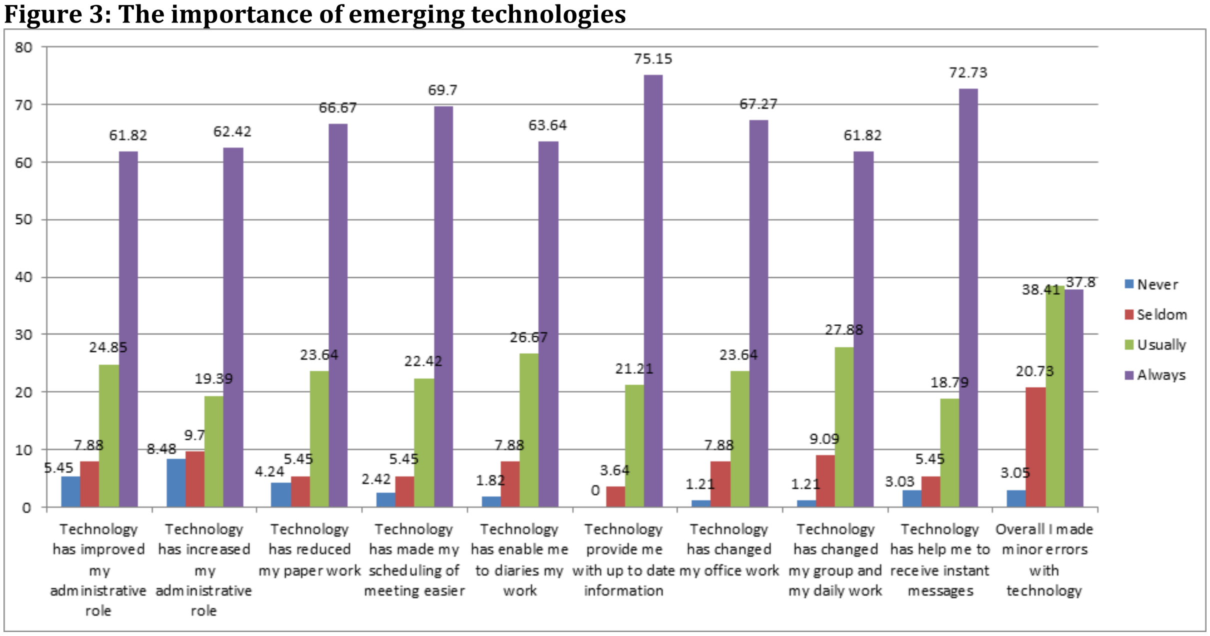
Figure 2: ICT skill level in terms of use



The effectiveness of administrative employees in an organisation strongly depends on the available office technology as well as the skills and competencies of such secretary to perform office duties (Dosunmu, Bukki & Akintola, 2017). However, the skill-set and literacy level of individuals differ as indicated in figure 2 above. It is evident that government administrative employees possess a high proficient literacy level of 76(46.06%) while functional literacy presented a lower percentage of 71(43.03%). There is a significant relationship (p = 0.001) between literacy level and departments. This means that participants from the two departments hold different view in terms of ICT skill levels. There is however skill imbalance in administrative employees since emerging technologies are perceived and accepted differently. Moreover, the lack of skills-set can influence their attitudes and beliefs results in acceptance and rejection. The findings depicted in figure 1.2 are in line with what Evanson. Usoro and Umondo (2012) found in their study that in order to be efficient in all areas of the organisation, administrative employees need to possess a specialised knowledge of work simplification, work measure and work standards based on the present day technology. For this reason, there is need for acquiring the latest basic ICT skill level by the administrative employees to remain suitable on their occupations. Furthermore, Garrido, Sullivan and Gordon (2012) explain that government consider an ICT skilled workforce a strategic asset that spurs economic growth, promotes competitiveness, and improves business productivity.

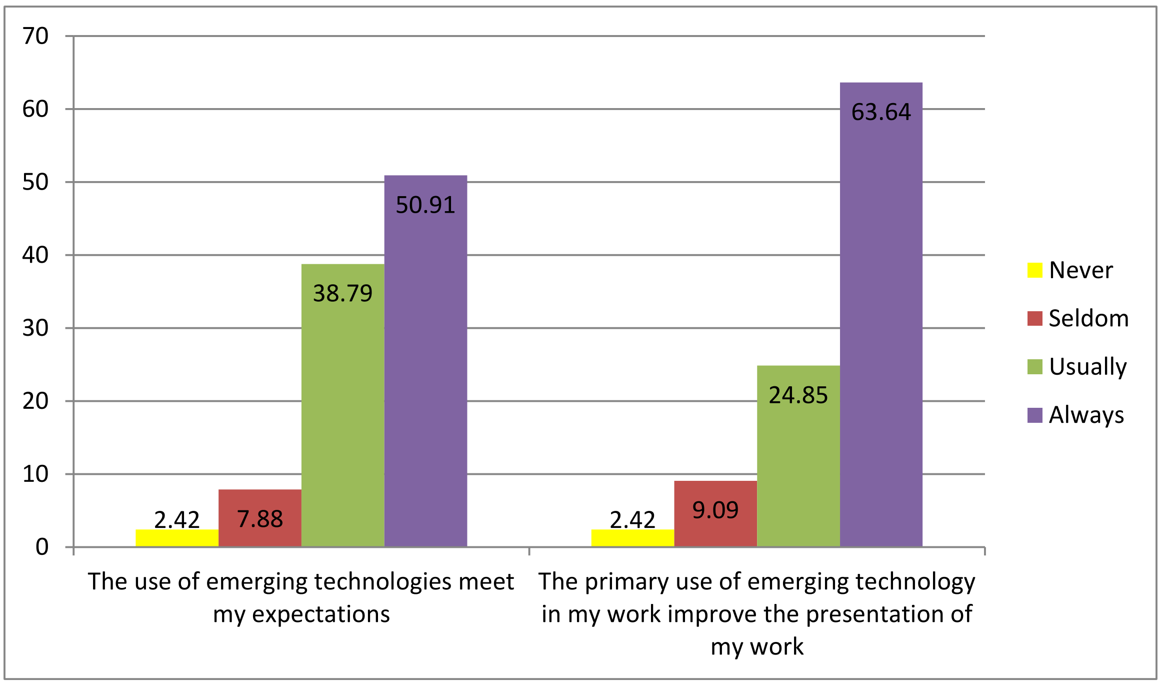
The significance of emerging technologies: Technology has changed the majority of administrators' office work as indicated in Figure 3 below. In particular, participants, 111(67.27%)indicated that emerging technologies had changed their office work. For instance, information technology has fundamentally altered interpersonal communications (Rahm, 1999). This author further stressed that from electronically enhanced Internet romances to new office interactions, the changes in person-to-person interchange are vast. Some of the changes that were experienced were how technology has improved their administrative roles as presented by 102(61.82%; Pr=0.12). There is no significant relationship between responses among respondents in relation to the importance of emerging technology with regards to improve the respondent's administrative role and department. This means that the respondents' opinion with regards to this question does not differ significantly between the two departments. Information technology has drastically changed the office functions, jobs are now done in a new way (Dosunmu et al., 2017). For example, it has reduced paper work by making it easier to schedule meetings 115(69.7%). From the analysis, it emerged that employees' on the importance of emerging technologies were not significant among employees from the two departments with respects to ($Pr =$ 0.187) as regards to enabling employees to diarise tasks and appointments digitally as indicated in Figure 3 below. Furthermore, emerging technologies had an influence on how work groups and daily routines were carried out 102(61.82%)due to the fact that it reduced errors. Therefore, the association between the respondents in response to the influence of emerging technologies is not significant (Pr = 0.781). This however, has created an opportunity for the government administrative employees to understand the significance of emerging technologies for their office work.

Figure 3: The importance of emerging technologies



However, the participants had different expectations when coming to how the emerging technologies impacted on their office work. Although the government administrative employees as well as the managers acknowledged the significance of the emerging technologies, there were, however, different views when it came to individuals' expectations with regard to the emerging technologies as presented in Figure 4 below. It is clear from the above Figure that the majority of participants from both departments mentioned how the use of emerging technologies had met their expectations as presented by 84(50.91%)However, this shows no significant differences (Pr = 0.194) among respondents from the two departments in relation to the use of emerging technologies which meet their expectations. The important role of expectations for emerging technologies is the functions of innovation systems approach as confirmed by (Alkemade & Suurs, 2012). Furthermore, 64(38.79%) respondents indicated that these technologies usually met their expectations. The success of every organisational investment on technology is determined by its adoption and successful use in all divisions within the organisation. In both government departments not all the administrative employees were embracing these technologies as they seldom met their expectations as stated by 13(7.88%) of the participants. In addition to that, was the 4(2.42%) of the selected administrative employees from the both departments who regarded these technologies as not meeting their expectations. Contrary to this sentiment, Cain and Haque (2008) attest that if ICT, used well, can improve efficiency and organisational workflow.

Figure 4: Expectations of emerging technologies



One of the benefits of emerging technologies is to improve the presentation of the work performed by administrators in the office environment. These benefits have always been embraced by 105(63.64%) of the selected administrative employees. A further 41(24.85%) of the participants selected from both government departments, usually found that emerging technologies to be beneficial with regard to improving the presentation of their work within their divisions. Not all the participants viewed the benefits of technology in their work in the same way, therefore, that was the reason why 15(9.09%) of the selected administrative employees seldom saw its significance with regard to the work they performed in the office. Moreover, 4(2.42%) of the participants from both departments never perceived the use of technology with regard to performing their daily routines as essential for executing their roles and responsibilities successfully. Although emerging technologies held promises for the effective office administration in modern offices they were also associated with countless challenges. It is therefore critical for organisations to provide skilled and well equipped manpower to match the current modern office obstacles. Evanson et al. (2012) assert that effective utilisation of emerging technologies in office administration can be achieved only if organisations are able to identify obstacles associated with its utilisation.

Although emerging technologies held promises for the effective office administration in modern offices they were also associated with countless challenges. It is therefore critical for organisations to provide skilled and well equipped manpower to match the current modern office obstacles. Evanson et al. (2012) assert that effective utilisation of emerging technologies in office administration can be achieved only if organisations are able to identify obstacles associated with its utilisation. Therefore, the majority of administrative employees did have technological skills apart from a minority 9(3.19%) among the participants, it is clear from Table 2 above that there were few challenges with regard to knowledge of utilising the emerging technologies. For example, the majority of the participants possessed background knowledge of the competencies required for individuals' effectiveness in today's office environment. In addition, it is clear that only 7(2.48%) of the selected administrative employees did not possess such knowledge. One can argue that knowledge goes hand-in-hand with skills-sets, and among the participants from both government departments, some 7(2.48%) did not possess the necessary skills to use technology in their environment. Although some employees were challenged by various obstacles with regard to using technology, some employees enjoyed the benefits that come with the utilising of emerging technologies.

Table 2: Obstacles associated with the use of technologies

Statement	Percentages
I do not possess communication technology skills	9(3.19%)
I have troubleshooting too many browser variations	12(4.25%)
It is difficult to adjust	6(2.13%)
I have trouble connecting to the internet	33(11.71%)
I'm used to old machines or old pattern of work	17(6.03%)
I do not know what is technology	4(1.42%)
I never use technology to aid me to do my work	2(0.71%)
I don't have sufficient access to other office devices	31(10.99%)
I have trouble connecting to internet	24(8.51%)
I'm not skillful in latest technology	21(7.45%)
It too difficult to use technology	1(0.35%)
I do not possess the background knowledge of the competencies required for my effectiveness in today's office	7(2.48%)
I don't have the technical support	17(6.03%)
It is extra work	6(2.13%)
Overall I don't have the necessary skills	7(2.48%)
There are no obstacles	73(25.88%)
Other	12(4.25%)

The participants from both departments 73(25.88%)indicated that, overall, they did not have any obstacles preventing them from using emerging technologies in their respective environments as can be seen in Table 2 above. On the other hand, a few of the employees were faced with challenges regarding utilising the emerging technologies; therefore, it is the duty of organisations to ensure that all employees are familiar with emerging technologies in this digital society. When employees recognize their organisation interest in them through offering training programs, they in turn apply their best efforts to achieve organizational goals, and show high performance on job and this also confirm what Elnaga and Imran, (2013) found in the study. Similarly, Yamoah (2013) also found that those employees who have taken trainings were more capable in performing different task & vice versa. Training is required to equip all employees with the necessary technological skills to ensure their effectiveness in the office environment so that some of the identified obstacles could be addressed, Administrative employees should be trained and retrained frequently to acquire the competencies and skills to deal with the present-day challenges of emerging technologies. These findings are in line with what Evanson et al. (2012) found in their study that there are many constraints against the adoption of fullfledged technology one of the reasons; it is implementation is apparently too slow in addressing the challenges associated with implementation efforts.

5. Conclusion and Recommendations

The primary objective of this study was to determine how emerging technologies enable or constrain employees in carrying out their roles and responsibilities within the South African government departments. It is evident from the findings that government administrative employees have a fair proficient literacy level and functional literacy. This however, suggests that the administrative employees possess a knowledge relating to ICT. It can further be concluded that use of emerging technologies has substantively changed the way they do their office work. The respondents indicated that they embrace the emerging technologies; however, they do not always meet their expectations. The use of emerging technologies has improved the presentation of their work within their divisions. Overall it emerged that the administrative employees do not have obstacles preventing them from using emerging technologies. In order to ensure that there is a continuous effective use of emerging technologies within government departments, it is recommended that the employees should attend refresher courses to familiarise them with new versions of the software packages.

Limitations and Future Research: The current study has a number of limitations which point to directions for future directions. First, study used a convenient sampling which consisted of administrative employees in the selected departments. The findings of the study may therefore not be generalised to other departments beyond the two. This however, suggests that future research should use a larger and more representative sample in order to allow the generalisability of the findings throughout the government departments and other contexts. Second, the current study was a cross-sectional which means that some of the possible respondents were not present at the time of data collection and these participants could have provided a different perspective on the matter under investigation.

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Capital Structure and The Profitability of Listed Retail Firms

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Abstract: The South African retail sector continues to experience a decline in sales and returns amidst growing external competition and a drop in consumer confidence stemming from the recent credit downgrades in the country. Yet, firms in this sector appear to maintain high debt to equity levels. This study investigated whether the capital structure practices of these firms influence their profitability. A Panel data methodology, using three regression estimators, is applied to a balanced sample of 16 retail firms listed on the Johannesburg Securities Exchange (JSE) during the period 2008-2016. The analysis estimates functions relating capital structure composition with the return on assets (ROA). Results reveal a statistically significant but negative relationship between all measures of debt (short-term, long-term, total debt) with profitability, suggesting a possible inclination towards the pecking order theory of financing behaviour, for listed retail firms. Additionally, retail firms are highly leveraged yet over 75% of this debt is short-term in nature. Policy interventions need to investigate the current restrictions on long-term debt financing which offers longer-term and affordable financing, to boost returns. While this study's methodology differs slightly from earlier studies, it incorporates vital aspects from these studies, and simultaneously specifies a possible model fit. This helps to capture unique but salient characteristics like the transitional effects of debt financing on firm profitability. It therefore delivers some unique findings on the financing behaviour of retail firms that both in form policy change, while stimulating further research on the phenomenon.

Keywords: *Capital Structure, Profitability, Return on assets, Leverage, Debt, Retail firms.*

1. Introduction

Evaluating the financial performance of retail firms in South Africa occupies a prominent space in the corporate finance literature particularly because current socio-economic challenges in this sector indicate high consumer debt-to-income ratios and rising utility costs that negatively impact the disposable income of households and eventually erode the forecasted revenues of the sector (Euro monitor International, 2017).This First Moving Consumer Goods (FMCG) sector, by its very nature, implies strong links between the acquisition and utilisation of operational debt, with financial performance, which, for this study, raises the empirical question; what form of debt financing is sufficient to sustain profitability and growth in this sector?

The debate on firm capital structure and its relevance to financial performance remains unresolved stemming from the 1958 seminal works of Modigliani and Miller (MM) who under perfect market conditions found no relevance of debt to firm performance. Since then, numerous studies have documented a more realistic approach to the use of debt, citing cases where firms under capital market imperfections will trade-off the costs and benefits of debt in order to maintain target debt-equity ratios. Conversely, they will initially finance their investments through internally generated funds and only issue debt when the latter are insufficient, thereby a deviating from the target debt-to-equity phenomenon (see; Myers, 1984; Rajan & Zingales, 1995; Fama & French, 2002 and Flannery & Rangan, 2006). Similarly, other capital structure theories arising out of empirical contention reject the possibility of a timely convergence towards a target debt-to-equity ratio and suggest, among others, management's ability to trade overpriced shares in a market-timing fashion, when information asymmetries exist (Baker & Wugler, 2002; Flannery & Rangan, 2006). Such cases indicate that firms rarely converge to absolute target debt ratios (or that the process of doing so takes time!), implying a possible dynamic nature of most firms' capital structures, with potential advantages and disadvantages for creating value.

Debt financing, according to theorists, has its known pros and cons. According to Graham, (2012) and Brigham and Daves, (2015), it increases firm value since payments on debt are tax deductible and create savings for borrowers that eventually reduce the cost of debt. However, accumulated debt increases the risks that shareholders have to bear and potentially causes financial distress or a possibility for bankruptcy. The retail sector in South Africa is faced with a myriad of potential challenges ranging from increased growth in external competition and the use of excess debt, to a decline in consumer confidence amidst the recent credit downgrades in the country (Fin24: 2017). According to a report by Fin24 (2017) and StatsSA (2017), while food retailers continued to experience stable sales despite the bleak economic conditions, other retail groups experienced a decline amidst rising input costs, putting pressure on their anticipated profit margins. Additionally, StatsSA (2016) indicates that this sector is highly leveraged with debt-to-equity ratios in ranges of 2.3:1. Simultaneously, a significant portion of the sales in this sector are managed by way of credit which exerts pressure on operating cash flows and exacerbates the financing problem.

This raises the need to empirically investigate what particular combination and/or amount of debt securities enhance the overall value of firms in this sector? To the best of the researcher's knowledge, no empirical studies could be found investigating the effect of capital structure on financial performance for listed retail firms in South Africa. While studies on capital structure exist in general, several have concentrated on other industries and sectors within the economy thereby creating a gap in the empirical literature on capital structure. This study seeks to empirically investigate whether the capital structure of listed retail firms on the Johannesburg Securities Exchange (JSE) influences their financial performance. To achieve this objective, the following secondary objectives were identified:

- To investigate the relationship between short-term debt and the profitability of retail firms listed on the JSE.
- To investigate the relationship between long-term debt and the profitability of retail firms listed on the JSE.
- To investigate the relationship between total debt and the profitability of retail firms listed on the JSE
- Comment on the overall impact of capital structure on the profitability for retail firms listed on the JSE.

The rest of this paper is organized as follows: Section 2 highlights the relevant empirical findings on the capital structure and financial performance relationship. Section 3 outlines on the research design and methodology. Section 4 presents the data analysis process and results, while the last section concludes by discussing the results and their policy implications.

2. Literature Review

The debate on capital structure and profitability remains contentious since the seminal works of Modigliani and Miller, (1958) hereafter MM (1958), whose original theory of "capital structure irrelevance" was based on restrictive assumptions that posited an absence of taxes and/or transaction costs, perfect capital markets and market participants with homogenous expectations. Once relaxed under MM (1963), it became apparent that the presence of bankruptcy costs and favourable tax-shields, favour the notion of an optimal capital structure - one which maximises firm value or respectively minimises the cost of capital (Abor, 2005).

Subsequent empirical studies further disputed the revised MM (1963), assertion that firms should use as much debt as possible in their capital structure to maximise value. This culminated in the advancement of other capital structure theories that include, but are not limited to; the bankruptcy costs theory (Titman, 1984), the agency theory (Jensen and Meckling, 1976) and the pecking order theory (Myers and Majluf, 1984). In all these cases firms' capital structures seem more dynamic than static. Frank and Goyal, (2003), categorically state that different theories apply to firms under different conditions so that "there is no universal theory of capital structure and no reason to expect one" (Myers, 2002). Against such backdrop, current empirical studies focus more on accessing reliable empirical patterns of debt-equity use and aligning them to the different theories as postulated. The financing pattern of a particular firm or its mixture of debt to equity provides an indicator of the particular theory or financing behaviour adopted by the firm. This takes precedence over the controversial posits presented by capital structure theorists.

For instance, Abor (2005) investigates the effect of capital structure on profitability (measured using the return on equity, ROE) on a panel sample of listed firms on the Ghanaian Stock Exchange during the period 1998 - 2002.Using an Ordinary Least Squares (OLS) regression technique, he confirms that most profitable firms use more short-term debt to finance their operations implying that short-term financing is an important component of financing for Ghanaian firms. In fact, 85% of the total debt on the Ghanaian Securities Exchange comprises of short-term debt. He observes that firms that finance using long-term debt become less profitable in the long run (Abor, 2005). These findings mirror studies by Frank and Goyal, (2003) and Nimalathasan and Brabete, (2010) who found positive correlations between debt and firm profitability for United States (US) firms and listed firms in Sri Lanka respectively.

Conversely, Javed and Akhtar, (2012) investigate this relationship using industrial sector firms on the Karachi Stock Exchange (KSE). Their sample is selected from 21 diversified industries with public limited companies registered on this exchange during the period 2004 - 2008. Using correlations and regression analyses, and contrary to the above findings, their study confirms a statistically significant but negative relationship between the debt-to-equity ratio and their profitability measure – the ROE. However, when the return on total assets (ROA) is used as a proxy for profitability, their findings confirm a statistically significant but positive relationship. Their initial findings align with studies by Rajan and Zingales, (1995) and in part, with those by Mirza and Javed, (2013) and Muneer (2015) indicating that excessive financing with debt sources negatively impacts profit margins due to heavy interest payments. This means that firms that have too much financing done through long-term debt, reduce their earnings by increasing their mark-up expenses (Mirza & Javed, 2013).

Amidu, (2007) also assesses the determinants of capital structure by applying a panel regression model on banks in Ghana. His supporting theories on the capital structure – profitability relationship are adopted from Ooi, (1999) who argues that firms that employ more debt become more profitable since they merely have a high tax burden but low bankruptcy risk, and Myers, (1984) who prescribes a negative relationship on the basis that profitable firms do not need to depend on so much external financing because they usually have adequate internal reserves. His findings support the former theory only in the sense that profitable banks employ more long-term debt. However, like Abor (2005), firms in his study rely mostly on short-term debt and the latter seems to have a negative impact on profitability. Conversely, Kyereboah-Coleman, (2007) assesses this relationship using microfinance institutions in Ghana. His panel consists of all microfinance institutions listed during the period 1995 – 2004, and is analysed using both fixed and random effects regression models. He confirms exclusively that most microfinance institutions employ a lot of debt in their capital structure and that such debt is of a long-term rather than short-term nature. He observes that these highly leveraged institutions build economies of scale and are better able to deal with cases of adverse selection and moral hazards, thereby enhancing their ability to deal with risk.

In another study, Ahmad, Abdullah and Roslan, (2012) investigate this relationship focusing on publicly listed firms in Malaysia. Their study incorporates several extraneous variables known to conventionally influence the debt –profitability relationship like; growth, size and efficiency. In addition, they use both measures of profitability (ROE and ROA) and also incorporate lagged debt variables in order to capture transitional effects if any. Their findings indicate that all forms of debt financing (short-term, long-term and total) are significantly positive to the ROE, while only short-term debt and total debt vary positively with the ROA. Additionally, their control variables vary significantly with both measures of profitability in directions prescribed by earlier empirical findings. However, the lagged variables of debt do not have a significant impact of profitability implying that previous years' debt does not significantly influence performance. In contrary to the above studies, Ahmad et al. (2012) confirm that all forms of debt financing influence firm profitability in a positive manner (Muneer et al., 2013).

Therefore, these findings suggest a set of plausible conclusions. First, it is evident that firms, even within the same environmental context, employ debt financing differently based on their pressing economic constraints. To this end, it is impossible to classify firms with certainty, to one theory or another since their financing behaviour tends to overlap more than one theory. Secondly, and flowing from the above, it is logical to classify firms based on their debt financing patterns rather than capital structure theory per se. It is necessary to classify the financing behaviour of firms based on the debt-to-equity composition, size, tax implications, profitability, growth prospects and chances of bankruptcy, among others. Hence, in order to further the literature on capital structure, and to verify the conflicts among several empirical studies, this study adopts an approach similar to Abor, (2005), Amidu, (2007) and Ahmad et al. (2012), to investigate the effect of capital structure on profitability for listed retail firms on the Johannesburg Securities exchange (JSE).

3. Methodology

The study adopted a panel data methodology similar to studies by Ismail, (2013), Ahmad et al. (2012), Amidu, (2007), Kyereboah-Coleman, (2007) and Abor, (2005) to investigate the effect of capital structure on profitability among listed retail firms on the JSE. According to Baltagi (2005), panel data methodology pools cross-sectional units of observations over several time dimensions and produces estimates that are more robust than employing cross-sectional or time-series estimation techniques alone. It also assumes that the variables are heterogeneous thereby controlling for bias and ensuring less collinearity but greater degrees of freedom.

All the above studies use a conventional weighted least squares methodology due to the nature of the panel data they apply since such a methodology controls for cases of possible heteroscedasticity and autocorrelation amongst the variables. The study adapts this approach in two aspects; firstly, it specifically isolates the various components of debt yet includes them into one specified model in order to assess the explanatory power of the latter, secondly, it lags certain components of debt financing in order to investigate for any possible transition effects in the debt – profitability relationship. It therefore differs from studies by Afrasiabi and Ahmadinia, (2011); Mazur, (2007) and Ortqvist et al. (2006) that apply a variant of structural equation modelling techniques in order to investigate capital structure theories and the effect of other macro and/or micro economic variables on profitability.

Sample and Data: The study employed audited financial statement data from Orbis – a flagship of the Bureau Van Dijk (BvD) database which contains financial and economic information on private and listed companies. The sample consisted of all retail firms listed on the JSE during the period 2008 – 2016. According to the North American Industry Classification System (NAICS 2017), the original sample consisted of an unbalanced sample of 19 firms grouped into two sub-sectors (code44 –motor parts, electronics, furniture, building materials, food and beverages, healthcare and clothing stores and code 45 – general merchandise, sporting and miscellaneous retailers). In order to create a balanced data panel, three firms with a non-random nature of missing data, were removed from the sample to create a balanced panel of 16 firms, with 144 firm-year observations. The Bureau Van Dijk database standardises financial statement data based on a particular reporting period (usually a year) and according to major business characteristics defining a particular industry and/or sector. Using a particular base year, this data is then converted into several global currencies for the purpose of analysis. For this study, pre-calculated financial statement ratios were extracted in thousands('000's) of rand values and used for the analysis.

Variables: For consistency, both measures of profitability (ROA and ROE) where considered in the preliminary analysis (see; Mirza & Javed, 2013 and Ahmad et al., 2012; Muneer et al., 2017). Unfortunately, the analysis with the ROE was weak across most estimations and dropped from the analysis. The return on assets (ROA) was operationalized as the dependent variable and a proxy for profitability. This proxy is defined as the ratio of earnings after taxes (EAT) to total assets and relates a company's profitability to its asset base (Ahmad et al., 2012).

Other proxies operationalized as independent variables and measures of capital structure included; a measure of short-term debt (SDA) calculated as a ratio of the firm's short-term debt to total assets, a measure of long-term debt (LDA) calculated as the ratio of the firm's long-term debt to total assets, the total-debt-to-total assets ratio representing total debt (TDA), and a differenced total debt-to-total asset measure (DTDA) to capture transitional effects of debt over time. Then, following Abor, (2005) and Amidu, (2007), two control variables that affect the validity of the study if excluded, were added as explanatory variables, in order to increase model robustness. These included; size of the firm (LSALES) calculated as the natural logarithm of sales per year and growth (SGROW) calculated as $(Sales_1 – Sales_0)/Sales_0$.

Since empirical findings on the debt – profitability relationship are mixed and most analyse debt as a collective, this study followed certain empirical postulates to hypothesise the relationships. The study followed Abor (2005) and Amidu, (2007) to hypothesise a positive relationship between short-term debt (SDA) and profitability (ROA) since such debt is less expensive, has lower interest commitments and therefore enhances profits (Abor, 2005). Conversely, it hypothesises a negative relationship between long-term debt (LDA) and profitability (ROA) since according to Fama and French, (2002), Graham, (2005) and Abor, (2005) such debt commits a firm to high proportions of interest payments over longer periods and potentially affects the returns. The study also assumes that total debt (TDA) will vary positively with profitability based on the conventional knowledge that "the higher the debt, the higher the profitability" (Abor, 2005). Finally, the general consensus about the size of the firm (LSALES) and growth (SGROW) is that both affect debt positively as a "rule of thumb" (Abor, 2005; Amidu, 2007 and Mirza & Javed, 2013).

4. Data Analysis and Results Discussion

The study employs a basic panel data regression equation adopted from Kyereboah-Coleman, (2007) but similar to Amidu, (2007) and Abor, (2005). The model is specified as follows:

$$Profitability_{it} = \beta + \beta Debt_{it} + \beta Control_{it} \quad (1)$$

Where $Profitability_{it}$ represents the performance of firm i at time t, $Debt_{it}$ represents the specific debt employed by firm i at time t and $Control_{it}$ represents the control variables of firm i at time t.
Following from equation (1), the following regression equations were estimated using Ordinary Least squares (OLS), Fixed Effects (FEM) and Random Effects (REM) estimation techniques:

$$ROA_{it} = \beta_0 + \beta SDA_{it} + \beta LDA_{it} + \beta TDA_{it} + \beta LSALES_{it} + \beta SGROW_{it} + e_{it} \quad (2)$$

$$ROA_{it} = \beta_0 + \beta SDA_{it} + \beta LDA_{it} + \beta DTDA_{it} + \beta LSALES_{it} + \beta SGROW_{it} + e_{it} \quad (3)$$

Where, the *ROA* denotes a measure of the firms' return on assets, *SDA* measures the amount of short-term debt, *LDA* measures the amount of long-term debt, *TDA* measures the amount of total debt, *DTDA* measures the differenced total debt, *LSALES* measures the size of the firm and *SGROW* measures growth level in sales terms. The subscript *i* denotes the cross-sectional dimension of firms ranging from 1 – 16 while *t* denotes the time-series dimension of years ranging from 2008 to 2016. *β* estimates the coefficients of the independent variables and *e* the error term. The study uses a balanced panel of data and *Eviews*9 to estimate these models.

Table 1: Descriptive results of all variables over the 9-year period

	ROA	SDA	LDA	LSALES	SGROW	TDA
Mean	14.61	0.409	0.082	12.87	79.34	0.511
Median	14.85	0.395	0.047	13.27	0.004	0.527
Maximum	48.16	0.853	0.446	16.19	11256	0.880
Minimum	-59.94	0.043	0.0008	8.168	-0.995	0.092
Std. Dev.	15.08	0.210	0.092	2.122	937.9	0.197
Skewness	-0.701	0.296	2.146	-0.461	11.87	-0.174
Kurtosis	6.950	2.063	7.786	2.252	141.9	2.211
Jarque-Bera	105.4	7.374	248.0	8.465	119262.	4.467
Probability	0.000	0.025	0.000	0.014	0.000	0.107
Sum	2105	59.01	11.88	1853.	11426	73.64
Sum Sq. Dev.	32543	6.312	1.231	644.2	1.26E+08	5.597
Observations	144	144	144	144	144	144

Where: ROA = return of assets, SDA = short-term debt, LDA denotes the long-term debt, TDA = total debt, LSALES represents size measured using the natural logarithm of sales and SGROW = growth in sales. ALL variables estimated for an annual cycle.

Table 2: Pearson's Correlation Analysis

Correlation Probability (*p*)	ROA	SDA	LDA	DTDA	LSALES	SGROW
ROA	1.000					
SDA	-0.3016***	1.000				
p-value	0.0005	_____				
LDA	-0.2807***	-0.4103***	1.000			
p-value	0.0013	0.0000	_____			
DTDA	-0.1748**	0.0879	0.0057	1.000		
p-value	0.0485	0.3237	0.9491	_____		
LSALES	0.5013***	0.1297	-0.1061	0.0340	1.000	
p-value	0.000	0.1443	0.2333	0.7025	_____	
SGROW	-0.0012	0.0495	-0.0551	-0.0042	0.1309	1.000
p-value	0.9895	0.5786	0.5367	0.9623	0.1406	_____

Where: (*) (**) and (***) represent statistical significance at the 10%, 5% and 1% levels respectively.
Included observations: 128 after adjustments Balanced sample (listwise missing value detection)

Where: ROA = return on assets, SDA = short-term debt, LDA denotes the long-term debt, DTDA is the value of the differenced (lagged) total debt, LSALES = size of the firm and SGROW = growth measured by a change in sales. All variables estimated for an annual cycle.

Descriptive statistics: Table I above presents the descriptive statistics of the estimates for normality. Of all 16 retail firms, the average ROA was 14.6% with a maximum of 48% and a minimum -59%. The standard deviation of 15.1% does not suggest a wide variation in the distribution of this measure. The variable SDA which measures the ratio of short-term debt to total assets has an average of 41% and a median of 40% implying that about 40% of all retail firms' debt is short-term in nature. The long-term debt (LDA) ratio on the contrary indicates an average debt-to-assets level of 8.25% and a median of 4.7% implying that most retail firms carry less than 5% long-term debt in their capital structures and as noted by Abor, (2005), seem to depend mostly on short-term financing to run their operations. It is possible that the acquisition of long-term financing from financial institutions is a cumbersome process. Slightly over 52% of firm's assets are financed by debt while for some firms this value raises to 88%. These results imply that retail firms are highly leveraged yet the majority of their debt is short-term in nature. A Pearson's Correlation analysis of the variables under study indicated the causality between the dependent and independent variables. This is presented in table 2 above.

Table 2 above indicates the bivariate values of correlations between the dependent and independent variables. First, it is observable that cases of multicollinearity were negligible. According to Garcia-Teruel and Martinez-Solano, (2007) cases of multicollinearity are considered severe when correlations among particular independent variables exceed the 80% level. Such a correlation existed between the variables TDA and SDA and the study adopted a lagged variable for TDA (DTDA) in order to eliminate the problem. Additionally, and according to Ahmad et al. (2012), a lagged variable helps to capture the transitional effects of one variable on another. In this case, using lagged values of total debt (TDA) improved the robustness of the model(s).

Secondly, the correlations between the dependent and independent variables confirm interesting findings. Accordingly, all debt variables (SDA, LDA and DTDA) negatively impact the performance of retail firms since all variables indicate negative but statistically significant correlation coefficients with profitability. This finding conflicts with studies by Abor, (2005), Amidu, (2007) and Kyereboah-Coleman, (2007) and suggests unique implications for the retail industry in South Africa. It is possible that while most retail firms finance with short-term debt as opposed to long-term debt, the excess levels of debt in the sector are negatively impacting the performance of firms. However, size positively and significantly affects profitability, while growth in the industry indicates an inverse relationship although this finding is insignificant. Consequently, further analysis to these findings was warranted since according to Padachi's (2016), Pearson's correlation coefficients do not, in isolation, provide a reliable indicator of association because they do not account for each variable's correlation with other independent variables. Therefore, this study further estimated its theoretical multivariate models' using the pooled ordinary least squares (OLS) estimation, the fixed effects estimation (FEM) and the random effects estimation (REM). While the analysis justifies the use of a suitable estimator, it is necessary to compare the findings across other alternatives.

Table 3: Multivariate Regression estimates for equation 2 using Pooled OLS, REM and FEM

	Pooled OLS	Random Effects (REM)	Fixed Effects (FEM)
constant	-12.19**	-8.46**	11.76
	(0.04)	(0.045)	(0.56)
SDA	3.516	-0.609	2.495
	(0.813)	(0.964)	(0.869)
LDA	-46.31***	-43.425***	-39.845***
	(0.002)	(0.002)	(0.005)
TDA	- 44.66***	-33.536***	-30.296**
	(0.002)	(0.008)	(0.0162)
LSALES	3.973***	3.428***	1.604
	(0.000)	(0.000)	(0.303)
SGROW	-0.001	-0.001	-0.001
	(0.153)	(0.160)	(0.474)
F-statistic	41.21***	14.92***	20.559***
	(0.000)	(0.000)	(0.000)
Adjusted R^2	58.43%	32.74%	73.23%
Observations	144	144	144

Where: (*) (**) and (***) represent statistical significance at the 10%, 5% and 1% levels respectively. *p*-values in parenthesis.

Where: ROA = return of assets, SDA = short-term debt, LDA denotes the long-term debt, TDA = total debt, LSALES = size of the firm and SGROW = growth of the firm measured by the change in sales. ALL variables estimated for an annual cycle.

Data analysis: Estimating models using panel data requires a determination of whether there exists a correlation between the unobservable heterogeneity of each firm and the independent variables within a model (fixed effects). This helps to ascertain whether a within-group estimator or a random effects estimator is more appropriate for the analysis (Garcia-Teruel& Martinez-Solano, 2007). In order to determine the appropriate estimator for the short panel data used in this study, a Hausman (1978) test (test for the null hypothesis of no correlation) was run on a random effects regression estimation. The obtained statistically insignificant *p*-value of 0.2613 meant that the null hypothesis could not be rejected hence; a random effect model (REM) was adopted as the best estimator for the panel data. According to Raheman and Nasr (2007), a random effects model counters the problem of heteroscedasticity by calculating a common weighted intercept for all variables. This generalised least squares procedure normalises the data by making the weighted residuals more comparable to the un-weighted residuals thereby providing a more consistent estimation. Nonetheless, for consistency, this study reports the findings using all the 3 estimation techniques. Table III below provides the regression estimations for equation 2 below.

$$ROA_{it} = \beta_0 + \beta SDA_{it} + \beta LDA_{it} + \beta TDA_{it} + \beta LSALES_{it} + \beta SGROW_{it} + e_{it} \qquad (2)$$

The study estimated two similar models separated by the presence of a single variable. Observably, the total debt-to-total assets variable (TDA) was found to be highly correlated to the short-term debt (SDA) variable. This necessitated the estimation of another model using a lagged TDA variable(DTDA). It is notable that this change significantly increases the robustness of the findings. Table 3above provides the original output of equation 2 using; pooled ordinary least squares (OLS), random effects (REM) and fixed effects (FEM) estimation techniques. First, all estimation techniques produced similar findings on the relationships between LDA and TDA with profitability. Secondly, the model constants, F-statistics and R-square values indicated robustness on the theoretical model fits albeit the fixed effects model produced the highest estimation (adjusted R^2 value of 76.56%). Table 3 indicates that both LDA and TDA are statistically significant to profitability but vary negatively with the latter, at the 1% level. These findings mirror those by Amidu, (2007) and Abor, (2005) with regards to the LDA – profitability relationship, but differ when the total debt – profitability relationship is considered. Evidently, long-term debt is more expensive and employing large amounts of it affects profitability among retail firms. Similarly, output of the estimations of SDA and SGROW with profitability, were weak to support reasonable inference. However, larger retail firms carry the most debt as indicated by the positive and statistically significant relationship between LSALES and profitability, indicated at the 1% level of significance. The above estimation procedure was repeated using a lagged total debt to total assets variable as indicated in equation 3 and table 4 below. Notably, the inclusion of a lagged variable (see equation 3) increases the explanatory power of the variables in the model.

$$ROA_{it} = \beta_0 + \beta SDA_{it} + \beta LDA_{it} + \beta DTDA_{it} + \beta LSALES_{it} + \beta SGROW_{it} + e_{it} \qquad (3)$$

Table 4: Multivariate Regression estimates for equation 3 using Pooled OLS, REM and FEM

	Pooled OLS	**Random Effects (REM)**	**Fixed Effects (FEM)**
constant	-12.53**	-14.32	-8.91
	(0.03)	(0.213)	(0.68)
SDA	-39.258***	-28.139***	-19.103**
	(0.000)	(0.000)	(0.048)
LDA	-74.54***	-59.952***	-55.055***
	(0.000)	(0.000)	(0.000)
DTDA	- 25.01**	-29.630***	-32.152***
	(0.012)	(0.000)	(0.000)
LSALES	3.812***	3.499***	2.760
	(0.000)	(0.000)	(0.102)
SGROW	-0.001	-0.001	-0.001
	(0.234)	(0.501)	(0.580)
F-statistic	34.366***	14.92***	21.738***
	(0.000)	(0.000)	(0.000)
Adjusted R^2	56.77%	35.41%	76.56%
Observations	144	144	144

Where: (*) (**) and (***) represent statistical significance at the 10%, 5% and 1% levels respectively. *p*-values in parenthesis.

Where: ROA = return of assets, SDA = short-term debt, LDA denotes the long-term debt, TDA = total debt, LSALES = size of the firm and SGROW = growth of the firm measured by the change in sales. ALL variables estimated for an annual cycle.

Table 4 includes a lagged variable for total-debt (DTDA) to capture the transitional effects of leverage on firm performance. This, at the one hand strengthens the explanatory power of the model, while at the other, captures new insights about the effects of a firm's previous year's debt on its profitability (Ahmad et al., 2012). Interestingly, the replacement of total debt with its lagged variable increases the explanatory power of the estimation between short-term debt and profitability. Short-term debt (SDA) affects profitability negatively at statistically significant levels of 1% across all estimations. This observation conflicts with findings by Abor, (2005); Amidu, (2007) and Kyereboah-Coleman, (2007) but aligns with findings by Ahmad et al. (2012). According to Abor, (2005), short-term debt is less expensive and increasing it creates comparatively lower interest commitments which boost firm profits. However, the negative relationship observed above and the finding that retail firms in South Africa carry almost 80% of short-term debt in their capital structure, suggests that regular short-term debt commitments negatively impact their profits in the long run. Moreover, short-term rather than long-term debt seems to be the ideal financing alternative for these firms given the first-moving-consumer-goods (FMCG) nature of this sector. It is interesting to note that firms in both Ghana and South Africa, rely heavily on short-term than long-term financing.

Additionally, long-term debt (LDA) negatively affects profitability at statistically significant levels of 1% across all estimations. This implies that an increase in long-term debt is associated with a decrease in profitability. This finding conflicts with studies by Kyereboah-Coleman (2007) but agrees with Abor, (2005). Long-term debt is harder to obtain and carries higher interest commitments. This offers some explanation why retail firms in South Africa carry so little in their capital structure (less than 5%). Moreover, it is plausible that these firms match financing requirements with their operating cycles and this favours short-term rather than long-term financing. Empirical findings estimate the debt - profitability relationship by combining the various components of debt (total debt). Of these, the common finding is that total debt should vary negatively with profitability because managers of profitable firms tend to avoid the disciplinary role of debt financing (Rajan & Zingales, 1995). Others believe, that total debt should vary positively with profitability based on the trade-off theory premise that more profitable firms carry more debt since they have the ability to access and take on such debt, (Myers, 2002). As in table 3 above, the lagged values of total debt varied inversely with profitability and at statistically significant levels of 5%, 1% and 1% across the three estimations respectively (see table 4). This finding contrasts with empirical evidence from Nimalathesan and Brabete, (2010) and Abor, (2005) but aligns with findings from Amidu, (2007). It is possible that this results from the negative trend in short-term debt which constitutes about 80% of the debt in the capital structures of retail firms.

Finally, table 4 indicates that size varies positively with profitability at the 1% level, for all estimations. This finding is consistent with most empirical studies that include; Frank and Goyal, (2003); Abor, (2005) and Mirza and Javed, (2013). Yet, it receives only partial support from Amidu, (2007) who finds a positive relationship only when short-term debt is considered. Similarly, findings on the growth variable (SGROW) do not offer meaningful results due to statistical insignificance. However, the sign of causality points towards a negative direction suggesting that retail profitability does not necessary imply growth. This study incorporates several variables into theoretical models 2 and 3 in order to specify a model fit for the “effect of capital structure on profitability among retail firms”. While certain important variables may have been excluded from the estimation, the robustness of the models as estimated by their respective adjusted R^2 values of 56.77%, 35.41% and 76.56%, across all estimations, provides some meaningful inference to suggest that the profitability of retail firms in South Africa is not a function of how much debt firms accrue. Alternatively, the current debt levels in this sector negatively influence the profitability of firms. This suggests alignment towards the pecking order theory of financing behaviour as opposed to the trade-off theory of financing behaviour. Also, lagged debt values seem to provide a better inference about the capital structure - profitability relationship than debt for a particular period

5. Conclusion and Policy Implications

According to Euromonitor International, (2017), the South African retail sector is experiencing a decline in sales and returns due to the increasing international competition and a drop in the consumer/investor confidence, amidst the recent credit downgrades in the country. Therefore, the present study attempted to empirically investigate whether the capital structure practices of this sector have an impact on its profitability. Two separate models on the capital structure – profitability relationship were specified and estimated using three comparative regression procedures, whose output indicated the following:
There is a negative relationship between the capital structure of retail firms and their profitability since all measures of debt in the firms’ capital structures were found to be statistically significant but negatively correlated with profitability. This seems to suggest that the sector aligns more towards a pecking order financing behaviour as opposed to a trade-off financing approach because it can be implied that the sector relies more on internally generated funds in order to generate profits. Alternatively, the retail sector is highly leveraged with more than 52% of its assets financed by debt and the resulting debt obligations negatively impact its profits.

Over 75% of the debt in the capital structure of retail firms is short-term. This unique observation implies that firms in the sector have limited access to long-term financing and therefore have to pay regular interest payments on their short-term debt, which negatively impacts their returns in the long run. Finally, the use of lagged debt in estimations seems to increase the robustness of the findings. While this study only employed one lagged debt variable, it is possible that future studies could confirm robust findings if they considered the applicable transitional effects of other variables in their models. Similarly, due to the sample size and the limited firm-year observations, this study analysed retail firms as a collective. It is possible that an industry-specific approach could produce somewhat conflicting results due to the distinguishing characteristics of each industry in the sector. This aspect could not be investigated due to the limited sample size per industry. Therefore, policy improvements and further research should attempt to investigate these aspects and explore why these firms use too much short-term debt at the expense of long-term debt, since the latter spreads over time and reduces the financing risks of firms over a longer horizon.

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Corporate Governance and Financial Distress in the Banking Industry: Nigerian Experience

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Abstract: The study investigates the effect of corporate governance on financial distress in the Nigerian banking industry and examines the discriminatory power of corporate governance mechanism of the board, audit committee, executive management and auditor in one model for financial distress prediction. Secondary data obtained from annual financial statements of twenty banks between 2005 and 2015 were used for the study. The data were analyzed using descriptive statistics and generalized quantile regression model. The empirical evidence from the study suggests that financially distressed banks are characterized by large board size with members who may not be well versed in banking complexities, chairmen and CEOs with significant shareholding both individually and collectively. Furthermore, the evidence also shows that distressed banks suffer major decline in customer deposits despite increase in size. The study concludes that financial distress can be caused by poor corporate governance mechanism.

Keywords: *Banking industry, corporate governance, financial distress, Nigerian experience*

1. Introduction

Banks play a very important role in the society, occupying critical position in the process of promoting economic growth (Wanke, Barros and Faria, 2015). As a result of this role, a properly functioning banking sector is crucial for the growth of an economy and the stability of the financial system (Hoggarth, Reis and Saporta, 2002). National governments through their regulatory agencies have shown concern towards the proper functioning of the banking industry and have therefore regulated the industry. However, despite the supervision and regulatory role of government, the industry has been periodically characterized by financial distress thereby resulting in huge loss of shareholders' funds and erosion of public confidence in the system (Lang and Schmidt, 2016). Financial distress in banking remains a significant issue for owners, managers and the public (Simpson and Gleason, 1999) and early warning signals have been advocated as essential to limit the potential adverse effect of financial distress on the economy (Li, Crooks, and Andreeva, 2014). Various models have been used in financial distress prediction starting with diverse statistical methods such as Altman's (1968) multiple discriminant analysis, Ohlson's (1980) logistic regression; Intelligent models such as neural network model, support vector machine, genetic algorithm, genetic programming and others. All of these methods focused on the explanatory powers of financial, accounting and market variables (Manzaneque, Priego and Merino, 2016).

However, in the early 1990s, another strand of research that explores corporate governance variables and their roles in predicting financial distress emerged in literature (Chan, Chou, Lin, and Liu, 2016). These authors have argued that economic and financial data alone do not provide sufficient predictive power of future distress, hence, the need to consider variables representative of corporate governance characteristics (Heremans, 2007; Chen, 2008; Chang, 2009). Amendola, Restaino and Sensini (2015) specifically argued that the structure of the firm's board of directors and ownership and the interaction among them can affect the probability of failure. While Zeitun (2009) states that the agency problem between the shareholders of a company and the management leads to inefficiency in terms of ownership concentration. The 2007-2009 global financial crises triggered a more robust discussion of corporate governance and brought it to the front burner of international dimension (Villanueva-Villar, Rivo-Lopez and Lago-Penas, 2016). According to Iqbal, Strobl and Vahamaa (2015) believe that politicians, banking supervisors and other authorities attributed financial crises to the flaws in the corporate governance practices of financial institutions (Kirkpatrick, 2009; Haldane, 2012).

Corporate governance is a mechanism that is used to protect the rights of different stakeholders. It specifies the distribution of such rights and responsibilities among the different actors in the corporation such as the shareholders, board, managers, and others. It spells out the rules and procedures for making decisions in corporate affairs (OECD, 1999). Corporate governance participants are the board of directors (BODs), audit committee, shareholders, top management and the auditors (Rezaee, 2007). No corporate governance would be necessary if management acted in the best interest of shareholders and if the board members effectively discharge their fiduciary duties and professional responsibilities. Corporate governance is needed to avoid concentration of power in the hands of management and to create an effective system of checks and balances to appropriately balance power-sharing authority among shareholders, board, management, and, to a lesser extent, other stakeholders. It is a monitoring mechanism for assessing corporate responsibility and accountability through the board, audit committee, management and auditors in order to serve and protect the interest of investors (Rezaee and Riley, 2010). There is substantial evidence that one corporate governance size does not always fit all firms in all countries as governance structure differs from one country to another (Black, de Carvalho and Gorga, 2012). Though there is a body of literature that highlights the importance of corporate governance and its influence on the likelihood of financial distress, the contribution has been limited because of the legal processes and definitions of financial distress which vary from one country to another (Manzaneque et al., 2016).

This study is justified because it extends the analysis of financial distress to other geographical contexts. Additionally, a more comprehensive determination of financial distress situation will contribute to the existing literature (Crespi-Cladera and Pascual-Fuster, 2015). Furthermore, the focus of most studies on corporate governance and financial distress centers on board structure and/or ownership characteristics with the exclusion of other participants such as the shareholders, audit committee and the auditor in the same model (Villanueva-Villar et al., 2016). To this end, the study raises the question as to how can we test the discriminatory powers of corporate governance mechanism of the board, external auditors, shareholders, and ownership structure in one model that can predict financial distress in the Nigerian banking industry? In view of this, the study investigates the effect of corporate governance on financial distress and examines the discriminatory power of corporate governance mechanism of the board, audit committee, executive management and auditor in one model for financial distress prediction in the Nigerian banking industry. The rest of the paper is organized as follows: Section 2 provides the review of relevant literature. Section 3 describes the data and methodological approach while Section 4 discusses the results. The conclusion and policy recommendation are provided in Section 5.

2. Literature Review

Financial distress is a broad concept used to describe situations in which firms face financial difficulty. The most common terms used interchangeably for financial distress are 'failure', 'default', 'insolvency', and 'bankruptcy' (Geng, Bose, and Chen, 2015). However, bankruptcy is the extreme and irredeemable outcome of financial distress and as such many financially distressed firms escape bankruptcy due to early reconstruction of operations. There are many definitions of financial distress because different countries have different accounting procedures and rules. It is generally believed that it is a situation where operating cash flow does not exceed negative net assets (Li et al., 2014). Geng et al. (2015) state that some of the methods that have been used for financial distress prediction include discriminant analysis, logit or probit regression model, linear conditional probability models, neural network, decision trees, case based reasoning, genetic algorithm, rough sets, support vector machine, and others. However, the assumptions underlying the majority of these methods are far from real world situation. Extant research has focused on the discovery of better models for financial distress prediction because of the limitations of statistical techniques that have been extensively used over the years.

Financial Distress in the Nigerian Banking Industry: In Nigeria, financial distress has been a pervasive issue as the banking sector has been periodically characterized by financial distress. The history of Nigerian banking distress can be conveniently divided into three eras namely: the era between (i) 1940s and 1950s; (ii) 1989 and 1998; and (iii) 2007 and 2010. The distress experienced between 1940s and 1950s was attributable to mismanagement of assets, lack of adequate capital and managerial expertise due to untrained personnel to mention but a few (Adekanye, 1983; Osaze and Anao, 1990). The second era of financial crisis was first observed in 1989 when there was mass withdrawal of deposits by government agencies, this situation worsened in 1993 after the annulled June 12 presidential election. This led to the collapse of the inter-bank market which later spread to all segments of the financial system (Ailemen, 2003; Hecko, 2007;

Sanusi, 2010). The third era of financial distress crisis happened in the aftermath of the 2007- 2009 global financial crises that prompted the Central Bank of Nigeria (CBN) to provide funding support to the banking industry. The third era of distress was partly explained by the global financial crisis, but, it was evident that the banks contributed in no small measure to its escalation. During this period, the CBN ordered a special investigation into the financial condition of the country's 24 banks. At the end of the investigation, the boards of eight banks were dismissed on the grounds of insider abuses, fraud, poor risk management, inadequate capital and corporate governance issues (Osaze, 2011; Sanusi, 2011). Consequently, the CBN injected fresh Tier II capital amounting to US $4.1 billion into the banking industry (Sanusi, 2010; Fadare, 2011). Financial distress is not a new phenomenon in the Nigerian banking sector. Despite this, only a few studies have been carried out on this issue, almost all of which utilized logit/probit models and focused on bankruptcy, which is the final outcome of financial distress.

Concept of Corporate Governance and the Nigerian Banking Industry: Various definitions reflecting different perspectives of corporate governance exist in the literature because of its multidimensional nature. Cadbury (1992) defines corporate governance as the mechanisms that are used to protect the interests of different stakeholders. Though studies have attempted to develop corporate governance indices that aggregate a number of mechanisms to investigate how corporate governance relates to performance, the literature indicates that there is no single, standard corporate governance index that can be considered as "one size fits all" (Munisi and Randoy, 2013; Rygh, 2016). The various views on corporate governance relates to different cultural contexts and intellectual background (Idam, 2015). In Nigeria, corporate governance studies have grown rapidly in recent times following the dismissal of the chief executives of eight banks by the Central Bank of Nigeria on the grounds of corporate governance issues among other factors. The CBN alleged that the 2007-2010 banking crisis in Nigeria was caused partly by poor corporate governance by banks' management. This revelation generated a lot of interest in corporate governance studies. However, the studies on corporate governance have been largely related to performance with little or no studies on the effect of corporate governance on financial distress. Thus, the role of corporate governance in financial distress has been largely neglected. According to Manzaneque et al. (2016), previous empirical debate on financial distress focuses on explanatory powers of financial and accounting information applying diverse statistical methods such as linear discriminant analysis and logit/probit analysis. Several researchers have argued that economic and financial data alone do not provide sufficient predictive power of distress and is therefore necessary to include variables representative of corporate governance characteristics to improve the predictive power of the model (Chen, 2008; Chang, 2009; Lakshan and Wijekoon, 2012).

Review of Theories applicable to the Study: The theoretical framework underlying this study includes theories such as the agency theory, stewardship theory, resource dependency theory, and the theoretical institutional perspective (Xu, 2007). The agency theory is the most prominent and rooted in the idea of separation of business ownership and control between shareholders and managers. The agency problem arises out of the possibility of opportunistic behavior on the part of the agents against the welfare of their principals (Duhnfort, Klein, and Lampenius, 2008; Idam, 2015). However, agency theory is limited because it does not explain the multidimensional complexity and character of corporate governance phenomenon (Adegbite, 2015; Briano-Turrent and Rodriguez-Ariza, 2016). The stewardship theory sees managers as good stewards of the business organization who work diligently to attain high level of corporate profit and shareholders' returns. The stakeholder theory on the other hand sees the organization as a system of stakeholders operating under a wider societal system, which provides the input, market, legal and other operational infrastructure for the organization. The theory advocates that stakeholders, including employees, customers, suppliers, communities and other groups, are directly or indirectly affected by the organization's operations, and should have a representation on the board of directors. The resource-dependency theory categorizes corporate governance mechanisms as firm's resources and suggests that the resources possessed by a firm are the primary determinants of its performance (Wernerfelt, 1984; Bernadette and Corina, 2015). Empirical studies such as Letza, Sun, and Kirkbride (2004) and Garcia-Torea, Fenandez-Feijoo and de la Cuesta (2016) have established that the shareholder and stakeholder perspectives are the most relevant approaches for analyzing the firm's corporate governance. While the former considers that the key aim of corporate governance is the protection of shareholder interests, the latter advocates that the main objective of corporate governance is to guarantee the interests of all of the firm's stakeholders. Following the works of

Money and Schepers (2007), this study extends the scope of corporate governance by considering shareholders as a type of stakeholder with rights equal to those held by other stakeholders.

3. Methodology

Data and Sample: The population of the study comprised deposit money banks operating in Nigeria between 2005 and 2015, of which the number varied from 25 in 2005 and 22 in 2015. The sample consisted of an unbalanced panel data set obtained from the audited annual financial statements of 20 banks for which information was available during the period under consideration.

Model Specification and Measurement of Variables: To test for the effect of corporate governance on financial distress in the Nigerian banking industry, we adopted the following model:

$$Y_{it} = \beta_0 + \beta_1 X_{1\,it} + \beta_2 X_{2\,it} + \beta_3 X_{3\,it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots + \beta_{21} X_{21\,it} + \varepsilon_{it}$$

Dependent Variable: The dependent variable is financial distress. Different indices have been used to capture financial distress. Following the works of Wanke, Barros and Faria (2015), Cielen, Peeters and Vanhoof (2004), Premachandra, Bhabra and Sueyoshi (2009), Premachandra, Chen and Watson (2011), Shiri and Salehi (2012), and Li et al. (2014), this study adopted efficiency scores determined through data envelopment analysis (DEA) as proxies of financial distress. The major underlying hypothesis is that lower efficiency levels imply greater chance for an eventual financial distress situation in the future and efficiency measures can successfully distinguish between healthy and distressed banks (Wanke et al., 2015). According to Li et al. (2014), it is logical to assume that efficiency is associated with the probability of financial distress. Empirical studies have established that there is significant difference of scores between healthy and failing banks and the difference increases as the date of failure approaches (Barr, Seiford and Siems, 1993; Geng, Bose and Chen, 2015). The efficiency scores lie between '1' and '0'. The value '0' indicates that the evaluated bank is on the financial distress frontier and the value '1' indicates that the evaluated bank is healthy. Intensity of financial distress decreases as the score moves from '0' to '1' (Shetty, Pakkala and Mallikarjunappa, 2012). To define input and output variables, we follow the intermediation approach of Sealey and Lindley (1977) which justifies the approach on the ground that the primary function of banks is to channel financial funds from savers to investors. In line with previous studies, we define three input and three output variables. We follow the original idea of DEA that inputs and outputs are measured as absolute amounts rather than as ratios (Li et al., 2014). Thus, the input variables are gross revenue, profit before interest and tax, and deposit, while the output variables are non-performing loans, total liabilities and staff cost.

Independent Variables: The independent variables and their *a priori* expectations based on literature are as shown in Table 1. This includes 21 indices of corporate governance variables and control variables over four governance mechanisms of the board, shareholder, external audit and ownership structure.

Control Variables: Following prior studies such as Shehzad, de Haan and Scholtens (2010), Munisi and Randoy (2013), and Rygh (2016), we include the following control variables: (i) size measured as logarithm of total assets: larger banks may have better performance because of economies of scale; (ii) capital measured as equity to assets: banks with high capital may have more resources that may allow them to adopt good practices; (iii) leverage measured as liabilities to assets: debt may affect company performance as it reduces the free cash flow, moreover, highly leveraged banks are more closely monitored by debt providers, who may put pressure on management to adopt good governance practices; (iv) business model measured as net loans to total assets; (v) managers' efficiency measured as cost to income ratio; (vi) profitability measured as profit before interest and tax: profitability has a significant impact on market valuation as investors accept a premium for owning more profitable companies; and (vii) growth measured by growth in deposit as deposit may influence a bank's financial market performance and corporate governance practices.

Estimation Techniques: Two-stage estimation process was adopted for the investigation of the effect of corporate governance on financial distress in the Nigerian banking industry. The first stage involved determining distress scores using DEA efficiency frontier, while the second stage involved determining the effect of corporate governance on financial distress using a variety of techniques in line with previous studies (Simar and Wilson, 2011; Johnson and Kuosmanen, 2012). A large number of studies have used a variety of techniques including the standard linear regression model, fixed and random effects regression models, censored normal regression model (that is, Tobit model), Simar and Wilson (2007) model, among others. The standard linear model including fixed and random effects regression models have been considered inappropriate for the second-stage DEA because they allow predicted values to lie outside the admissible interval (0, 1) determined by the measurement scale (Papke and Wooldridge, 2008; Pericoli, Pierucci and Ventura, 2013). The two-limit Tobit regression has also been considered as a conceptually flawed model for proportional data. This is because DEA scores are not observationally censored by Tobit model but are defined only over the interval (Simar and Wilson, 2007; Cook, Kieschnick and McCullough, 2008; McDonald, 2009).

A model that has been proposed as an effective alternative to the two flawed techniques is quantile regression model (Rousseliere, 2014; Shawtari, Salem, Hussain, Alaeddin and Thabit, 2016). As the dependent variable takes the ranges between upper and lower values (0, 1), it results in having a number of percentiles of dependent variable, in which its relationship with corporate governance varies from one percentile to another. Therefore, estimating the relationship based on the averaged figures or means may not reflect the reality and would hide some information due to heterogeneity of the data (Chi, Huang, and Xie, 2015). Consequently, it is believed that using the quantile regression would provide a better estimation for the relationship between dependent and independent variables as the analysis estimate the relationship at any point conditional on the distribution of the dependent variable (Shawtari et al., 2016).

Quantile regression relaxes one of the fundamental conditions of ordinary least square (OLS) and permits the estimation of various quantile functions, helping to examine in particular the tail behaviors of that distribution (Parente and Santos-Silva, 2016). It departs from conditional-mean models as it allows for heterogeneity and deal with endogeneity problem associated with governance studies (Koutsomanoli-Filippaki and Mamatzakis, 2011; Liu and Miu, 2010). It is invariant to monotonic transformations and robust to outliers (Baum, 2013). Also, it is asymptotically consistent and valid under intra-cluster correlation; and robust even when the error term is heteroskedastic and non-normally distributed (Aldieri and Vinci, 2017; Koutsomanoli-Filippaki and Mamatzakis, 2011; Powell, 2014; Powell, 2016). A version of quantile regression model known as the generalized quantile regression model was applied to estimate the effect of financial distress in the second stage analysis. The generalized quantile estimator addresses a fundamental problem posed by traditional quantile estimators, namely: inclusion of additional covariates alters the interpretation of the estimated coefficient on the treatment variable (Powell, 2014). The generalized quantile estimator implemented by "genqreg in STATA application" addresses this problem and produces unconditional quantile treatment effects even in the presence of additional control variables (Powell, 2016).

4. Findings

Descriptive Statistics: Table 2 depicts descriptive statistics for the dependent variable, independent variables and control variables used in the empirical analysis. For the dependent variable, we found that the sample firms have a mean financial distress level of approximately 50%. The average board is composed of about eleven members and the proportion of independent directors is around 53% of the total board members. The board meets for an average of 7 times per year. Regarding shareholding, the chairman and the chief executive officer hold about 2% each of shares, the largest shareholder controls about 4%, while insider management comprising of all directors and the chief executive officer hold about 11% which indicate a fair alignment of interests between ownership and the board. The institutional shareholders hold about 20% in shareholding.

Financial Distress Scores (First Stage): The study adopted a two-stage approach in the analysis of the effect of corporate governance on financial distress in Nigerian banks. In the first stage, DEA efficiency estimator was used to obtain distress scores proxied by efficiency scores for individual banks as the dependent variable. An input-oriented, variable return to scale (VRS) approach which is based on the assumption that banks have more control over their inputs than outputs was adopted. Financial distress was modeled with technical efficiency scores where efficiency scores of "1" means healthy banks while efficiency scores between "0" and

"0.9" suggest different levels of inefficiencies. Following the works of Kumar and Gulati (2008), we utilized the quartile values of efficiency scores as cut-off points to segregate the banks into three categories as follows:

Quartile values between 0.1 – 0.5 = distressed banks
Quartile values between 0.6 – 0.9 = marginally healthy banks
Quartile values of 1 = healthy banks

Generalized Quantile Regression Analysis Results (Second Stage): Table 3 shows the second stage analyses of the effect of corporate governance variables on financial distress in Nigerian banking industry. The results of the generalized quantile regression model (using quartile values between 0.1 and 0.5 for distressed banks) show that nine variables are statistically significant at 5% level. Board size (lnbsize) presents a positive coefficient on financial distress. The variable shows a statistically significant relationship with financial distress at a 5% significance level. This suggests that distressed banks are characterized with a large board that may be ignorant of the dynamics of the banking industry. Small boards are more likely to monitor management better since their members are less able to hide in a large group. They are also more likely to be involved in strategy formation and abler to arrive at decisions faster than larger ones. This finding is consistent with the work of Briano-Turrent & Rodriguez-Ariza (2016) which associate large boards with distress. This study is at variance with the resource dependence theory which argues that large boards offer better advantages than small boards (Manzaneque et al., 2016).

Board independence (bind) presents a positive coefficient and statistically significant effect on financial distress at a 5% significance level. This indicates that distressed banks have more non-executive directors on their boards who may not contribute positively to the progress of the banks. Independent directors may lack in-depth knowledge of the internal workings of the banks on whose boards they sit. They may also lack the financial expertise to understand the complexity of the securitization processes banks engage in and the risks involved. This finding is in alignment with the works of Adams (2010, 2012) which concludes that board independence may not necessarily be beneficial for banks, as independent directors may not always have the expertise necessary to oversee banking firms. This study is at variance with the agency theory which posits that the proportion of independent directors is negatively related to financial distress (Manzaneque et al., 2016). Ownership diffusion (lnshares) presents a negative coefficient and statistically significant effect on financial distress at 5 %. This implies that distressed banks have less diffused ownership or fewer numbers of shares. The chairman (chair) share ownership presents a positive coefficient and statistically significant effect on financial distress at 5% significance level, implying that in distressed banks, chairmen hold a significant number of controlling shares.

Chief Executive Officers (CEO) share ownership also present a positive coefficient and statistically significant effect on financial distress at 5% significance level, with the implication that in distressed banks, chief executive officers also hold significant number of controlling shares. Insider ownership (insider) representing the shares owned by all the directors including the CEO presents a negative coefficient and a statistically significant indirect effect on financial distress. Insider shareholders are considered to have access to a greater extent and better quality of bank-specific information. The implication of a negative effect could be that insider shareholders have access to inside information of the poor financial state of the banks and the quick divestment of shares by the directors. Size (bind) proxied by log of assets presents a positive coefficient and statistically significant direct effect on financial distress at 5%. This suggests that as size increases, the banks might face more risk events. This finding is in alignment with the works of Wang and Hsu (2013) which document that larger banks are associated with higher systemic risk. Growth (growth) proxied by customer deposits presents a negative coefficient and statistically significant indirect effect on financial distress at a 5% significance level, implying that the propensity to withdraw deposits increases with the magnitude of financial distress. This finding is in line with the works of Goldstein and Pauzner (2005) and Egan, Hortacsu, and Matvos (2015) who affirm that distressed banks experience large decline in customer deposits.

In Nigeria, banks are supervised by regulatory organs such as the Central Bank of Nigeria and the Securities and Exchange Commission and governed by their board of directors. Various initiatives have been carried out by the regulatory authorities to improve corporate governance in Nigeria including but not limited to the creation of codes of corporate governance. Some of the provisions of the code include a pegging of direct and indirect equity holding in any bank to 10% and an equity holding of above 10% by any investor subject to the regulatory prior approval; a maximum board size of 20 directors; an appointment of a chief compliance officer, among other rules (Uche, 2014). Some studies on corporate governance in Nigeria focused on the structure and the distribution of rights and responsibilities among the different corporate governance participants (Garuba and Otomewo, 2015; Adeyemi and Olowu, 2013; Uche, 2014). Few studies constructed a corporate governance index and evaluated its effect on banks' performance (Ajala, Amuda and Arulogun, 2012). The outcome of studies on corporate governance in Nigerian banks revealed that corporate governance impacted on performance (Thomas and Mohammed, 2011; Sanda, Mikailu and Garba, 2005; Kajola, 2008; James and Okafor, 2011; Ahmad and Mansur, 2012; Akingunola, Adekunle, and Adedipe, 2013).

Table 1: Measurement and *a priori* Expectation of Independent Variables

S/NO	VARIABLES	MEASUREMENT	A PRIORI
	BOARD STRUCTURE		
1	Board Size (lnbs)	Log of Total Directors	±
2	Board Independence (bind)	Non-Executive Directors/ Total Directors	±
3	Board Salaries (bsal)	Board Compensation/ Total Compensation	±
4	Board Meetings (lnbmtg)	Log of Total Number of Meetings	±
5	Female Directorship (bfemale)	Number of Female Directors/ Total Directors	±
6	Foreign Directorship (bforeign)	Foreign Directors/ Total Directors	±
	OWNERSHIP STRUCTURE		
7	Chairman's share ownership (chair)	Chairman's Shares/ Total Number of Shares	±
8	CEO's share ownership (ceo)	CEO's Shares/ Total Number of Shares	±
9	Chairman & CEO' share ownership combined (chairceo)	Chairman's and CEO's Shares combined/ Total Number of Shares	±
10	Insider Ownership (insider)	Insider's Shares/ Total Number of Shares	±
11	Institutional Ownership (inst)	Institutional Ownership Shares/ Total Number of Shares	±
12	Largest Shareholders (largest)	Largest shareholder/Total Shares	±
	SHAREHOLDERS		
13	Total number of shares (lnshares)	Log of total number of shares	--
14	Equity (lnequity)	Log of equity	--
	EXTERNAL AUDITING		
15	Auditor's Opinion (opinion)	1= Qualified Audit Opinion 0= Favorable Audit Opinion	--
	CONTROL VARIABLES		
16	Size (size)	Log of Total Assets	±
17	Capital (capital)	Equity/ Total Assets	--
18	Leverage (leverage)	Liabilities/Total Assets	+
19	Management Efficiency (efficiency)	Operating Cost/ Operating Income	--
20	Profitability (profit)	Profit before Interest and Tax	--
21	Growth(growth)	Log of Deposit	--

Source: Shawtari, Salem, Hussain, Alaeddin, and Thabit (2016); Li, Crooks and Andreeva (2014); Premachandra, Chen and Watson (2011); Chang (2009); Chen (2008).

Table 2: Descriptive Statistics of Variables

Variables	Mean	Median	Std. Dev	Min	Max
distress	0.509	0.537	0.341	0.100	1.000
lnbsize	1.144	1.146	0.096	0.845	1.322
bind	0.529	0.533	0.085	0.200	0.750
bsal	0.247	0.016	0.037	0.001	0.382
lnbmtg	0.755	0.699	1.165	0.602	1.380
bfemale	0.095	0.071	0.088	0.000	0.429
bforeign	0.043	0.000	0.066	0.000	0.316
lnshares	4.134	4.142	0.249	3.486	4.639
lnequity	4.915	5.030	0.521	3.107	6.023
chair	0.012	0.001	0.024	0.000	0.146
ceo	0.014	0.003	0.022	0.000	0.095
chairceo	0.027	0.009	0.035	0.001	0.148
insider	0.112	0.064	0.140	0.001	0.907
inst	0.201	0.119	0.254	0.000	1.000
largest	0.044	0.030	0.048	0.000	0.249
opinion	0.127	0.000	0.334	0.000	1.000
lnsize	5.639	5.707	0.441	4.289	6.443
capital	0.130	0.151	0.215	-1.042	0.668
leverage	0.883	0.849	0.195	0.410	2.042
efficiency	0.828	0.660	0.814	0.276	9.483
profit	3.601	3.973	1.191	0.000	5.043
growth	5.565	5.607	0.459	4.093	6.410

Source: Authors' computation, 2017

Table 3: Generalized Quantile Regression Model Results

Variables	Coefficient	Z- Statistics	Prob- Significance
Dependent Variable:			
distress			
Independent Variables			
lnbsize	0.9655619	2.00	0.045**
bind	1.100266	2.27	0.023* *
bsal	-1.58429	-1.09	0.275
lnbmtg	0.0442366	0.17	0.867
bfemale	-0.3131937	-0.88	0.377
bforeign	-0.4237746	-1.23	0.219
lnshares	-0.4727464	-2.89	0.004** *
lnequity	0.2549368	1.04	0.297
chair	4458.867	3.14	0.002***
ceo	4452.235	3.14	0.002***
chairceo	-4453.376	-3.14	0.002***
insider	-1.485981	-2.42	0.016**
inst	0.0682644	0.47	0.639
largest	1.61275	0.98	0.329
opinion	0.0391501	0.24	0.811
lnsize	1.3501	3.21	0.001***
capital	-0.4301007	-1.24	0.214
leverage	-0.7988084	-1.17	0.240
efficiency	-0.2150012	-0.89	0.373
profit	0.0008392	0.03	0.978
growth	-1.012666	-2.37	0.018**
_cons	-1.468274	-1.85	0.065

Source: Authors' computation, 2017.

This table shows the generalized quantile regression model analysis of the effect of corporate governance on financial distress in Nigeria. The first column shows the variables; the second column shows the model coefficient. The third column displays the z-statistic while the fourth column indicates the significance at 1, 5 and 10 denoted by ***, ** and * respectively.

5. Conclusion and Policy Recommendations

This study examined the effect of corporate governance on financial distress in the Nigerian banking industry. We analyzed a sample of 20 banks over the period between 2005 and 2015 and measured financial distress by DEA technical efficiency following previous studies and corporate governance variables along board characteristics, ownership structure, shareholding, external audit opinion and control variables. Using generalized quantile regression model, we found that corporate governance variables which significantly influence financial distress are board size; independence; share ownership by chairmen, chief executive officers and directors; size; and deposit. The empirical results suggest that distressed banks are characterized by large board size and non-executive board members who may lack financial expertise and in-depth knowledge of the complexity of banking businesses. Share ownership by chairmen and CEOs both individually and jointly are significantly and positively related to financial distress suggesting that the banks may have been managed to fulfill some personnel interest which contradicts established opinion that the interest of both the chairman and CEO will align where share ownership by chairman and CEO are significant. Lastly, distressed banks experience massive withdrawal of customer deposits and divestment by insider management who also double as shareholders. Consequently, for corporate governance policy implementation, banks should employ smaller board size with members having the requisite banking knowledge, which will allow them to run efficiently. The regulatory authority should strengthen corporate governance mechanism that will help to reduce the incidence of financial distress and improve uniform mechanisms of control.

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Emerging Information Technologies and Delivering of Service Quality to Air Passengers: Case of South African Own-Registered Airlines

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Abstract: Increasingly services to airline passengers have evolved into the digital and technological realms. This study examined the extent to which South African own-registered airlines (SAORA) utilize emerging information technologies in delivering service quality to air passengers. The acronym "SAORA" refers to Six South African own-registered airlines which was focus of this study. The research methodology adopted for this study was a descriptive approach focused on cross-sectional analysis. Using a quantitative research method and non-probability convenient sampling technique, primary data was collected from 684 passengers at O.R. Tambo International Airport in Johannesburg and King Shaka International Airport in Durban. The study revealed that by utilizing emerging technologies, SAORA stand to offer superior service quality to air passengers, thereby gaining competitive advantage, continuous patronage, loyalty and increased profitability.

Keywords: *Configuration, intangibles, legacy systems*, *patronage*, *technologies*

1. Introductıon

This study examines Information and Communication Technologies (ICT) in the delivery of service quality in South African own-registered airlines (SAORA). Advances in Information technology systems in this 21st Century have provided the opportunity for firms to deliver valued services to customers. Airlines now have numerous emerging technologies to deliver efficient and effective service quality to air passengers. While some of these technologies have been around for some time, others are emerging with improved features and capabilities. The significance of this study is that, it contributes towards advancement of academic knowledge, society, management, the global airline industry in general, and the airline industry in South Africa in particular. Therefore, this study has both theoretical and managerial significance. The subject matter of the study was considered from three perspectives: the extent to which emerging technologies improve service quality to airline passengers of South African own-registered airlines (SAORA); the gaps in the usage of emerging technologies in serving passengers of South African own-registered airlines (SAORA);establishing whether a significant relationship exists between passengers' service quality and the use of emerging technologies (ICT/CRM) in delivering efficient services to passengers of South African own-registered airlines (SAORA).In conducting this study extensive literature was reviewed from both primary and secondary sources. This has enabled the study to unearth creative ideas and technological innovations from literature.

Currently, airline companies worldwide are using ICT for competitive advantage, and have become a strategic enabler for delivering efficient and faster service(s) to airline passengers (Esu and Anyadighibe, 2014:9). This study advocates that emerging information and communication technologies (ICT) and innovation tools, including customer relationship management (CRM) application software, be used to improve service quality in delivering services to airline passengers. Some of these emerging technologies are Customer Relationship Management (CRM), social media platforms, mobile/smartphones technologies, self-service technologies (SST), wireless communications platforms (Wi-Fi's), Radio Frequency Identification (RFID),E-commerce, BIG Data designed to analyze customers/passengers data, business intelligence/data warehousing applications, cloud computing platforms(designed to analyze and monitor passengers data), and m-commerce applications, mostly enabled by the Internet. Five of these emerging technologies for service quality delivery are highlighted in this article, namely CRM, social media platforms, SST, RFID, and mobile/smartphones. The South African own-registered airlines(SAORA) which were operational in South Africa as low cost airlines (LCA) and traditional airlines (TA) at the time of this study were: (1) Airline G (LCA), operating on domestic and regional routes, (2) Airline X (LCA/TA), operating on global, regional and domestic routes, (3) Airline C (LCA), operating on domestic routes, (4) Airline T (LCA) operating on domestic and regional routes, (5) Airline Y(TA)operating on global routes, and (6) Airline Z (LCA/TA) operating on domestic and regional routes (Luke and Walters, 2013:1-11).

Theoretical model: The main theoretical model that anchored this study was the SERVQUAL- Gaps model (Parasuraman et al., 1985:41-50; 1988:12-40; Lovelock and Wirtz, 2011:406). The scholars Parasuraman et al. (1988), in developing the SERVQUAL dimension model, conceptualized service quality constructs as: tangibles, reliability, responsiveness, assurance, and empathy focused on the customer. The SERVQUAL dimension model has served as the catalyst by which many researchers have either modified or developed new concepts (Chikwendu et al., 2012:118; Aydin and Yildirim, 2012:219 – 230) in the airline industry. In conducting this study three hypotheses were tested in respect of using emerging technologies to enhancing service quality in SAORA.
H1: Emerging technologies would improve service quality to airline passengers of South African own-registered airlines (SAORA)
H2: Significant gaps exist in the usage of emerging technologies in serving SAORA airline passengers.
H3: A moderate negative significant relationship exists between passengers' service quality and the use of emerging technologies in delivering services to SAORA's passengers.

2. Literature Review

Scholars have emphasized the need for service firms to use information and communication technologies (ICT) systems as a strategic tool in response to customers' needs (Goktan and Miles, 2011:533). The subject airlines (SAORA), as with their peers in the industry across the globe, have embraced ICT in providing services to passengers. However, the fast pace at which technologies are emerging and modernizing business processes, particularly in the airlines (Elkhani, Soltani, and Jamshdi, 2013:109), suggests that airlines cannot afford to remain static. Several studies have confirmed that ICT has revolutionized the operational imperatives of most organizations, including the airline industry, thus impacting on service delivery to passengers (Esu and Anyadighibe, 2014:9; Cheng, Gibson, Carrillo and Fitch, 2011:509; Ojiako, 2012:584). Therefore, ICT is becoming a supportive base for competitive and strategic capability for the airline industry (Esu and Anyadighibe, 2014:9). Technology plays a crucial role in the re-configuration of the airline service value chain. The advent of the Internet, E-commerce and mobile communication has placed services in close proximity to the air passenger (Cheng et al., 2011:509). Therefore, ICT has improved certain challenges in the business environment and made firms dependable on ICT systems. In particular, ICT is becoming an indispensable tool of the airline industry because of the uniqueness of this mode of transportation, which thrives on speed of mobility, reliability, timeliness, comfort, efficiency, and other unique attributes (Esu and Anyadighibe, 2014:9-21). Information and communication technologies are considered as playing a fundamental role and significantly impacting the customers' experience (Edvardsson, Tronvoll, and Gruber, 2011:327). Ideally, there must be a mutual effort made by both customers and the service firm using ICT to enhance the service experience and service quality. Therefore, ICT creates a standardized service quality delivery, thereby inducing potential cost reductions for service firms and ensuring convenience for the customer during the service encounter (Edvardsson et al., 2011:327). However, the advances in ICT constantly affect the interface between the customer and the service provider, because of the introduction of new technologies (Gelderman, Ghijsen and van Diemen, 2011:414; Lin and Hsieh, 2012:100-109). While utilization of technologies and allied novelties may heighten passengers' expectations, and speedily embrace such technological innovations, they feel dissatisfied should the technology fail to provide the required service (Janawade, Bertrand, Léo, and Philippe, 2015:278). Additionally, ICT is ever more mandatory as a precondition for alliance arrangements between airlines; and it also makes possible the growth of pioneering delivery avenues for communicating with customers (Janawade et al., 2015:278). While ICT has made a considerable contribution to the success of many firms, there is the question of its actual effectiveness and exploitation in other firms (Ojiako, 2012: 584). However, Geum, Lee, Kang, and Park (2011:128) argued that, in order to ensure effective exploitation of ICT, managers should deploy effective strategies focusing mainly on delivery services, while simultaneously using real-time applications for servicing customers.

Emerging Technological Trends in Airlines: The fast pace of technologies in the airline industry may compel SAORA to enhance ICT systems, improving service offerings. Air passengers are becoming technologically savvy and demanding services (Lin and Hsieh, 2011:94-206) on electronicdevices rather than in the conventional way of providing face-to-face service and accessing of information (Ku and Chen, 2015:465; Lock, Fattah, and Kirby, 2010:3). The attainment of future success by an airline depends in part on the airline's ability to utilise emerging technologies to deliver excellent customer experience. Such experience stimulates loyalty, while simultaneously "growing" employees' and operational competences (Lock et al.,2010:2). Thus,SAORA should embrace emerging technologies which enhance business operations (Esu and Anyadighibe, 2014:9; Ojiako, 2012:584). The five emerging technologies for service quality delivery in the airlines CRM, social media platforms, SST, RFID, and mobile/smartphones are discussed at this stage.

The first emerging technology discussed in this study is Customer Relations Management (CRM). The Customer Relations Management system, which is not new to the airline industry, is a critical technology with capability of managing the relationship between a service firm and the customer. These CRM systems enhance continuous relationships, customer patronage and loyalty, while at same time understanding the needs of the customer, and satisfying those needs (Kortlle and Kerller, 2012:42). The benefit of CRM to a service firm comprises upturn of revenues and profit growth, cheap marketing costs, concise decision-making as a consequence of better appreciation of customers' needs. Other benefits may result in customer satisfaction, retention, individualization of the product or the service and providing competitive advantage to the service firm (De Meyer and Mostert, 2011:80). Therefore, CRM software, combined with web-based applications, is becoming an indispensable tool for corporate strategy apropos of passengers for the airline industry, differentiating airlines in terms of service offerings from opposition airlines (Boland, Morrison, and O'Neill, 2002:1-4).

The second emerging technology which can conveniently be integrated into CRM is the social media applications. Scholars (Esu and Anyadighibe,2014:10; Edosomwan, Prakasan, Kouame, Watson, and Seymour, 2011:79-91) cited ways in which the social-media platforms and applications, enthused by micro-marketing techniques, are making inroads into the airline services' marketing space to offer customer satisfaction in the Nigerian airline industry. As quoted by Prabu (2012:1), the "social media is much more than just establishing mere presence. It is a revenue generating channel for many airlines, a medium that has helped PR teams at airline companies to cut down costs" (Esu and Anyadighibe, 2014:9). With the advent of social platforms, airline companies are now incorporating social-media platforms into their traditional CRM systems, thus enhancing communication and interaction between airline companies and passengers (Mills, and Plangger,2015:521). According to Menne and Halova (2013:32), the expression "Social CRM" is reasonably new. Its originators were Mohan, Choi, and Min (2008:237), who defined Social CRM as "the features of Web 2.0 and social networking with the current CRM Systems". Therefore, Social CRM is the combination of the "traditional CRM models and systems with the new Web 2.0 and social media capabilities of the Internet" (Menne and Halova, 2013:32). Strategically, "Social CRM" has become a tool with which to build stronger company and customer relationships (Faase, 2011:5). Effective deployment of these technological tools may potentially enable SAORA to provide more efficient service. Advances in technology and deploying of the Internet have enabled online communication between companies and consumers to move from Web 1.0 to Web 2.0 (Menne and Halova, 2013:2). The distinction between the two is that under Web 1.0, communication and the stream of information was one-sided, forwarded by the company to the consumer without enabling constructive feedback from the consumer (Menne and Halova, 2013:68). Under Web 2.0, online communication has developed from a simple one-sided to a two-sided stream; companies are now effortlessly receiving feedback from customers (Fuchs, Hofkirchneremail, Schafranekemail, Rafflemail, Sandovalemail, and Bichleremail, 2010:41). Web 2.0 is therefore the premise on which social-media platforms work, customers being able instantly to communicate with a company or an individual who can receive and send the necessary feedback (Fuchs et al., 2010:41).

Popular social media platforms include, amongst others, Facebook, Twitter, Google Plus, LinkedIn, Wikipedia, Pinterest, and others (Menne and Halova, 2013:2). From the customer or the air-passenger's perspective, the social-media platforms provide an opportunity for feedback comments/complaints to be made on the service-delivery experience, with the airline or service firm using the same platform on which to react to the comments/complaints (Mills and Plangger, 2015:530). All these may be combined with the conventional CRM architecture to enhance service quality to the passenger. The third emerging technology that has substantially impacted the airline industry and improved passenger service interacting experience is the self-service service technology (SST) (Geldermanet al.,2011:414; Lin and Hsieh, 2012:100-109). Services are multidimensional in character, therefore service firms utilize variety of competencies (Ojiako, 2012:585). Information technology systems drive these competencies, which in effect improve service delivery to the passenger. The advent of the Internet, E-commerce applications, and mobile communication systems, has strengthened the use of automated and self-managed technologies in the airline industry. Some airlines use ICTs to render outstanding service to passengers (Ojiako, 2012:585). While these technologies have substantially improved the service encounter and brought about savings, there has, nevertheless, been dissatisfaction and frustration for some customers in using these technologies (Gelderman et al., 2011:414; Lin and Hsieh, 2012:100-109). Indeed, a passenger now has the opportunity of processing a boarding pass using a self-service kiosk by means of self-service technologies (SST) located at airports, without needing assistance from airline staff (Lin and Hsieh, 2011:94-206).

The fourth emerging technology discussed in this study is Radio Frequency Identification (RFID). Radio Frequency Identification is an automated technology, which has capabilities of recognizing and tracking objects or persons from afar by means of electro-magnetic mechanisms (Mishra and Mishra, 2010:139; International Air Transport Association (IATA 2008:20). The RFID technology has been available for some time and is becoming popular in the airline industry because of its reputation for addressing issues relating to the handling of baggage (Roberti, 2013:1). According to Roberti (2013:1), baggage mishandling and lost items are a challenge to most airlines, costing the global airline industry US$ 2.6 billion annually. Although RFID many not completely eradicate baggage mishandling, investment by airlines in this technology could generate substantial savings in baggage mishandling costs for the global industry (Roberti, 2013:1-2; IATA, 2008:20). The fifth emerging technology for airline services discussed in this study is about mobile and smartphones. Modern technologies have made inroads into the airline industry, especially with mobile technology. The use of mobile phones, smartphones, personal-assistance devices (PDAs), and many other mobile devices, are improving the way in which services are being delivered by some airline companies (Esu &Anyadighibe, 2014: 9-21; Lock, Fattah, and Kirby, 2010:4). According to Lock et al. (2010:4) some of the examples of the latest services and applications (mobility 3.0) include personal-travel assistants, mobile marketing, mobile-concierge service, and mobile payment using smartphones, augmented reality and real-time business intelligence for airlines (Lock et al.,2010:4). Airlines using innovative technologies include American Airlines, Air France, and Emirates Airlines, to mention a few. The American Airlines (AA) Multichannel Mobile Web Capabilities, for example, makes it possible for American Airlines to be in contact with passengers while in-flight (Lock et al.,2010:6). Increasingly, more passengers are turning to smartphones/mobile communication devices for information, constantly desiring access to information (Ku and Chen 2015: 465). Some airlines are already providing information to passengers, confirming bookings, providing information on conditions at the airports, check-in, boarding, and departure times. These technologies are consistently sending information to the passenger on a real-time basis, thus improving the service quality to the passengers (Castro, Atkinson, and Ezell, 2010:25). Real-time customer service using the social media is becoming critical in finding a solution to passengers' problems (Geum et al., 2011:128).

According to airline industry experts, the smartphone holds the future for enriched service to passengers who require information at the touch of a device (Castro et al., 2010:25; Ku and Chen, 2015:465). The average passenger is so connected to technological devices that a passenger may be considered a "digital traveler" (SITA, 2015:1). Using mobile technologies and devices, passengers can check in per iPhone, BlackBerry, iPad, tablet, other brand mobile phones, smartphones, and a range of devices offering various capabilities. For example, Emirates Airlines appears to be the vanguard in online mobile novelty, using its Emirates.com enabled for smartphones (Lock et al., 2010:6). "Airlines and airports will continue to grow existing mobile offerings centered on flight status, purchase services, and retail offers. But unquestionably, the new frontier in passenger mobile services will be consumer relationships and personalization" (Pickford, 2015:6). According to SITA, a new air-travel survey entitled "The future is personal" provides an in-depth examination of IT trend surveys. The next level of expectation from passengers is for mobility and "personal touch" or "me-centric", that is, the satisfying of ever-increasing expectations of the traveler at a personal level (Pickford, 2015:6).

3. Methodology

The study employed a survey–based research technique. This was adopted, using a descriptive research approach focused on cross-sectional analysis (sample survey). This study is therefore quantitative in nature, using primary data. A five-point Likert scale questionnaire was developed with influences from the SERVQUAL- Gaps model for conducting the survey. The questionnaire was adapted to the SERVQUAL instrument developed by Parasuraman, Berry and Zeithmal (1985). The target population for this study consisted of passengers (domestic and international) totaling seventeen million four hundred thousand passengers (ACSA annual report, 2014:114) who travelled through the O.R. Tambo airport in Johannesburg and the King Shaka airport in Durban. The sampling method used for this study was non-probability convenience sampling- a type of non-probability sampling in which people are sampled because they are "convenient" sources of data for the researcher (Mantey, 2015:150; Sekaran and Bougie, 2013:252; Mostert, De Meyer and van Rensburg, 2009:118). The sample for this study was seven hundred SAORA passengers selected from the target population. In all, seven hundred questionnaires were directly distributed at the O.R. Tambo airport in Johannesburg, and the King Shaka airport in Durban. The response rate for the data collection was 97.71%. The instrument was subjected to rigorous validation and reliability processes: through internal consistency review, Cronbach alpha testing, pilot testing, content validity and expert opinions. The overall Cronbach's alpha coefficient test was calculated as 0.900 which was within the expected levels of 0.00 to 1 (Sekaran and Bougie, 2013:228). Cronbach alpha testing was performed on the data reliability of this study and the results were 0.810 which was within the range of 0.00 to 1, therefore the data was considered reliable. This study was conducted taking into consideration the ethical requirements of the University of KwaZulu- Natal.

4. Results and Discussıon

The following were the empirical findings of the study, starting with the socio-demographic information as per Table 1).

Table 1: **Distribution of Socio-demographic Information**

Variables	Frequency	Percentage
Gender		
Female	312	45.6
Male	372	54.4
Total	*684*	*100.0*
Race		
African	434	63.5
Colored	93	13.6
Indian	67	9.8
White	90	13.2
Total	*684*	*100.0*
Age group		
18 - 30 years	213	31.1
31 - 40 years	273	39.9
41 - 50 years	137	20.0
51 - 60 years	43	6.3
>60 years	18	2.6
Total	*684*	*100.0*
Monthly income		
Less than R50001	603	88.2
50001 – 100000	54	7.9
>100000	27	3.9
Total	*684*	*100.0*
Education		
Primary	14	2.0
Secondary	93	13.6

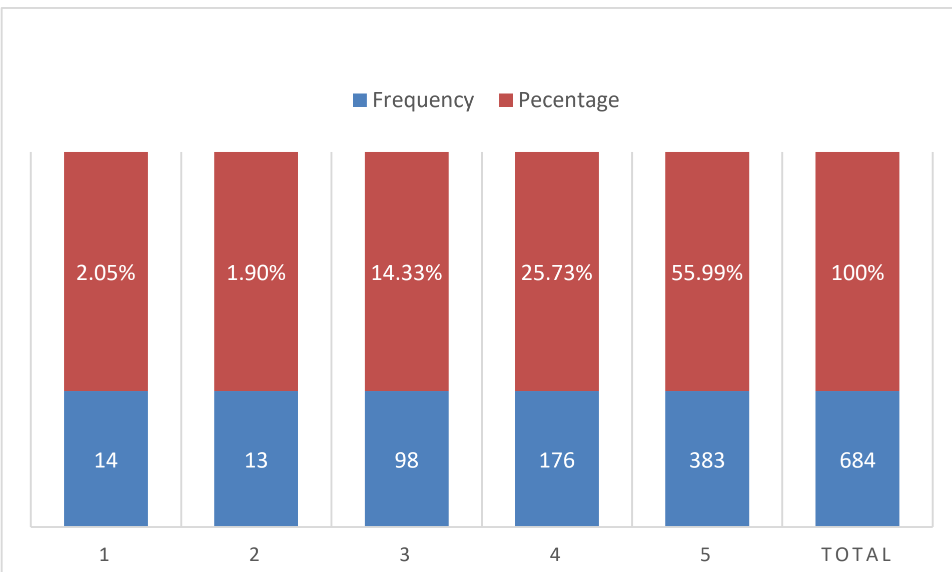
Tertiary/University	577	84.4
Total	*684*	*100.0*

(Source: Mantey 2015:156)

Socio- demographic findings indicated that, of the passengers who participated in the study, 64% were Africans, the majority of participants. The results showed that 46% of the survey's participants were female, and (54%) were male. Colored comprised 13.6%, Indians 9.8%, and Whites constituted 13.2% of the survey. The socio-demographic results also revealed that most SAORA's passengers (71%) were in the younger age bracket (below 40). A large number of the respondent passengers (84%) had attended tertiary institutions. The results also highlighted that about half of the passengers (47%), were at the middle-income level. The implication of these findings is that the majority of participants who took part in this survey fall within the middle-class, earning a reasonable income of up to R50 000 per month, and having university-level education. The middle-class and the youth tend to have appetite for consuming technology services (Lock et al.,2010:4; Pickford, 2015:6). Consequently, SAORA should consider investing in emerging technologies and application systems in order to deliver excellent service quality to passengers in South Africa.

Emerging technologies and improvement of service quality: In achieving this research objective passenger were asked whether emerging information technologies would greatly improve SAORA service quality to them. The results are depicted Figure 1 below.

Figure 1: Emerging technologies and improvement of service quality



(Source: Mantey 2015: 245)

The results were that 14.33% of the respondents were neutral about the statement. However, 55.99% of the respondents strongly agreed with the statement. Another 25.73% agreed with the statement. A small number of passengers 1.90% disagreed and 2.05% strongly disagreed with the statement. Therefore, the finding was that effectively 81% of SAORA passengers conceded that emerging information technologies would greatly improve delivery of service quality to them. This lead to the hypothesis that:
H1: *Emerging technologies would improve service quality to airline passengers of* South African own-registered airlines (SAORA)
There is ample literature to support the above hypothesis that ICT has the capacity to improve service quality to airline passengers (Elkhani et al., 2013: 109-117; Esu and Anyadighibe, 2014: 9-21; Ku and Chen, 2015:465). Therefore, based on the findings of this study and the literature the hypothesis is valid and accepted.

Descriptive Statistics-Emerging technologies gaps and service quality: Descriptive data manipulations were conducted to determine the relationship in the gap scores and ICT within the context of passengers' expectations and perceptions towards ICT (Tables 2 &3). The ICT expectations level from passengers were determined by evaluating the specific attributes relating to ICT in the questionnaire as depicted in Table 2. The attributed statement AS 7 under the tangibility dimension asked whether SAORA have efficient information technology systems to deliver efficient services to passengers. AS 9, also under tangibility, was about whether SAORA have in-flight communication facilities (internet/email/fax/phone) for passengers. AS 24 under the responsiveness dimension was about whether online booking and websites of SAORA were user-friendly for ticket booking. The data manipulation depicted in Table 2 was as follows:

Table 2: ICT Expectations attributes

Expectations	SD	D	N	A	SA	Mean (m)	Score	Standard Deviation (SD)
AS 7	1.3	0.9	5.1	15.6	77	4.66		0.733
AS9	1.6	2.8	8.3	17.3	70	4.53		0.888
AS24	1	1.3	4.1	16.4	77	4.67		0.71

SD= strongly disagree, D= Disagree, N= Neutral, A=Agree, SA=Strongly Agree
(Source: Mantey, 2015:248)

The finding was that the mean score for all the expectation statements in respect of ICT as set out in Table 2 were more than four (m = >4). In respect of attribute AS7 the mean score was m= 4.66 and a SD 0.733 while for attribute AS 9 the mean score was m=4.53 and SD 0.888. The attribute AS24 had a mean score of m=4.67and a SD 0.71. In Table 3, the Perceptions mean scores were slightly above three (m= >3) for the attributes. The mean score for attribute AS 7 was m=3.174 with SD 1.078. The attributes AS 9 and AS 24 recorded m=3.034 and SD 1.074 and m= 3.148; SD1.027 respectively. The Table 3 also shows the gap differences between ICT perceptions and expectations gaps using the mean and standard deviation gaps (P-E gap).

Table 3: **ICT Perceptions and Expectations Gapsat SAORA**

Perceptions	SD	D	N	A	SA	Mean Score (m)	Standard Deviation (SD)	P-E (Gap) (Mean) (m)	P-E (Gap) (St Dev) (SD)
AS7	7.2	16.7	40.5	23	12.7	3.174	1.078	-1.488	0.345
AS9	8.8	18.1	44.2	19.4	9.5	3.034	1.074	-1.491	0.1863
AS24	4.2	22.2	39.5	22.7	11.4	3.148	1.027	-1.526	0.317

SD= strongly disagree, D= Disagree, N= Neutral, A=Agree, SA=Strongly Agree
(Source: Mantey 2015:168)

The ICT Gap scores in Table 3 was computed by using the formula: Service Quality (Q) = Perception (P) – Expectation (E) (Parasuraman et al., 1985, 1988; Lovelock and Wirtz, 2011:406; Naidoo, 2015: 45). The gap score under AS 7 as per Table 3 was M=1.488 with SD 0.345. The gap score under AS 9 is M=1.491 with SD 0.1863. With regard to AS24 the gap score was M=1.526 with SD 0.317). The negative mean score results between perceptions and expectations revealed that there were significant gaps in the usage of ICT, and that participants (SAORA's passengers) were unhappy or dissatisfied with service quality in respect of ICT. This leads to a hypothesis that:
H2: Significant gaps exist in the usage of emerging technologies in serving SAORA airline passengers.

In the light of literature this finding means that user-friendly systems, including website usage, were crucial in impacting on service quality (Ku and Chen, 2015:465). Prior studies reveal that user-friendly systems bring satisfaction to customers in terms of service quality evaluation (Ku and Chen, 2015:465). Airlines are now using e-ticketing, which may be processed via the Internet and the E-commerce platforms. This has drastically reduced transaction costs to the airlines while enhancing convenience to the passenger. While some passengers still use conventional ticket agents for bookings and purchase of tickets, e-ticketing and credit cards may be processed online, tickets being purchased in real-time (Geum et al., 2011:128). Therefore, the above hypothesis is valid and SAORA should consider strategies to bridge or meet the emerging information technologies gap.

Inferential Statistics-Relationship between emerging technologies and Service Quality delivery to passengers: The study attempted to establish the relationship between SAORA's service quality delivery and the use of emerging technology in delivering efficient services to passengers. Inferential statistics were manipulated. The Kendall's tau-b (*Tb*) correlation coefficient was used to establish the association between two independent variables- the use of emerging technologies and service quality. The computation of Kendall's tau-b (*Tb*) correlation coefficient (orKendall's tau-b) in data manipulation and analysis, is considered as a non-parametric measurement tool used to determine the strength and direction of the association that exists between two variables (Lund and Lund n.y.). It is especially ideal when the measurement is being done on an ordinal scale with dependent and independent variables. It is often used in place of Pearson's product-moment correlation or Spearman's rank-order correlation coefficient (Lund and Lund n.y.). Therefore, the Kendall's tau_b correlation was used to establish the relationship between the variables. Table 4 below shows this relationship.

Table 4: Emerging Technologies and Services quality delivery to passengers

Correlations

			Q 3.5	Gap of ICT
Kendall's tau_b	Q 3.5	Correlation Coefficient	1.000	-.222**
		Sig. (2-tailed)	.	.000
		N	684	684
	Gap of ICT	Correlation Coefficient	-.222**	1.000
		Sig. (2-tailed)	.000	.
		N	684	684

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

Source: Mantey 2015:169

The correlation analysis in Table 4 showed that a moderately negative correlation exists between service quality and ICT ($r = -0.222$, $p<0.01$). The moderately negative correlation gap score of $r = -0.222$ and $p<0.01$ means that emerging ICT technologies were not being fully utilized to deliver services to passengers. Table 4 confirms that there were significant gaps in using ICT for service delivery at SAORA. Consequently, a hypothesis is formulated that:
H3: A moderate negative significant relationship exists between passengers' service quality and the use of emerging technologies in delivering services to SAORA's passengers.

In the context of literature, air passengers are becoming technologically savvy, demanding services Lin and Hsieh (2011:94-206) on electronic devices rather than in the conventional manner of face-to-face service and in accessing information (Ku and Chen, 2015:465; Lock et al., 2010:3). In the literature ample information is provided on how emerging technologies may potentially improve service quality delivery (Cheng et al., 2011:509; Castro et al., 2010; Edosomwan, Praksan, Kouame, Watson, Seymour, 2011:79-91; Elkhani et al., 2013:109; Ojiako, 2012:584). Strategic adoption of emerging technologies may potentially improve SAORA's service quality. The socio-demographic information in this study, as discussed above, points to the fact that SAORA has a young generation of passengers who are predisposed to using technological devices. The social media channel and mobile technologic means of disseminating information is a modern convenience to passengers, proving to be more progressive and satisfying to society (Esu and Anyadighibe, 2014:10O; Jiako, 2012:584). According to Esu and Anyadighibe (2014:20), the 21st century airline should incorporate knowledge-based economies, social-media technologies and micro-marketing into the traditional marketing strategies of airlines in order to satisfy service expectations of passengers. Given that a large percentage of SAORA's passengers (as per the socio-demographic information in Table 1), fall within the younger generation bracket (71% were 40 years or younger; educated (84%); and earning an income of up to R50 000 per month) thus, investing in emerging technologies to provide better and faster service to these passengers should be regarded as a proactive strategic move, in accordance with their social status. These younger generation and middle-aged passengers of SAORA are likely to own electronic devices and may demand personalized services on electronic devices (Pickford 2015:6). Based on the findings of the study, supported by existing literature the hypothesis *H3* is accepted. This study strongly maintains that SAORA's adoption of new technologies will go a long way towards improving service quality in South African airlines (Naidoo, 2015:98).

Results of prior studies: Globally, some scholars have researched the subject, although from different perspectives (Tolpa, 2012; Pickford, 2015, Buhalis, 2003) among others. The research results of the present study differ from prior studies conducted by the above-mentioned scholars. The results of the present study specifically highlight on the usage of emerging technologies in delivery service quality to air passengers in South Africa. However, Tolpa's research underlined the importance of using systems to perform critical functions of airline processes such as ticket purchases, pre-flight procedures, check-in, airport services, departure, in-flight and arrival services, and baggage delivery services to passengers (Tolpa, 2012:62). While Pickford's study was on emerging technologies, the emphasis was on future utilization of emerging technologies in the global airline industry. Buhalis (2003), focused on delivering value to air passengers with particular emphasis on strategic and tactical application of ICT in e-airline environment. Therefore, comparatively all these studies revealed different findings/results.

The significant findings of the present study are : (1) effectively 81 % of SAORA passengers conceded that emerging information technologies greatly improved delivery of services to them; (2) Significant gaps existed in the application of emerging technologies in serving SAORA passengers;(3) a moderately negative significant relationship existed between passengers' service quality and the utilization of emerging technologies in delivering services to SAORA's passengers, and (4) 71% of SAORA passengers fall within the younger generation bracket (40 years or younger; educated at tertiary level (84%); and earning an income of up to (R50 000 per month). Potentially, the younger generations are becoming technologically savvy, and may demand airline services on electronic devices. This study revealed that by depending on emerging technologies, SAORA stand to offer superior service quality to air passengers, thereby gaining competitive advantage, continuous patronage, loyalty and increased profitability.

Theoretical and Managerial significance: The theoretical significance of this study is its contribution towards the improvement of academic knowledge and providing new information. From South African perspective, there is dearth of research in the subject area, and this study has contributed in bridging the research gap. This study reveals that SAORA should redesign their service packages, embedding them with emerging ICT applications, for efficient and effective delivery of services to all passengers. This study takes the stand that it is critical for SAORA to invest and integrate emerging technologies into their legacy systems to effectively deliver service quality to passengers. From managerial and strategic marketing perspective, SAORA management could use information from this study to design technological-induced services for young people, knowing the socio-demographics of passengers in South Africa. Technology has transformed the airline industry worldwide. South Africa owned registered airlines should come on board and be abreast with new technological changes that directly impact customers' satisfaction in terms of airline service quality delivery. Information technology systems, RFID systems, self-service systems, the Internet, and mobile technologies devices (including mobile and smartphones), will compel airline companies to review their delivery efforts. The ability of SAORA's adaptation to change, supported by technology will determine their level of competitiveness in the airline industry (Edosomwan et al., 2011:79-91).

Recommendatıons: The following recommendations are proposed, based on the findings of this study and the underlying reviewed literature:

Table 5: Summary of recommendations

Recommendations	Application areas
Technology-enabled devices	Airline staff should provide prompt service at check-in- terminals by using technology-enabled devices. Passengers should be encouraged to use self-service kiosks currently installed at South Africa airports,in order to improveservices at check-in- terminals.
Customerfeedback system (CFS)	SAORA should provide an effective and efficient customer feedback system (CFS) so that passengerscould receive real-time solutions to their complaints on elcectronic devices.
UpgradingCRM systems	SAORA shouldupgrade their current CRM systems to "social CRM" system status, by synchronising these systems with passengers' mobile and smartphones. SAORA should also consider upgrading their CRM systems, by adding social-media applications/upgrades. This will ensure that passengerswill be able toprovide instant or real-time feedback information to SAORA on complaints, suggestions, appreciation, inter alia.SAORA should consider using emerging technologies combined with bespoke customer relationship management systems and application systems to deliver personalised or individualised services to passengers.
Legacy systems	This study strongly recommends that SAORA management should consider upgrading their legacy systems (old systems), including CRM systems, by deploying emerging ICT devices and applications to efficiently process passengers' transactions. For example, passengers should be able to make bookings, check-ins, paymenst, and check boarding passes by using their mobile and smartphones. Some international airlines are using mobile and smartphones when boarding passengers (Castro et al., 2010: 25).
Interfaced Systems	Special applications (software) could be developed and interfaced with the existing legacy systems of SAORA to disseminate information to passengers in real-time mode. While SAORA are using the short message service (SMS) to send information to passengers, not all domestic airlines send SMSes to passengers in South Africa.
The youth and electronic devices	The youth and the middle class will continue to consume services via electronic devices, and SAORA Management should strategise around the findings of this study and provide certain aspects of airline services via electronic devices.
Synchronisingpresent systems	The starting point for SAORA is to synchronise their present systems with emerging technologies, providing user-friendly websites, which passengers could visit on their mobile and

	smartphones, to make bookings and purchase tickets without difficulty. Mobile and smart phone applications could be used to conduct procedures relating to the pre-flight, check-in, and departure procedures. Passengers should be able to check-in and obtain a boarding pass via their mobile and smartphone as is currently being done by some international airlines (Castroet al., 2010:25).
RFID technology	RFID technology could be deployed by SAORA to secure passengers' luggage and ensure effective monitoring.
Entertainment	SAORA should consider upgrading their current in-flight systems to ensure that passengers are able to use and enjoy entertainment on board the aircraft. Emerging multimedia facilities could be installed on board the aircraft to enhance passengers' travelling experience, especially on long-distance international routes.
Morden Aircrafts	Passengers in this era of information technology wish to be constantly connected to electronic devices whether on the ground or in the air (Pickford, 2015:6; 2014:1). Therefore, SAORA should consider purchasing modern aircrafts which allow passengers to use their electronic devices in-sflight without interfering with the operation of the aircrafts.

Limitations & Future research: The limitation of the research methodology was that only a few passengers from South African own-registered airlines participated in the study. However, the data used for the study was valid, therefore the research is credible. Another limitation was that South African own-registered airlines were not willing to support this study. This situation delayed the data collection process. However, the sampled respondents were enthusiastic about the study and completed the questionnaire. Future research area is that, researchers should consider conducting comparative studies on the respective of South African own-registered airlines to determine which airline has the best ICT systems to deliver efficient and effective services to air passengers. This research could be conducted with full co-operation and support from Management of the respective airlines.

5. Conclusion

In conclusion, emerging information technology systems, RFID systems, CRM systems, self-service systems, the Internet, and mobile technologies devices (including mobile and smartphones and others not mentioned in this study), should compel airline companies to review their service delivery efforts. In order to be on top of their game, SAORA should consider enhancing and integrating some of these technologies into their existing systems. Extensive narratives from literature were examined with the emphasis being placed on service quality in airlines using ICT as a tool. Excellent service quality delivery should be combined with emerging technologies as a strategic tool for competitive advantage. Using modern technologies to support their business processes, SAORA stands a better chance of offering a superior quality service to their passengers, thereby gaining continuous patronage and loyalty, not to mention increased profitability.

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The Biographical and Human Resource Management Predictors of Union Membership Engagement of Low- and Middle-Income Workers

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Abstract: In this study, the researcher investigated the biographical and human resource management (HRM) predictors of union membership. The literature reviewed revealed that there is little research on this topic in the South African context. The literature reviewed also showed that males, permanent employees, employees who are less committed, who have a level of quality of work-life (QWL) and engagement, and those who are satisfied are more likely to be unionized. A cross-sectional survey design was used to address the research questions. One thousand questionnaires were distributed and 874 were completed by the respondents at Marabastad Mall in the City of Tshwane Metropolitan Municipality (CTMM) in South Africa. The study results showed that employment status was the highest predictor (β = -1.782, $p<0.05$) of union membership, and gender and job satisfaction were not predictors of union members. This study had managerial implications, in the sense that when hiring employees on a part-time basis, having employees who are committed and offering employees QWL (i.e. excellent fringe benefits) will impact negatively on union membership. In terms of policymakers, the study revealed that developing remuneration policies that are pro-employee (i.e. offering excellent working conditions and fringe benefits) would make them satisfied, possibly be productive, and they would engage less in counterproductive industrial actions like strikes, which in South Africa are the amongst highest in the world.

Keywords: *Biographical, human resource management, low and middle-income workers, South Africa, union membership*

1. Introduction

Union membership means employees who are registered with a union and enjoy benefits like being represented in grievances (Bendix, 2015), disciplinary hearings (Venter & Levy, 2015), and earn a living wage that will enable them to live a good quality of life (Anker, 2011). Conversely, employees who are not unionized are hired on a part-time basis, do not have specialized skills demanded by employers (Slabbert, Parker &Farrel, 2015) and earn lower wages (Maleka, 2012). In South Africa, unions operate under a collective agreement and negotiate for better working conditions and wages of employees irrespective of whether they are unionized or not (Bendix, 2015). Non-union employees who benefit from the collective agreements negotiated are known as free riders and in terms of the Labor Relations Act (LRA), No. 66 of 1995, such employees must pay an agency fee (Finnemore, 2013). Literature from the United States of America (USA), and Europe suggests that union membership is decreasing (Fitzenberger, Kohn &Lembck, 2008; Western & Rosenfeld, 2011; Markey & Townsend, 2013) and management control is on the rise (Maiorescu, 2016). Management approaches to union membership differ from country to country. For example, in Germany, through the policy of co-determination, managers have to include union leadership in strategic planning as members of the top management (Gumbrell-MacCormick & Hyman, 2010). The results have been positive because Germany is known for precision and producing high-quality products. A South African study where employees were engaged also yielded positive outcomes –involving and getting buy-in from union members helped the organization to increase profit (Nienaber & Martins, 2016). On the contrary, other organizations in South Africa have seen a spike in labor unrest, which has impacted negatively on productivity (Nel, Kirsten, Swanepoel, Erasmus & Jordaan, 2016). In the 1980s, in the United Kingdom (UK), productivity increased after unions were weakened by passing labor legislation that discouraged union membership (Mason & Bain, 1993). Trends show that South African productivity has been adversely affected by strikes (Nel et al., 2016); hence some employers have a negative attitude towards a high number of union members and prefer temporary workers (Coetzee &Schreuder, 2016).

There are interesting trends on how biographical factors and HRM outcomes predict union membership (see Turner, Cross & O'Sullivan, 2014). An Australian study, showed that women who were unionized were more satisfied because they received training opportunities, as compared to women who were not unionized

(Oliver, 2010; Waddoups, 2014). Another study showed that the mean scores of job satisfaction were higher for employees who were unionized than the employees who were not part of trade unions (Garcia-Serrano, 2009). Berglun (2014) argued that in Nordic countries, union membership is sustained because workers are satisfied with the benefits and working conditions (i.e. QWL). A review of labor relations literature revealed that there is little research on the biographical and HRM predictors of union membership of low- and middle-income workers in the South African context. Instead, the focus has been on wage inequality (Ntuli & Kwenda, 2014), wages (Godfrey, Maree, Du Toit & Theron, 2014), job security (Finnemore, 2009), andrepresentation during grievance and disciplinary hearings (Bendix, 2015; Venter & Levy, 2015). Low-income workers are employees who are paid low salaries and in most cases they are women, black, and most of them do not have a National Senior Certificate. In South Africa, they earn between R570 to R2 300 per month (Statistics South Africa [Stats SA], 2014). Using price capita per month in 2014 to determine poverty trends, economics determined the lower poverty line as R712 and upper poverty line as R1 312 (Morh, Yu &Mollentze, 2016). Research revealed that employees earning less than R10 000 are low-income workers and those who earn more than R10 000 are middle-income workers (Carr, Maleka, Meyer, Barry, Parker & Haar, 2017). Employees earn low wages because they are not unionized and part of the collective agreement (Stats SA, 2014).

This study is important because it addresses the gap in the South African literatureasit covers HRM variables (i.e. employee engagement, job satisfaction, quality of work-life [QWL], and organizational commitment) that are usually neglected as predictors of union membership in South African labor relations literature. In South Africa, predictors of union membership are based on decent wages (Mmolaeng&Bussin, 2012), job security, political affiliation, race, and representation during grievances and disciplinary hearings (Nel et al., 2016). The researcher conducted a study on low- and middle-income workers in Tshwane, one of the metropolitan cities in South Africa. According to the Tshwane Research Unit (2013), the population in Tshwane in 2013 was 2.4 million, of which almost 40% were low-income workers. Discussed in the next section is the literature on predictors or determinants of union membership, the methodology followed to address the research problem, and the study results. The paper concludes with the discussion of the results and prior research, managerialimplications, and recommendations.

2. Literature Review

Biographical predictors of union membership: There is evidence that gender plays a role in union membership (Bean &Holde, 1994; Blanchflower, 2007; Maiorescu, 2016). Women are less likely to be unionized (Western & Rosenfeld, 2011) because they perceive shop stewards to be ineffective in communicating information about workplace decisions (Nthani, 2017) and negotiating for equal wages (Casale & Posel, 2009). Employees who are not permanently employed are less likely to be unionized due to the type of employment contract they have signed (Bendix, 2015). The following hypotheses are therefore put forward:

H1A: Males who are committed are more likely to be unionized than females.

H1B: Permanent employees are more likely to be unionized than part-time employees.

Human resource management (HRM) predictors of union membership: Meyer and Allen (1997) developed an organizational commitment model. Meyer and Allen's model measured three dimensions, which are affective, normative, and continuance commitment, and it has been validated in different organizations globally (Stephens, Dawley & Stephens, 2004; Seibert, Wang &Courtright, 2011; Brunetto, Teo, Shacklock & Farr-Wharton, 2012; Coetzee, Mitonga-Monga & Swarts, 2014). The other model of commitment, which is not organization based but is used to measure union members, was developed by Newton and Shore (1992). In this study, Meyer and Allen's model was deemed appropriate because the researcher was interested in measuring whether affective, continuance, and normative items predict union membership. The review of the literature showed that employees who worked under managers who were not democratic would not be committed to the organization and would be unionized (Sarkar, 2012). The following hypothesis is therefore put forward:

H2: Employees who are less committed are more likely to be unionized.

Collectively, employees who are unionized are engaged through workplace and bargaining forums in South Africa (Godfrey et al., 2014). Engaging union members collectively is not peculiar to South Africa, but is a global phenomenon (Chan & Hui, 2010; Compte & Jehiel, 2010; Muneer et al., 2014). Despite volumes of literature on collective engagement and union membership, there is little research on how individual engagement dimensions like absorption, vigor, and dedication, developed by Schaufeli, Salanova, González-Romá, and Bakker (2002), predict union membership. According to Nienaber and Martins (2016), employees who are engaged are more likely to be unionized. At an individual level, employees who are members of unions thatengage employees through online media (Maiorescu, 2016) are more likely to be engaged than non-unionized employees (Maleka, Schultz, Van Hoek, Dachapalli & Ragadu, 2017). The following hypothesis is therefore put forward:
H3: Employees who have a high individual level of engagement are more likely to be unionized thannon-unionized members.

QWL is viewed as an effort of a union to involve its leadership in working together with management (Lawler III & Drexler Jr., 1977) and to enhance customer satisfaction and/or implement new technology in the workplace (Fields & Thacker, 1987). For the purpose of this study, QWL is when an employee is satisfied with the working conditions and fringe benefits (Maleka et al., 2017) negotiated by trade unions (Fields & Thacker, 1987). It was found that research on QWL tends to focus on union leadership, at the expense of focusing on how employees perceived union membership (Holley, Field & Crowley, 1981). A study conducted in the USA revealed that QWL was a predictor of union membership (Flavin & Shufeldt, 2016). Flavin and Shufeldt (2016, p.171) found that "union members are more satisfied with their lives than those who are not members and that substantive effect on union membership on life satisfaction rivals other predictors of QWL". The following hypothesis is therefore put forward:
H4: Employees who have good QWL are more likely to be unionized as opposed to non-unionized members.

Job satisfaction as an HRM variable plays a significant role in determining whether employees are unionized or not (Gordon & Denisi, 1995; Bluem & Van Zwam, 1997; Hammer & Avgar, 2005; Hipp & Givan, 2015; Laroche, 2016; Colley, 2017). Smith, De Beer and Pienaar (2016) found that there was an association between job satisfaction and union membership. An international study revealed that unionized employees in low economic countries are satisfied, it negotiated for good working conditions (Charman & Owen, 2014). Union members are more likely to be satisfied than non-unionized members because they receive company benefits, for example training opportunities (Waddoups, 2014), fair and equitable policy, and negotiating a living wage (Mmolaeng & Bussin, 2012; Tufail et al., 2016). Conversely, studies conducted in the late 1970s showed that employees who were unionized were more dissatisfied compared to non-unionized employees (Borjas, 1979; Freeman, 1979). The commonality of the studies is that they used econometrics techniques to predict job satisfaction. Also, in the literature, it was evident that thereis a lack of research measuring job satisfaction as a predictor of union membership using statistical techniques like logistic regression. The following hypothesis is therefore put forward:
H5: Employees who are satisfied are more likely to be unionized than non-unionized members.

3. Methodology

Discussed in this section are research approach, design and paradigm, sampling, research instrument, reliability and validity, and data analysis.

Research approach, design, and paradigm: The research approach that assisted the researcher to address the research hypotheses was quantitative, because the researchers wanted to quantify the effects and differences of HRM outcomes on union membership. The research design was cross-sectional and descriptive. The research paradigm that influenced the study was positivism, and the researchers created new knowledge by testing hypotheses (i.e. epistemological stance) and were objective when they analyzed the data (ontological stance) (Du Plooy-Cilliers, Davis & Bezuidenhout, 2014).

Sampling: Purposive sampling was used at Marabastad Mall because the researcher knew that it was a place where unionized and non-unionized employees could be found. One thousand (N=1000) questionnaires were printed, and 874 were completed. The sample size was sufficient to conduct logistic regression, because it was above 400 sample size threshold recommended by Hair, Black, Babin and Anderson (2014). The response rate was 87.40%. The response rate is above the 10% threshold suggested by Bless, Higson-Smith and Sithole (2013).

Research instrument, reliability, and validity: The research instrument used for data collectionwas a validated questionnaire. The questionnaire did not take respondents a long time to complete (Maree, 2007; Neuman, 2014). The researcher hired research assistants who spoke the language understood by the respondents who visited the research site. In some instances, the research assistants translated the questionnaire items for respondents who did not understand English. Section A of the questionnaire comprised biographical information. Table 1 shows that the majority (67.10%) of the respondents were not unionized. In terms of gender, 51.70% of the respondents were males. The majority (88.80%) of the respondents' ages ranged from 25 to 54.

Table 1: Biographical information

Variable	Frequency	Percentage
Trade union membership	Yes (589)	67.10%
	No (280)	31.90%
Gender	Male (454)	51.70%
	Female (421)	47.90%

Section B had three scales. Nine items of job satisfaction were taken from a scale developed by Spector (1985) and after deleting the following items, the Cronbach's alpha was 0.86: *There are few rewards for those who work here*; *I don't like the people I work with; I find I have to work harder than I should because of the incompetence of the people I work with*. Nine items were taken from the quality of work-life scale developed by Timossi, Pedroso, De Fransicoand Pilatti (2008) and after deleting the following variables, the Cronbach's alpha increased to 0.72: *I am under pressure to meet deadlines*; *I often find myself thinking about work instead of focusing on home/leisure activities*; *I find it hard to take time off during work to take care of personal and family matters*; and*It is difficult to concentrate on because of home matters*. Nine items of organizational commitment were taken from a scale developed by Meyer and Allen (1997) and after deleting the following items, the Cronbach's alpha was 0.71: *It should be very hard for me to leave my organization right now, even when I wanted to*; *Right now, staying with my organization is a matter of necessity as much as a desire*; *One of the major reasons I continue to work for this organization is that I believe that loyalty is important and I therefore feel a sense of moral obligation to remain;* and *I think that people these days move from company to company too often*. Items in Section B were measured on a five-point Likert scale where 1 is strongly disagree and 5 is strongly agree.

Section C had nine employee engagement items, taken from Schaufeli et al. (2002). None of the items were deleted and the Cronbach's alpha was 0.89. A sample of the questions is as follows: *At my work, I feel bursting with energy*; *My job inspires me*; and *I am happy when I work intensely*. The items had a seven-point Likert scale, and the alpha coefficient in this study was 0.91. Since the factor loadings of all the items retained were above 0.70, it can be argued that construct validity was achieved (Field, 2013; Struwig & Stead, 2013). Prior to data collection, the researcher was given ethical clearance by the university to conduct the study and the questionnaire was pretested on 20 respondents.

Data analysis: Data were coded in Microsoft Excel and exported into the Statistical Package for the Social Sciences (SPSS) version 24 for analysis. The univariate analysis comprised frequencies and logistic regression and was used to address the study's hypotheses. The latter was used because the dependent variable was binary, where "Yes" was coded as 1 and "No "wascoded as 0 (Kleinbaum& Klein, 2010). As suggested by Pallant (2016), model fit was conducted by means of a chi-square (χ^2) and variancewas measured by means of the Cox and Snell R-square and Nagelkerke R-square.

4. Results

This section comprises testing for model fit and hypotheses testing.

Testing for model fit: Binarylogistic regression was performed to assess the impact of a number of factors on the likelihood that respondents would report union membership. The model contained four predictor variables (employee engagement, QWL, job satisfaction, and organizational commitment). Table2 displays that the model containing predictor variables was statistically significant (Pearson chi-squared (χ^2) at (4, N=857) = 248.541, p<0.05), indicating that it distinguished between those who were unionized and not unionized.

Table: 2: Omnibus tests of model coefficients

		Chi-square	Df	Sig.
Step 1	Step	248.541	10	.000
	Block	248.541	10	.000
	Model	248.541	10	.000

As can be observed from Table 3, the model can potentially explain between 27.20% (Cox & Snell R-square) and 37.90% (Nagelkerke R-square) of the variance in union membership.

Table 3: Model summary

Step	-2 Log likelihood	Cox & Snell R-square	Nagelkerke R-square
1	741.956a	.272	.379

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

The data not displayed in the paper correctly classified 76.40% of cases. The Hosmer-Lemeshowgoodness-of-fit test (see Table 4) indicated a non-significant value (.510), meaning that our model fit the data satisfactorily (Kleinbaum& Klein, 2010; Hosmer, Lemeshow& Sturdivant, 2013; Pallant, 2016).

Table 4: Hosmer-Lemenshowtest

Step	Chi-square	df	Sig.
1	15.478	8	.510

Hypotheses testing: As discussed in the methodology section, logistic regression (refer to the SPSS output in Table 5) was used to test the hypotheses.

Table 5: Predictors of union membership

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1a	Gender	.181	.186	.944	1	.331	1.198
	Employment status	-1.782	.279	40.936	1	.000	.168
	Organizational commitment	-.802	.101	62.860	1	.000	.448
	Employee engagement	.222	.095	5.512	1	.019	1.249
	QWL	-.380	.119	10.249	1	.001	.684
	Job satisfaction	.128	.099	1.681	1	.195	1.137
	Constant	5.386	.739	53.152	1	.000	218.248

The data in Table 5 show that gender was not a predictor of union membership (β = .181 p>0.05). Based on the study results, H1a is not supported. The data also revealed that employment status is a predictor of union membership (β = -1.782, p<0.05). This indicates that permanent employees are .168 less likely to be unionized compared to part-time employees. Therefore, H1b cannot be supported. The data also revealed that organizational commitment was a predictor of union membership (β = .222, p<0.05). This indicates that employees who are committed, are0.448 less likely to be unionized. Based on the study results, H2 is not supported. It can also be observed from Table 5 that employee engagement was a predictor of union membership (β = .222, p<0.05). This means that employees who are engaged, are 1.249 more likely to be unionized. Hypotheses H3 is therefore supported. It was also found in this study that QWL was a predictor of union membership (β = -.380, p<0.05). This indicates that employees with high QWL are 0.684 times less likely to be unionized. H4 is thus not supported. Lastly, the data revealed that job satisfaction was not a predictor of union membership (β = .128, p>0.05). This indicates that employees who are satisfied are 0.195 more likely to be unionized than non-unionized members. H5 is therefore not supported.

5. Discussion

The purpose of the study was to identify biographical (i.e. gender and employment status) and HRM outcomes (i.e. employee engagement, QWL, job satisfaction and organizational commitment) as predictors of union membership. The data revealed that gender was not a predictor of union membership. This finding contradicts previous research that showed that gender was a predictor of union membership (Bean &Holde, 1994; Blanchflower, 2007; Maiorescu, 2016) and that females were less likely to be unionized than males (Western & Rosenfeld, 2011). Interestingly, the data showed that employees who were working on a full-time based were less likely to be unionized, as compared to employees who were employed on a part-time basis. This finding is in contrast with the literature (Bendix, 2015). This implies that employees employed permanently did not see the benefits or the importanceof the roles that unions play, like negotiating for decent wages (Mmolaeng & Bussin, 2012) and job security and representation during grievances and disciplinary hearings (Nel et al., 2016).Earlier it was argued that this study is salient or important because it covered HRM outcomes (i.e. employee engagement, job satisfaction, QWL, and organizational commitment), which are neglected in South African literature as predictors of union membership. It was found that organizational commitment was a predictor of union membership. Similarly, Sarkar (2012) found that employees who are less committed are more likely to be unionized. The implication of having employees who are less committed is that the unions will have to represent them more often at disciplinary hearings because their lack of commitment can lead them to not coming to work and being charged for poor performance.Unfortunately, the literature showed that South Africa workplaces are less productive due to high labor unrest and employees who are not committed (Nel et al., 2016) and indicated less harmonious employment relations like in Germany, for example(Gumbrell-MacCormick & Hyman, 2010). It can be argued that employees who are not committed and are protected by the unions can also adversely affect the morale of committed employees.

Consistent with the literature (see Maleka et al., 2017), it was found that employees who are engaged are more like to be unionized. At an organizational level, Nienaber and Martins (2016) discovered that South African management who were engaged or worked collaboratively with unions increased the profit margins of the organizations. Contrary to Flavin andShufeldt's (2016) findings, the data in this study showed that employees with a high QWL were less likely to be unionized. This implies that employees with high QWL valued their skills as proxy to better wages, and did not perceive being unionized as an enabler of decent wages and working conditions (Fields & Thacker, 1987). The data showed that employees who are satisfied were more likely to be unionized than those who are unionized. This seems to suggest that unionized employees were satisfied because unions negotiated for better training opportunities (Waddoups, 2014), fair and equitable policy, and a living or decent wage (Mmolaeng & Bussin, 2012).

This study has managerial implications, in the sense that when hiring employees on a part-time basis, having employees who are committed, and offering employees QWL (i.e. excellent fringe benefits) will impact negatively on union membership. Hiring employees earning less than R203 000 on a part-time basis without proper reasons might lead to labor disputes because it is against section 198(c) of the LRA of 1995, which states that if employees are hired for more than three months, their contract must be converted to a permanent basis (Casual Workers Advice Office, 2015). In terms of policymakers, the study revealed that developing remuneration policies that are pro-employee (i.e. offering excellent working conditions and fringe benefits) would make them satisfied, possibly productive, and they would be less engaged in counterproductive industrial actions like strikes. In South Africa, a minimum wage of R3 500, which is above the lower- and upper-poverty lines determined by economics (see Morh et al., 2016), will be implemented in May 2018.It is recommended that organizations should:

- hire employees on a part-time basis in accordance with section 198(c) of the LRA and train them to be productive;
- encourage employees to be unionized, offer them decent wages, and treat them fairly and equally to keep them satisfied;
- offer employees fringe benefits that will enhance their QWL; and

- work collaboratively with unions to gain buy-in to implement organization strategy and increase profit margins.

In terms of the unions, it is recommended that they work together with management as in Germany, so that they can increase their membership and be involved in the strategic decision-making in organizations (Gumbrell-MacCormick & Hyman, 2010). In South Africa, it was found that when there is a co-determination between unions and managers; the latter had a high membership and assisted organizations in reaching business objectives (Nienaber & Martins, 2016). This study brought new insight on how to predict union membership, and since it was based on a cross-sectional research design, it is recommended that it is conducted over a longer period to determine if the same trends will emerge. In future, researchers can use a mixed-methods design, so that they can also solicit qualitative data that will shed more light on the quantitative predictors of union membership.

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Food Insecurity and the Rising Urbanisation in Africa: Can ICT Revolution Bridge the GAP?

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Abstract: The task of reducing food insecurity in Africa is very challenging. This is because of the changing conditions such as adverse climate change impacts. This study examined food insecurity, urbanisation and ICT in Africa. The paper employed a combination of both secondary and historical information obtained from different sources (UNHCR, FAO, Mo Ibrahim Foundation etc). Analytical method used include descriptive statistics such as charts. Food security indices in Africa is alarming and disturbing. One in four people in Africa do not have access to food in adequate quantities and one in five African children are underweight. African agriculture is rendered unattractive by low productivity hence the exodus of labour from rural to urban areas. Africa is the most rapidly urbanising continent in the world with enabling factors comprising of infrastructure deficits in rural areas, dearth of employment opportunities and glamour of city life. However, Africa's urban centres are not immune to the challenges inducing rural-urban migration in the first place. In fact, youth unemployment in Africa is 6 times higher in urban areas than in rural areas. About 72percent of urban dwellers live in slums with the most of them having no access to basic amenities. These culminated in what is regarded in literature as 'urbanisation of poverty'. Migrants are generally scapegoated as the causes of crimes, violence and even unemployment in urban areas. Therefore, they are subjected to sub-human living conditions. Information and Communication Technology (ICT) is particularly critical to the achievement of food security in Africa. This is because of the huge gap between markets and farmers which it is capable of filling. The paper therefore recommends increased but monitored investments in infrastructure in Africa in order to make rural areas more attractive and discourage rural-urban migration. There is also the need to provide favourable micro and macro-environment for businesses to grow especially in rural Africa.

Keywords: *Africa, Development, Food insecurity, ICT revolution, Rural-urban drift, Urbanization*

1. Introduction

Background of the Study: Food security occupies a central position in the global policy discourse (Ruhiiga, 2013). In fact, it is the second goal in the Sustainable Development Goals which is to end hunger, achieve food security and improved nutrition and promote sustainable agriculture. The Catholic Relief Agency defines food security as a situation where people have physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life today without sacrificing investments in livelihood security tomorrow (Ubong *et al*., 2009). The most widely cited definition in literature is the 1996 World Food Summit Plan of Action which states that food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (Harris, 2014). Although, urbanisation has been defined in many ways. It is defined as the process of agglomeration of people in a human settlement such that the settlement graduates from a level of complexity (economic, social and physical) to the other (Jelili, 2012). Urbanisation can also be viewed as the process by which rural areas are transformed into urban areas which involves population rise stemming from migration and natural expansion (Waugh, 1990). Most of the definitions of urbanisation in previous studies have some concepts that unite them. The concepts include (i) a demographic process (ii) necessary ingredient for economic and industrial development (iii) social change and (iv) a universal phenomenon (Hove *et al.*, 2013). There are a lot of issues around the nature of urbanisation in Africa and its effects on food security and they have received attention in literature. However, this paper situates ICT within the context of food security and urbanisation process in Africa in order to drive inclusive and pro-poor policies.

The Current State of Food Security in Africa: There is a reduction in global hunger according to the FAO estimate. An estimated 805 million people were estimated to be chronically malnourished in 2012-2014. However, Northern Africa has a consistently low prevalence of hunger at less than 5 percent. According to Ackello-Ogutu *et al*., (2012), an estimated 40 percent of people in sub-Saharan Africa subsist below the poverty line with majority living in rural areas. Given the current situation and potential climate change issues, it is estimated that 52 million children will be malnourished by 2050 (Ackello-Ogutu *et al.,* 2012). Meanwhile, agriculture accounts for 60 percent of employment, 15percent of exports and 20 percent of Africa's Gross Domestic Product (Ackello-Ogutu *et al.,* 2012). However, only 5percent of the cropped area is irrigated as against 14 percent in Latin America and 37 percent in Asia (Ringler *et al.,* 2010). Hence, the undue exposure to vagaries of weather and consequently low productivity. The proportion of food insecure people has been rising globally since 2007 food price crisis. Available estimates reveal an increase in the proportion of undernourished from 28percent in 2004-2006 to 29percent in 2008 (UN, 2009; Conceicao *et al.*, 2011) compared to 17percent in developing countries. An estimated 50 percent of food insecure people are smallholder farmers, 22percent are rural landless, 20percent are urban poor and 8percent depend on natural resources for their livelihoods (Bremner, 2012).

An estimated 70percent of the global poor live in rural areas with young people constituting the vast majority of the poor. Meanwhile, about 75 percent of the poor live in rural areas in South and South East Asia and sub-Saharan Africa (SDSN, 2013). In fact, 25percent of people who lack adequate food for healthy and active life reside in sub-Saharan Africa (FAO *et al*., 2014). In Africa, agricultural food productivity per capita of about 2.5percent is lower than population growth estimated at 3.6 percent hence the worsening food crisis (Ogujiuba *et al.*, 2013). Low agricultural and food productivity in Africa is on the other hand caused by unfavourable climatic conditions, land degradation and natural disasters such as drought especially in the Horn of Africa, desertification and desert encroachment in other parts of Africa (IFAD, 2011; IFPRI, 2012). This has resulted in increased food prices thereby pushing access to food beyond the reach of the poor. Moreover, agriculture in Africa is characterised by undercapitalisation, underproduction, underemployment and low incomes. Scholars have identified a relationship between food crisis, population growth and human health (Ogujiuba *et al.*, 2013). In fact, due to global population growth there are 840 million malnourished people in the world. Developing countries account for the bulk (799million) of the malnourished people most of which are in Asia and Africa (WHO, 1996). Poor people are particularly vulnerable to malnutrition, anaemia, vitamin A deficiency, iodine deficiency, acute respiratory infections, malaria and fatigue.

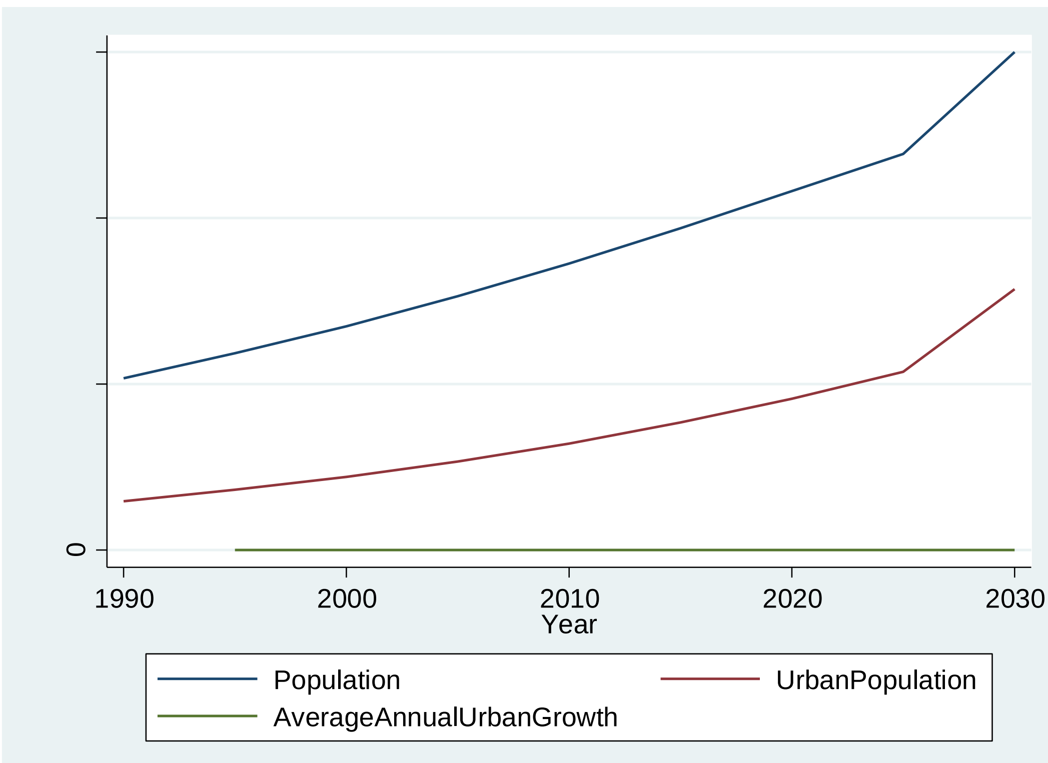
There is the challenge of multidimensional nature of food security and its relationship with issues such as climate change, trade and development that policy makers have to resolve (Masters, 2008). The issue of food security is very complex as it can be linked to poor harvests and low food stocks, floods, droughts and changing consumption patterns. Climate change worsens food insecurity in Africa (Lwasa, 2014). This occurs through delay in the onsets and early cessation of rains, rising sun intensity and wind storms consequently leading to crop failure, sub-optimal production level, high post-harvest losses and conflicts (Oluwatayo and Ojo, 2016). Hence, climate change affects social and economic development in Africa. According to Masters (2008), heavy rains and flooding has affected over 800,000 people with Ghana, Togo, Burkina Faso and Mali most affected. Drought is the main undermining factor influencing food security in Mauritania. Another climate change-induced challenge is the increase in the incidences of pests and diseases for humans, animals and plants. While pests and diseases reduce yields and consequently income of farm families, it increases the number of days farmers spend off-farm. In terms of trade, there are challenges in Africa's regional integration plan. This can be attributed to the absence of legal and regulatory framework and capacity to implement policy decisions (Masters, 2008).

Human Immunodeficiency Virus/ Acquired Immunodeficiency Syndrome (HIV/AIDS) is another emerging threat to Africa's food security. This is because HIV significantly influences availability and health of farm labour. The disease also affects household income due to the high cost of managing it. HIV/AIDS is more prevalent among people aged 15 to 50 years who constitute the bulk of the labour force. FAO estimates that AIDS has killed seven million agricultural workers in Africa since 1985. It has the potential to kill 16 million more within the next 20 years (ICAIDS, 2001). Typically, the quantity and quality of food available to a household will decline as productive family members become sick or die. The situation is worse for child-headed households in countries like South Africa. The additional burden of caring for orphans and unproductive individuals can impact upon overall food security (ICAIDS, 2001). Conflicts in Central African Republic, North East Nigeria and Northern Mali have grave consequences on food security. Fulani herdsmen are actively destroying farmlands and engaging in attacks and reprisal attacks in almost all parts of Nigeria. This threatens already inadequate food production level. There are currently 1, 235, 294 internally displaced persons in Nigeria (UNHCR, 2015 cited in FAO, 2015). Chad currently has 17,300 refugees out of which ten percent battle with severe food insecurity (FAO, 2015). In West Africa, about 4,749, 000 people were food insecure between March and May 2015 (FAO, 2015).

2. The Food Insecurity and Urbanisation Nexus in Africa

The global population is expected to rise to 7.5 billion by 2020. Meanwhile, the developing world is expected to account for 80percent of the urban population. According to the 2014 World Urbanisation Prospects, 54percent of global population currently live in the urban areas and the number is expected to rise to 66percent by 2050 (UNDESA, 2012; Freire *et al*., 2014). The global urban population increased from 746million in 1950 to 3.9 billion in 2014. Africa and Asia will account for significant level of global urbanisation in near future. In fact, Africa and Asia will account for 70percent of urban inhabitants in the world by 2030 (Jelili, 2012). New cities are emerging in Africa while the existing ones are fast becoming megacities (Hove et al., 2013; Chenal, 2016). An estimated 50percent of Africa's population will be living in urban areas by 2030 (Mo Ibrahim Foundation, 2015). Africa is considered the most rapidly urbanising continent in the world (Hove et al., 2013) with an annual average growth of 3.3percent between 1990 and 2000 and 4.5 percent between 2000 and 2005 (Jelili, 2012). The percentage of African population living in urban areas is expected to increase to 56percent by 2050 (AFDB *et al*., 2016; Carmody and Owusu, 2016).

Figure 1: Population, Urban Population and Population Growth Rate in Africa



Sources: Author's representation of underlying data from UN-Habitat, (2010); Adegun (2011) and Jiboye (2011)

In absolute terms, an estimated 900 million new urban dwellers which is equivalent to what Europe, USA and Japan combined have managed over the past 265 years will emerge in Africa by 2050 (Mo Ibrahim Foundation, 2015). Urbanisation is both a problem and advantage to Africa's economic development (Tacoli *et al*., 2015; Collier, 2016). Urbanisation provides an opportunity to internalise economies of scale in the provision of basic infrastructure (water, health, education and electricity among others) (Carmody and Owusu, 2016). There is a dearth of opportunities in rural Africa which accounts for exodus of people to urban areas. The people gain improved access to employment opportunities and infrastructure (schools, electricity, water, health facilities etc.) (Opoko and Oluwatayo, 2014). There are pull and push factors influencing urbanisation in Africa (Freire *et al.,* 2014). In Africa, the bulk of the people who moved into the urban areas were "pushed-out" of rural areas because of adverse climate change impacts resulting in low agricultural productivity and consequently low income. Another push factor is infrastructure deficits that characterise rural areas in Africa. The pull factors are the abundance of opportunities-employment and social services and glamour of city life. Urbanisation is an outcome of social, economic and political developments resulting in urban concentration and growth of large cities, changes in land use and transformation from rural to metropolitan pattern of organisation and governance (Ekpenyong, 2015).

Urbanisation becomes a problem when cities are not safe because of the one-way movement of people from rural to urban areas. Generally, migrants are scapegoated as the cause of insecurity confronting our world. African urban centres are characterised by kidnapping, terrorism, armed robbery and electoral violence among others. Migrants put pressure on the already stressed or inadequate infrastructure in cities. Only 38percent of the urban population in Africa have access to piped water networks (Mo Ibrahim Foundation, 2015). The level of indiscriminate disposal of toxic wastes into the environment is worrisome. Urban environment is characterised by pollutions from industries, traffic, residential congestion and lack of green parks (UNECA, 2014). According to Tabiajuka (2007), an estimated 72percent of the urban population in sub-Saharan live under sub-human conditions in slums and squatter settlement without adequate access to basic services. African cities have the 2nd highest level of inequality in the World with urban Gini coefficient of 0.84 compared to the average of 0.4 (Mo Ibrahim Foundation, 2015; UNHabitat, 2015). In fact, one could be living in urban areas without gaining access to basic services e.g. health, education, water and improved sanitation among others (Ozden and Enwere, 2012). The facilities could be available while an average citizen lack economic access to them (Nordhag, 2012). Youth unemployment in Africa is 6 times higher in urban areas than in rural areas (Mo Ibrahim Foundation, 2015). Therefore, living in urban areas does not necessarily translate to better economic outcomes. Urban and rural areas are linked in the food security web. This is because increased food production in rural areas will result in low food prices in urban areas given transportation costs *ceteris paribus*. The population of farmers in rural Africa are aged owing to the migration of potential agricultural labour to urban areas. Therefore, urbanisation compound agricultural production problems since there is little to what the farmers can produce (Ackello-Ogutu *et al.,* 2012). The risk aversion of farmers makes technology adoption difficult. Therefore, almost all the four pillars of food security are affected by urbanisation in Africa.

There is a large body of literature in economics which explained urbanisation in the context of spatial and demographic outcome of a broader process of structural transformation (Timmer, 2009; Djurfeldt, 2015). Labour and capital flow from agriculture to manufacturing and services in urban areas. This reduces the share of agriculture both in total value added and in the labour force in the process of economic growth (Djurfeldt, 2015). Urbanisation in the developed world resulted from increase in agricultural productivity which induced movement of people into labour markets in newly developed industries. In other words, a positive relationship exists between economic growth and societal development in developed countries (Nordhag, 2012). This is consistent with the earlier works of Arthur Lewis and Simon Kuznets (Christiaensen *et al*., 2013). In other words, it is believed that as people move out of agriculture to engage in economic activities off-farm and outside the rural communities, new opportunities are opened up. The opportunities include remittances, increased demands for agricultural output thereby igniting the process for economic growth and poverty reduction (Christiaensen *et al*., 2013). Africa's urbanisation is unplanned (Fox, 2013) and premature since it is not a product of agricultural growth (Tibajiuka, 2007; AFDB *et al.,* 2016). To this end, Africa now witnesses "urbanisation of poverty" and new dimensions of crime (Christiaensen *et al*., 2013). Now that urbanisation is a reality of our time, global economic integration, improved trade, capital flows and Information Communication Technology (ICT) play an important role in integrating major cities and shaping the spatial organisation of cities (Jiboye, 2011).

3. The ICT Revolution in Africa: A Problem or Way out of Urbanisation Challenges and Food Insecurity?

Broadband penetration is currently low in Africa, but it is expected to rise steadily in the next few years (AFDB, 2011). The ICT penetration estimated at 7percent in 2010 is expected to rise to 99percent of the population in 2060 (AFDB, 2011). African cities are built around large system of interconnected networks with regards to flow of labour, raw materials and other resources from rural areas (Dodman *et al*., 2016). Proper management of urbanisation is critical to economic development (Nordhag, 2012; Collier, 2016). Over time, countries that have reached OECD level of prosperity had successful urbanisation (Collier, 2016). There is a need for connectivity between the producers or firms and the market. Rural Africa is predominantly agricultural and as such needs to be well connected to the industries. Producers need to be connected with consumers given their changing needs such that they can transact in the market (Collier, 2016).

Urbanisation is key to good spatial connectivity as it generates connectivity in two ways. Urbanisation reduces distance between household and firms and cost of transport per unit of distance between them (Collier, 2016). Information Communication and Technology provides a platform where information on transactions, new business prospects, opportunities and market information can be generated, shared and reviewed on some devices including phones, computers, and internet among others. The world without borders and significant reductions in distance is emerging. Although, the state of infrastructure in Africa is not commendable, ICT provides a way out of most of the current challenges. The ICT revolution is based on quality information efficiently disseminated at the right time. Many scholars have argued that the African agricultural system needs a total overhaul in order to achieve food security. ICT can be used to gather, analyse and interpret information on the existing agricultural practices with the aim of proffering far-reaching solutions to age-long problems. There are improved strains of livestock and varieties of crops that did not go beyond the researchers' farm plots in Africa. The ailing agricultural extension system suffering from inadequate man power and unattractive conditions is not able to guide adoption process of improved agricultural practices and inputs. On the other hand, farmers face challenges in getting their goods to the market owing to infrastructure deficit. Due to high moisture content, bulkiness and perishability that characterise agricultural products, farmers are forced to sell at low prices to middlemen. ICT can provide a platform for farmers to gain better access to markets and re-organise their farm operations to accommodate market dynamics. According to Mafusire *et al*. (2010), Africa requires about USD93 billion of investment to meet the funding needs in ICT, irrigation, power, transport, water and sanitation infrastructure. ICT especially mobile networks that are currently growing exponentially in Africa can be harnessed in bridging food gaps and urbanisation issues in Africa. ICT can also be used in crime control and maintaining law and order.

4. Conclusion and Recommendations

The paper examined food security and urbanisation within the context of ICT revolution in Africa. We found that urbanisation and agricultural productivity have bi-causal relationship. There is no way food security will be attained if agricultural productivity is low in Africa. The bulk of the people are food insecure due to some undermining factors of agricultural productivity. The factors include undercapitalisation, climate change, inadequate access to improved technologies and low adoption of improved agricultural practices. As a result of this, people move from rural to urban Africa thereby increasing the proportion of the population that is urban. The paper found that urbanisation can both be a challenge and opportunity depending on how it is managed. The level of ICT use in Africa is still low but it is projected to increase significantly in future. ICT can be used to provide market information to farmers with regards to sourcing of improved inputs and getting good markets for agricultural products. ICT can also be deployed to climate change adaptation through weather forecasts and advice towards building climate resilient systems. From the foregoing, the following policy prescriptions are suggested:

- African governments should plan urbanisation such that cities will have master plans to be adhered to by all developers towards reducing slums.
- Government and private organisations should increase and monitor investments in infrastructure (roads, schools, hospitals, electricity, potable water etc.) in order to make rural areas more attractive and reduce unplanned migration
- Farmers should adopt improved technologies towards mitigating climate change impacts in order to enhance agricultural productivity.
- There is the need for government to provide enabling environments where industries can thrive if the much desired improvement in youth employment especially in African major cities is anything to go by.

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Promoting Business Inclusivity for Sustainable Livelihoods among the Zimbabwean Poor

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Abstract: The Zimbabwean economy has nose-dived since the long decade era of hyperinflation resulting in serious economic depression, extreme poverty and unemployment. Regrettably, lack of an entrepreneurial culture has become a huge obstacle to the resuscitation of the economy. Developing inclusive business models incorporating livelihood opportunities for social bottom line has long been suggested as the solution for economically distressed less developed nations facing high levels of unemployment. This study sought to explore factors that disincentivise Zimbabweans from seeking and initiating value creating business opportunities that are low income inclusive and further presents strategies to infuse an entrepreneurial investment culture. It adopts the survey design approach in collection of data. The study identifies lack of skills and knowledge, lack of access to financial markets, unfavorable business environment and regulatory system, perceived high risk and poor infrastructure as the main impediments to the integration of the poor communities in to the value chain.

Keywords: *Business inclusion, Bottom of pyramid, poverty cycle, value chain, entrepreneurship*

1. Introduction

A decade long of economic crisis in the 2000s has seen poverty escalating at disturbing levels in Zimbabwe. The majority of the Zimbabwean citizenry live with elementary existential deprivations as manifested by extreme poverty. The rural areas are most affected by the depression in economic activity. The Zimbabwe Poverty Atlas for 2015, a survey done by the Zimbabwe National Statistics Agency (Zimstats), the World Bank and the United Nations Children's Fund (UNICEF), reports that the poverty prevalence levels have risen to as high as 96% in some areas. The living standards have further been worsened by the July 2015 labor ruling that allowed companies to dismiss employees on three months' notice. This has opened floodgate for massive dismissals by private companies putting thousands into the poverty pit. The Zimbabwean populace has unfortunately been disproportionately concentrated on the poor resulting in the Base of the Pyramid (BoP) confronting seemingly insurmountable challenges in escaping the vicious cycle of poverty. With the majority of Zimbabweans constituting the bottom of the pyramid sector of society, there is need for deliberate strategies to reduce poverty levels. Lessons can be learnt from the Asian experience on poverty reduction where, though still high, extreme poverty has since the 1990s been on a downward trend owing to deliberate policies aimed at eradicating poverty. According to the Asian Development Bank (2015), extreme poverty is projected to fall to a low level of 1.4% by year 2030. The Asian experience has shown that a direct focus on poverty reduction such as subsisting in Zimbabwe may not yield long term benefits as it is primarily short term focused and is mainly in the form drought relief food aid. Such an approach has proven to be unsustainable in the long term as it does not equip the bottom of the pyramid with sustainable income sources. The Asian experience rather informs of the imperative need to embrace advancing inclusive growth strategies that yield sustainable gains to the Bottom of the pyramid poor and vulnerable members of society.
This study seeks to identify obstacles to the creation of BoP entrepreneurs that can actively and gainfully participate in inclusive growth business initiatives. In a developing country context, existing studies have focused on multi-stakeholder initiatives by large multinational corporations involving complex value creation systems (Gimenez & Tachizawa, 2012; Halme et al., 2012; Hall et al., 2012) with very limited focus on SMEs. This article responds to calls for further research to understand approaches for integrating poorly educated, impoverished farmers within supply chains (Hall and Matos, 2010) by focusing on the business models of agribusiness SMEs (Ngoasong, 2016).

2. Literature Review

Inclusive businesses are those aimed at generating employment and income for groups with low or no job market mobility (Bauer, 2014; Comini et al., 2012; Wakiaga, 2013). They may involve the establishment of relationships between the business and the low income groups of the society resulting in an inclusive value chain of supply, production, distribution and marketing of goods and services (Wach, 2012; Ashley, 2009; UNDP, 2013; Nyoni, 2015). The effect of including low income communities in the value chain is the creation of new jobs, impartation of technical skills, raising of income and the strengthening of the local capacity to ultimately improve the general standards of living (UN Global Compact, 2015, Wakiaga, 2013). The low market mobility income groups include poor citizens above 40 years who have little formal education, local communities that have strong ethnic ties and poor education, youths who have no work experience and living in high social vulnerability areas as well as the disabled (Comini et al., 2012; UNDP, 2013; Bonnell & Veglio, 2011). Governments world over have become increasingly focused on incorporating the vulnerable poor in to the markets and integrating them in production and distribution as valuable business partners to the private enterprises. Companies face a growing need to embrace the BoP in co-creating inclusive innovation that culminates in share value leveraging on the BOP in supply of critical inputs, innovative distribution system and skilled labor that ultimately has a great potential to sustainably reduce poverty (Farinelli, 2016; Manila forum, 2012,).This study looks at inclusive businesses as it relates to companies having relationships with people as employees, suppliers, distributors and entrepreneurs in the value chain. Attention is on factors limiting the creation of entrepreneurs that can be adopted in the supply, production and distribution of goods and services.

There has been much debate in developed economies on the challenges to the creation and entry of BoP entrepreneurs in the supply, production and distribution of goods and services. Research has shown that entrepreneurial knowledge is integral to the success of inclusive models. The success of any business model hinges on the availability of market information and businesses that have been successful have largely leveraged on market information. The Global Impact(2015)and Besugo et al., (2017) report that businesses, established and otherwise, inherently possess too little knowledge about the low income communities, what these communities prefer, can afford as well as the products and skills they can offer. This presents a barrier in the creation of business inclusivity in many nations. The BoP has lack of knowledge on how they can act and be integrated into the value chain, as players in production, supply and distribution processes (Farinelli, 2016; UNDP, 2015; Rosler, 2013). Studies on challenges to business inclusivity have also focused on the regulatory environment and business climate. A business friendly regulatory environment is a key feature for the success of inclusive businesses. Regrettably, literature has shown that most governments have not established a regulatory framework that enables business to sustainably work (Ogunsade & Obembe, 2016; Doke, 2015; Global Compact, 2015; Manila forum, 2012), which has resulted in chaos and lack of access to the much needed regulatory system. Most regulatory systems are weak resulting in an insufficient enforcement of rules and contracts (Rosler, 2013) as the enabling environment is not conducive for inclusivity. Jenkins et al. (2011) call for strong and transparent regulation that encourages growth of inclusive partnerships. The UNDP (2015) acknowledges the existence of regulatory barriers as an impediment to the achievement of business inclusivity and advocates for the crafting of a regulatory environment that is conducive to economic activities. De Jongh (2013) reports that a weak business climate has been a common challenge facing most low income countries, which has negatively impacted on efforts to develop their private sector which must be the carrier of inclusivity.

Infrastructure has long been established as key to the success of business inclusive efforts. Studies have shown that businesses face challenges in the form of supporting infrastructure such as transport, electricity, water and sanitation and telecommunications network especially in rural areas (Ngoasong, 2016; Porter, 2014;Franz et al., 2014; Rosler, 2013; Wakiaga, 2013). Empirical evidence has revealed that support structures are not harmonized resulting in a huge gap in infrastructure requirements necessary for the achievement of gainful business inclusion. Logistics, transaction marketing and communication support services are integral to the function of an inclusive business ecosystem (Farinelli, 2016; UNDP, 2015; Jenkins et al., 2011). There is need to expand infrastructure to unserved areas so as to embrace an inclusive growth (De Jongh, 2013; Teodósio & Comini, 2012). Missing local knowledge and skills has also been identified as one of the main challenges facing most developing economies in trying to incorporate the bottom of the pyramid entrepreneurs into the value chain system. In most developing nations, local entrepreneurial suppliers, distributors and retailers largely lack the skill and knowledge that is necessary for participation in the value chain opportunities that may be available. Research has largely shown that missing knowledge and skills has become the greatest impediment to efforts directed at incorporating the BoP into the business models (UNDP, 2015). Gradl & Jenkins (2011) present that many BoP entrepreneurs lack requisite knowledge on how to

produce to buyer specifications and they advocate for a high level of training for BoP supplier, distributor and retailors since the inclusive business model is essentially high touch.
Other studies have focused on access to financial markets. Ngoasong (2016) report that investments of entrepreneurial nature require access to affordable credit. Literature has shown that most entrepreneurs have challenges to accessing credit and insurance and hence evidently face insecure an unsustainably expensive credit (Besugo et al., 2017; Global compact, 2015; Gradl and Jenkins,2011; De Jongh, 2013). The conventional banking system perceive inclusive businesses as high risk businesses thus forcing interest rates up for such businesses (UNDP, 2013). Besugo et al. (2017) posit that the financial sector in Africa is largely under-developed, uncompetitive and in most cases state-dominated which tends to limit the development of a vibrant private sector. Innovative inclusive business models have in the past been concentrated mainly in capital intensive oriented sectors such as construction, agriculture and mining which require more access to patient financing and better access to financial markets. There is a growing consensus that with access to finance, inclusive business initiatives would be considerably more effective (Rosler, 2013; De Jong, 2013; Manila forum, 2012), hence financial institutions must be adequately supported so as to enhance their development of tailored SMME products to catalyze the effective participation of SMMEs in the value chain.

3. Methodology

The study employed a survey approach to collect data from the BoP entrepreneurs both in rural and urban areas focusing on the post dollarization era stretching from 2009 to date (2017). The survey design approach was used owing to its ability of a high representativeness for large populations, convenient data collection coupled with a good statistical significance, lower costs and a standardized stimulus for respondents. The targeted areas included Harare, Bulawayo, and rural areas in Matabeleland and Midlands provinces. A questionnaire was used for data collection as it allows for a considered response and the collection of large amounts of information from a large number of respondents in a short period of time, a relatively cost effective way and in a standardized format. A total of 110 questionnaires were distributed of which 94 were responded to resulting in a response rate of 85%. The questionnaire was pretested before data collection and pretest respondents were asked to identify questionnaire items that were ambiguous or confusing. Minor changes were made to the questionnaire following the pretest. Scale measures were used and, in order to check the internal consistency of the scales, Reliability analysis was done on all the multi items scales. A cut off of 0.5 for Cronbach's Coefficient was adopted in line with Nunnally (1978). Correlation analysis was done in order to identify inter-correlations amongst the variables. A regression analysis was then run to identify which variables had significance in promoting business inclusive. Graphical presentations were also used to analyses and present the data.

4. Analysis and Results

Before results analysis was done, the data were examined using SPSS 22 to ensure data entry accuracy, identify missing values and any violation of regression assumptions of normality, linearity, and multicollinearity. Normality tests were carried out by screening residuals using skewness and kurtosis. The skewness values and kurtosis values for the constructs were all closer to zero confirming the requirements of normality postulated by Hair, *et al.*(2009). The data analysis results are indicated in table1 and table 2. The results indicate that the model predictor variables 67% of the variation in business inclusivity indicating a good predictive power. The overall model obtained a p- value of 0.00 indicating a valid relationship between the variables Infrastructure, Risk perception, Requisite skills, Lack of knowledge, Funding and Successful inclusive business linkages between mainstream companies and the bottom of the pyramid entrepreneurs. The Durbin Watson value of 1.734 is satisfactory for the hypothesized relationship.

Table 1: Contribution of Infrastructure, Risk Perception, requisite skills, Knowledge and Funding on inclusion

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.818[a]	.669	.651	.855	1.734

Table 2: Model summary of Risk Perception, requisite skills, Knowledge and Funding effects on inclusion

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	130.288	5	26.058	35.652	.000b
1	Residual	64.318	88	.731		
	Total	194.606	93			

Dependent Variable: Inclusion.
Predictors: (Constant), Infrastructure, Risk Perception, requisite skills, lack of Knowledge, Funding.

Table 3 indicates the contribution of each upstream variable to successful inclusive business. The results show that Knowledge, funding, requisite skills and infrastructure are significantly and positively related to the successful integration of the Bottom of the pyramid entrepreneurs in production value chain whilst the risk perception is an insignificant factor in successful incorporation of the poor in value chains though it lends support to successful inclusion. The implication is that investing in providing BOP entrepreneurs with knowledge about how to participate in value chains, availing necessary and affordable funding and requisite skills as well as the necessary conducive infrastructure will enhance the inclusion of the entrepreneurs in value chains.

Table 3: Coefficients analysis for the regression.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-1.313	.421		-3.121	.002		
	lack of Knowledge	.088	.040	.145	2.228	.028	.889	1.125
	Funding	.460	.076	.406	6.019	.000	.827	1.209
	requisite skills	.254	.055	.294	4.595	.000	.920	1.087
	Risk Perception	-.011	.039	-.019	-.293	.770	.923	1.083
	Infrastructure	.420	.059	.471	7.102	.000	.854	1.171

Dependent Variable: Inclusion.

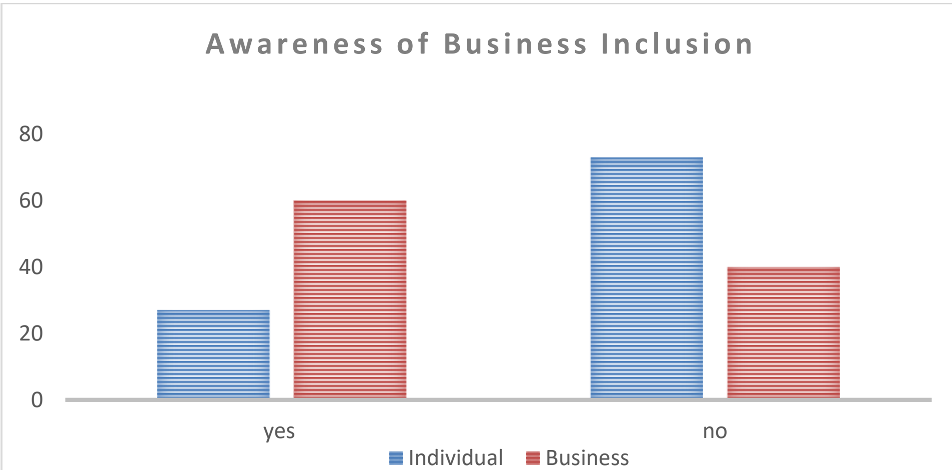
Table 4: Correlation matrix of Risk Perception, requisite skills, Knowledge, Funding and inclusion

		Inclusion	lack of Knowledge	Funding	requisite skills	Risk Perception	Infrastructure
Pearson Correlation	Inclusion	1.000	-.053	.604	.460	.097	.635
	lack of Knowledge	-.053	1.000	-.203	-.063	.208	-.198
	Funding	.604	-.203	1.000	.230	.085	.345
	requisite skills	.460	-.063	.230	1.000	.141	.180
	Risk Perception	.097	.208	.085	.141	1.000	.021
	Infrastructure	.635	-.198	.345	.180	.021	1.000

The study tested the assumption of multicollinearity on the basis of the correlation matrix and collinearity diagnostics as shown in Table 3 and Table 4. The correlation values for all the upstream variables were below 0.6 clearly indicating that multicollinearity was not violated as per requirements of regression analysis. Collinearity diagnostics were done as indicated in table 3. The criteria was on the tolerance values and variance inflation factor (VIF). As is the norm, low tolerance especially those approaching zero indicate a high multiple correlation with other variables hence strongly suggesting the possibility of multicollinearity. For the study, the tolerance values for the independent variables are quite acceptable and the VIF values range from 1.083 to 1.209 which are far below the threshold of 10, whereas the Tolerance values range from 0.827 to 0.923. Correlations among predictor variables appear to be very low ranging from 0.021 to 0.635 as indicated in table 4 above. Furthermore, the study made the following observations.

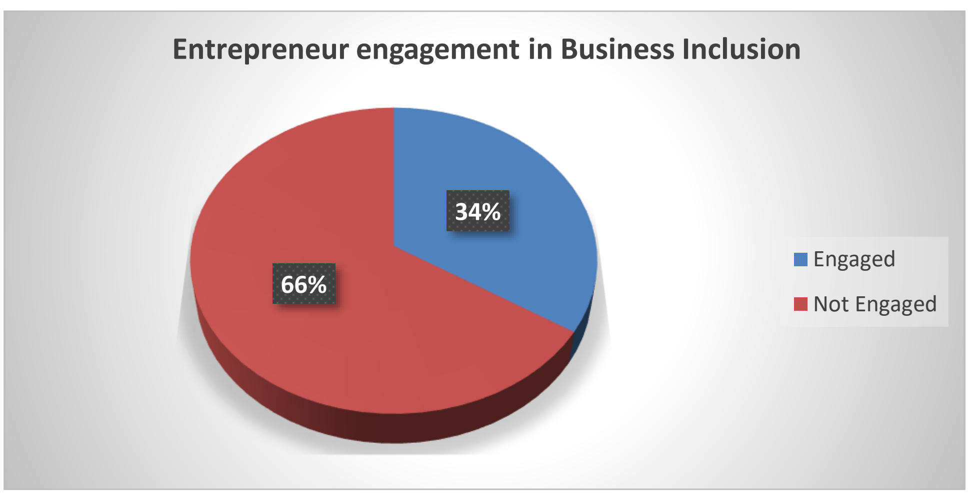
Awareness to inclusive opportunities: Ensuring awareness to the availability of inclusive opportunities is a critical for both companies and the BoP. Quite a majority of the respondent SME entrepreneurs (73 %) are not aware of the benefits of participating in the value chain as inclusive partners and neither are they aware of the existence of inclusive opportunities in the various sectors of the economy. There appears however to be more awareness to the availability and benefits of inclusive business opportunities on the part of the businesses with 60% of the respondent businesses showing an appreciation of inclusive growth. Figure 1 below indicates the respondents' knowledge of inclusive opportunities.

Figure 1: Knowledge of inclusive opportunities.



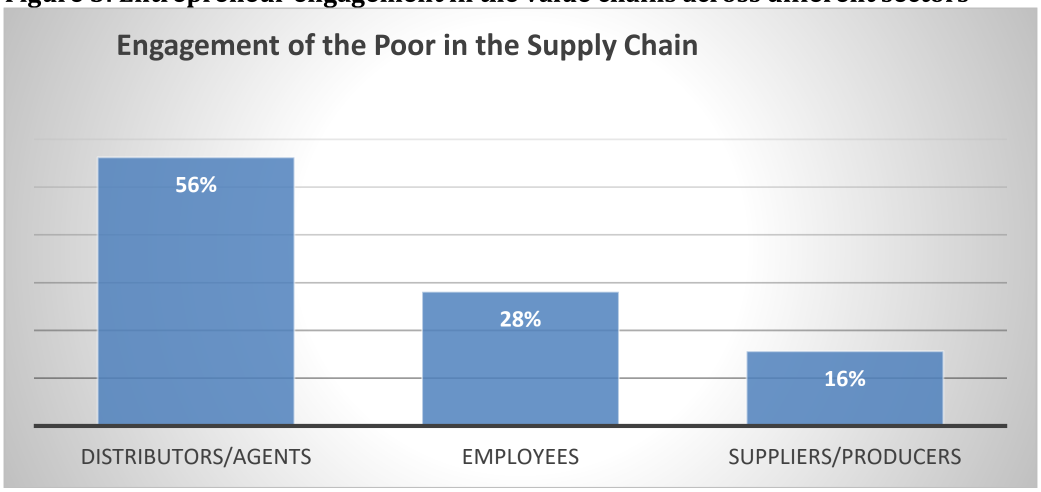
Entrepreneur engagement in Business Inclusion: The study found that only 34 percent of the respondent entrepreneurs are engaged in inclusive business activities whilst the rest (66%) are not involved in inclusive initiatives. The majority of those involved in inclusive activities were found to be in the financial sector as agents for banks and mobile telecommunication companies and in agriculture as farmers and distributors. Figure 2 below indicates the responses in the level of inclusion for entrepreneurs.

Figure 2: Level of inclusion for Entrepreneurs



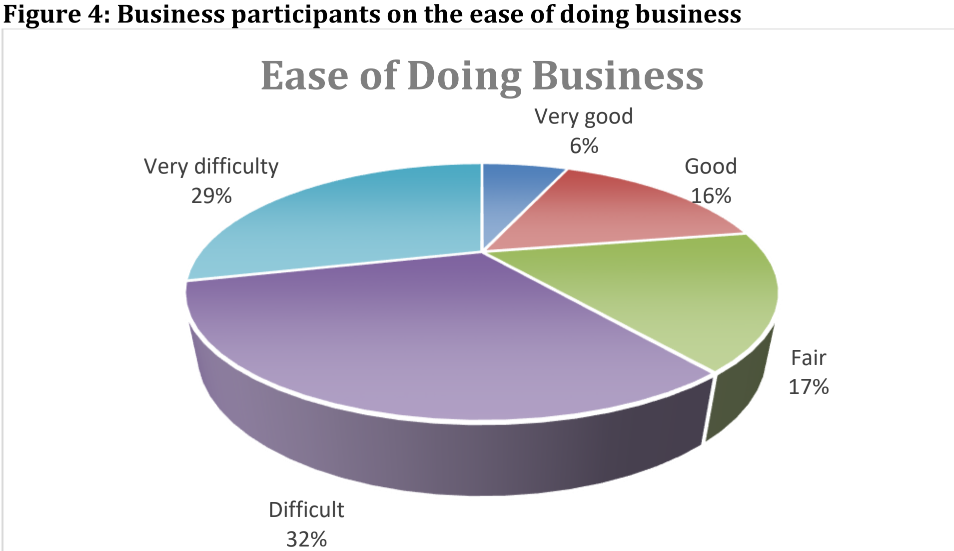
Roles played by the BoP entrepreneurs in the Value chain: The study shows that most of those respondents who are engaged in business inclusion are Distributors (56%) or agents, followed by 28% who are employees, and 16% are suppliers or producers. This shows that most people are included as Distributors but a few can manage to be suppliers. Figure 3 below shows the distribution of entrepreneur engagement in the value chains across different sectors.

Figure 3: Entrepreneur engagement in the value chains across different sectors



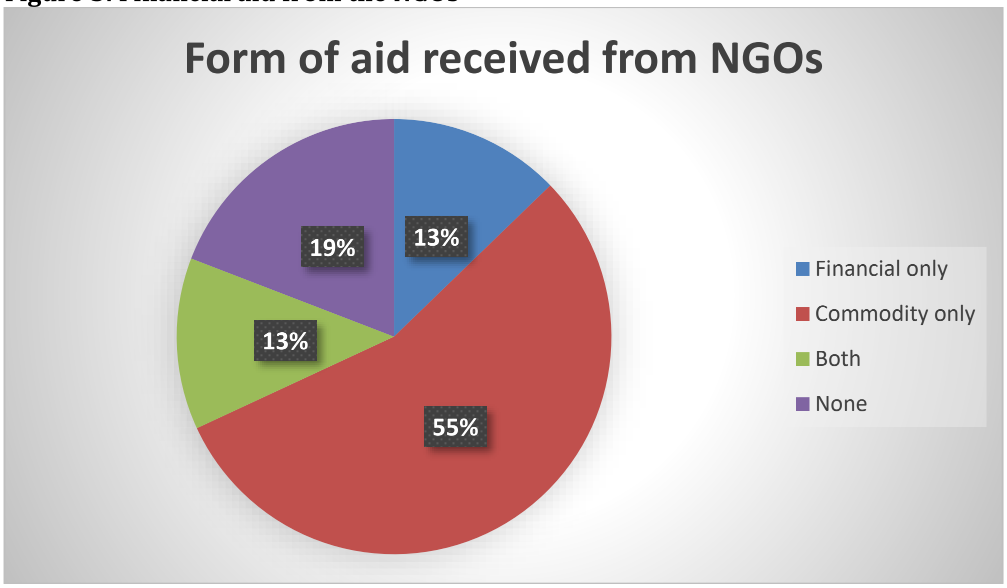
Experiences of the business sector on the ease of doing business: The majority of the business and the SMEs (61%) believe the business environment is not conducive for the growth of private business in Zimbabwe whilst 17% feel the business environment is fair and only 22% believe the business environment is conducive. Most feel that the regulatory environment obtaining in Zimbabwe in suffocating the growth of business due to unnecessary requirements needed to set up business and felt that the bureaucracy that is involved is too high. Figure 4 below illustrates the experiences of business participants on the ease of doing business.

Figure 4: Business participants on the ease of doing business



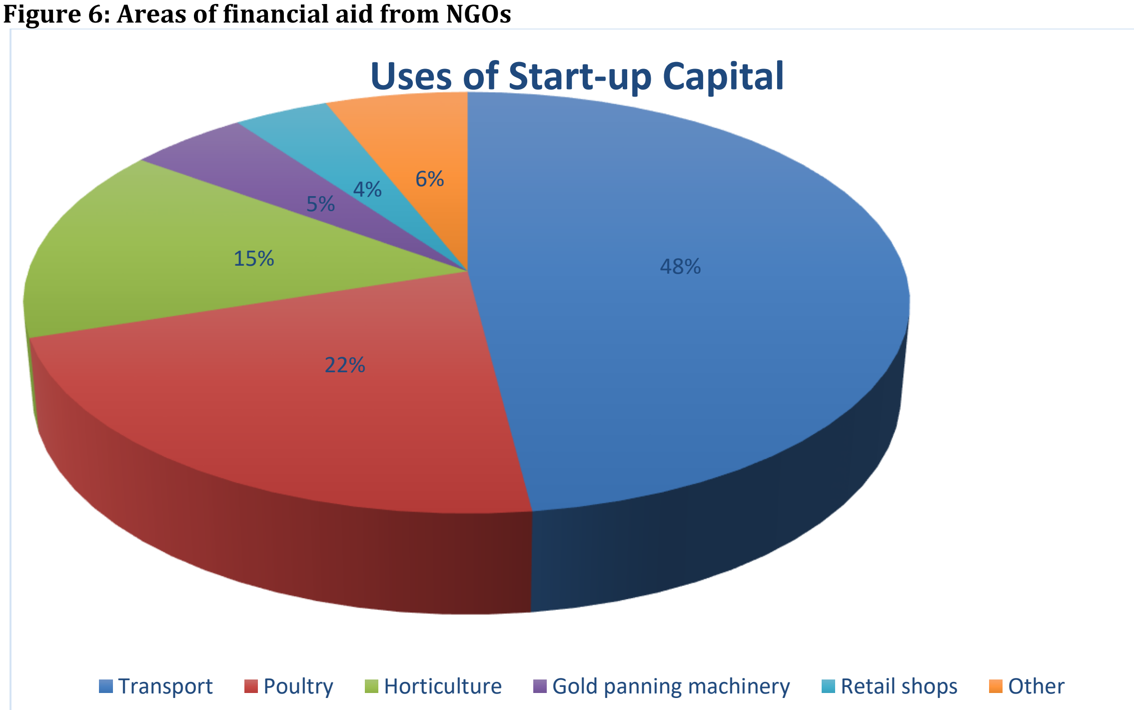
Form of aid received from NGOs: NGOs have become strategic partners for the support and growth of BoP entrepreneurs in most of the countries where inclusive business models were a success. Regrettably most of the respondents felt the NGOs were not doing adequate to support the growth of the small business sector. Most of the respondents (55%) received aid in the form of commodity aid and short term projects which they feel cannot leverage them into the value chain and neither is it sustainable in the longer term. Only 13% acknowledge receipt of financial aid from the NGOs as illustrated in figure 5 below.

Figure 5: Financial aid from the NGOs



Areas of financial aid from NGOs: The study sought responses on how the financial assistance from the donors was used. Forty-eight percent of the respondents who got financial aid were in the retail sector as sole traders, twenty-two percent in poultry and subsistence agriculture, fifteen percent in horticulture and the remaining in other sectors as indicated in figure 6 below.

Figure 6: Areas of financial aid from NGOs



Study Implications: It is apparent that there is massive scope to unlock Zimbabwe's hidden wealth through the promotion of inclusive societal growth leveraging on the integration of low income communities in various capacities in the value chain.

Incentives: The government needs to offer companies the impetus to integrate low income communities through a deliberate system that rewards positive externalities emanating from business activities such as through a reduction in costs for such companies. Cost incentives may be given in the form of tax relief for companies that incorporate SMMEs in their value chain. Other incentives may be in the form of tender preference to business initiatives that incorporate inclusive business models,

Financial market access: To enhance inclusivity, there is need to enhance the accessibility of financial markets to the low income entrepreneurs who currently have limited access to the financial markets. Given the obtaining challenges in accessing financial markets, it is imperative for inclusive business models to focus on service oriented inclusive partnerships with the BoP entrepreneurs as these are less capital intensive.

Communication and training: Given the contemporary lack of knowledge among the low communities about the potential benefits found in inclusive partnerships, there is need to have a deliberate communicative system that clearly informs potential BoP business partners the benefits of becoming BoP business partners as well as the requirements and expectations that will arise. Potential BoP partners need training on requisite skills that are necessary for participation in the value chain. There is need to instill and develop new professional skills on prospective inclusive partners.

Calibration of donor funding policies: Realigning donor aid approaches from short-termism approaches in poverty reduction (as manifested in drought relief and other short term projects) to sustainable initiatives that can participate in inclusive businesses is important. Donors need to focus on providing more of capital support than commodity aid. It thus is imperative to seriously engage development financial institutions to speed up inclusivity by unlocking private enterprise potential and provide equity and debt financing to SMEs with viable prospects that can be included in value chains.

Business friendly regulatory environments: The regulatory environment needs to be realigned so as to reduce the various bureaucracies in setting up business initiatives as well as enhancing the ease of doing business. There is need for policy dialogue between the government and business if the highly regulated markets such as microfinance, health and education are to effectively participate in business inclusion.

Formation of alliances: An individual approach to inclusive business may not yield good results. Rather what should subsist is the formation of alliances between the BoP entrepreneurs, non-governmental organizations, companies and development institutions so that they pool together resources and efforts as well as calibrate their strategies.

Infrastructure development: Critical to the success of inclusive business models in the Asian markets has been the development and investment in infrastructure. Thus there is need to focus on improving the transport, communication, water, electricity and sanitation system both in urban and rural areas. Infrastructure development will enhance the provision of technical and business support to the BoP business partners.

Products and process adaptation: Successful inclusive business models are hinged on the embrace of technology to enhance the adaptation of business products and processes to suite the requirements and capabilities of the BoP. In Zimbabwe notable adaptation has been experienced in mobile banking sector that has tailored their products and processes to incorporate the BoP through agency banking, mobile money transfer and others. Cropping such adaptation in other sectors such as manufacturing and mining would enhance business inclusion.

5. Conclusion

Inclusive Business Models have become indispensable with sustainable development poverty eradication in developing nations. Where implemented, the inclusive business models have been quite successful in integrating the poor into value chains thus uplifting their standards of living. Disturbingly most businesses in Zimbabwe have not yet embraced business inclusion into their value chains. This study identifies lack of financial access, bureaucracy, lack of skills, unfavorable regulatory environment, poverty trap, lack of knowledge amongst potential BoP entrepreneurs, inadequate infrastructure as the chief hindrances to successful inclusive business initiatives in Zimbabwe. The implications of the study are that in order to realize a reduction in poverty levels there is need to seriously consider adopting and advancing inclusive business models based on effective integration and participation of the BoP in the business value chain so as to achieve inclusive societal growth. There is thus need to realign the regulatory environment to allow for ease of doing business by reducing the lead time in establishment of business ventures. There is need to need to engage in inclusive business model investments in the form of employee education, market research, infrastructure development, partner training, capital provision so that the inclusive partners will be able to efficiently deliver. Future research may be carried on how to leverage on alliances to achieve sustainable inclusivity.

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The Determinants of South African Banks' Capital Buffers

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Abstract: The financing decisions of banks remain an enigma, increasingly attracting the attention of banking regulators and corporate finance scholars alike. The 'buffer view' of bank capital is premised on the notion that banks keep capital in excess of the regulatory requirements in line with bank specific factors. This study sought to test the 'buffer view' of bank capital. Utilising a sample of 16 South African banks for the period 2006-2015, panel data techniques were employed to estimate a fixed effects model to test the relationship between buffer capital and the firm level determinants of capital structure. It was established that the risk and size variables were negatively related to the buffer capital variable, whilst the dividend variable was positively related. This was consistent with the predictions of the buffer view of capital. The findings lend credence to the 'buffer view' school of thought about bank capital. These findings are also inconsistent with bank capital regulations solely determining the capital structures of banks but epitomises some measure of voluntary capital structure decision making by banking firms.

Keywords: *Bank, Capital structure, Firm level, Buffer, South Africa*

1. Introduction

Banks play a critical role in intermediation in any economy. It is for this reason that their financial well-being is a subject that attracts the attention of monetary authorities. The main thrust of the financial regulation of banks is to ensure the safety and financial soundness of the banking sector. At worst, the financial problems bedevilling a banking institution could precipitate a bank run. The failure of a large bank, then, can cause psychological contagion, leading depositors to start runs on other banks (Hart & Zingales, 2011: 3). This is a situation whereby the depositors will 'panic' and withdraw their funds in anticipation of the bankruptcy and demise of their banking institution. As the banking institutions are interconnected, the demise of one banking institution can result in a contagion effect, resulting in the distress of other banking institutions. Bank runs cause real economic problems because even 'healthy' banks can fail, causing the recall of loans and the termination of productive investment (Diamond & Dybvig, 1983: 402). Suffice to highlight that there is systemic risk posed by the failure of one banking institution. As such, monetary authorities have a vested interest in regulating the banking sector. Therefore, the attainment of a safe and financially sound banking sector is predicated on the establishment of an effective financial regulatory regime. The two approaches that are at the disposal of monetary authorities are the micro-prudential and the macro-prudential regulatory regimes. The former regime involves the bank regulator specifically tailoring an individualistic regulatory response for each banking firm, while the latter regime involves the bank regulator taking a holistic view of banking regulation and promulgating standardised regulations for the entire industry.

To achieve the objective of fostering a financial sound banking sector, various capital regulations have been promulgated over the years, starting with Base I Accord in 1988 to the present day Basel III regulatory framework. These provisions amongst other laid the minimum capital requirements that should be observed by banks. Notwithstanding, a growing strand of empirical studies have demonstrated that banks keep capital in excess of the regulatory minimum (refer to, among other scholars, Berger, Herring and Szegö, 1995; Berger, DeYoung, Flannery, Lee & Öztekin, 2008; Besanko & Kanatas, 1996; Gropp & Heider, 2010; Muneer et al., 2011). The 'buffer view' of bank capital contends that banks seek to keep capital in excess of the prescribed regulatory minimum requirements. Several reasons have been advanced in support of the hypotheses that banks keep buffer levels of capital. Firstly, it has been argued that banks keep buffer capital for fear of regulation sanction should they deviate below the minimum threshold. Secondly, banks keep buffers to insulate themselves against the insolvency risk. Thirdly, buffers act as a cushion for banks to mitigate adverse business and economic cycles. It is instructive to note that the importance of buffer capital has been acknowledged and enshrined in the Basel III Accord.It was enshrined in the accord that banks are required to reduce procyclicality and promote countercyclicality by introducing capital conservation and countercyclical buffers to curtail systemic risk. Fourthly, banks hold buffer capital as a risk absorption mechanism. This ensures that bank can grow their loan books with the necessary capital to absorb the additional loan portfolio risk. Fifthly, banks may be motivated to keep excess levels of capital if the adjustment costs are prohibitive. Sixthly, the buffer view may also be explained by information asymmetry that might exist in bank financing. For instance, dividend-paying, high-growth, profitable and large banks are rated favourably by the equity market and hence can issue equity at short notice. As such, they can hold low levels of capital (Gropp & Heider, 2010: 595). The empirical studies have also demonstrated that the firm level determinants of capital structure also have a predictive power on bank buffer. As such, bank buffers are dependent on bank characteristics such as size, growth and profitability, among other factors.

The principal motivation behind this study was to test the 'buffer view' of bank capital within the context of a developing country and also incorporating the 2007 to 2009 global financial crises. South Africa was employed as the test case, due to its developed financial system notwithstanding that it is a developing country. Unlike previous studies on bank buffers, this study took cognisance of the fact that banks rely on one another in their financing of operations through their interaction in the inter-bank market. As such this study tested and corrected for cross-sectional dependenceand utilised the Driscoll and Kray (1998) estimator which produces heteroskedasticity and autocorrelation- consistent standard errors that are robust to general forms of spatial and temporal dependence. This study extends the existing knowledge in that it was conducted within a developing country context, an area which has been under-researched. The study also offers insight as to the effect of the global financial crises on bank buffers. The rest of the article is organised as follows: the next section reviews the related literature. Section 3 discusses the research methodology employed. Section 4 presents and discusses the empirical findings and Section 5 concludes.

2. Literature Review

Banking regulation and buffer capital: The regulation of banking firms may promote or curtail the banks from operating at their desired target capital structure. According to Ahmad and Abbas (2011: 201), following mandatory bank capital standard requirements, banks are involved in both voluntary and involuntary capital structure decisions. They go on further to observe that voluntary capital structure decisions of banks are considered the same as in non-financial settings; same theories and determinants of capital structure are applied to decisions relating capital structure. Involuntary capital structure decisions are enforced on the banks by regulatory authorities after deviating from the prescribed and adequacy capital requirements as directed by the regulators. The motivation behind the holding of buffer capital is one such voluntary capital structure decision by banks, which continues to baffle researchers and regulators alike. Several reasons have been advanced in attempting to address the rationale behind banks keeping buffer capital. Buffer capital may be defined as the amount of capital that banks hold in excess of the minimum regulatory capital requirement. Berger et al. (1995:8) contend that banks may hold a substantial buffer of additional capital as financial slack so that they can borrow additional funds quickly and cheaply in the event of unexpected profitable investment opportunities. Similarly, such a buffer of capital protects against costly unexpected shocks to capital if the financial distress costs from low capital are substantial and the transactions costs of raising new capital quickly are very high. Buffer capital can further act as a cushion, absorbing costly unexpected shocks, particularly if the financial distress costs from low capital, and the costs of accessing new capital quickly, are high (Jokipii and Milne, 2008:13). Proponents of the "buffer capital view" argue that banks hold capital as a buffer against insolvency. As such, banks have an incentive to avoid failure through a variety of means, including holding a capital buffer of sufficient size, holding enough liquid assets, and engaging in risk management (Cebenoyan and Strahan, 2004:2). The impact of regulation has banks holding capital buffers, or discretionary capital, above the regulatory minimum in order to avoid the costs associated with having to issue fresh equity at short notice (Gropp and Heider, 2010:595). In essence by holding capital as a buffer, banks essentially insure themselves against costs related to market discipline or supervisory intervention in the event of a violation of the requirements.

The empirical evidence in support of the buffer capital view has been mixed. In support, amongst others, Gambacorta and Mistrulli (2004:443) find evidence that for all kinds of banks the buffer capital has always been much greater than zero. They reason that this is consistent with the hypothesis that capital is difficult to adjust and banks create a cushion against contingencies. Koziol and Lawrenz (2009:871) also find evidence that banks do not hold the minimum capital but have voluntary capital buffers. Harding, Liang and Ross

(2013) find evidence that there exists an interior optimal capital ratio for banks with deposit insurance, a minimum capital ratio and bank franchise value. They reason that banks voluntarily choose to hold capital in excess of the required minimum. Allen, Carletti and Marquez (2011) and Jacques and Nigro (1997) also find evidence that banks will hold buffer capital in excess of regulatory requirements. There is another strand of literature that does not find support for the buffer view of capital. Gropp and Heider (2010:589) observe that high levels of banks' discretionary capital do not appear to be explained by buffers that banks hold to insure against falling below the minimum capital requirement. Moreover, banks that would face a lower cost of raising equity at short notice (profitable, dividend paying banks with high market to book ratios) tended to hold significantly more capital. Teixeira, Silva, Fernandes and Alves (2014:56) also fail to find evidence in support of the buffer view. It is also instructive to note that the conservation of buffer capital has been instituted in the Basel III accord regardless of the unresolved debates. Suffice to conjecture that the advantages of banks keeping buffer capital outweigh the disadvantages. According to BIS (2010:9) the purpose of a buffer is to provide capital sufficient for a banking company to withstand downturn events and still remain above its regulatory minimum capital requirement.

As has been demonstrated hitherto, capital requirements and deposit insurance are the two regulatory instruments that are in the armoury of the banking regulator which could have a bearing on capital structure choices of banking firms. Gropp and Heider (2010:589) set out to establish whether capital requirements are indeed a first-order determinant of banks' capital structure. They employed cross-section and time-series variation in a sample of large, publicly traded banks spanning 16 countries, namely; the United States and 15 countries of the European Union from 1991 until 2004. They also sought to establish whether deposit insurance determines the capital structure of banking firms. To the contrary they established that neither capital regulation nor deposit insurance is a first order determinant of capital structure of banks. They reason that the implication is that capital regulation is not binding. They also report similarities in the determinants of capital structures of banks and non-financial firms. Teixeira et al. (2014:34) also set out to establish whether regulation is a first order determinant of bank capital structure. They employed panel data of a sample of 560 banks, 379 from the U.S.A. and 181 from Europe, spanning 23 countries, for the period 2004–2010. They found that the factors affecting the capital structure of non-financial firms play an important role in explaining banks' capital structure. They reason that this suggested that regulation may not be a first order determinant of banks' share of equity capital. They also document a strong similarity in the factors affecting the capital structure of banks and those of non-financial firms.

The above foregoing suggests that banking regulation determines capital structure to a certain extent. Banking firms would stock up capital motivated by a variety of reasons, chief amongst them being fear of regulatory sanction, as well as the costs associated with raising capital at short notice should it fall below the required minimum. However, there are studies that have documented that the buffer capital stocked by banking firms is in excess and is inexplicable in-terms of providing cushion against the regulatory minimum. It has also been demonstrated that capital regulation might not necessarily be a first order determinant of bank capital structure but of secondary importance. This is a test for the efficacy of bank capital regulation. The implication is that the minimum capital requirements set for banks may not be binding in such a scenario. The majority of the studies also discount the moral hazard hypothesis of deposit insurance—that banks would seek to take advantage of mispriced deposit insurance. Also deposit insurance does not show up as a primary determinant of capital structure.

Credit risk management: Banks manage credit risk in a variety of ways. The principal methods employed by banks to manage risks of their loan portfolio include the purchasing of credit derivatives as well as securitisation. One strand of literature has explored the relationship between risk management and capital structure of banking institutions. This has been premised on the notion that banks that actively manage their credit risk through, for instance the loan sales market (securitisation) are bound to keep lower levels of capital as compared to the banks that manage the credit risk passively. The second strand of literature advances the risk absorption hypothesis. Proponents of this view posit that bank capital absorbs risk and expands banks' risk-bearing capacity. The first strand of literature focuses on the relationship between credit risk management and capital structure choices. Amongst these scholars, Cebenoyan and Strahan (2004:2) using a sample of all domestic commercial banks in the United States of America, test whether banks that are better able to trade credit risks in the loan sales market experience significant benefits. They find evidence that banks that purchase and sell their loans (their proxy for banks that use the loan sales market to engage in credit-risk management) hold a lower level of capital per dollar of assets than banks not engaged in loan buying or selling. They also document that banks that operate on both sides of the loan sales market also hold less capital than either banks that only sell loans but do not buy them, or banks that only buy loans but do not sell them. They reason that this difference is important because it suggests that the active rebalancing of credit risk – buying and selling rather than just selling (or buying) – allows banks to alter their capital structure. Further they posit that their results also suggest that banks use the risk-reducing benefits of risk management to take on more profitable but higher risk activities to operate with greater financial leverage. Froot and Stein (1998:1) demonstrate that at the same time that banks are investing in illiquid assets, most banks also appear to engage in active risk management programs. They postulate that, holding fixed its capital structure, there are two broad ways in which a bank can control its exposure to risk. First, some risks can be offset simply via hedging transactions in the capital market. Second, for those risks where direct hedging transactions are not feasible, the other way for the bank to control its exposure is by altering its investment policies. Therefore, with illiquid risks, the bank's capital budgeting and risk management functions become linked.

The second strand of literature tests the risk absorption hypothesis. Amongst these scholars, Allen, Carletti and Marquez (2011:36) develop a model that demonstrates that when banks directly finance risky investments, they hold a positive amount of equity capital as a way to reduce bankruptcy costs and always prefer to diversify if possible. In contrast, when banks provide loans to non-financial firms that invest in risky assets, diversification is not always optimal. Berger et al. (2008:3784) examine bank liquidity creation by employing a sample including almost all commercial banks in the United States that are in business during the period 1993 to 2003. They find that for large banks, the relationship between capital and liquidity creation is positive, consistent with the expected empirical dominance of the "risk absorption" effect. In sharp contrast, for small banks, the relationship between capital and liquidity creation is negative, consistent with the expected dominance of the "financial fragility crowding out" effect for these institutions. The relationship is not significant for medium banks, suggesting that the two effects cancel each other out for this size class. Credit risk management attaches much importance in the formulation of capital structure policies of banking organisations. It has been demonstrated that those banking institutions that actively manage credit risk will be much inclined to keep lower levels of buffer capital in comparison to those who do not actively manage the risk. On the other hand, the risk absorption hypothesis predicts that large banks are most likely to keep higher levels of buffer capital in order to be best placed in absorbing more risks, as they grow their loan book.

3. Data and Methodology

Sample description and data Sources: The population for this study comprised of South African banking institutions both listed and not listed on the Johannesburg Stock Exchange. All the banks with complete data sets for the ten-year period running from 2006 to 2015 were considered for this study. There were 16 such banks. The Bureau van DijkBankscope database was used to source the audited financial statements of the banks.

Variable definition

Dependent variable: The dependent variable employed in this regard is *the excess of Tier 1 regulatory capital ratio over the prescribed Tier 1 regulatory capital ratio (BUFFER).*

Independent variables: The independent variables consisted of the firm level determinants of capital structure as well as dummy variables. The firm level determinants of capital structure that are reliably important and were considered for this study are size, growth, profitability, asset tangibility and credit risk. Dummy variables were employed for this study are to capture the effects of the 2007-2009 financial crises as well as to capture one remaining firm level determinant of capital structure—dividends.

- Size: To measure size the natural logarithm of total assets was employed. There is a direct relationship between size and the value of assets held. Larger companies are expected to have more assets. Most studies on the determinants of capital structure have employed this proxy to measure size. Such studies include, Al-Najjar and Hussainey (2011); Antoniou, Guneyand Paudyal (2008);

Booth, Aivazian, Demirguc-Kuntand Maksimovic (2001); Frank and Goyal (2009); Mukherjee and Mahakud (2010) and Oztekin and Flannery (2012) amongst others.

- Growth: The growth variable was defined as the annual growth rate of total assets. We took cue from Titman and Wessels (1998) and Anarfor (2015) amongst others, in defining growth as such. The reasoning is that the higher the growth rate, the higher the growth prospects of the company. The alternative definition which has also been used widely in empirical studies would have been to proxy growth prospects with the market-to-book value ratio (see amongst others, Booth et al., (2001; Frank and Goyal, 2009; and Teixeiraet al., 2014).
- Asset tangibility: In this study asset tangibility was defined as the ratio of fixed assets to total assets. The ratio of fixed assets to total assets expresses the collateral value. Fixed assets offer collateral value. If collateral value is high, the firm would be viewed in good light in the debt market. As such it could access loans at concessionary rates. The fixed assets to total assets ratio was employed as a proxy for asset tangibility as extant studies have utilised this measure. The empirical studies that have employed this measure include Rajan and Zingales (1995); Frank and Goyal (2009); Mukherjee and Mahakud (2010); Oztekin and Flannery (2012) and De Jonghe and Oztekin (2015) amongst others.
- Profitability: Various measures have been employed in empirical studies to capture the effect of profitability. This is partly because profitability is defined in several ways. In this study we employ the return on assets (ROA) measure as the proxy for profitability. Boot et al. (2001) and Anarfor (2015) amongst others, employ ROA as an indicator of profitability in similar studies. In the case of the banks this is defined as the return on average assets (ROAA).
- Risk: The proxy that we employ for risk measures bank credit risk. It is defined as the *ratio of impaired loans to gross loans*.
- Dummy variables: Two dummy variables were utilised in this study. The first one was the dummy variable (DIVIDEND) for dividend payers. It was defined as one, when a bank paid out a dividend and zero when the bank did not declare a dividend. The second dummy variable (GFC) was to capture the effects of the financial crises. It was defined as one for the years when the financial crisis occurred and zero otherwise.

Empirical model specification and estimation techniques: To examine the relationship between buffer and the firm-level determinants of capital structure, a static panel data model was employed. Diagnostics tests were performed to ensure that the model was well specified and in order to select the most appropriate estimation technique to run the regression. The econometric analysis was conducted by employing Stata version 14 software.
The static panel data model was specified as follows:

$$Xre_{i,t} = \boldsymbol{x}'_{i,t}\boldsymbol{\beta} + \alpha_i + \varepsilon_{i,t} \quad (1)$$

Where:
$Xre_{i,t}$ = buffer capital for banking firm *i* at time *t*.
$\boldsymbol{x}'_{i,t}$= a vector of explanatory variables (size, profit, growth, asset tangibility, dividend, risk and GFC) for banking firm *i*at time *t*.
β = a vector of slope parameters
α_i= group-specific constant term which embodies all the observable effects.
$\varepsilon_{i,t}$ = composite error term which also takes care of other explanatory variables that equally determines leverage but are not included in the model. Equation (1) was estimated using the fixed effects with Driscoll and Kray (1998) standard errors estimator, which controls for cross-sectional dependence and heteroscedasticity which were the characteristics of this data set.

4. Empirical Results

Summary statistics: This section presents the summary statistics of all the variables that were used. The trends of the variables over time are also described. The descriptive statistics of the variables are presented in **Table 1:** These are the central measures of tendency (mean and median), standard deviation, minimum and maximum values for the sample of banking firms under consideration.

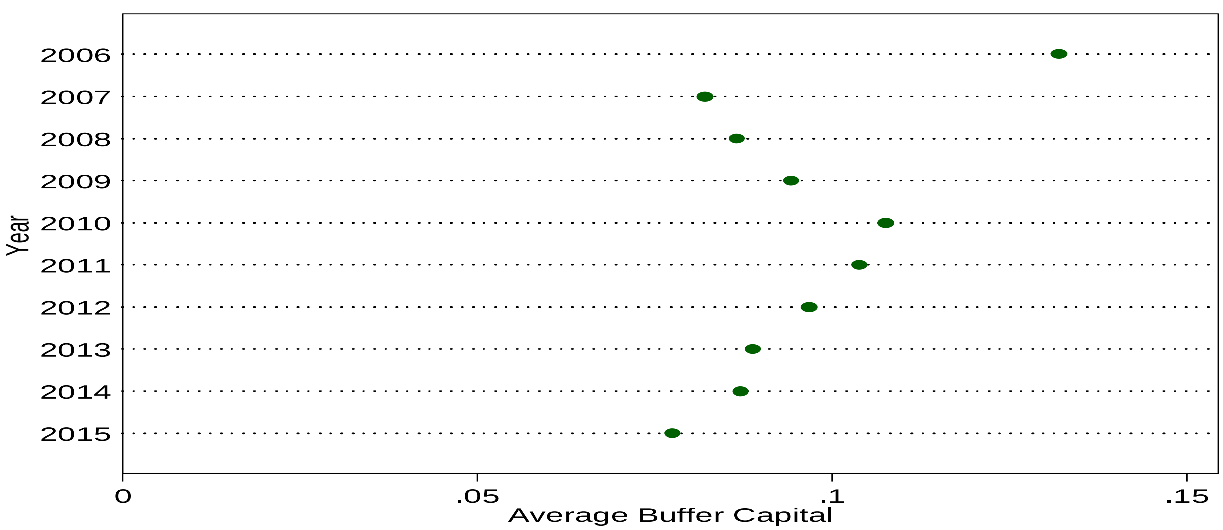
Table 1: Summary statistics of the variables

Variable	Mean	Median	Standard Deviation	Minimum	Maximum
Buffer Capital	0.0957	0.0688	0.1135	-0.2600	1.0561
Growth	0.1592	0.1199	0.1962	-0.5775	1.1195
Profit	0.0191	0.0134	0.0380	-0.1694	0.2036
Asset Tangibility	0.0102	0.0089	0.0083	0.0005	0.0400
Risk	0.0528	0.0249	0.0870	-0.0528	0.6878
Size	10.8500	8.7100	5.0200	6.1800	27.5700
Dividend	0.6500	1	0.4785	0	1
GFC	0.3000	0	0.4597	0	1

Note: GFC is the dummy variable representing the 2007-2009 global financial crises.

South African banks on average experienced a mean year-on-year growth of 15.9% of their total assets. They also realised profits with a mean return of assets (ROA) of 1.9%. This is modest in comparison to non-financial firms. Ramjee and Gwatidzo (2012:59) in comparison report a mean ROA of 17% for their sample of non-financial firms. The mean asset tangibility level of banks was one percent of total assets. This implies that on average one percent of South African banks' total assets consisted of fixed assets. The average size of the bank approximated by the natural logarithm of total assets is 10.85. On average on any given year, 65% of the banks paid dividends. South African banks store buffer levels of capital. Buffer capital is defined as the excess of the actual Tier 1 regulatory capital over the regulated minimum Tier 1 regulatory capital. The variation in this buffer is exhibited in Figure 1. On average, banks have maintained buffer capital levels ranging between 7% and 11%.

Figure 1: The variation of buffer capital



Correlation analysis: The correlations of buffer capital and the firm level determinants of capital structure are documented in Table 2.

Table 2: Correlation matrix of buffer capital and the main variables used in this study

	Buffer Capital	Growth	Profit	Asset	Risk	Size	Dividend
Buffer Capital	1.000						
Growth	-0.068	1.000					
Profit	0.284***	0.411***	1.000				
Asset	0.157**	0.131	0.261***	1.000			
Risk	-0.001	0.047	-0.178**	0.123	1.000		
Size	-0.284***	-0.127	-0.209***	-0.027	-0.004	1.000	
Dividend	0.052	-0.069	0.002	-0.143*	-0.196**	0.188**	1.000

(*) / (**) and (***) indicates the (10%), (5%) and (1%) level of significance respectively. The variables are defined as follows: Buffer Capital= Tier1 Regulatory Capital ratio – Prescribed Tier 1 Regulatory Capital ratio; Growth=growth rate of Total Assets; Profit= Return on Average Assets (ROAA); Size= natural logarithm of Total Assets;
Asset (Asset tangibility) =Fixed Assets/Total Assets; Credit risk= Impaired Loans/Gross Loans; Dividend = dummy variable = (1 when dividend is paid and, 0 when dividend is not paid).

Profit is positively correlated with buffer capital. Highly profitable banks keep more levels of capital in excess of the regulatory requirement. This is consistent with the predictions of the buffer view of capital. Asset tangibility is positively correlated to buffer capital. This implies that banks that have more tangible assets stock more capital. This is consistent with the buffer view of capital. Lastly, size is negatively correlated to buffer capital. Small banks are inclined to keep more levels of capital in comparison to large banks. This is because they have not generated goodwill to readily shore up capital in the equity or debt markets at short notice, should the need arise, as compared to the large banks.

Panel regression diagnostics: Initial diagnostics tests were conducted in order to estimate a robust model to test the relationship between buffer capital and the firm level determinants of capital structure. The results are reported in Table 3.

Table 3: Initial diagnostic tests

Test	Test Statistic	Critical Value	Inference
Joint validity of cross-sectional individual effects *H0:* $\boldsymbol{\alpha_1 = \alpha_2 = \cdots \alpha_{N-1} = 0}$ *HA:* : $\boldsymbol{\alpha_1 \neq \alpha_2 \neq \cdots \alpha_{N-1} \neq 0}$	F= 9.55	$F_{(0.01,15,137)}$=4.142	Cross-sectional specific effects are valid.
Joint validity of time effects *H0:* $\boldsymbol{\lambda_1 = \lambda_2 = \lambda_{n-1} = 0}$ *HA:*$\boldsymbol{\lambda_1 \neq \lambda_2 \neq \cdots \lambda_{n-1} \neq 0}$	F=0.62	$F_{(0.01,9,129)}$= 2.548	Time effects are invalid. The error term takes a one-way error component form.
Breusch Pagan (1980) LM test for random effects *H0:*$\boldsymbol{\delta_\mu{}^2 = 0}$ *HA:*$\boldsymbol{\delta_\mu{}^2 \neq 0}$	LM= 12.23	$\chi^2_{(15)}$ = 5.23	There is significant difference in variance across the entities. Random effects are present.
Hausman (1978) specification test	m_3= 70.17	$\chi^2_{(6)}$=0.873	Regressors not exogenous. Hence the Fixed effects specification is valid.

H0: $\mathbf{E}(\boldsymbol{\mu}_{\mathbf{it}}\vert\mathbf{X}_{\mathbf{it}}) = \mathbf{0}$ *HA*: $\mathbf{E}(\boldsymbol{\mu}_{\mathbf{it}}\vert\mathbf{X}_{\mathbf{it}}) \neq \mathbf{0}$			
Heteroscedasticity *H0*: $\boldsymbol{\delta}_{\mathbf{i}}^{\mathbf{2}} = \boldsymbol{\delta}$ *for all i* *H0*: $\boldsymbol{\delta}_{\mathbf{i}}^{\mathbf{2}} \neq \boldsymbol{\delta}$ *for all i*	LM = 2768.28	$\chi^2_{(16)}$=31.99	The variance of the error term is not constant. Heteroscedasticity is present.
Cross-sectional dependence tests *H0*: $\boldsymbol{\rho}_{ij} = \boldsymbol{\rho}_{ji} = \boldsymbol{cor}(\boldsymbol{\mu}_{it}, \boldsymbol{\mu}_{jt}) = \mathbf{0}$ *HA*: $\boldsymbol{\rho}_{ij} \neq \boldsymbol{\rho}_{ji} = \mathbf{0}$			
Pesaran (2004) CD test:	CD = 2.847 (0.430)	p = 0.0044	Cross sections are interdependent.
Frees (2004) test:	FRE= 1.620	$Q_{(0.01)}$=0.5198	Cross sections are interdependent.

The diagnostics confirmed the validity of fixed effects, absence of time effects, interdependence of cross-sections, presence of random effects and heteroscedasticity. In the absence of time effects, a one-way model is specified. Subsequently, the FE estimator is applied. However, in order to avert estimation inefficiency rendered by the detected cross-sectional dependence and heteroskedasticity, estimation was done within the framework of Driscoll and Kray (1998). According to Hoechle (2007:282), the Driscoll and Kray (1998) estimator produces heteroskedasticity and autocorrelation- consistent standard errors that are robust to general forms of spatial and temporal dependence.

Panel regression results: Having run the initial diagnostics, the model was estimated. The results of the regression of the firm level determinants of capital structure on buffer capital are reported in Table 4. These results are premised on testing the hypothesis stated as follows: *Bank leveraging is consistent with the buffer view of capital.*

Table 4: Panel regression results with buffer capital and Tier 1 capital as the dependent variables

Explanatory Variable	Fixed Effects with Driscoll and Kray (1998) standard errors
Growth	-0.147
	(-1.70)
Profit	-0.585
	(-1.12)
Asset Tangibility	1.731
	(0.68)
Risk	-0.997***
	(-4.21)
Size	-0.042**
	(-2.97)
Dividend	0.076*
	(2.10)
GFC	-0.025**
	(-3.09)
constant	0.584***
	(3.93)
Adjusted R^2	0.4182

(*) / (**) and (***) indicates the (10%), (5%) and (1%) level of significance respectively. The t-statistics for the fixed effects model are reported in parentheses.

The table above shows the results of estimating the following regression for the sample of 16 South African banks for the period 2006-2015.

$$Xre_{i,t} = \boldsymbol{x}'_{i,t}\boldsymbol{\beta} + \alpha_i + \varepsilon_{i,t}$$

Where: the dependent variable = BUFFER=$Xre_{i,t}$; $\boldsymbol{x}'_{i,t}$= a vector of explanatory variables (size, profitability, growth, asset tangibility, dividend, credit risk and GFC) for bank *i* at time t; β = a vector of slope parameters; α_i= group-specific constant term which embodies all the observable effects.
$\varepsilon_{i,t}$ = composite error term which also takes care of other explanatory variables that equally determines buffer capital but are not included in the model.

The estimated results document four statistically significant results. Firstly, bank credit risk was negatively related to buffer capital and the result is statistically significant at the 1% level of significance. Banks with high credit risk keep low buffer capital in comparison to banks with less credit risk. Secondly, size is negatively related to buffer capital and the result is statistically significant at the 5% level of significance. Arguably, large banks are keeping low levels of capital because of the ease with which they can raise capital in the event that they deviate from the prescribed levels. Thirdly, the dividends variable is positively related to buffer capital. The relationship is statistically significant at the 10% level of significance. Dividend paying banks are keeping high buffer capital levels as compared to non-dividend paying banks. We reason that this phenomenon could perhaps be best explained by the signalling theory. Dividend paying banks send out the signal that their prospects are good and hence are viewed favourably by the debt and equity markets. Thus they are able to shore up their capital levels with much ease. Lastly, buffer capital is negatively associated with the global financial crises dummy variable. This corroborates the findings of Jokipii and Milne (2008:1450) who find a negative relationship between buffer capital and cycle.

Table 5 draws comparisons between the predicted and estimated effects of the regression of the buffer capital variable on the firm level determinants of capital structure. Suffice to highlight that by and large, the financing of South African banks conforms to the buffer view of capital as the predicted results are in line with the estimated results for dividends, size and risk. This diminishes the role of regulation as being the first-order determinant of capital structure. The findings lend credence to the 'buffer view' school of thought about bank capital. These findings are also inconsistent with bank capital regulations solely determining the capital structures of banks but demonstrate that banks also voluntarily determine their capital structures subject to their bank specific attributes.

Table 5: Predicted effect versus estimated effect of firm level factor on buffer capital

Firm Level Determinant	Predicted Effect	Results of this Study
Profitability	*Positive*	*Insignificant*
Asset tangibility	*No prediction*	*N/A*
Growth	*Positive*	*Insignificant*
Dividends	*Positive*	*Positive*
Size	*Positive/Negative*	*Negative*
Risk	*Negative*	*Negative*

5. Conclusion and Recommendations

This study examined the "buffer view" of bank capital. The main view being tested was whether firm level determinants of capital structure have a predictive power on the banks stocking capital in excess of the regulatory minimum. The study controlled for cross-sectional dependence emanating from the dependence of banks on one another for financing. The fixed effects with Driscoll and Kray (1998) standard errors estimator was utilised to estimate a fixed effects model to test the relationship between buffer capital and the firm-level determinants of capital structure. Moderate support was found in favour of the buffer view school of thought. When the buffer capital variable was regressed on the firm level determinants of capital structure, it was found that the estimated results were consistent with the predictions of the buffer view. Specifically, the dividends variable was positively related to buffer capital, whilst size and risk were negatively related to buffer capital. This further diminishes the regulatory view of bank capital. The results also confirmed that the GFC was negatively related to buffer capital. In essence the South African bank capital buffers were eroded to mitigate the effects of the GFC.The implication of these finding is that South African banks are financial sound. Notwithstanding as the monetary authorities grapple with the implementation of Basel III framework, we would like to offer some policy advise. Firstly, it would be prudent for regulatory authorities to expedite the institution of deposit-protection insurance to increase the safety nets available for depositors. Secondly it is advisable that the Basel III requirements be adapted to be in synch with the requirements of the South African banking sector as opposed to the current scenario of one-size-fits-all.

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