**RISK GOVERNANCE & CONTROL:
FINANCIAL MARKETS & INSTITUTIONS**

EDITORIAL

Dear readers!

The recent issue of the journal Risk Governance and Control: Financial Markets and Institutions pays attention to issues of debt management, innovations and transparency etc. More detailed issues are given below.
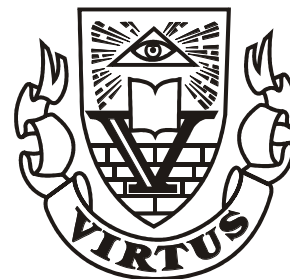
Diteboho Xaba, Ntebogang Dinah Moroke, Johnson Arkaah and Charlemagne Pooe compare the in-sample forecasting accuracy of three forecasting nonlinear models namely: the Smooth Transition Regression (STR) model, the Threshold Autoregressive (TAR) model and the Markov-switching Autoregressive (MS-AR) model. *Mubanga Mpundu* presents the empirical findings of analysis comprising of 157 Class I and 234 Class II banks. A Cointegrated Vector Autoregressive (CVAR) approach was used on balance sheet liquidity data to ascertain the behavior of variables in relation to bank failure. *Petter Gottschalk* contributes insights into convenience associated with internal private investigations. Convenience aspects of private investigations are discussed in this article in terms of five internal investigations, two in the United States (General Motors and Lehman Brothers) and three in Norway (Telenor VimpelCom, DNB Bank, and Norwegian Football Association). *Raphael T Mpofu* analyses the association between certain macroeconomic variables and food price inflation, non-food price inflation and overall inflation in Zimbabwe, and also seeks to determine the level of association between these variables, given food security implications and overall well-being of its citizens. *Pariang Siagian, Jonny and Noerlina* examine leasing business in Indonesia, if there is any effect of leasing literacy to the access into leasing company, motivation to buy and ability to pay liabilities. The outcomes revealed that 68.5% of respondents have the average income of less than 5 million per month, and the type of product leased is dominated by motorcycles and cars. *Nirmala Dorasamy* focuses on the relevance of citizen participation as source of input for local government in it's quality management system. Quality management for local government, with reference to ISO 18091:2104, is a recent attempt to construct a quality management system specifically targeting the requirements of local government. *Wanjiru Gachie and Desmond Wesley Govender* recommend strategies to strengthen corporate governance mechanisms in the South African retail sector should include a commitment to risk disclosure and revamping of the corporate governance structure of the 'whole' system. *Hussein Mohammed Alrabba and Muhannad Akram Ahmad* prove true the deduction that the overall ERP structure (Enterprise Resource Planning System) greatly impacted the accounting mechanisms and standards in the Jordanian organizations. *Mavetera Nehemiah, Jokonya Osden and Maradung Pako* investigate the adoption of Internet banking among Gaborone`s working class and university students. *Harit Satt and Youssef Chetioui* show that high level of goodwill has a positive impact on firm performance in large firms. Yet, at small firms, goodwill was not proved to improve performance. The aim of the study carried out by *Ardiansyah Rasyid, Elizabeth Sugiarto D. and Wilson Kosasih* was to give a background of a clearer portrait of how some factors can significantly affect the adoption of management accounting techniques. This research is to investigate that some factors that affect the new adoption in management accounting techniques on the Indonesia manufacturing industries, specifically in Jakarta, Bogor, Depok, Tangerang and Bekasi regions.

We hope that you will enjoy reading the journal and in future we will receive new papers, outlining the most important issues and best practices of corporate governance!

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CONTENTS

A COMPARATIVE STUDY OF STOCK PRICE FORECASTING USING NONLINEAR MODELS

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Abstract

This study compared the in-sample forecasting accuracy of three forecasting nonlinear models namely: the Smooth Transition Regression (STR) model, the Threshold Autoregressive (TAR) model and the Markov-switching Autoregressive (MS-AR) model. Nonlinearity tests were used to confirm the validity of the assumptions of the study. The study used model selection criteria, SBC to select the optimal lag order and for the selection of appropriate models. The Mean Square Error (MSE), Mean Absolute Error (MAE) and Root Mean Square Error (RMSE) served as the error measures in evaluating the forecasting ability of the models. The MS-AR models proved to perform well with lower error measures as compared to LSTR and TAR models in most cases.

Keywords: Stock Price, Nonlinear Time Series Models, Error Metrics

1. INTRODUCTION

In recent times nonlinear time series has received great attention as opposed to linear time series models in modelling economic and financial data. This is due to the realization that linear models fail to describe the dynamics of financial time series. According to Maponga (2013) linear time series involves simple models that describe the behaviour of time series in terms of past values, may be used to describe the dynamics of an individual time series. Nonlinear time series are generated by nonlinear dynamic equations. These nonlinear dynamic equations show attributes that cannot be modeled by linear time series models. These attributes are time-changing variance, asymmetric cycles, higher-moment structures, thresholds and breaks data.

A variety of nonlinear models have been considered as alternative to standard linear models. For instance, the parametric nonlinear models such as the autoregressive conditional heteroscedastic (ARCH) of Engle (1982) and the generalized autoregressive conditional heteroscedastic (GARCH) of Bollerslev (1986) are some of the alternative linear models. However, the nonlinear models that receive great attention are the regime switching models (Franses and Dijk, 2000). These numbers of nonlinear models have been suggested in the literature to capture the suggested nonlinearities in economic and financial data. Commonly used among these models are the Threshold Autoregressive (TAR) of Tong (1978), Smooth Transition Regressive

(STR) of Teräsvirta and Anderson (1992) and Markov-Switching Autoregressive (MS-AR) of Hamilton (1989).

These three models differ from conventional linear econometric models by their assumption of existence of different regimes, within which the time series may exhibit different behaviour. The study sought to explore the possibility of developing empirical models capable of describing and forecasting each of the five South African major banks' closing stock prices. In addition, the study investigates the question that although three different nonlinear univariate time series modeling and forecasting techniques are used for each of the five time series data used in the study; one particular method may outperform others. The performance of the model will be based on the margin of forecast error generated by each model. It is assumed that the data used satisfy the nonlinear properties in order to allow an efficient performance of the three suggested models.

The findings could empower stock market investors to make informed and accurate investment decisions. Again this may also boost the confidence of stakeholders in the financial industry to do more business with less risk exposure. Other beneficiaries of the study may be shareholders, regulators and other financial institutions as well as researchers in the academia.

The rest of the paper is organized as follows: in Section 2 study discuss the literature; in Section 3 study describe our methodology and data employed; the main results of the empirical analysis are

presented in Section 4; finally, in Section 5 Study provide concluding remarks.

2. LITERATURE REVIEW

There is much interest in modeling and forecasting the nonlinearity in a variety of macroeconomic and financial series, such as stock market, exchange rate and Gross Domestic Products (GDP). A number of nonlinear time series models have been suggested in literature, for instance the bilinear models of Granger and Andersen (1978), the TAR, STR and the MS-AR models.

Moolman (2004) used the idea of MS-AR model as a tool to provide evidence that the South Africa stock market returns depends on the state of the business cycle. McMillan (2005) employed the STAR model to examine nonlinear behavior in the international stock market. Pérez-Rodriguez *et al.* (2005) concluded that the artificial neural network (ANN) and the STAR models in the Spanish market outperform the ARMA and the random-walk models. Cheung and Lam (2010) have compared profitability in the US stock market using the self-exciting threshold autoregressive (SETAR) and linear models. Ismail and Isa (2006) and Yarmohammadi et al. (2012) used MS-AR model to perform model comparison and it was found that MS-AR is a best-fitted model for modeling fluctuations of exchange rates.

Wasim and Band (2011) employed MS-AR examine the existence of bull and bear in the Indian stock market. Amiri (2012) have compared the forecasting performance of linear and nonlinear univariate time series models for GDP growth. The evaluation of the forecasting performance of their set of non-linear models using real time data is that the nonlinear models are able to capture the underlying processes of GDP rate time series as opposed to linear models. Cruz and Mapa (2013) also contributed to the literature by developing an early warning system (EWS) for predicting the occurrence of high inflation in the Philippines Markov switching model. The aim of the study was to develop models that could help quantify the possibility of the future occurrence of high inflation.

3. METHODOLOGY

This section discusses the data and methods used in the study

3.1. Sampling Technique, Data Description and Source

There are 31 banks registered with the South African Reserve Bank (SARB). Twenty-one (21) of these banks are listed on the JSE. The study used the purposive sampling technique, due to limited time and responses obtained from all the twenty-one (21) banks listed on the JSE when a request was made to help provide data for the study. Of the 21 banks listed on the JSE, only five (5) responded by providing data for this study. The banks that responded were ABSA Bank (ABSA), Capitec Bank (CAPB), First National Bank (FIRB), Nedbank (NEDB) and Standard Bank (STDB). These banks were considered to be the sampling frame for the study. This scenario fits in with the purposive sampling

since the intention had been to find readily available banks willing to provide data for the realization of the aims and objectives of the study. Coincidentally, these five banks constitute the five largest banks listed on the JSE.

For the purpose of addressing the research objectives, the study uses weekly historical data starting from the first week of January 2010 to the last week of December 2012, a total of 563 observations. Using the purposive sampling technique, five (5) banks from a population of twenty-one (21) banks were used. Based on this sample, a formal request was made to the JSE for the weekly closing stock prices of the selected banks, a request that the JSE promptly responded to.

3.2. Preliminary Data Analysis

In statistics the norm is to perform preliminary data analysis in order to get the key features of the data and summarise the results. Before the main analysis of data, the study seeks to address important issues such as the normality of the actual data as suggested by Kline (2005) and Schumacker and Lomax (2004). Other descriptive statistics such as the mean, median and standard deviations of the variables are discussed. Furthermore, the skewness-kurtosis measures are estimated to check whether actual data is normal distributed, following the work of Joreskog (2000) and Cziraky *et al.* (2002).

3.3. Assessment of Data for Linearity

In order to apply the various methods needed to address the research aims and objectives of the current study, the data must first be tested for linearity and stationarity. Since nonlinearity in time series may occur in several ways, there exists no single test that dominates others in detecting nonlinearity. To test for nonlinearity in the data sets, the RESET (Regression Specification Error Test) and BDS (Brock- Dechert-Scheinkman) tests are used and the Cumulative Sum (CUSUM) test is used to investigate stability.

3.3.1. The RESET Test

According to Ramsey (1969) the RESET test is a specification test for linear regression analysis. In the context of the study, the commonly used linear regression model is the univariate autoregressive model of order p, denoted by AR (p):

$$X_t = \beta_0 + \sum_{j=1}^{p} \beta_j X_{t-p} + \varepsilon_t \qquad (3.1)$$

where, $\beta_0, \beta_1, \beta_2, \ldots, \beta_p$ are parameters and ε_t is independent and identically distributed random variable with mean 0 and variance σ_ε^2. The AR order, p, is selected to minimize the error, ε_t. This is practically accomplished by selecting a value for p that minimizes an information criterion, such as the SBC (Franses & Dijk, 2000). If $X_t = (1, X_{t-1}, X_{t-2}, \ldots X_{t-p})'$, equation (3.1) becomes

$$X_t = X_{t-1}' \beta + \varepsilon_t \qquad (3.2)$$

The RESET test involves, first, obtaining the OLS estimate, β, in equation (3.2), the residual $\hat{\varepsilon}_t = X_t - \hat{X}_t$, and the sum squared residuals:

$$SSR_0 = \sum_{t=p+1}^{n} \hat{\varepsilon}_t^2 \qquad (3.3)$$

• The second step involves estimating the regression

$$\hat{\varepsilon}_t = X'_{t-1}\lambda_1 + M'_{t-1}\lambda_2 + e_t \qquad (3.4)$$

where, $M'_{t-1} = (\hat{X}_t^2 \, X_t^3 \, \dots \, X_t^{s+1})$ for some $s \geq 1$, e_t is an independent and identically distributed random variable with mean 0 and variance σ_e^2. From the estimated residuals $\hat{e}_t = \hat{\varepsilon}_t - \hat{\hat{\varepsilon}}_t$, the sum of squared residuals is computed as:

$$SSR_1 = \sum_{t=p+1}^{n} \hat{e}_t^2 \qquad (3.5)$$

• If the underlying AR (p) is adequate, the RESET test asserts that λ_1 and λ_2 are zero. Thus, the hypotheses to test are:

$H_0 : \lambda_1 = \lambda_2 = 0$ (Specification is indeed linear)

vs. $H_0 : \lambda_j \neq 0$ for at least one j (Specification is nonlinear)

The test statistic is the usual F-statistic of the equation given by:

$$F^* = \frac{(SSR_0 - SSR_1)/r}{SSR_1/(n-p-r)} \sim F_\alpha(r, n-p-r) \qquad (3.6)$$

where, $r = s + p + 1$. At the α level, the null hypothesis of linearity is rejected in favour of the alternative hypothesis if

$$F^* > F_\alpha(r, n-p-r) \text{ or } prob(F^*) < \alpha . \qquad (3.7)$$

This means that the F test statistic is greater than the F critical value, and the study rejects the null hypothesis that the true specification is linear (which implies that the true specification is non-linear).

3.3.2. The Brock-Deckert-Schienkman (BDS) Test

If equation (3.1) is correctly specified, then under the null hypothesis of linearity, the residuals should be serially independent. This forms the basic idea behind various tests of nonlinearity. In practice, diagnostic tests of serial independence typically are based on certain aspects of the data such as the serial correlations or ARCH-type dependence while other tests explore dependence by testing the identical-and-independence-distributed (iid) condition of the residual term, which is sufficient for serial independence (Kuan, 2008; Kuan, 2009). One such test is the so-called Brock-Deckert-Schienkman (BDS) test - a form of portmanteau test. Portmanteau tests are residual-based tests in which the null hypotheses are well-stated but do not necessary have well-stated alternative hypotheses.

The BDS test can be applied to the estimated residuals from any time series process provided the time series process can be transformed into a form with iid errors. The BDS test, which focuses on the residual obtained after a linear structure has been removed from a process, tests the null hypothesis of linearity against a variety of alternative hypotheses. Under the null hypothesis of the BDS test, if the residuals are iid or follow a white noise process, then its m-lagged (also referred to as embedding dimension) correlation integral (also referred to as correlation function) is equal to the correlation integral of the (m-1)-lagged residuals. BDS test statistic is given by (Brock *et al.,* 1996) as:

$$BDS_{m,n} = \frac{\sqrt{n}\left[C_{m,n}(\in) - C_{1,n}(\in)^m \right]}{\sigma_m(\in)} \qquad (3.8)$$

where, $C_{m,n}(\in)$ is the correlation integral, $\sigma_m(\in)$ is the asymptotic standard deviation of the numerator, and $\in$ is the maximum difference between pairs of observations used in calculating the correlation integral. Brock *et al.* (1996) showed that, under the null hypothesis of the residuals being iid or following a white noise process,

$$BDS_{m,n} \sim N(0,1) \qquad (3.9)$$

The null hypothesis of iid residuals (whiteness or linearity) is rejected if the test statistic exceeds the critical value at the α-level of significance or if the p-value of $BDS_{m,n}$ is lower than α. Rejection of the null hypothesis is indicative of nonlinear dependence in time series data.

3.2.3. CUSUM Test

Stability is another aspect of nonlinearity in data. CUSUM examines data stability by testing for possible structural change in the data. On the one hand, if the model is stable, then β and the variance of the residuals do not change over time. In that case, the coefficients, $\hat{\beta} = (1 \, \beta_1 \, \beta_2 \, \dots \, \beta_p)'$, in equation (3.2) can be obtained from the matrix (Brown *et al.,* 1975):

$$\hat{\beta} = (X'_{t-1} X_{t-1})^{-1} X'_{t-1} X_t \qquad (3.10)$$

where, X_t is the dependent variable in equation (3.1) and $X_{t-1} = (1 \, X_{t-1} \, X_{t-2} \, \dots \, X_{t-p})'$ and $\varepsilon_t \sim iid(0, \sigma_\varepsilon^2)$. On the other hand, if the model is unstable, then β and the variance of the residuals possibly change over time. In that case, then β is replaced by b_t, say, and so:

$$\hat{\beta} = (X'_{t-1} X_{t-1})^{-1} X'_{t-1} X_t \qquad (3.11)$$

where, $X_{t-1} = (1 \, X_{t-1} \, X_{t-2} \, \dots \, X_{t-p})'$ and $\varepsilon_t \sim iid(0, \sigma_{t,\varepsilon}^2)$. If the AR(p) is stable, the parameters remain constant over time, suggesting the absence of any structural change in the data. Thus, the hypotheses to test are:

$H_0 : \beta_1 = \beta_2 = \dots = \beta_p = \beta$ (say)

or $H_0 : \sigma_{1,\varepsilon}^2 = \sigma_{2,\varepsilon}^2 = \dots = \sigma_{n,\varepsilon}^2 = \sigma_\varepsilon^2$ (say) $\qquad (3.12)$

Then, the variance of the recursive residuals is computed as:

$$
\begin{aligned}
var\,(\varepsilon_t) = E(\varepsilon'_t \varepsilon_t) &= var\{\varepsilon_t - X'_t(b_{t-1} - \beta)\} \\
&= \sigma_\varepsilon^2 + X'_t \sigma_\varepsilon^2 (X'_{t-1} X_{t-1})^{-1} X_t \\
&= \sigma_\varepsilon^2 \{1 + X'_t (X'_{t-1} X_{t-1})^{-1} X_t\}
\end{aligned} \quad (3.13)
$$

Define the scaled recursive residuals, ω_t , as:

$$
\begin{aligned}
\omega_t &= \frac{\varepsilon_t}{\sqrt{\{1 + X'_t (X'_{t-1} X_{t-1})^{-1} X_t\}}} = \frac{\varepsilon_t}{\sqrt{var(\varepsilon_t)}} \\
&= \frac{\varepsilon_t}{s.e.(\varepsilon_t)} = \frac{\varepsilon_t}{\sigma_\omega}
\end{aligned} \quad (3.14)
$$

Then under constant parameters, $\omega_t \sim iid(0, \sigma_\omega^2)$. Then the CUSUM test statistic is given by:

$$
W_t = \sum_{j=k+1}^{t} \omega_{j,} \qquad t = k+1, k+2, \dots, n \quad (3.15)
$$

The cumulative sum of the square (CUSUMSQ) test statistic is given by:

$$
S_t = \sum_{j=k+1}^{t} \omega_j^2 \Bigg/ \sum_{j=k+1}^{n} \omega_j^2, \quad t = k+1, k+2, \dots, n \quad (3.16)
$$

These tests are performed by plotting W_t or S_t against time t. The confidence bounds are obtained by plotting the two lines that connect the points $[k, \pm a\sqrt{n-k}]$ and $[n, \pm 3a\sqrt{n-k}]$. At the 5% level (that is, 95% confidence interval) $a = 0.948$ while at the 1% level (that is, 99% confidence interval) $a = 1.143$. A test statistic meandering outside the confidence interval is indicative of a possible a structural change, non-constancy in the parameters, and hence instability in the data, leading to the rejection of the null hypothesis of model stability.

Under the null hypothesis of model stability, Harvey and Collier (1977) developed a test with test statistic given by:

$$
T^* = (n-1)^{1/2} S^{-1} . \bar{W} \quad (3.17)
$$

where,

$$
\bar{W} = \frac{1}{n-k} \sum_{j=k+1}^{n} \omega_j \text{ and } S^2 = \frac{1}{n-k-1} \sum_{j=k+1}^{n} (\omega_j - \bar{W})
$$

The estimated T^* has a t-distribution with (n-k-1) degree of freedom. The null hypothesis of model stability is rejected if T^* is greater than a critical value at the α-level or if the p-value of T^* is less than α, often 0.05.

3.2.4   ARCH Test

Under the null hypothesis of linearity, the residuals of a properly specified AR(p) model should be independent. Denote the autocorrelations of the residuals by $\rho_1, \rho_2, \dots, \rho_m$, where $m = n/4$ (n=sample size), then the independence of the residuals, ε_t, can be tested based on the hypotheses (Engle, 1982):

$$H_0 : \rho_1 = \rho_2 = \cdots = \rho_m = 0 \qquad \text{(Residuals are independent)}$$

vs. $H_1 : \rho_j \neq 0$ for at least one j (Residuals are not independent)

The test statistic is the Q-statistic of squared residuals given by:

$$
Q(m) = n(n+2) \sum_{k=1}^{m} \frac{\rho_k^2}{n-k} \sim \chi_\alpha^2(m-p) \quad (3.18)
$$

At the α level, the null hypothesis of linearity is rejected in favour of the alternative hypothesis if

$$
Q(m) > \chi_\alpha^2(m-p) \text{ or } prob[Q(m)] < \alpha \quad (3.19)
$$

This same test is particularly useful in detecting conditional heteroskedasticity in X_t. A closely related test to the Q-statistic test is the Lagrange test of Engle (1982) for autoregressive conditional heteroskedasticity (ARCH) test based on the linear regression:

$$
\hat{\varepsilon}_t^2 = \eta_0 + \sum_{i=0}^{m} \eta_i \varepsilon_{t-i}^2 + \upsilon_t \quad (3.20)
$$

where, $\eta_0, \eta_1, \eta_2, \dots, \eta_m$ are parameters and υ_t is independent and identically distributed random variable with mean 0 and variance σ_ε^2. Testing for heteroskedasticity involves testing the hypotheses:

$$H_0 : \eta_1 = \eta_2 = \cdots = \eta_m = 0 \qquad \text{(Homoskedasticity)}$$

vs.

$$H_0 : \eta_j \neq 0 \quad \text{for at least one j} \qquad \text{(Heteroskedasticit)}$$

The test statistic is the usual F-statistic:

$$
F^* = \frac{R^2/m}{(1-R^2)/(n-m-1)} \sim F_\alpha(m, n-2m-1) \quad (3.21)
$$

At the α level, the null hypothesis of linearity is rejected in favour of the alternative hypothesis if

$$
F^* > F_\alpha(m, n-2m-1) \text{ or } prob(F^*) < \alpha \quad (3.22)
$$

Asymptotically, $F^* \sim \chi_\alpha^2(m)$.

3.4. Modelling and Forecasting Methods

This section presents an overview of the three nonlinear time series modelling and forecasting methods which include the TAR model, STR model, and MS-AR model.

3.4.1 Threshold Autoregressive Model

The TAR model is basically an extension of the Autoregressive model, which allows for the parameters to change in the model according to the number of segments (breaks), m, deemed to exist within the data. If the time series, $\{X_t : t = 1, 2, 3, \ldots, n\}$ changes structurally with m break points, then there are $w = m + 1$ segments or regimes with a TAR model representation given by (Tong, 1978):

$$X_t = \begin{cases} \alpha_{1,0} + \varphi_{1,1}X_{1,t-1} + \varphi_{1,2}X_{1,t-2} + \varphi_{1,3}X_{1,t-3} + \cdots + \varphi_{1,p_1}X_{1,t-p_1} + \varepsilon_{1,t} & t = 1, 2, \ldots, n_1 \\ \alpha_{2,0} + \varphi_{2,1}X_{2,t-1} + \varphi_{2,2}X_{2,t-2} + \varphi_{2,3}X_{2,t-3} + \cdots + \varphi_{2,p_2}X_{2,t-p_2} + \varepsilon_{2,t} \,, & t = n_1 + 1, n_1 + 2, \ldots, n_2 \\ \qquad\qquad\qquad\qquad\qquad \vdots & \\ \alpha_{w,0} + \varphi_{w,1}X_{w,t-1} + \varphi_{w,2}X_{w,t-2} + \varphi_{w,3}X_{w,t-3} + \cdots + \varphi_{w,p_w}X_{w,t-p_w} + \varepsilon_{w,t} & t = n_w + 1, n_{w+1}, \ldots, n \end{cases} \qquad (3.23)$$

where, $\varepsilon_{j,t}$ $(j = 1, 2, \ldots, w)$ are iid error term and $n_1, n_2, \ldots, n_w$ (where $n_1 < n_2, < \cdots, < n_w$) are respectively the sample sizes of segment 1, segment 2, …, and segment w. The TAR model in equation (3.23) allows different variances for all w segments (regimes). In order to stabilize the variance over different segments (regimes), restriction of the form is applied:

$$X_t = I_1 \left[\alpha_{1,0} + \sum_{i=1}^{p1} \varphi_{1,i}X_{1,t-i} \right] + I_2 \left[\alpha_{2,0} + \sum_{i=1}^{p2} \varphi_{2,i}X_{2,t-i} \right] + \cdots + I_w \left[\alpha_{w,0} + \sum_{i=1}^{p_w} \varphi_{w,i}X_{w,t-i} \right] + e_t \qquad (3.24)$$

Where, I_t is the indicator function such that $I_t = 1$ when it correspond to segment j and $I_t = 0$, if otherwise. Each of the m segments can easily be estimated using OLS while the TAR model in equation (3.24) can be estimated using Nonlinear Least Squares (NLS), however, boundaries for the segments need to be determined. One possible approach to determining boundaries for the segments is by possible locating structural breaks.

The existence of at least structural break in a time series is indicative that the data is nonlinear.

To test for structural change due to the presence of one break point, the Chow test is widely used. However, for multiple break points the Bai-Perron test is usually applied. The Bai-Perron test assumes the following vector-form multiple-structural-break model with m breaks (w segments/regimes):

$$X_t = \begin{cases} X'_{t-1}\beta + Z'_t\delta_1 + \varepsilon_{1,t} \,, & t = 1, 2, \ldots, n_1 \\ X'_{t-1}\beta + Z'_t\delta_2 + \varepsilon_{2,t} \,, & t = n_1 + 1, n_1 + 2, \ldots, n_2 \\ \qquad\qquad \vdots & \\ X'_{t-1}\beta + Z'_t\delta_{m+1} + \varepsilon_{m+1,t} \,, & t = n_m + 1, n_m + 2, \ldots, n \end{cases} \qquad (3.25)$$

where is $X_{j,t-1} = (1 \ X_{j,t-1} \ X_{j,t-2} \ldots X_{j,t-p_j})'$ is the column vector of with j=1,2,..,m+1 at time t whose effects are invariant with time and Z_t is a column vector of the explanatory variables at time t whose effects vary over time, and $\varepsilon_{j,t}$ are the error terms. The break points, $n_1, n_2, \ldots, n_m$, are treated as unknowns and are estimated together with the unknown coefficients, β and δ_j are coefficients, when n observations available. A structural change in a given time series means $\beta = 0$. Using the OLS principle, the Bai-Perron test involves sequentially estimating the regression coefficients of the m+1 data segments/regimes along with the break points in the sample of n observations. Bai and Perron (2003) discussed three types of test – a test of no break vs. a fixed number of breaks, a double maximum test, and a sequential test – notable among them is the sequential test. The sequential test involves the following steps:

• Using the full sample, a test of parameter constancy with unknown break is conducted. If the test rejects the null hypothesis of constancy, the breakpoint associated with this result is estimated and noted as the first breakpoint. A test statistic called the Fisher statistic associated with the first breakpoint is then obtained.

• If the Fisher statistic associated with the first breakpoint is greater than the critical value, this first breakpoint is then used to divide the sample into two samples. For each of the two sub-samples, a single unknown breakpoint test is conducted in each subsample. If the Fisher statistic is greater than the critical value for each of the two samples, the date corresponding to the higher value is chosen as the second breakpoint.

• Sequentially, this procedure is repeated until all of the subsamples do not reject the null hypothesis of constancy (that is, no further breakpoints are left).

3.3.2. Smooth Transition Regression Models

Smooth Transition Regression models are a set of nonlinear models that incorporates both the deterministic changes in parameters over time and the regime switching behaviour within the time series data (van Dijk, Teräsvirta & Franses, 2002).

The general STR model for a time series $\{X_t : t = 1, 2, 3, \dots, n\}$ is:

$$X_t = \left(\alpha_0 + \sum_{i=1}^{p}\alpha_i X_{t-i}\right) + \left(\beta_0 + \sum_{i=1}^{p}\beta_i X_{t-i}\right)G(S_{t-d}, \gamma, c) + \varepsilon_t \quad (3.26)$$

where, $G(S_{t-d}, \gamma, c)$ is the transition function with S_{t-d} as the transition variable which determines the switching point, d is the decay parameter, γ is the smoothing parameter that determines the smoothness of the transition variable, c is the threshold parameter, $\alpha_0, \alpha_1, \alpha_2, \dots, \alpha_p$ and $\beta_0, \beta_1, \beta_2, \dots, \beta_p$ are the parameters of the two autoregressive components of the model with optimal lag length p, and ε_t is an error term. The two most popular transition functions are the logistic smooth and exponential functions given, respectively, by:

Logistic Function:

$$G(S_{t-d}, \gamma, c) = \frac{1}{1 + \exp\{-\gamma(S_{t-d} - c)\}} \;, \quad \gamma > 0$$

Exponential Function:

$$G(S_{t-d}, \gamma, c) = \frac{1}{1 + \exp\{-\gamma(S_{t-d} - c)^2\}}, \quad \gamma > 0.$$

The optimal lag length, p, of the autoregressive components is selected using automatic selectors based on information criteria. Using the appropriate transition function and transition variable, the STR model can be estimated using nonlinear least squares (NLS). The estimated parameters are obtained by minimizing the sum of squared residuals:

$$\text{RSS}(\Psi) = \sum_{t=1}^{n}\varepsilon_t^2 \quad (3.27)$$

where, $\psi = (\alpha', \beta', \gamma, c)$ with $\alpha = (\alpha_0\ \alpha_1\ \alpha_2 \dots \alpha_p)'$ and $\beta = (\beta_0\ \beta_1\ \beta_2 \dots \beta_p)'$. Using nonlinear optimization algorithm, a two-dimensional grid search is conducted over γ and c, allowing the selection of the pair that gives the smallest estimator for the residual variance, $\sigma_\varepsilon^2(\gamma, c)$.

3.3.3. *Markov Switching Autoregressive Models*

The underlying principle of Markov Switching Models is to decompose nonlinear time series into a finite sequence of distinct stochastic processes, states or regimes, whereby the parameters are allowed to take on different values with regard to the state/regime prevailing at time t. Switches between states/regimes arise from the outcome of an unobservable regime variable, S_t, which is assumed to be evolve according to a Markov Chain. One particular type of MSM is the Markov Switching Autoregressive (MS-AR) model. Given the time series $\{X_t : t = 1, 2, 3, \dots, n\}$, the MS-AR model assumes the representation (Hamilton, 1989):

$$X_t - \mu(S_t) = \varphi_1[X_{t-1} - \mu(S_{t-1})] + \varphi_2[X_{t-2} - \mu(S_{t-2})] + \cdots$$
$$+ \varphi_p[X_{t-p} - \mu(S_{t-p})] + \varepsilon_t$$

which, when re-parameterised yields:

$$X_t = c + \varphi_1 X_{t-1} + \varphi_2 + \cdots + \varphi_p X_{t-p} + \varepsilon_t$$

or $\quad X_t = \sum_{i=1}^{p}\varphi_i X_{t-i} + \varepsilon_t \quad (3.28)$

where, $\varphi_1, \varphi_2, \dots, \varphi_p$ represent the coefficients of the AR(p) process, $\varepsilon_t \sim \text{iid}(0, \sigma_\varepsilon^2)$ and $\mu(S_t)$ are constants that are dependent on the states/regimes S_t and represent μ_1 if the process is in state/ regime $1(S_t = 1)$, μ_2 if the process in state/regime $2(S_t = 2), \dots$, and μ_R if the process is in state/regime $R(S_t = R)$, the last state/regime). The change from one state to another is governed by the R-state first-order Markov Chain with transition probabilities, expressed as:

$$p_{ij} = P(S_t = j\, |S_{t-1} = i), i, j = 1,2 \quad (3.29)$$

where, p_{ij} is the probability of moving from state i at time t-1 to state j at time t. Using the fact that:

$$p_{1i} + p_{2i} + \dots + p_{Ri} = 1 \quad (3.30)$$
,

the probability of state i being followed by state j (also known as the transition matrix) is given by:

$$P = \begin{pmatrix} p_{11} & p_{21} & \cdots & p_{R1} \\ p_{12} & p_{22} & \cdots & p_{R2} \\ . & & & \\ . & & & \\ p_{1R} & p_{2R} & \cdots & p_{RR} \end{pmatrix} \quad (3.31)$$

In the current study, two states or regimes assumed that R=2 and the underlying MS-AR (p) model is given by:

$$X_t = \begin{cases} c_1 + \sum_{i=1}^{p}\varphi_{1,i}X_{t-i} + \varepsilon_{1,t}, & \text{if } S_t = 1 \\[2mm] c_2 + \sum_{i=1}^{p}\varphi_{2,i}X_{t-i} + \varepsilon_{2,t}, & \text{if } S_t = 2 \end{cases} \quad (3.32)$$

The transition matrix is, thus, given by:

$$P = \begin{pmatrix} p_{11} & p_{21} \\ p_{12} & p_{22} \end{pmatrix} \quad (3.33)$$

so that $p_{11} + p_{12} = 1$ and $p_{21} + p_{22} = 1$. P represents the probability of change in regime. For this two-regime MS-AR model, there are four transition probabilities given by:

$$P(S_t = 1 | S_{t-1} = 1) = p_{11}$$
$$P(S_t = 2 | S_{t-1} = 1) = p_{12} = 1 - p_{11} \quad (3.34)$$
$$P(S_t = 2 | S_{t-1} = 2) = p_{22}$$
$$P(S_t = 1 | S_{t-1} = 2) = p_{21} = 1 - p_{22}$$

The MS-AR allows one to make inferences about the value of the observed regime, S_t, through the observed behaviour of X_t. This inference takes the form of probabilities called 'filtered probabilities', which are estimated using a simple iterative algorithm that computes both the likelihood function recursively and $P(S_t = i|\Omega_t)$, the filtered probability conditional on the set of observations, $\Omega_t = (X_t, X_{t-1}, X_{t-2}, \dots, X_1 X_0)$ up to time t. If the whole data set is used, the probabilities obtained are called the 'smoothed probabilities' which is estimated conditional on all the n available observations, $\Omega_n = (X_t, X_{t-1}, X_{t-2}, \dots, X_1 X_0)$. An important result that can be derived from the transition matrix is the expected duration (or average duration) of regime *i* as well as the average duration of regime *i*. The expected duration of regime *i* is given by:

$$E[D(S_t = i)] = \bar{D}(S_t = i) = 1/(1 - p_{ii}) = 1/p_{ij} \quad (3.35)$$

A small value of p_{ij} (*i ≠ j*) is an indication that the model tends to stay longer in state i while its reciprocal $1/p_{ij}$ describes the expected duration of the process to stay in state i.

3.5. Model Selection Criteria

Schwarz Bayesian Criterion (SBC) developed by Schwarz (1978) was derived from a Bayesian modification of the AIC criterion. The idea of SBC is to select the model that has a minimise value. SBC is a function of the number of observation *n*, the SSE, the number of independent variables p ≤ m + 1 where p includes the intercept, as shown in equation (3.40).

$$SBC = n \ln\left(\frac{SSE}{n}\right) + p \ln(n) \quad (3.36)$$

The penalty term for SBC is similar to AIC, but uses a multiplier of ln *n* for p instead of a constant by incorporating the sample size *n*.

3.6. Comparison of Model Performance

On the basis of reliability, validity and wide use, the following performance (error) measuring metrics are recommended for evaluating models. In order to select the appropriate models for each of the five closing stock prices among the three nonlinear modelling techniques which include SETAR, STR and MS-AR, four error metrics, RMSE, MAE, MAPE, and RSMPE, are appealed to. Given the time series, X_t and estimated series, $\hat{X}_t$, the four error metrics are defined below:

$$RMSE = \sqrt{\frac{\sum_{t=1}^{n}(X_t - \hat{X}_t)^2}{n}} \quad (3.37)$$

$$MAE = \frac{1}{n}\sum_{t=1}^{n}|X_t - \hat{X}_t| \quad (3.38)$$

$$MAPE = \frac{1}{n}\sum_{t=1}^{n}\left|\frac{X_t - \hat{X}_t}{X_t}\right| * 100\% \quad (3.45) \quad (3.39)$$

$$RMSPE = \sqrt{\frac{1}{n}\sum_{t=1}^{n}\left(\frac{X_t - \hat{X}_t}{X_t}\right)^2} \quad (3.40)$$

4. EMPIRICAL ANALYSIS

4.1. Preliminary Analysis

The study employed the stock prices of the South Africa collected daily for the period 2010-2012, a total of 563 observations and was obtained from http://www.jse.com. Study used the purposive sampling technique; five (5) banks from a population of twenty-one (21) banks were used. The banks that responded were ABSA Bank (ABSA), Capitec Bank (CAPB), First National Bank (FIRB), Nedbank (NEDB) and Standard Bank (STDB). Figure 1 depicts a picture of the closing stock price series.

Figure 1. Graphical Representation of the Five Closing Stock Prices
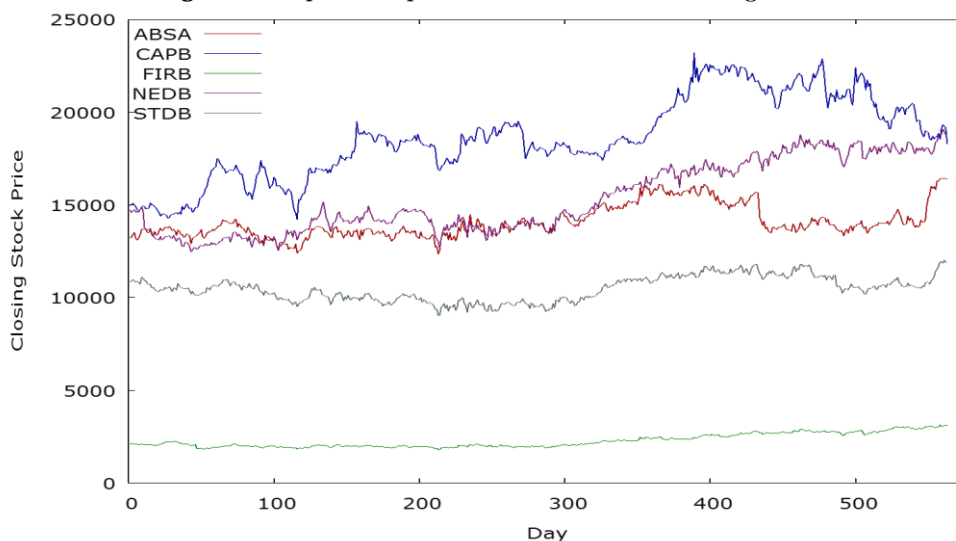
The results reveal that FIRB has the lowest stock prices and is estimated by an upward sloping trend. Stock prices of other banks are explained by

irregular increasing patterns with ABSA and NEBD showing convergence at several stages. Given this movements by the stock prices, the data is not

stationary at all levels. The series are further checked for nonlinearity by employing different tests.

Since nonlinearity in time series may occur in several ways, there exists no single test that dominates others in detecting nonlinearity. Therefore the study uses the Regression Specification Error Test (RESET) by Ramsey (1969) and Brock-Dechert-Scheinkman (BDS) by Brock et al. (1996) tests for this purpose. The null hypothesis of

nonlinearity is rejected if the RESET and the BDS tests are greater than the critical values at conventional levelod significance, implying that the true specification is nonlinear. To determine the stability of the models, a Cumulative Sum (CUSUM) test by Brown et al. (1975) will be used. The null hypothesis is rejected if the CUSUM test exceeds the critical value. The results of the three tests are summarised in Table 1.

Table 1. Estimated AR Models with Nonlinearity Tests

		ABSA	CAPB	FIRB	NEDB	STDB
Parameter Estimate	α_0	263.614 (1.8731) [0.0616]	197.824 (2.001) [0.0459]	2.9902 (0.3089) [0.7575]	47.3057 (0.6324) [0.5274]	182.023 (2.013) [0.0446]
	α_1	0.862676 (20.5228) [0.0000]	0.9897 (187.60) [0.0000]	0.9995 (237.80) [0.0000]	0.8596 (20.51) [0.0000]	0.9828 (114.0) [0.0000]
	α_2	0.119039 (2.8155) [0.0050]			0.1379 (3.279) [0.0011]	
RESET Test for Specification	Test Statistic	4.00483 [0.0188]	3.4352 [0.0329]	3.6984 [0.0254]	4.9172 [0.0076]	8.7728 [0.0002]
CUSUM Test for Parameter Stability	Test Statistic (Harvey-Collier)	2.58915 [0.0099]	0.6004 [0.5485]	1.7090 [0.0880]	2.6447 [0.0084]	0.2375 [0.8123]
Test for ARCH Effects	LM	3.1967 [0.07379]	71.2252 [0.0000]	3.0925 [0.0787]	5.9051 [0.0151]	12.1992 [0.0022]
BDS	z-statistics	3.1967 [0.07379]	3.1967 [0.07379]	3.1967 [0.07379]	3.1967 [0.07379]	3.1967 [0.07379]

Figures in (•) are t-statistics while figures in [•] are p-values

Results from the RESET tests of the five variables suggested that the use of a linear regression modelling technique was inappropriate. In addition, the residuals from various autoregressive (AR) models fitted to the data were found to have ARCH structures, further supporting the use of nonlinear modelling methods. There is no evidence of structural change in the data according to the BDS tests. The preliminary results of the data proves that the data is suitable for the application of STR, TAR, MS-AR models.

4.2.Modelling and Forecasting models

This section presents the results of the three nonlinear time series models suggested.

4.3. Threshold Autoregressive Models for Closing Stock Price

Switches between one regime and another depend on a threshold variable and threshold value. This study followed the Hsu *et al.* (2010) structural break concept in selecting the thresholds. In particular, assuming that the numbers of thresholds are unknown, the Bai-Perron multiple breakpoint method was applied.

This section focuses on estimating TAR models on the basis that each stock price is a linear AR within a regime of that particular variable. First, for each regime of a particular variable, an AR model was run by allowing maximum five (5) lags and their respective SBC. Using these optimal lag lengths, the AR models were estimated for each segment of each of the five variables. At the 5% level, the final estimated AR models were obtained by eliminating the insignificant lags. The final estimated TAR models are reported in the estimated TAR models for the closing stock prices, ABSA, CAPB, FIRB, NEDB and STDB are, respectively:

$$ABSA_t = I_1 * (2372.97 + 0.8258 * ABSA_{t-1}) + I_2 * (2386.70 + 0.8205 * ABSA_{t-1}) + I_3 * (3733.22 + 0.7329 * ABSA_{t-1}) + I_4 * (1840.19 + 0.8811 * ABSA_{t-1}) + I_5 * (1.0003 * ABSA_{t-1})$$

$$CAPB_t = I_1 * (1.0005 * CAPB_{t-1}) + I_2 * (1441.48 + 0.9202 * CAPB_{t-1}) + I_3 * (1.0008 * CAPB_{t-1}) + I_4 * (2983.46 + 0.7163 * CAPB_{t-1} + 0.3746 * CAPB_{t-2} - 0.2281 * CAPB_{t-3}) + I_5 * (0.9980 * CAPB_{t-1})$$

$$FIRB_t = I_1 * (0.9990 * FIRB_{t-1}) + I_2 * (355.556 + 0.8199 * FIRB_{t-1}) + I_3 * (1.0022 * FIRB_{t-1}) + I_4 * (1.00112 * FIRB_{t-1}) + I_5 * (1.00114 * FIRB_{t-1})$$

$$NEDB_t = I_1 * (1414.94 + 0.8925 * NEDB_{t-1}) + I_2 * (3785.64 + 0.9518 * NEDB_{t-1} - 0.2153 * NEDB_{t-3}) + I_3 * (1726.92 + 0.8769 * NEDB_{t-1}) + I_4 * (0.7171 * NEDB_{t-1} + 0.2848 * NEDB_{t-3}) + I_5 * (3017.19 + 0.8329 * NEDB_{t-1})$$

$$STDB_t = I_1 * (1485.84 + 0.8590 * STDB_{t-1}) + I_2 * (1557.05 + 0.8438 * STDB_{t-1}) + I_3 * (1771.69 + 0.8170 * STDB_{t-1}) + I_4 * (1384.42 + 0.8772 * STDB_{t-1}) + I_5 * (1.0007 * STDB_{t-1})$$

where, $I_k = \begin{cases} 1, & \text{regime k} \\ 0, & \text{other wise} \end{cases}$

4.4. Smooth Transition Regression Analysis

This section provides the results for the STR modelling technique. Also shown are the forecasts of the model for the five variables. As a starting point, AR models up to lag five (5) were estimated with each of the five variables in order to determine the appropriate lag order.

Once the suggested STR models have been specified, the nonlinear least squares (NLS) method was used to estimate them and the results are summarised in Table 2.

Table 2. Estimated LSTR Models

Dep. Var.	Variable	Estimate	t-Stat	p-Value	R-Square	Adj. R-Square
ABSA(t)	----- Linear Part ------				0.94704	0.9471
	CONST	1407.01652	4.4602	0.0000		
	ABSA(t-1)	0.89731	38.7516	0.0000		
	---- Nonlinear Part ----					
	ABSA(t-1)	0.01213	3.8226	0.0001		
	Gamma	14.19718	0.7681	0.4427		
	C1	14598.19084	138.9240	0.0000		
CAPB(t)	----- Linear Part ------				0.98467	0.9847
	CONST	244.32152	2.3887	0.0172		
	CAPB(t-1)	0.98762	177.9250	0.0000		
	---- Nonlinear Part ----					
	CONST	-244.32152	-2.3887	0.0172		
	Gamma	17.97761	1.2362	0.2169		
	C1	22476.78769	94.3540	0.0000		
FIRB(t)	----- Linear Part ------				0.99051	0.9905
	CONST	239.56090	3.8898	0.0001		
	FIRB(t-1)	0.87937	28.3434	0.0000		
	---- Nonlinear Part ----					
	CONST	-206.50774	-3.1367	0.0018		
	FIRB(t-1)	0.10941	3.3907	0.0007		
	Gamma	800.73372	0.1317	0.8953		
	C1	2132.44609	347.5154	0.0000		
NEDB(t)	----- Linear Part ------				0.98693	0.9870
	NEDB(t-1)	1.00023	1121.5372	0.0000		
	---- Nonlinear Part ----					
	CONST	813.8	2.2596	0.0242		
	NEDB(t-1)	-0.0	-2.2466	0.0251		
	Gamma	14.1	0.7563	0.4498		
	C1	15526.9	30.4711	0.0000		
STDB(t)	----- Linear Part ------				0.96003	0.9601
	CONST	268.61160	1.8589	0.0636		
	STDB(t-1)	0.99933	95.3909	0.0000		
	---- Nonlinear Part ----					
	CONST	-266.04	-2.2890	0.0225		
	Gamma	7.29	1.9281	0.0544		
	C1	9284.20	98.9096	0.0000		

As revealed by the results, all five variables have been found to be autoregressive processes since their lags are significant in both the linear and nonlinear parts. By observation the estimated models seem good judging from the high R^2 and R^2_{adj} values. Again, the transition values (C1), for ABSA, CAPB, NEDB, and STDB suggest that closing stock price of these banks switch between two regimes. In fact, a closing stock price less than transition values 14598.19 for ABSA, 22476.79 for CAPB, 2132.45 for FIRB, 15526.88 for NEDB, and 9284.20 for STDB are regarded as low stock yield periods for these banks. Closing stock price larger than these values implies even higher stock prices.

4.5. Markov-Switching AR Models for Stock Prices

First, in order to ascertain the possibility of using two-regime switching models for the variables, linearity likelihood ratio (LR) tests were conducted and the regime results reported in Table 3. The test rejects the null hypothesis of no regime switching in favour of the existence of two regimes since the p-value of the chi-square statistics for all the five variables are less than the 10%, 5% or 1% level. Therefore, the LR test results support a two-state regime for all the five variables. Similar results were reported by Ismail and Isa (2007), Psaradakis *et al.* (2009), Wasin and Bandi (2011) and Yarmohammadi *et al.* (2012).

Table 3. Linearity LR Test of Two-Regime Switch

Variable	Chi-Square Test Statistic	P-value
ABSA	53.794	0.0000
CAPB	100.1	0.0000
FIRB	21.788	0.0006
NEDB	11.296	0.0796
STDB	12.042	0.0610

In order to find the optimal lag length for the estimation of the univariate MS-AR (p) model, different AR models were estimated with up to five (5) and their SBC. From these results, an optimal lag length one (1) is deemed appropriate for each of the five two-regime MS-AR (p) models. Results for the estimated MS-AR (1) models are shown in Table 4.18. As observed from these results, with ABSA, CAPB and FIRB, the variances of Regime 2, $\sigma^2(s_t = 2)$, is

greater than the variance of Regime 1, $\sigma^2(s_t = 1)$, suggesting that for these three closing stock prices, Regime 2 is more volatile than Regime 1. In other words, Regime 2 captures the behaviours in ABSA, CAPB and FIRB in an unstable manner while Regime 1 captures the behaviours of the three stock prices in a stable manner. The opposite happens in the case of NEDB and STDB since the variances of Regime 1, $\sigma^2(s_t = 1)$, is greater than the variance of Regime 2, $\sigma^2(s_t = 2)$. It is also observed that, for ABSA, FIRB, NEDB and STDB, the estimated regime-dependent intercepts (expected daily increments in closing stock prices) are higher in Regime 1 than in Regime 2 (that is, $\mu(s_t = 1) > \mu(s_t = 2)$ for ABSA, FIRB, NEDB and STDB) while the opposite holds in the case of CAPB. In other words, changes in ABSA, FIRB, NEDB and STDB closing stock prices increased in a stable state while opposite holds for NEDB.

Table 4. Two-Regime MS-AR Modelling Results

	ABSA	CAPB	FIRB	NEDB	STDB
$\mu(s_t = 1)$	13749.6	17853.9	2276.56	15390.1	10507.0
$\mu(s_t = 2)$	13642.6	18761.8	2194.16	14488.6	10457.0
$\varphi_1(s_t = 1)$	0.996758	1.00108	0.998810	0.994343	0.973702
$\varphi_1(s_t = 2)$	0.531652	0.945820	1.259510	1.000960	1.180030
$\sigma^2(s_t = 1)$	178.457	201.356	34.4960	241.296	137.350
$\sigma^2(s_t = 2)$	241.037	331.188	116.217	190.232	18.7274
p_{11}	0.989355	0.98621	0.995928	0.995980	0.94730
p_{12}	0.061359	0.041621	0.999979	0.004151	0.69051
p_{21}	0.010645	0.013793	0.0040724	0.004019	0.052702
p_{22}	0.938640	0.958380	0.0000212	0.995850	0.309490
$E[D(s_t = 1)]$	16.2975	24.0263	1.0000	240.8884	1.4482
$E[D(s_t = 2)]$	93.9408	72.5005	245.5554	248.8181	18.9746

Furthermore, the probabilities of a closing stock price remaining in Regime 1, p_{11}, are smaller than the probability of a closing stock price staying in Regime 2, p_{22}, for all the five closing stock prices. In fact, the probabilities of a closing stock price staying in Regime 1 lie in the range of 0.947 to 0.996 with an expected duration, $E[D(s_t = 1)]$, of 1 to 241 days. Similarly, the probabilities of a stock price staying in Regime 2 lie in the range 0.000 to 0.958 with an expected duration, $E[D(s_t = 2)]$, of 19 to 249 days. In other words, closing stock prices can stay slightly longer in Regime 2 than in Regime 1.

Model performance

This section provides the results of the forecast perfomance of the three models. One Forecasted future values are of great importance for decision-

making and policy formulation. The evaluation of nonlinear models is based on the properties of resulting residuals. Using the residuals, various tests for misspecification, including non-normality, parameter stability and autocorrelation checks were conducted. The diagnostic tests of the residuals of the three models did not violate the required assumptions and as a result rendered the models accurate and sufficient.

On the basis of reliability, validity and wide use, the performance (error) measuring metrics are recommended for evaluating the efficieny of models in forecasting. The study uses the four error metrics such as RMSE, MAE, MAPE, and RSMPE. The model that generate the least forecast error is chosen and suggested for further analysis. Table 5 provides the results for the four measures.

Table 5. Forecast Comparison among LSTR, TAR and MS-AR Models

Measure	Method	ABSA	Capitec	FRIB	NEDB	STDB
RMSE	LSTR	200.2572	270.9698	35.48659	219.5906	133.0790
	TAR	196.5424	266.1471	35.48629	210.4875	131.0235
	MS-AR	186.7458	217.5940	35.32322	213.6210	129.6859
MAE	LSTR	148.9902	189.5397	27.03180	167.8142	103.7846
	TAR	147.2353	186.6499	26.93976	162.2681	101.3549
	MS-AR	143.0377	160.6033	27.34744	165.5507	97.6963
MAPE	LSTR	0.010624	0.010107	0.011973	0.011023	0.009965
	TAR	0.010502	0.009945	0.011929	0.010653	0.009735
	MS-AR	0.010188	0.008587	0.012121	0.010863	0.009400
RMSPE	LSTR	0.251849	0.239601	0.283848	0.261327	0.236247
	TAR	0.248965	0.235339	0.282786	0.252104	0.230791
	MS-AR	0.241512	0.203568	0.287354	0.257530	0.222846

According to the results, the four error metrics select the MS-AR(1) model for ABSA, CAPB and STDB, and TAR model for NEDB accordingly. MAE, MAPE and RMSPE select the TAR model for FIRB, RMSE selects the MS-AR(1) model for FIRB. The results are in accordance with those by Dacco and Satchell (1999), whose study identified the FIRB as best modelled by the MS-AR(1).

4. CONCLUSION REMARKS

Study explored the perfomance of the TAR, STAR and the MS-AR models in modelling and forecasting daily stock prices series of five banks of South Africa. Five banks considered are the ABSA, Capitec , First Rand Bank, Nedbank , and Standard Bank for the period from 2010 to 2012. One of objective of the study was to provide evidence that the five variables used in the study were nonlinear in nature. Three test used proved that all series are nonlinear in nature and nonlinear models are more appropriate to model five varaibles. The study technique suggested the LSTR1 models for all five variables, while the TAR modelling technique involved a maximum lag of three in coming up with suitable TAR models for the five variables, and the MS-AR modelling technique allowed up to a maximum lag of one in determining the appropriate MS-AR models for the five variables. The study employed the four error metrics to select the best performing model. The results showed that while ABSA, CAPB, FIRB and STDB are best modelled by MS-AR(1), NEDB is best modelled by TAR. Generally, the results proved that the MS-AR modelling technique performed better in most cases compared to the LSTR and TAR models. From the discussions of the results, the following conclusions can be drawn:

• All five closing stock prices are nonlinear in nature.

• All five closing stock prices do not change structurally.

• The almost negligible error measures suggest that the various estimated predictive models for the five closing stock prices are robust, efficient and reliable for purposes of forecasting.

Although the three nonlinear models proved to be good, there is room for further improvement. More specifically, in the case of MS-AR results. It is recommended that the Neural Networks (NN) be used and results compared with the current results of MS-AR.

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ANALYSIS OF BANK FAILURE: AN APPLICATION OF CVAR METHODOLOGY ON LIQUIDITY

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Abstract

In this paper, balance sheet liquidity data was analyzed comprising of 157 Class I and 234 Class II banks. Class I banks are categorized as those with tier 1 capital in excess of $4 billion and internationally active while Class II banks are the rest. A Cointegrated Vector Autoregressive (CVAR) approach was used on balance sheet liquidity data to ascertain the behavior of variables in relation to bank failure. The study also demonstrated the nature of each of the variables containing estimated Basel III and Traditional liquidity measures for Class I and II banks. The estimated Basel III liquidity standards were made up of the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR) while the liquidity measures involved Government Securities Ratio (GSR) and Brokered Deposit Ratio (BDR). Results showed that a response of Net Stable Funding Ratio to a shock in Liquidity Coverage Ratio decreased in the first quarter and a steady continuous increase in the next quarters was observed. A shock on the Liquidity Coverage Ratio therefore would cause banks to increase their level of Net Stable Funding Ratio. This explains why the Liquidity Coverage Ratio is considered for a short term stress period of 30 calender days while the Net Stable Funding Ratio will be considered for a longer stress period of 1 year when fully implemented by banks.

Keywords: Basel III, Cointegration, Credit Risk, Liquidity, Securitization

1. INTRODUCTION

According to BCBS (June, 2011) and BCBS (December, 2010), strong capital requirements are a necessary condition for banking sector stability but by themselves are not sufficient. A strong liquidity base reinforced through robust supervisory standards is of equal importance but there has however been no internationally harmonized standards in this area to date. The Basel Committee has therefore introduced internationally harmonized global liquidity standards, BCBS (July, 2013). As with the global capital standards, the liquidity standards will according to BCBS (July, 2011) establish minimum requirements and will promote an international level playing field to help prevent a competitive race to the bottom. The Committee observed that during the early liquidity phase of the financial crisis, many banks despite adequate capital levels still experienced difficulties because they did not manage their liquidity in a prudent manner, (BCBS, September 2012 and BCBS, July 2013).

The crisis again drove home the importance of liquidity to the proper functioning of financial markets and the banking sector (Hu and Hong, 2012; Drehmann and Nikolaou, 2010). Subsequent to the crisis, asset markets were resistant and funding was readily available at low cost and the rapid reversal in market conditions illustrated how quickly liquidity can evaporate and that illiquidity can last for an extended period of time, BCBS (January, 2013). The banking system came under severe stress, which necessitated central bank action to support both the functioning of money markets and, in some cases, individual institutions according to BCBS (December, 2010) and BCBS (June, 2011). The difficulties experienced by some banks were due to lapses in basic principles of liquidity risk management, Gorton (2010). In response, as the foundation of its liquidity framework, the Basel Committee in 2008 published Principles for Sound Liquidity Risk Management and Supervision, BCBS (September, 2008). The Basel committee introduced two ratios to create a more resilient financial sector. These ratios include the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR), (BCBS, June 2011; BCBS, July 2013 and BCBS, October 2014). The main objective of the LCR according to BCBS (January, 2013) is to promote short-term resilience of the liquidity risk profile of banks by ensuring that the banks have an adequate stock of non-burdened high-quality liquid assets (HQLA) that can easily be

converted into cash in private markets to meet their liquidity needs for a 30 calendar day liquidity stress scenario. According to BCBS (October, 2014), the Net Stable Funding Ratio (NSFR) on the other hand aims to promote resilience over a longer period of time by creating additional incentives for banks to fund their activities with more stable sources of funding on an ongoing basis. In this regard, the NSFR supplements the LCR and has a time horizon of one year and provides a sustainable maturity of assets and liabilities, (BCBS, July 2011 and BCBS, October 2014). These liquidity measures are to be phased in stage by stage beginning in January 2015 to 2019, BCBS (January, 2013).

The LCR will improve the banking sector's ability to absorb shocks arising from the financial sector to the real economy whilst implications of the LCR on financial markets, credit extension and economic growth have been taken into consideration with regard to ongoing strains in some banking systems, (BCBS, January 2013 and BCBS, July 2013). The NSFR impact on the financial market according to BCBS (October, 2014) will include limiting overreliance on short-term wholesale funding, encouraging better assessment of funding risk across all on and off-balance sheet items and thereby promote stability of the banking and economic system as a whole.

A destabilizing element of the crisis was the pro-cyclical amplification of financial shocks throughout the banking system, financial markets and the broader economy, (TingTing, 2011; Fender and Scheicher, 2009). The tendency of market participants to behave in a pro-cyclical manner was amplified through a variety of channels, including through accounting standards for both mark-to-market assets and held-to-maturity loans, margining practices, and through the build-up and release of leverage among financial institutions, firms, and consumers, (BCBS, May 2010 and BCBS, September 2012). The Basel Committee introduced a number of measures to make banks more resilient to such pro-cyclical dynamics, BCBS (June, 2011). These measures will in turn help ensure that the banking sector serves as a shock absorber, instead of a transmitter of risk to the financial system and broader economy according to BCBS (September, 2009). In addition, the Committee introduced a series of measures to address pro-cyclicality and raise the resilience of the banking sector in good times, (TingTing, 2011 and BCBS, June 2011). These measures objectives such as; to dampen any excess cyclicality of the minimum capital requirement; to promote more forward looking provisions; to conserve capital to build buffers at individual banks and the banking sector that can be used in stress and achieve the broader macro-prudential goal of protecting the banking sector from periods of excess credit growth, BCBS (July, 2009).

The Basel II framework increased the risk sensitivity and coverage of the regulatory capital requirement and one of the most pro-cyclical dynamics has been the failure of risk management and capital frameworks to capture key exposures such as complex trading activities, re-securitizations and exposures to off-balance sheet vehicles in advance of the crisis (BCBS, July 2009 and BCBS, July 2011).

The association between global liquidity and asset prices has rarely been investigated using the CVAR framework. It appears that the potential relations between asset returns and liquidity have solely been studied by means of OLS regressions, SVAR models and in some cases panel co-integration tests (Giese and Tuxen, January 2007; Roman et al., 2012). This study proposes the use of a CVAR analysis as it allows for accountability of non-stationarity of the data, i.e. looking for co-integration properties in the data, and at the same time disentangle short- and long-run dynamics as was proposed by, (Giese and Tuxen, 2009; Johansen and Juselius, 1990). In this regard, the study aims to establish whether there is a link between bank failure and liquidity as well as whether market wide risk in the form of traditional liquidity risk measure was a contributor to the 2007-2009 financial crisis.

2. LITERATURE REVIEW

During the 2007-2009 financial crisis outburst, the notion of funding liquidity frequently was pointed out in relation to asset prices, Attila (2012). The funding or balance sheet liquidity can be explained as the ability of a financial institution to settle obligations with as immediate as possibly without major setbacks (Drehmann et al., 2010 and Petersen and Mukuddem-Petersen, 2014). This notion fundamentally supposes that funding conditions should be an essential part of asset and financial stability valuation process, Attila (2012). In the core of rapidly evolving financial theory, it is inherently not unexpected that there are difficulties with the identification of liquidity and as a consequence with its measurement, (Attila, 2012; Petersen and Mukuddem-Petersen; Roman et al., 2012). Discovering an appealing relationship between asset prices and monetary or credit aggregates seems interesting but only after the 2007-2009 financial crisis was a suitable answer arrived at, Drehmann et al. (2010). According to Borio and Lowe (2002), continuous rapid credit growth coupled with enormous increases in asset prices seems to increase the possibility of an occurrence of financial instability. On the other hand, rapid credit growth, on its own, creates uncertain risk to the stability of the financial system and the same can be said to be true for quick growths in asset prices or investments, (Attila, 2012; Borio, 2000; Borio and Low, 2002). The combination of events, such as the coordinated occurrence of fast credit growth and rapid increases in asset prices that increases the likelihood of financial risk, rather than any one of these events alone, Borio and Lowe (2002). The key feature of the development of financial systems since the 1970s has according to (Borio, 2000 and Alexander, 2001) been the rapid expansion of financial markets. The importance of liquidity has been acknowledged by central banks in respect to both monetary and financial stability, (Attila, 2012 and Borio, 2000). An example can be given by yield curves that are commonly used to extract information about market participants' expectations concerning inflation and process depending crucially on the liquidity of the underlying market, namely the treasury and bond market, (Borio, 2000 and Hoover et al., 2008). In the case of financial stability, central banks use asset prices in the monitoring of liabilities in the financial system, as they include information about market participants assessment and risk pricing, Borio (2000).

Market-based institutions[1] overtook the dominant role in the supply of credit from commercial banks and these market-based financial institutions were deeply involved in securitization and actively used capital and financial markets to satisfy their funding needs, (Attila, 2012 and BCBS, July 2011). In such a way, market-based liabilities such as repos and commercial paper are better indicators of credit conditions that influence the economy, (Attila, 2012 and BCBS, December 2010). As a result, from the point of view of financial stability measures of collateralized borrowing, such as the weekly series of primary dealer repos can prove very useful, (Borio, 2000 and BCBS, July 2011). In order to protect against losses in case of default of borrower, lenders apply haircut on pledged assets, which is the difference between the current market price of the security and the price at which it is sold, Gorton (2010). The system of repurchase agreement is built on trust of the value of the underlying asset and in the case of questioning the value of collateralized assets, the trust fades from the markets resulting in higher haircuts, (Gorton, 2010 and BCBS, September, 2009). In addition, haircuts addresses the risk that if the holder of the bond in repo, the depositor, has to sell a bond in the market to get the cash bank, he may face a better informed trader resulting in a loss[2], Gorton (2010). The risk in this case is endogenous to the trading practice, which is not the danger of loss due to default, Gorton (2010). One way to protect against this endogenous adverse selection risk is to require overcollateralization, (Attila, 2012 and Gorton, 2010).

Preliminaries about the Liquidity Coverage Ratio

According to BCBS (December, 2010), the LCR standard aims to ensure that a bank maintains an adequate level of unencumbered, high-quality liquid assets that can be converted into cash to meet its liquidity needs for a 30 calendar day time horizon under a significantly severe liquidity stress scenario specified by supervisors. At a minimum, the stock of liquid assets should enable the bank to survive until day 30 of the stress scenario, by which time it is assumed that appropriate corrective actions can be taken by management and supervisors or the bank can on the other hand be resolved in an orderly way, (BCBS, July 2013 and BCBS, July 2011). The LCR is given by the formulae:

$$\frac{Stock\ of\ high-quality\ liquid\ assets}{Total\ net\ cash\ outflows\ over\ the\ next\ 30\ calender\ days} \geq 100\%$$

The Liquidity Coverage Ratio (LCR) as pointed out by the BCBS in, (BCBS, December 2010 and BCBS, May 2010) builds on traditional liquidity coverage ratio methodologies used internally by banks to assess exposure to contingent liquidity events. In this case, the total net cash outflows for the scenario are to be calculated for 30 calendar days into the future and the standard requires that the value of the ratio be no lower than 100%[3], (BCBS, July 2011 and BCBS, January 2013).

For the promotion of more medium and long-term funding of the assets and activities of banking organizations, the Basel Committee has developed the Net Stable Funding Ratio (NSFR), BCBS (October, 2014). This metric establishes a minimum acceptable amount of stable funding based on the liquidity characteristics of an institutions assets and activities over a one year horizon, (BCBS, December 2010 and BCBS, October 2014). The NSFR is designed to act as a minimum enforcement mechanism to complement the LCR and reinforce other supervisory efforts by promoting structural changes in the liquidity risk profiles of institutions away from short-term funding mismatches and toward more stable, longer-term funding of assets and business activities, (BCBS, June 2011 and BCBS, December 2010).

Preliminaries about the Net Stable Funding Ratio

The Net Stable Funding Ratio (NSFR) standard is structured to ensure that long term assets are funded with at least a minimum amount of stable liabilities in relation to their liquidity risk profiles and it aims to limit over-reliance on short-term wholesale funding during times of resilient market liquidity and encourage better assessment of liquidity risk across all on and off-balance sheet items, (BCBS, December 2010; BCBS, June 2011 and BCBS, October 2014). In addition, the NSFR approach offsets incentives for institutions to fund their stock of liquid assets with short-term funds that mature just outside the 30-day horizon for that standard, (BCBS, July 2013 and BCBS, October 2014). The NSFR is given by the formulae:

$$\frac{Available\ amount\ of\ stable\ funding}{Required\ amount\ of\ stable\ funding} \geq 100\%$$

The NSFR is formed on the basis of traditional net liquid asset and cash capital methodologies used widely by internationally active banking organizations, bank analysts and rating agencies, (BCBS, July 2009 and BCBS, October 2014).

According to House et al. (2016), holding large liquid assets makes sense from a financing perspective but also brings forth an economic trade-off. Liquid assets tend to be less profitable for banks and maintaining the buffer effectively ties up more of their balance sheets which in the process restructures financial institutions' ability to lend, (BCBS, December 2010 and BCBS, July 2011). However regulators emphasize they had taken into consideration this trade off when they opted to soften their original liquidity coverage ratio proposals, BCBS (July, 2011). In this regard, banks will now be able to include a host of assets from Residential Mortgage Backed Securities (RMBS) to different types of corporate bonds when building their buffers which will go on until the full implementation in 2019, BCBS (July, 2011).

Furthermore, according to House et al. (2016), some of the shortcomings identified of relying entirely on central banks as lenders of last resort to extend liquidity to solvent banking institutions in times of crisis may encourage firms to hold less liquidity on their own which might ultimately make them vulnerable to runs. It should be noted that it is not easy during the financial crisis for the central bank to determine which institutions are insolvent and those experiencing temporary liquidity shortage, BCBS (January, 2013) . While insuring deposits may

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1 broker-dealers, investment banks

2 relative to the true value of the security

3 ie the stock of high-quality liquid assets should at least equal total net cash outflows

reduce the risk of runs on deposits, uninsured short-term funding is still susceptible to runs as was witnessed in the 2007-2009 financial crisis, (BCBS, December 2010 and BCBS, January 2014).

3. METHODOLOGY

To empirically analyse the dynamic interactions among the variables of interest with regard to bank performance in the new proposed Basel III liquidity framework, the model was estimated by using the Co-integrated Vector Autoregressive (CVAR) procedure, developed by Johansen and Juselius, (1990). According to Hoover et al. (2008), the CVAR approach insists on careful stochastic specification as a necessary groundwork for econometric inference and the testing of economic theories. In the time series data, the probability approach requires careful specification of the integration and cointegration properties of variables in the system of equations, (Koop et al., 1996 and Hoover et al. 2008). The CVAR approach in this artcle includes, stationarity testing, cointegration analysis and Granger Causality testing. The study makes use of EMERG global liquidity data, similar to that used by Petersen et al. (2013). This data consists of observations for the London Interbank Offered Rate (LIBOR) based banks for the period 2002-2012. The study in this regard uses databases consisting of individual banks' income statements. Furthermore, the study includes a total of 391 LIBOR-based Basel II compliant banks from 36 countries[4] made up of 157 class I and 234 class II banks. In addition, bank failure data was obtained from the deposit insurance schemes of the 36 countries from the period 2002-2012. In the United States for example, bank failure data was obtained from the Federal Insurance Corporation. The period 2002-2012 was selected for the study because EMERG global liquidity data could not be used to accurately calculate the LCR and NSFR prior to 2002 which is similar to the data used by other studies such as Wu and Hong (2012). Emphasis should be given that calculating the LCR and NSFR using the available public data goes without difficulties as it is limited in terms of format and granularity between EMERG global banking data and the information required for determining Basel III LCR and NSFR.

Model Specification

The data used in this study is similar to the EMERG data used for similar studies on Basel III such as the study by Petersen and Mukuddem-Petersen (2014), on Basel III liquidity and its regulations as well as Roman et al. (2012), on Bank's Capital and Liquidity Creation. It gives the desired values of bank liquidity; hence it was applied to model default risk of assets and for econometric analysis. The data gives quarterly observations of variables for Class I and II banks from the period 2002Q1 to 2012Q4

comprising of estimated Basel III liquidity standards comprising Net Stable Funding Ratio (NSFR) and Liquidity Coverage Ratio (LCR), as well as Traditional liquidity measures in the form of Government Securities Ratio (GSR) and Brokered Deposits Ratio (BDR). Therefore the study adopts the following econometric model for bank failure with regard to the estimated Basel III standards and traditional liquidity measures:

$$Bank\ Failure = f(NSFR, LCR, GSR, BDR) + \varepsilon$$
$$NSFR_t = \alpha + \beta_1 LCR_t + \beta_1 GSR_t + \beta_3 BDR_t + \varepsilon_t$$

where:
NSFR = Net Stable Funding Ratio
LCR = Liquidity Coverage Ratio
GSR = Government Security Ratio
BDR = Brokered Deposit Ratio
β = Intercept Parameters
ε = Normally distributed error term

The liquidity coverage ratio, net stable funding ratio, government securities ratio and brokered deposit ratio were calculated using the following formulas:

$$\frac{Stock\ of\ high-quality\ liquid\ assets}{Total\ net\ cash\ outflows\ over\ the\ next\ 30\ calender\ days} \geq 100\%$$

$$\frac{Available\ amount\ of\ stable\ funding}{Required\ amount\ of\ stable\ funding} \geq 100\%$$

$$GSR = \frac{Loans}{Deposits}\ BDR =$$

$$Brokered\ deposits$$
$$Domestic\ deposits\ above\ 10\%\ threshold, adjusted\ for\ asset\ growth\ rate\ factor$$

Strengths and Weaknesses of the Data

The data gives quarterly observations of estimated traditional balance sheet liquidity comprising of Basel III liquidity data in the form of Net Stable Funding Ratio (NSFR) and Liquidity Coverage Ratio (LCR) as well as liquidity measures made up of Government Securities Ratio (GSR) and Brokered Deposits Ratio (BDR) for Class I and II banks from the period 2002Q1-2012Q4. Some of the strengths of this data includes the interesting fluctuation of different balance sheet variables in trillions of dollars prior to the market collapse of 2007-2012. In addition, the data has already been transformed into logs, making the variables independent of their units and comparable to each other and in order to reduce the effect of residual heteroscedasticity. However, the data has shortcomings such as the time period for which it represents which is 10 years in this case. It might be difficult to forecast the behaviour of banks with the proposed Basel III changes in liquidity with minimal observations especially for the period after the financial crisis considering that most of the changes will fully be implemented in the year 2019. Econometric analysis enabled the study establish how the independent variables affected or impacted the respective dependent variable which was the NFSR in this case when regression and correlation tests were conducted.

4. EMPIRICAL RESULTS

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4 Australia (5,2), Austria (2,6), Belgium (1,2), Brazil (3,1), Canada (7,3), China (7,1), Czech Republic (4,3), Denmark (1,3), Finland (0,14), France (5,5), Germany (8,25), Hong Kong (1,8), Hungary (1,2), India (6,6), Indonesia (1,3), Ireland (3,1), Italy (2,11), Japan (14,5), Korea (6,4), Luxembourg (0,1), Malta (0,3), Mexico (1,8), Netherlands (3,13), Norway (1,6), Poland (0,5), Portugal (3,3), Russia (0,3), Saudi Arabia (4,1), Singapore (5,0), South Africa (4,5), Spain (2,4), Sweden (4,0), Switzerland (3,5), Turkey (7,1), United Kingdom (8,5), and United States (35,66).

Table 1. Descriptive Statistics for Estimated Traditional Liquidity Measures

Parameter	NSFR	LCR	GSR	BDR
Mean	0.937550 0.959670	0.750527 0.773422	14.20897 14.40467	2.371149 2.432092
Median	0.940000 0.962500	0.748840 0.774060	14.84535 15.05465	2.423043 2.492325
Maximum	0.992690 1.016400	1.026760 1.061340	16.58310 16.81690	4.428780 4.491220
Minimum	0.879840 0.90090	0.540400 0.514560	11.22090 11.37910	1.119600 1.198330
Std.Dev	0.023357 0.023991	0.136743 0.143466	1.618854 1.639070	0.759057 0.778322
Skewness	0.005426 -0.004725	-0.002109 -0.029288	-0.250406 -0.245797	0.365017 0.315371
Kurtosis	3.167401 3.133101	1.793564 1.855692	1.780825 1.787296	2.964153 2.823904
JB	0.051591 0.032643	2.668429 2.406930	3.184866 3.184866	0.979433 0.979433
Prob.	0.974534 0.983811	0.263365 0.300152	0.203430 0.208124	0.612800 0.674956
Sum	41.25221 42.22550	33.02320 34.03056	625.1948 633.8054	104.3306 107.0120
Sum Sq.Dev	0.023458 0.024750	0.804045 0.885042	112.6896 115.5216	24.77521 26.04877
Observations	44 44	44 44	44 44	44 44

In Table 1, the NSFR and BDR show positive skewness while the LCR and GSR portray negative skewness. The NSFR and LCR mean values stand at 93.76% and 75.05% respectively for class I banks while the values of class II banks are given by 95.97% and 77.34%. The kurtosis value for the variables is equivalent to 3 or lower which in turn shows that the distribution is flat in this case. Furthermore, the P-values of the risk measures are greater than 5% which shows normality. However, the normality test gives the more accurate results when the observations are large and in this data set it is very sensitive to the number of observations. The descriptive results show in a way that the LCR seems to have satisfied the Basel III minimum liquidity standards of 100% but emphasis should be given that conclusions are hard to derive in the absence of empirical evidence in support of NSFR compliance with Basel III requirements until the phase in period 0f 2015-2019 has been completed.

The Basel Committee on Banking Supervision (BCBS) reluctance to align the two ratios' implementation dates may be due to regulatory concerns regarding short-term wholesale funding or due to the view that the NSFR is more maintainable than the LCR.

The study further tests for the stationarity status of all the variables in the model in order to determine their order of integration.

Table 2. Stationarity Test Results for Class I Estimated Basel III Liquidity Measures

Variable		ADF test statistic at level	ADF test statistic at 1st difference	Result
LCR	Intercept	-1.115959 (-2.931404)	-5.382705* (-2.933158)	I(1)
NSFR	Intercept	-2.879233 (-2.931404)	-7.512755* (-2.933158)	I(1)
GSR	Intercept	-1.127572 (-2.931404)	-6.629503* (-2.933158)	I(1)
BDR	Intercept	-1.880787 (-2.933158)	-5.300611* (-2.933158)	I(1)
		PP test statistic at level	**PP test statistic at 1st difference**	
LCR	Intercept	-1.115959 (-2.931404)	-5.377240* (-2.933158)	I(1)
NSFR	Intercept	-2.883220 (-2.931404)	-8.592902* (-2.933158)	I(1)
GSR	Intercept	-1.138511 (-2.931404)	-6.628121* (-2.933158)	I(1)
BDR	Intercept	-1.590563 (-2.931404)	-5.341996* (-2.933158)	I(1)

Note: I(1) indicates unit root and stationarity after first difference
* Denotes significance at 5% level and the rejection of the null hypothesis of non-stationarity.

Table 3. Stationarity Test Results for Class II Estimated Basel III Liquidity Measures

| Variable		ADF test statistic at level	ADF test statistic at 1st difference	Result
LCR Class II	Intercept	-1.196122 (-2.931404)	-5.483439* (-2.933158)	I(1)
NSFR Class II	Intercept	-2.912241 (-2.931404)	-7.392878* (-2.933158)	I(1)
GSR Class II	Intercept	-1.138699 (-2.931404)	-6.685446* (-2.933158)	I(1)
BDR Class II	Intercept	-1.717819 (-2.931404)	-6.174256* (-2.933158)	I(1)
		PP test statistic at level	**PP test statistic at 1st difference**	
LCR Class II	Intercept	-1.196122 (-2.931404)	-5.460584* (-2.933158)	I(1)
NSFR Class II	Intercept	-2.875632 (-2.931404)	-8.118934* (-2.933158)	I(1)
GSR Class II	Intercept	-1.151767 (-2.931404)	-6.685045* (-2.933158)	I(1)
BDR Class II	Intercept	-1.717819 (-2.931404)	-6.174430* (-2.933158)	I(1)

Note: I(1) indicates unit root and stationarity after first difference
*Denotes significance at 5% level and the rejection of the null hypothesis of non-stationarity.

The ADF results in Tables 2 and 3 indicate the non-stationarity of the series when the variables are defined at levels. However, at first difference the series removes the non-stationarity components in all cases and the null hypothesis of non-stationarity is rejected at the 5% significance level which implies that all the variables are integrated of order one, I(1).

At the same time, PP tests are also reported in both tables and they are not essentially different from the ADF results. The Bartlett Kernel according to Newey and West (1987) were chosen for the lag truncations. The results after first-difference strongly reject the null hypothesis of the presence of a unit root implying that the series are integrated of order one.

Figure 1. Log Area Bands for Traditional Liquidity Standards and Measures
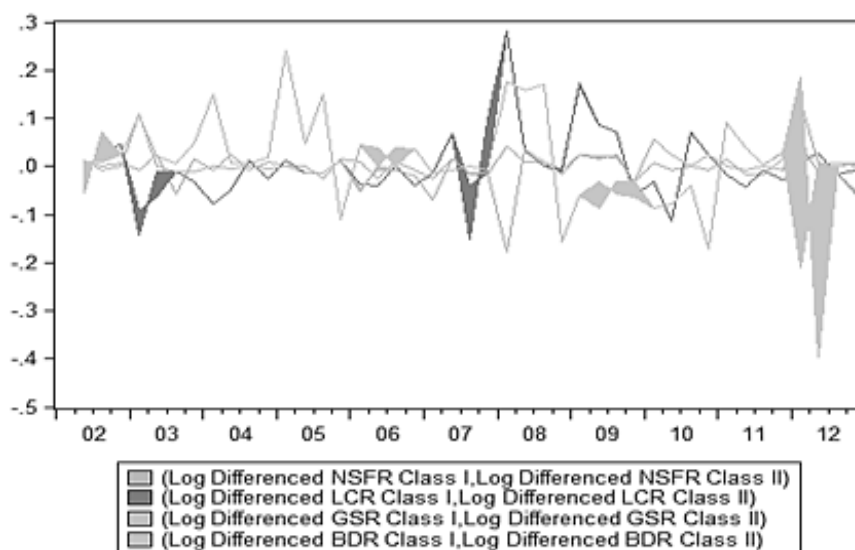
Because of the difficulty in predicting or forecasting the impact of NSFR due to insufficient data, the area band does not show much activity for this trend. The estimated liquidity measures of LCR, GSR and BDR however show some interesting movements especially during the 2007-2009 financial crisis period. Changes in the liquidity measures were observed around the 2007-08 phase of the crisis and BDR which comprises large denomination deposit sold by a bank to a brokerage

which in turn divides it into smaller pieces for sale to its customers. The decrease in the BDR can be attributed to reduced capital and liquidity as a result of the decline in the practice of securitization for capital generation by banks during that period due to strict measures imposed by financial regulators.

The cointegration analysis results of Class I bank liquidity are presented in Tables 4 and 5 respectively.

Table 4. Unrestricted Cointegration Rank Test (Trace)

Hypothesized no. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob**
None*	0.465873	54.95981	47.85613	0.0093
At Most 1	0.262374	28.62072	29.79707	0.0679
At Most 2*	0.207397	15.83936	15.49471	0.0444
At Most 3*	0.134713	6.077166	3.841466	0.0136

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 5. Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized no. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob**
None	0.465873	26.33909	27.58434	0.0715
At Most 1	0.262374	12.78136	21.13162	0.4725
At Most 2	0.207397	9.762196	14.26460	0.2280
At Most 3*	0.134713	6.077166	3.841466	0.0136

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
*denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Tables 6 and 7 present cointegration results for Class II banks.

Table 6. Unrestricted Cointegration Rank Test (Trace)

Hypothesized no. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob**
None*	0.483266	56.90476	47.85613	0.0056
At Most 1	0.248656	29.17520	29.79707	0.0589
At Most 2*	0.222961	17.16776	15.49471	0.0277
At Most 3*	0.144861	6.572646	3.841466	0.0104

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
*denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 7. Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized no. of CE(s)	Eigenvalue	Max-Eign Value	0.05 Critical Value	Prob**
None*	0.483266	27.72955	27.58434	0.0479
At Most 1	0.248656	12.00744	21.13162	0.5469
At Most 2	0.222961	10.59511	14.26460	0.1757
At Most 3*	0.144861	6.572646	3.841466	0.0104

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
*denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

In Table 4, the trace statistic shows 3 cointegrating equations at 5% significance level while the maximum eigenvalue test in Table 5 shows 1 cointegrating equation at all levels in Class I bank liquidity. The trace test are advantageous if there are atleast two more cointegrating relations in the process than specified under the null hypothesis. Based on the two tests undertaken, the trace test is preferred because it has more cointegrating ranks. The hypothesis of no cointegration in the trace test at none is rejected because the probability 0.0093 is less than 5% and the trace statistic 54.95981 is greater than the critical value 47.85613 at 5% significance level. The same can be said for At most 2 and At most 3 in the trace test. For the maximum eigenvalue, only At most 3 has a probability 0.0136 which is less than 5% and a trace statistic 6.077166

which is greater than the critical value 3.841466 at 5% significance hence showing the presence of cointegration in the series. For Class II banks, the trace test in Table 6 shows the presence of 3 cointegrating equations and the maximum eigenvalue in Table 7 shows 2 cointegrating equations. This points to the existence of a possible long run relationship between the dependent and independent variables in both Class I and II bank liquidity however this is not explored further due to setbacks in acquiring data for a longer time span of at least 20 years and above. A change in the independent variables given by LCR, GSR and BDR will have an effect or impact on the NSFR.

Causality results for the Basel III liquidity standards and traditional liquidity measures are given in Table 8 below.

Table 8. Granger Causality Test Results

Null Hypothesis	Obs	F-Statistic	Prob.
LCR does not GC NSFR	42	4.67881	0.0154
NSFR does not GC LCR	42	0.99859	0.3781
GSR does not GC NSFR	42	3.22953	0.0510
NSFR does not GC GSR	42	3.69710	0.0344
BDR does not GC NSFR	42	1.16531	0.3230
NSFR does not GC BDR	42	3.14460	0.0548
GSR does not GC LCR	42	3.68711	0.0347
LCR does not GC GSR	42	4.90443	0.0129
BDR does not GC LCR	42	4.76004	0.0145
LCR does not GC BDR	42	3.29004	0.0484
BDR does not GC GSR	42	2.37035	0.1075
GSR does not GC BDR	42	0.81661	0.4497

According to the granger causality test results, the null hypothesis that LCR does not granger cause NSFR is rejected due to the low p-value given by 0.0154 which is less than the 5% significance level. The test results further show that the null hypothesis that NSFR does not granger cause LCR is accepted given by the high p-value of 0.3781. The null hypothesis that GSR does not granger cause NSFR is accepted given by the high p-value of 0.3230. The granger causality test therefore shows that estimated LCR has an impact on the NSFR while the GSR and BDR have similar impacts on the LCR. Therefore any changes in the traditional liquidity measures have direct or indirect impact on the Basel III liquidity standards considered in this study.

5. CONCLUSION

The NSFR is yet to be implemented by the Basel committee and aim of this study was to establish the link between bank failure and estimated liquidity standards such LCR as well as traditional liquidity measures comprising of GSR and BDR. In addition the study took into account market wide liquidity risk in the form of traditional measures as a possible contributor to the previous 2007-2009 financial crisis. Changes to any of the independent variables will definitely affect the NSFR as evidenced by the existence of co-integration. The Error correction term size in the Vecm indicates the speed of adjustment of any disequilibrium towards a long run equilibrium and it was found to be negative which is economically significant for the restoration of equilibrium. It confirms the unavailability of setbacks in the long run equilibrium relationship between the dependent and independent variables. This in turn suggests that any short term fluctuations between the independent and the dependent variables gives rise to a stable long run relationship between the variables.

The BCBS should insure that it imposes high penalty charges for banks that do not have sufficient capital and liquidity but are in the business of securitizing assets. There should be a minimum capital and liquidity level set up for each bank to adhere to before they indulge in securitization practices. Governments of each respective country should insure that they set up regulatory boards that will insure sound banking principles are followed by each bank operating in the country. In addition, governments should have strict guidelines for non-bailing of defaulting banks, a process which

will encourage banks to hold enough capital and increase their liquidity to safe levels. In addition, Class II banks have to be regulated with the same measures taken on Class I banks. Some of the Class II banks qualify to trade internationally and have capital reserves similar to those of Class I banks. These Class II banks can therefore securitize and trade assets without notice from regulators which in turn contributes to the risk of default for these structured asset products and in turn results in bank failure. The BCBS should consider increasing the NSFR stress scenario period from one year to one year six months considering it shall be the last line of defence for banks after using the LCR. This will help banks keep enough reserves and liquidity avoiding situations of government bailouts

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CONVENIENCE IN WHITE-COLLAR CRIME: A RESOURCE PERSPECTIVE

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Abstract

White-collar offenders have access to resources that make financial crime convenient. In the rare case of crime suspicion, resources are available in terms of professional attorney work, control over internal investigations, and public relations support. Hiring private investigators at an early stage of potential crime disclosure enables the organization to control the investigation mandate and influence the investigation process and the investigation output. Getting an early start on reconstruction of the past in terms of a fraud examination makes it possible for the suspect and the organization to influence what facts are relevant and how facts might be assessed in terms of possible violations of the penal code. Convenience aspects of private investigations are discussed in this article in terms of five internal investigations, two in the United States (General Motors and Lehman Brothers) and three in Norway (Telenor VimpelCom, DNB Bank, and Norwegian Football Association). The aim of this research is to contribute insights into convenience associated with internal private investigations.

Keywords: Resource-Based Theory, Convenience Theory, White-Collar Crime, Internal Investigation

1. INTRODUCTION

White-collar offenders have access to resources that make financial crime convenient. Convenient individuals are not necessarily neither bad nor lazy. On the contrary, these persons can be seen as smart and rational (Sundström and Radon, 2015). Convenience in white-collar crime relates to savings in time and effort by privileged and trusted individuals to reach goals, explore and exploit opportunities, avoid collapse and pain, and illegally benefit individuals and organizations. Convenience orientation is conceptualized as the value that individuals and organizations place on actions with inherent characteristics of saving time and effort. Mai and Olsen (2016) measured convenience orientation in terms of desire to spend as little time as possible on a task. Basic elements in convenience orientation at white-collar crime are offenders' attitudes toward the saving of time, effort and discomfort in the planning, action and achievement of goals. Generally, convenience orientation is the degree to which an offender is inclined to save time an effort to reach a goal. Examples of goals include obtaining contracts in corrupt countries, avoiding bankruptcy, and buying a private farm. A convenience-oriented person is one who seeks to accomplish a task in the shortest time with the least expenditure of human energy (Berry et al., 2002).

Convenience comes at a potential cost to the offender in terms of the likelihood of detection and future punishment. Reducing time and effort today entails a greater potential for future cost. 'Paying for convenience' is a way of phrasing this proposition (Farquhar and Rowley, 2009).

In this article, we apply resource-based theory to discuss the extent of convenience in white-collar crime. We suggest that increased access to resources makes white-collar crime more convenient. The resource-based perspective is useful in law enforcement since reduced access to resources makes white-collar crime less convenient. The conceptual research in this article is important, since white-collar crime can be detected and prevented to the extent members of the elite are precluded from resources.

The research topic in this article is convenience in private investigations. The purpose is to demonstrate convenience in several cases based on available resources. The empirical research in this article is concerned with private investigations by fraud examiners. In the organizational dimension of crime convenience, suspected white-collar offenders have access to resources. A resource available to suspects is fraud examiners who conduct internal private investigations. Five case studies are presented in this article, two in the United States and three in Norway.

2. RESOURCE-BASED THEORY

White-collar offenders have access to resources to commit financial crime in convenient ways. Furthermore, they have access to resources to conceal crime as well as to prevent prosecution if they are detected. Resource-based theory postulates that differences in individuals' opportunities can be explained by the extent of resource access and the ability to combine and exploit resources. A resource is an enabler that is used to satisfy human needs. A resource has utility and limited availability.

Resource-based theory applied to white-collar crime implies that executives and other members of the elite are potential white-collar offenders that are able to commit financial crime to the extent that they have access to resources that can be applied to criminal actions. Strategic resources are characterized by being valuable, unique, not imitable, not transferrable, combinable, exploitable and not substitutable:

1. *Valuable resource.* Application of the resource provides a highly appreciated outcome. For example, a supplier can be a valuable resource if the vendor is willing to participate in fictitious invoicing.

2. *Unique resource.* Very few have access to this resource, because it is exceptional and rare. For example, an outstanding attorney can be a unique asset if the couternparty has inferior legal assistance.

3. *Not imitable resource.* It is not possible to imitate or copy this resource. For example, an accounting system for subsidy fraud is difficult to copy.

4. *Not transferrable resource.* The resource cannot be released from its context or be moved in any way. For example, price fixing in a cartel is difficult to move to a different industry.

5. *Combinable resource.* The resource can be combined with other resources in such a way that it results in an even more highly appreciated outcome. For example, a frayed property appraiser can be combined with a criminal property developer to commit bank fraud.

6. *Exploitable resource.* The white-collar individual is able to apply the resource in criminal activities. For example, a corrupt son of a government minister is possible to bribe to influence his father so that the business is successful in obtaining local licenses and contracts.

7. *Not substitutable resource.* The resource cannot be replaced by another resource tto achieve a correspondingly high valued result. For example, only the corrupt son of a government minister and no one else is available for corruption to successfully obtain local licenses and contracts.

Organizational opportunity to commit economic crime depends on social capital that is available to white-collar offenders. The structure and quality of social relations in hierarchical and transaction oriented relationships determine the degree of social capital that the offender can exploit. Social capital is the sum of the actual and potential social resources available in a hierarchy and in a network (Adler and Kwon, 2002). Formal as well as informal power means influence over resources that can be used for crime.

Access to resources in the organizational dimension makes it more relevant and attractive to explore possibilities and avoid threats using financial crime. The willingness to exploit a resource possession for white-collar crime increases when it is perceived as convenient. The legal management of key personnel and other resources are important so that the white-collar offender has the ability to commit economic crime by virtue of position in a comfortable way. The resource-based theory implies that the difference between success and failure for white-collar offenders can be explained by the efficient or inefficient ability to leverage strategic resources.

Not only do white-collar offenders have access to resources to carry out financial crime, they also have access to resources to cover criminal acts. Criminal acts are easily hidden in a multitude of legal transactions in different contexts in different locations performed by different people. The organizational affiliation makes crime look like ordinary business. Economic crime is easily concealed among apparently legal activity. Offenders leverage resources that make it convenient to conceal crime among regular business transactions. Especially businesses that practice secrecy enable convenient concealment of financial crime. For example, many multinational companies do not disclose what they pay in taxes in various countries. This kind of secrecy makes it easy to conceal economic crime such as corruption, since regular financial statements are not accessible. Secrecy combined with sloppy and opportunistic accounting can make financial crime even more attractive. Accounting is no mathematical discipline. Rather, the value of accounts receivable, business contracts and warehouse stocks are subject to personal judgments. Auditors are often criticized in the aftermath when financial crime is disclosed.

Chasing profits leaves people more creative in finding ways to make more legal as well as illegal profits for themselves as well as the organization, and people become more creative in concealing crime in various ways (Füss and Hecker, 2008). Crime is carried out so that the risk of detection is minimal and even microscopic (Pratt and Cullen, 2005).

In the rare case of detection of potential crime, the possible offender has access to strategic resources like few others. Available resources include better defense, private investigations, and presentation in the media. The suspected offender can hire the best attorneys paid by the organization or personally. The best attorneys do not limit their efforts to substance defense, where legal issues are at stake. The best defense lawyers also conduct information control and symbolic defense. Information control is concerned with the flow of damaging information about the client. A defense attorney will attempt to prevent police from exploring and exploiting various sources of information collection. Information control implies taking control over information sources that are most likely to be contacted by the police. The police have many information sources when they investigate a case, and these sources can, to a varying extent, be influenced by a defense attorney.

Information is the raw material in all police work. The relative importance of and benefits from pieces of information are dependent on the relevance to a specific crime case, the quality of

information, and the timeliness of information. Information value in police work is determined by information adaptability to police tasks in an investigation. A smart defense lawyer can reduce information value by lowering its fitness for policing purposes. Information quality can be reduced in terms of accuracy, relevance, completeness, conciseness, and lack of scope.

In addition to substance defense and information control, a white-collar defense lawyer is typically involved in symbolic defense as well. A symbol is an object or phrase that represents an idea, belief, or action. Symbols take the form of words, sounds, gestures, or visual images. Symbolic defense is concerned with activities that represent defense, but in themselves are no defense. It is an alternative and supplement to substance defense. Substance and symbolic defense are different arenas where the white-collar attorney can work actively to try to make the police close the case, to make the court dismiss the case, and to enable reopening of a case make the client plead not guilty. The purpose of symbolic defense is to communicate information and legal opinions by means of symbols. Examples of attorney opinions are concerns about unacceptable delays in police investigations, low-quality police work, or other issues related to police and prosecution work. Complaining about delays in police investigations is not substance defense, as the complaint is not expressing a meaning about the crime and possible punishment. Complaining is symbolic defense, where the objective is to mobilize sympathy for the white-collar client.

In the rare case of detection of possible crime, the potential offender has access not only to better defense as a strategic resources, but also often access to an alternative avenue of private investigation. When suspicion of misconduct and crime emerges, then the organization may hire a fraud examiner to conduct a private investigation into the matter. The enterprise takes control of suspicions by implementing an internal investigation. An external law firm or auditing firm is engaged to reconstruct past events and sequence of events. Typically, the resulting investigation report points to misconduct, while at the same time concluding that there have been no criminal offenses. The police will monitor the internal investigation and await its conclusion. When the conclusion states that there may be misconduct, but no crime, then the police and prosecution tend to settle down with it.

In addition to better defense and private investigation as available resources in case of detection of possible crime, the potential offender can also hire public relations consultants. These consultants help tell a story to the media where the potential offender is presented as a victim of unfortunate circumstances.

Furthermore, a white-collar defendant may behave in court so that he or she often gets more sympathy and milder sentence than other defendants, partly because the person belongs to the same segment in society as the judge, prosecutor and attorney. Finally, a convicted offender has the expertise and network to hide criminal profits and protect himself against confiscation, so that the government will be unsuccessful in its attempts at asset recovery.

If a white-collar criminal should end up in jail, defense attorneys work hard to make prison life as easy as possible for the client. Attorneys argue that it is much worse for a member of the elite to end up in prison than for other people. After a short while, the white-collar offender typically gets most of his freedom back in an imprisonment setting to avoid too much damage. However, research indicates that it is easier for a white-collar criminal than for a street criminal to spend time in prison. White-collar offenders tend to find new friends more convenient, and they are able to sleep all night, while most other inmates may have trouble sleeping and making friends in prison (Dhami, 2007; Stadler et al., 2013).

Nevertheless, defense lawyers apply the special sensitivity hypothesis, which claims that white-collar offenders are ill-equipped to adjust to the rigors of prison life (Stadler et al., 2013: 2):

Termed the "special sensitivity hypothesis", the claim is made that white-collar offenders experience the pains of imprisonment to a greater degree than traditional street offenders. Upon incarceration, they enter a world that is foreign to them. In the society of captives, status hierarchies found in the larger community are upended, as those with more physical prowess and criminal connections "rule the joint". White-collar offenders discover that they are no longer in the majority in a domain populated largely by poor and minority group members – in fact, prison is a place that a researcher suggests is the functional equivalent of an urban ghetto.

Furthermore, Stadler et al. (2013) found that research investigating the sentencing of white-collar offenders has revealed that federal judges often base their decisions not to impose a prison sentence for white-collar offending on a belief that prison is both unnecessary for and unduly harsh on white-collar offenders.

The essence of resource-based theory lies in its emphasis on the internal resources available to privileged individuals in the elite, rather than on external forces. Resources are available to conveniently commit crime, conceal crime, and avoid consequences in case of detection. According to the resource-based theory, performance differences can be attributed to the variance in individuals' and firms' resources and capabilities. Firms are considered to be highly heterogeneous, and the bundles of resources available to each firm are different. This is both because firms have different initial resource endowments and because managerial decisions affect resource accumulation and the direction of firm development as well as resource utilization.

Resource-based theory rests on two key points. First, resources are the determinants of individual and firm performance. Second, resources are only available to a few. Individuals and firms must continually enhance their resources and capabilities to take advantage of changing conditions.

Increased access to resources makes white-collar crime more convenient. Opposite, reduced access to resources makes white-collar crime less convenient. In a law enforcement perspective, white-collar crime can be detected and prevented to the extent members of the elite are precluded from resources.

3. CONVENIENT INTERNAL INVESTIGATIONS

In the organizational dimension of convenience theory (Gottschalk, 2016b), suspected white-collar offenders have access to resources. A resource available to suspects is fraud examiners who conduct internal private investigations. Hiring private investigators at an early stage of potential crime disclosure enables the organization to control the investigation mandate and influence the investigation process and the investigation output. Getting an early start on reconstruction of the past in terms of an investigation makes it possible for the suspect and the organization to influence what facts are relevant and how facts might be assessed in terms of possible violations of the penal code.

Since law enforcement has scarce resources, they sometimes welcome private investigations as a source for fact finding. While the internal investigation is going on, many police departments will be reluctant to look into the matter. When an internal investigation concludes that no penal code has been violated, many police departments are reluctant to open a criminal case. They trust private investigators both out of necessity and professionalism.

Therefore, the theory of strategic resources in the economical dimension of convenience theory can shed light on the role of fraud examiners in private internal investigations. This chapter presents some investigation cases in the United States and Norway that demonstrate the role of internal investigations as strategic resources.

It is important to emphasize that none of the cases described in this chapter involve white-collar crime prosecution or conviction. There were only suspicions of misconduct and crime. The convenience of internal investigations can be found in an attempt to prevent law enforcement to get interested in the cases. The convenience can be found in preventing police investigations.

4. VALUKAS INVESTIGATION AT GENERAL MOTORS

Mary Barra was chief executive officer at General Motors in the United States. She hired fraud examiner Anton Valukas at law firm Jenner & Block to investigate the circumstances that led up to the recall of the Cobalt and other cars due to a flawed ignition switch. Valukas concluded that Barra had done nothing wrong. Instead he pointed at others in the organization for misconduct and potential crime. As a consequence, Barra was never investigated or prosecuted by law enforcement.

The report of investigation by Valukas (2014) is 325 pages long. The report says on page 227:

As part of Jenner's engagement, we were asked to prioritize our review of the involvement, if any, of these three current senior leaders in the events that led to the belated ignition switch recall.

One of the three senior leaders was Mary Barra who had been part of top management at General Motors for many years. The internal investigation report acquitted Barra by emphasizing that (Valukas, 2014: 228):

"Based on that experience and others she believed that recall issues were addressed with appropriate urgency and that the recall decision-making process worked well".

"Barra first began to learn of some aspect of the Cobalt's Ignition Switch issue in December 2013, when she was told by Calabrese that the company was working on an analysis that might lead to a decision to recall the Cobalt. She did not learn more about the matter until shortly after the EFACD made the recall decision on January 31, 2014."

The ignition switch failure was ignored by GM management for many years. Finally, GM had to recall nearly 30 million cars worldwide and pay compensation for 124 deaths. The ignition switch could not shut off the engine during driving and thereby prevent the airbags from inflating. As part of a deferred prosecution agreement, GM agreed to pay a fine of $900 million to the United States (Korosec, 2015).

But CEO Barra was never investigated or prosecuted by law enforcement in the United States. By not knowing, she was not responsible for what had happened, according to private investigator Valukas (2014).

Valukas (2014) addresses in the report the role of senior leadership and board in the scandal. Investigators reviewed a large number of documents collected from numerous custodians, including potentially relevant e-mails any of the senior leaders sent or received at pertinent times. They interviewed GM employees in the top leaders' respective chain of reporting who might have discussed Cobalt-related issues with them. All of the evidence that investigators reviewed corroborated the conclusion that none of the senior executives had knowledge of the problems with the Cobalt ignition switch or non-deployment of airbags in the Cobalt until December 2013 at the earliest.

Before becoming the CEO at GM in January 2014, Mary Barra had served for the preceding three years as a senior vice president for global product development. Barra became well acquainted with the recall process when the issue involving the Chevrolet Volt's lithium battery arose in 2011. Based on that experience and others she believed that recall issues were addressed with appropriate urgency, and that the recall decision-making process worked well (Valukas, 2014).

Investigators provided opportunities to witnesses to contradict. For example, Raymond DeGorgio, an engineer who allegedly approved the faulty switch and later replaced it with a better one without notifying anyone, just refused the allegations and stated during the interview that he knew nothing. While reading the report (especially ignition switch portion), one can find that the report from the very beginning is leading to one suspect, DeGorgio. The testimonies from Delphi mechatronics directly incriminate him for his negligence and persistence to use flaw switches. After publication of the report, engineer DeGorgio alongside many other engineers were terminated from their positions.

Not only engineers at GM were blamed, while top executives were acquitted. Also legal staff was criticized in the report. Legal staff did not provide specific guidance concerning the types of issues that could become relevant in terms of safety problems and unresolved safety challenges. In-house counsel was not aware of the expectation that they should respond appropriately if they became aware of any threatened ongoing or past violation of a federal, state or local law or regulation, a breach of fiduciary

duty, or violation of GM policy. After Valukas (2014) released his report, GM fired 15 low and middle-level managers from its engineering and legal staff and disciplined five others.

Jones (2014) is critical to the investigation and consequences of the investigation:

While the Valukas report outlines what can be best described as corporate criminality, it attributes GM's refusal to issue a recall to "errors" or "failure to connect the dots". This is an obvious whitewash. In reality the lives of scores if not hundreds of mostly young people were sacrificed on the altar of corporate profits.

This is not just the product of the willful actions of executives, though GM officials should be held to criminal account. It above all expresses the incompatibility of the capitalist mode of production based on production for private profit with basic social needs. Corporations driven by the demands of Wall Street for ever-higher returns on investment are bound to ignore safety for the sake of cutting costs.

Newspapers reported in the fall of 2014 that Megan Phillips, 17, was behind the wheel of the 2005 Chevy Cobalt when the ignition switch led the car to lose power steering, power braking and the airbag's ability to deploy. Her friend Amy Rademaker was in the front seat and died one week before her 16th birthday.

Federal prosecutors started in the fall of 2014 to investigate GM's legal department for possible criminal liability in the way it handled the company's deadly ignition switch problem. The lawyers came under federal criminal investigation by the FBI for allegedly concealing ignition switch evidence. U.S. officials investigating the matter were seeking to determine whether lawyers working for GM, both internally and externally, concealed knowledge and evidence of the ignition switch defects. The police investigation was triggered by the internal Valukas (2014) report. GM had by then fired 15 employees, including several in its legal department. However, the head of GM's legal department, Michael Milliken, a 37-year veteran at the company, "has kept his position within the company, a circumstance that has drawn harsh disapproval and outrage from critics" (Niland, 2014).

Attorney Anton Valukas at law firm Jenner & Block is a well-known fraud examiner in the United States. He has managed a number of internal investigations in major organizations such as General Motors and Lehman Brothers. Valukas was the United States attorney for the northern district of Illinois from 1985 to 1989. The most notable event of Valukas' four-year term was Operation Greylord which was an investigation into judicial corruption in Cook County in Illinois that ultimately resulted in the indictment of 92 people, including 17 judges. Valukas returned to Chicago law firm Jenner & Block, where his practice focused on white-collar criminal defense. He became the chairman of Jenner & Block in 2007, in which capacity he gained notoriety in 2009, when he was appointed bankruptcy examiner in the bankruptcy of Lehman Brothers.

Jenner & Block is a law firm of approximately 450 attorneys with offices in Chicago, New York, Los Angeles, and Washington, DC in the United States. The firm works on litigation cases involving anti-trust and competition law, bankruptcy, copyright, intellectual property, media and first amendment, privacy and information governance, real estate and construction, and white-collar defense and investigations. The firm does also work in transactional areas such corporate finance, employee benefits, mergers and acquisitions, real estate, and tax practices (www.jenner.com).

5. VALUKAS INVESTIGATION AT LEHMAN BROTHERS

Valukas (2010) bankruptcy report on Lehman Brothers consists of 9 volumes of a total of 2,300 pages. The table of contents alone is 45 pages. It is long, but judge James M. Peck of the U.S. Bankruptcy Court in Manhattan said the released report on the causes for the Lehman Brothers Holdings bankruptcy reads like a "best seller" (Corkery, 2010). Financial services firm Lehman Brothers filed for bankruptcy protection in 2008. The filing was the largest bankruptcy filing in U.S. history, with Lehman holdings of over $600 billion in assets.

The investigation report by financial crime specialist Valukas on Lehman Brothers was by the press coined the "Valukas Report" and universally applauded for its clarity and usefulness in determining what brought about the demise of the bank. Chambers USA named Valukas one of the country's leading litigation lawyers for eight consecutive years, and in 2009, Chicago Lawyer named him Person of the Year. He has been appointed to a number of special investigative roles and served on task forces on financial crime.

Valukas (2010) concluded in the private investigation report that Lehman failed because it was unable to retain the confidence of its lenders and counterparties, and because it did not have sufficient liquidity to meet its current obligations. Lehman was unable to maintain confidence because a series of business decisions had left it with heavy concentration of illiquid assets with deteriorating values such as residential and commercial real estate. Confidence was further eroded when it became public that attempts to form strategic partnerships to bolster its stability had failed.

The investigation report begins with a discussion of the business decisions that Lehman made well before the bankruptcy and the risk management issues raised by those business decisions. Ultimately, investigators conclude that while certain Lehman's risk decisions can be described in retrospect as poor judgment, they were within the business judgment rule and do not give rise to colorable claims. But those judgments, and the facts related to them, provide important context for the other subjects on which investigators found colorable claims. For example, after saddling itself with an enormous volume of illiquid assets that it could not readily sell, Lehman increasingly turned to deviant acts to manage its balance sheet and reduce its reported net leverage (Valukas, 2010).

The time allotted to the examiner, Anton R. Valukas, was reduced compared to other large investigations due to the rapid functions necessary in a bankruptcy proceeding. The examiner began his investigation by requesting access to Lehman Brothers records, both online and physical files stored within their office. Once his request was granted he used key search terms to sort through approximately three-hundred and fifty billion pages

of online data sheets and client information sheets. (Valukas, 2010).

Valukas then requested hard copy files of other companies whose records corresponded with Lehman Brothers. Valukas looked specifically at companies such as JP Morgan, Ernst & Young, and S &P among records from sources such as The Federal Reserve. Over five million records from these sources were maintained in an online database cataloging them by company and then by relevance. (Valukas, 2010).

The examiner was able to gain access to ninety of Lehman Brother's operating, financial, valuation, accounting, trading and other data systems. Much of the software was unorganized and outdated which only slowed down the process. Valukas enlisted the help of numerous attorneys in scouring through the endless databases and documents searching through the use of key terms and essential events which could point to misconduct. (Valukas, 2010).

Valukas then continued his investigation by speaking with examiners from other large bankruptcy cases such as WorldCom, Refco and SemCrude in order to obtain advice from them as to the best practices for successful investigation report. Valukas used some of the other attorneys and examiners in the next step of his investigation, the interview stage. Valukas used a set of informal interviews with two attorneys present during each to take precise notes and make sure all laws were followed. (Valukas, 2010).

The interviews' main goals were to gain a better perspective on where everyone stood opinionwise on the filing for bankruptcy, why they thought Lehman Brothers failed and other essential questions that could lead to evidence of misconduct or point to new information. The examiner gave the person to be interviewed advanced notification of the topics to be discussed and the documents they would be asked to interpret. Valukas was met with great cooperation from all two hundred and fifty people he and the other attorneys interviewed.

Valukas (2010) concluded his investigation as follows:

1. The examiner does not find colorable claims that Lehman's senior officers breached their fiduciary duty of care by failing to observe Lehman's risk management policies and procedures.

2. The examiner does not find colorable claims that Lehman's senior officers breached their fiduciary duty to inform the board of directors concerning the level of risk Lehman had assumed.

3. The examiner does not find colorable claims that Lehman's directors breached their fiduciary duty by failing to monitor Lehman's risk-taking activities.

Valukas (2010) created an impression of having planned the investigation strategy with the goal of finding the presence of white-collar criminal activity, however, found no evidence of such a crime. When investigators were unable to find evidence of any misdeed regarding Repo 105 transactions that had taken place, the investigation abruptly finished because investigators were seemingly unable to readjust their view point to look at other forms of transactions that had taken place.

Chairman and chief executive at Lehman Brothers was Richard S. Fuld. He received a bonus of $20 million dollars in 2007. Fuld was never investigated or prosecuted by law enforcement in the United States.

Lehman Brothers Holdings Inc. was a global financial services firm. Before declaring bankruptcy in 2008, Lehman was the fourth-largest investment bank in the United States with more than twenty thousand employees. They all lost their jobs because of misconduct and potential crime by chief executives. Bankruptcy was declared following the massive disappearance of its clients, drastic losses in its stock, and devaluation of assets by credit rating agency. The collapse was largely sparked by Lehman's involvement in the subprime mortgage crisis and subsequent allegations of negligence and malfeasance. Lehman was a financial event with long-lasting geopolitical consequences (Irwin, 2016).

Although Valukas (2010) indicated that Lehman executives regularly used cosmetic accounting gimmicks at the end of each quarter to make its finances appear less shaky than they really were, no executives became subject to law enforcement attention.

According to Cohan (2016), CEO Fuld was nicknamed the Gorilla. Joe Gregory was president at Lehman Brothers, while Erin Callan was chief financial officer (CFO). CFO Callan wrote later a book that describes her ruthless ambition, which left behind trusting colleagues, boyfriends and a former husband for whom she steadfastly refused to make time as she focused on her successful career. The book entitled "Full Circle" traces her experiences to the highest-ranking woman on Wall Street during the financial crisis as CFO of Lehman Brothers (Montella, 2016).

6. DELOITTE INVESTIGATION AT TELENOR VIMPELCOM

When top executives at Norwegian telecommunications company Telenor were suspected of involvement in VimpelCom's corruption in Uzbekistan, the board at Telenor hired fraud examiners at law firm Deloitte to conduct an internal investigation. Telenor sought to control damage from bribery allegations (Hovland and Gauthier-Villars, 2015). The report of investigation concludes that misconduct has occurred, but there was no evidence of white-collar crime (Deloitte, 2016). Based on this conclusion, the Norwegian national authority for investigation and prosecution of economic crime (Økokrim) decided not to investigate the case.

VimpelCom headquartered in Amsterdam in the Netherlands is one of the world's largest telecommunications services operators providing voice and data services. VimpelCom is registered on the U.S. stock exchange. VimpelCom entered into a deferred prosecution agreement with the United States Department of Justice and with the prosecution service in the Netherlands in 2016, where the company paid $835 million to the U.S. Securities and Exchange Commission and to the public prosecution service of the Netherlands. According to the Statements of Facts for the agreement, the bribe related to the acquisition of 3G frequencies in 2007 was falsely recorded in VimpelCom's consolidated books and records as the acquisition of an intangible asset, namely 3G frequencies, and as consulting expenses.

Telenor was a substantial shareholder in VimpelCom with an economic and voting interest of

33% in the company. A number of top executives at Telenor had over the years been on the board of VimpelCom. The internal investigation case in Norway was concerned with the role of these individuals. Deloitte (2016) investigated the matter.

Jon Fredrik Baksaas had been the CEO at Telenor from 2002 to 2015. He had been a member of the board at VimpelCom since 2011. Nevertheless, fraud examiners Anne Helsingeng and Ingebret Hisdal concluded in their report that the corruption concerns "did not come to the attention of Baksaas before March 2014" (Deloitte, 2016: 7).

A middle manager at Telenor was a whistle-blower on VimpelCom corruption already in 2011. He blew the whistle by reporting suspected wrongdoing to top executives at Telenor, but CEO Baksaas was not informed (Deloitte, 2016: 7 and 26 and 28):

The fact that Baksaas was a board member of the VimpelCom Supervisory Board, has in our view also affected how individuals have handled the 2011 concerns internally at Telenor. Complicated confidentiality, and in certain cases legal privilege issues, have also affected the internal handling at Telenor (…)

We have been informed that when Baksaas became a Telenor nominee in December 2011, he was not informed either by the outgoing or by the two incumbent Telenor nominees about the concerns raised in Employee A's e-mail of 4 October 2011. According to Nominee C he cannot recollect one way or the other whether he discussed with Baksaas Employee A's concerns at the time Baksaas re-entered the VimpelCom supervisory board. According to Baksaas, he did not become aware of the reported concerns before March 2014, when he was interviewed as a witness in relation to the VimpelCom investigation. Executive D has informed us that he made Baksaas aware of the concerns, prior to Baksaas being interviewed. Since Baksaas was a member of VimpelCom's Supervisory Board of Directors since December 2011, we have therefore assumed that the concerns were not raised as an issue at VimpelCom board level by the nominees that had knowledge of the concerns, or discussed with Baksaas in his capacity as Telenor nominee before he received the information in March 2014 (…)

Executive E has also explained to us that the reason for not informing Baksaas at this stage was also based on the assumption that Baksaas already had been informed in his capacity as Telenor nominee to the VimpelCom Supervisory Board and/or through the various processes initiated by Telenor to try to get a better understanding of VimpelCom's investments in Uzbekistan (…)

We have not been presented with any evidence indicating that the concerns expressed by Employee A were escalated internally at Telenor to Baksaas.

The acquittal of Baksaas as a suspect by private Deloitte (2016) investigators caused Økokrim not to look into the matter. Instead, Økokrim helped prosecutors in the Netherlands and Switzerland to collect intelligence on the VimpelCom corruption. Also, Økokrim charged former CEO at VimpelCom, Jo Lunder, a Norwegian who was not included in the Deloitte investigation (Hovland and Gauthier-Villars, 2015).

While Telenor owned a substantial share of VimpelCom, the Norwegian government was a majority shareholder of Telenor. Therefore, Telenor engaged in a dialogue with its majority owner, the Norwegian government, to discuss Telenor's role and responsibility in VimpelCom. Svein Aaser was at that time chairman of the board at Telenor. As later became public, Aaser did not disclose everything to the minister in the fall of 2014. Industry minister Monica Mæland therefore said in a statement that she did not trust Aaser, and he had to leave the chairman position as a consequence.

The whistleblower had informed two executives at Telenor in 2011, labelled Executive D and Executive E respectively in the report of investigation by Deloitte (2016). Executives D and E lost the blame game (Gottschalk, 2016a). Executive D was head of legal and compliance at Telenor, while Executive E was chief financial officer. Both executives had to leave Telenor when the report of investigation by Deloitte was published. They got the blame for not having told CEO Baksaas about the corruption scandal at VimpelCom, which they learned about from the whistleblower Employee A in 2011 (Deloitte, 2016: 31):

In our opinion, Executive D, as Head of Legal and Compliance at Telenor, has had a responsibility to escalate the concerns expressed by Employee A internally at Telenor. In our view, this responsibility is embedded in his role (…)

(Executive E) should subsequent the 12 February 2013 board meeting have informed Baksaas that he was uncertain whether the VimpelCom 2011 transactions and the related concerns expressed by Employee A was disclosed.

Both executives D and E disagreed with investigator assessments (Deloitte, 2016: 32):

(Executive E) disagrees with our assessment as laid out in the third paragraph above. Executive E has further stated that given his role which is clearly outside VimpelCom, the strict personal confidentiality undertakings, and other actions and reasonable assumptions Executive E has taken in this matter, his own consideration is that he also on this occasion acted correctly and according to good leadership.

Several experts were skeptical of the Deloitte report. The president of the Norwegian lawyer association, Curt A. Lier, expressed concern about internal investigation reports, especially when there is an issue of whether or not crime has occurred (Ekeberg, 2016).

It was disclosed in the media that Pål Wien Espen was executive D while Richard Olav Aa was executive E. Pål A few months after their resignation from Telenor; Richard Olav Aa was hired for a similar CFO position in the Fred. Olsen Group, while it was expected that Pål Wien Espen would join a Norwegian law firm as a partner (Trumpy, 2016).

Jon Fredrik Baksaas retired as CEO at Telenor in 2015, and Sigve Brekke took over the position. Brekke was not interested in expanding the internal investigation to other parts of Telenor business. It was suggested that possible corruption in India, Thailand and Myanmar had occurred and might be investigated, since Telenor had obtained telecom rights in those corrupt countries. Before becoming the CEO, Brekke was based in Bangkok and responsible for Telenor business in all Asian markets (Hustadnes, 2015).

Per Olaf Lundteigen, a member of Norwegian parliament "Stortinget", wrote the following statement after a public hearing about Telenor's involvement in VimpelCom in June 2016 (www.stortinget.no):

This member would point out that the size of the fine, the disturbing Deloitte report as well as the risk of new corruption surprises makes it necessary for the ministry to initiate a new investigation. This is to get a

total review of all Telenor business abroad, especially in Eastern Europe, Thailand, India, and Myanmar to clarify how zero tolerance of corruption is being practiced.

But nothing happened.

7. HJORT INVESTIGATION AT DNB BANK

When Norwegian bank DNB was accused of fraud and corruption in connection with media leaks from the Panama Papers, corporate management immediately implemented a preliminary internal investigation to clear themselves. After only three days, attorneys at law firm Hjort concluded that no violations of Norwegian penal code had occurred among executives at DNB Bank. At the press conference, Rune Bjerke, chief executive in the bank, could announce that an independent law firm (Hjort) had concluded that there was no evidence of crime. By claiming that the law firm had already examined suspicions of crime, Bjerke may have prevented investigation and prosecution by Norwegian law enforcement agency Økokrim (Langset et al., 2016).

Reactions were loud and swift after Oslo newspaper "Aftenposten" revealed how Norway's biggest bank, DNB, made it possible for wealthy customers to avoid taxes by hiding assets in tax havens through DNB in Luxembourg and Panama. DNB's chief executive Rune Bjerke, who has close ties to the Labor Party – the largest political party in Norway – was facing calls for his resignation (Brustad and Hustadnes, 2016). Customers said they were disgusted and angry, government officials and state authorities expressed a sense of betrayal, and newspapers were editorializing that DNB had violated the confidence of politicians, taxpayers as well as customers who supported the bank during the financial crisis less than a decade ago.

The ministry of trade, industry and fisheries owned 34 % of DNB bank. This large ownership fraction occurred as a consequence of the collapse of the financial sector during the financial crisis. When Panama Papers were leaked and evidence of DNB involvement occurred, DNB called the press conference and at the same time submitted a written statement to the minister, Monica Mæland. She was, however, not happy with the explanations in the statement and returned a number of questions to the chairperson at the bank, Anne Carine Tanum.

Again, chairperson Tanum hired attorney Kristin Veierød at law firm Hjort to reply to the minister's questions, although law firm Hjort already very promptly had concluded that there were no traces of corporate crime.

Law firm Hjort was to carry out a fraud examination of DNB's knowledge of and involvement in tax havens such as the Seychelles. The investigation was to answer questions from the minister concerning possible violations of internal guidelines at DNB Luxembourg, concerning governance structure in DNB, concerning corporate culture, concerning audit functions, concerning whistle-blowing routines, and the need for future investigations.

Law firm Hjort was hired in April 2016 to carry out this investigation, and they were expected to complete the work by June. However, they were still not done in July, and chairperson Tanum was thus unable to provide answers to minister Mæland in August.

It was probably convenient for DNB management to quickly respond to accusations in the Panama Papers by initiating a prompt Hjort investigation and to call a press conference as well as submit the Tanum (2016) statement to the minister. DNB management may have expected that their fast initiatives would solve the situation so that the bank could return to its business as usual. However, the loud and lasting reactions combined with the surprising new list of questions from the minister made bank management confused and silent.

From a convenience perspective, DNB chief executive Rune Bjerke argued that he did not know about the practice at their subsidiary DNB Luxembourg helping with post box companies in the Seychelles and other tax havens through a law firm in Panama. Furthermore, DNB management finds it convenient to remain convinced that this bank practice may have represented misconduct, but no crime.

When the Panama Papers disclosed DNB involvement in tax havens for their clients, DNB executives were quickly stating that this practice was not according to bank ethics and was terminated. They apologized for unethical bank practice, but claimed they were not to blame. Chairperson Tanum (2016: 13) wrote in her statement to the minister:

It is the view of the board that DNB Luxembourg should have refrained from facilitating customers establishing companies on the Seychelles from 2006 to 2008. Not because it was illegal, or that customers necessarily have done anything wrong, but because the structures themselves could be abused for hiding assets and income from the internal revenue service. Although it is the responsibility of the customers to report to the internal revenue service, DNB Luxembourg should not have facilitated corporate structures that could be misused. In addition, the board underlines that to facilitate for customers establishing companies in low-tax countries is far from what a bank should be involved in.

Knowledge about DNB Luxembourg's services never reached the CEO, and it was never discussed in executive meetings or in board meetings at DNB.

In the economical dimension of convenience theory, it seems that wealthy Norwegians are important bank clients for whom DNB provided secrecy services. In the organizational dimension, it seems that transactions could be hidden on the electronic road from DNB Luxembourg via Panama arrangements to tax havens. In the behavioral dimension of convenience theory, it seems that DNB executives think they are not to blame since they did not know about the practice.

8. LYNX INVESTIGATION AT FOOTBALL ASSOCIATION

Yngve Hallén was president of the Football Association of Norway (Norwegian: Norges Fotballforbund, NFF). The association organizes men's and women's national teams, as well as the Norwegian premier league. There are two thousand football clubs with four hundred thousand players in Norway, which has less than six million inhabitants. The association is the largest sports federation in Norway. Like in most other parts of the world, there is much more money involved in Norwegian football now than there was before. Elite players receive a solid salary, and clubs are into

selling and buying players. When a player is sold to the next club, previous clubs are often entitled to a transfer fee.

In 2012, there were strong rumors that Norwegian clubs cheated with transfer fees. For example, a player from Island who played for the French club Nancy, was sold from the Norwegian club Stabæk to the Norwegian club Vålerenga. Nancy was expecting a transfer fee, but the pricing of the player was such that Nancy received very little.

In this situation of rumors about fraud in Norwegian football, president Yngve Hallén initiated an internal investigation by law firm Lynx. Their mandate was to examine all recent player transfers to establish whether or not fraud was occurring. President Hallén felt confident that nothing would be found, and formulated in the mandate that the purpose of the private investigation was to help "strengthen the confidence in Norwegian football" (Lynx, 2012: 13). This mandate formulation was based on the assumption that nothing would be found. Norwegian sports associations have always believed that they were clean in all respects unlike sports federations in other countries.

However, after a while, fraud examiners at Lynx came on the track of fraud at player transfers. To collect solid evidence, they asked for more detailed information. Norwegian football clubs refused, and Hallén supported them. After a while, Hallén terminated the whole investigation. The Lynx investigation was never completed (Johnsen, 2015).

Three years later, when Hallén was up for re-election as president of the Football Association of Norway, he first launched his candidacy, but later withdrew it, because of the Lynx investigation scandal and other scandals where he had provided favors to members of the election committee (Johnsen and Melnæs, 2016).

In the economical dimension of convenience theory, Hallén struggled to become a hero within Norwegian sports. An internal investigation in the organizational dimension should provide evidence that nothing was wrong in international player transfers involving Norwegian clubs. He stopped the investigation in the behavioral dimension of convenience theory, maybe out of higher loyalty to the reputation of Norwegian sports.

9. CONCLUSION

This article has applied resource-based theory to study white-collar crime. Members of the elite have access to resources to commit financial crime in convenient ways. A typical example is the chief executive officer (CEO) who is the only executive at level 1 in the hierarchy of an organization. All other executives in the organization occupy lower levels. At level 2, we find the most senior executives. This article suggests that resources available to the CEO and other members of the elite should be controlled and limited to reduce the number of occurrences of white-collar crime.

The Valukas investigation at General Motors seems to protect the client paying for the investigation. The Valukas investigation at Lehman Brothers avoids making executives accountable. The Deloitte investigation at Telenor avoids making Telenor members on the VimpelCom board responsible for corruption in Uzbekistan. The Hjort

investigation at DNB bank avoids blaming executives who supposedly did not know about structures in tax havens. The Lynx investigation at football association illustrates that internal investigations are stopped when investigators ask questions that clients dislike.

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MACROECONOMIC VARIABLES AND FOOD PRICE INFLATION, NON-FOOD PRICE INFLATION AND OVERALL INFLATION: A CASE OF AN EMERGING MARKET

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Abstract

The paper analyses the association between certain macroeconomic variables and food price inflation, non-food price inflation and overall inflation in Zimbabwe, and also seeks to determine the level of association between these variables, given food security implications and overall well-being of its citizens. The study reveals that during the 2010 to 2016 period, Zimbabwe experienced stable food prices—annual food price inflation for food and non-alcoholic beverages averaged a relatively low growth rate of 0.12% monthly, while non-food inflation monthly growth rate was 0.09% and overall inflation growth rate was 0.11%. Although inflation from 2010 had been declining, of late, the increase in annual inflation has been underpinned by a rise in non-food inflation. Zimbabwe's annual inflation remains lower than inflation rates in other countries in the region. Despite the increases lately in overall inflation, it remained below zero in January 2016, mostly driven by the depreciation of the South African rand and declining international oil prices. It should also be noted that domestic demand continued to decline in 2015, leading to the observed decline in both food and non-food prices. While food inflation has remained relatively low, it should be noted that non-food expenditures is significant component of the household budget and the rising prices result often lead to declining purchasing power and force households to make difficult choices in terms of their purchases. The findings of the study are food inflation has a low association with the independent variables under study; Zimbabwe broad money supply, rand-dollar exchange rates and the South Africa food inflation. There is, however, a very strong association between non-food inflation and these independent variables, as well as between overall inflation and the independent variables. Given the mostly rural population and the high level of unemployment in Zimbabwe, it can be surmised that the distributional burden of the effects of rising non-food prices between 2009 and 2016 fell mostly on these vulnerable groups as they had the lowest disposable income. In addition, it can also be surmised that domestic production can cushion the impact of rising prices in general, particularly on food. A deliberate policy of increasing domestic food production would therefore go a long way in ensuring lower price changes of both food and non-food items.

Keywords: Dollarization, Exchange Rates, Money Supply, Food Prices, CPI, Zimbabwe, South Africa

1. INTRODUCTION

It is imperative for policy makers and governments to understand the significance of food price changes and how they affect consumers. This study looked at the current state and outlook for Zimbabwe food prices. It looked at food-price changes and how these changes affected Zimbabwean consumers

between 2009 and 2016. Between 2006 and 2012, a number of economic factors emerged that influenced commodity and household goods market prices upward, especially cereals, grains, transportation and energy costs. These factors included declining currency reserves in Zimbabwe, Zimbabwe's government land policy, strong pressure on fiscal governance, rising world fuel prices, the deterioration of the South African Rand against the US dollar and the scarce rainfall in the region that led to poor harvests and a sharp decline in the supply of grains and meat products; these factors contributed to sharp increases in the prices of meat, dairy products, grains and feed, energy and transportation costs. The collapse of Zimbabwe's economy in 2009 was driven largely by these endogenous and exogenous forces.

Higher prices have a direct impact on the purchasing power for consumers, as they find themselves with a diminished spending budget. The sharp increases in retail food prices during the period of study were made worse by the global financial crisis of 2008 that led to a decline in both gross domestic product (GDP) and personal income. While the crisis occurred prior to the study, the it led to a severe global economic recession in 2009, and, for Zimbabwe, it worsened in 2009, with real spending power declining sharply, along with hyperinflation that reached over a trillion percent, and eventually plunging the economy into a crisis and resulting in the government decision to defacto dollarization in March 2009.

The economic recession also led to a decline in household wealth, reduced bank lending ability for banks, declining wages for employees and rising unemployment. Unemployment generally has a lagged effect and the effects of this economic downturn in Zimbabwe was felt in the post 2009 year. This was mainly due to the need for companies being required to obtain permission for such requests in line with the labour laws of Zimbabwe then. As a result, Zimbabwe's unemployment rate did not peak until 2015, when it reached 80-90%. Monthly inflation of domestically produced retail food prices take time to reflect as the commodities are produced at farms and factories. Post 2008, agricultural farm produce suffered a severe supply shock, leading to pressure on the supply price of such commodities. Prices for most agricultural have since shown a steady decrease as a result of increased supply and reduced spending power of consumers.

With effect from January 2013, a new Consumer Price Index (CPI) was introduced with new weights and a new classification in line with international guidelines. The new Classification of Individual Consumption by Purpose (COICOP) resulted in the creation of a new classification which resulted in coming up with 83 classes, 41 groups and 12 divisions. The CPI basket now has 495 items as opposed to 428 previously.

This study uses time-series analysis to identify and estimate the magnitude of the statistical linkages between Zimbabwe food inflation, Zimbabwe non-food inflation, Zimbabwe CPI and Zimbabwe broad money supply, rand-dollar exchange rates and the South Africa food inflation. Time series data used in the study covered the period 1 January 2010 to 31 January 2016.

The next section provides the literature review on the relationship of these variables discussed above and how they influence these indices in Zimbabwe.

2. REVIEW OF LITERATURE

The influences of the growth (and the decline) of income and demand for goods and services in Zimbabwe during Zimbabwe's economic and fiscal crisis that emerged in the period up to 2009 was discussed briefly in the introduction. Food price inflation is the result of pressures that take place from the farming of the product and along the food supply chain, which includes energy, transportation, food processing, packaging and logistics. A number of costs contribute to the gross farm product price, mainly input costs, farm labour, transportation, processing and storage, as well as other services like insurance and financing (including exchange rate fluctuations due to the high import levels in Zimbabwe), and advertising costs; costs that add up as the goods and services are moved to the end-user (Pretty, Ball, Lang and Morison, 2005). The relative significance of these expenses shifts widely for various retail items, contingent upon the depth of the supply chain (e. g., production, logistics, marketing, etc.). Highly processed food products have a much smaller farm input cost, the bulk is a result of the supply chain link post the farm.

Consumer demand is influenced by a number of factors. These factors include the retail price of the product, the price of complementary products, the price and quality of substitute goods, the size of the family disposable income, as well as consumer preference and tastes, the size of a household, the average household age, geographical location, buying behaviour and lifestyle in general (Griffith, Connell and Smith, 2015). As a general rule, consumers will consume less of a product if they experience price increases on a specific product relative to other products (pure substitution effect). However, the way consumers respond to such stimuli is debated and is arguably influenced by a number of factors and not just the ones identified here (Andreyeva, Long and Brownell, 2010).

There are instances where the availability of substitutes can lead to higher consumer responsiveness. Conversely, consumers can respond more favourably to a price change that may see them change to similar products. It is also reported that the availability of substitutes can give consumers more choice than them continuing to buy the available good. Sometimes, even a price change does not yield the desired behaviour, especially if the product is considered a necessity (Tiu, Nancarrow, and Kwok, 2001). Tiu et al also found that strong ethnic or cultural flavours and preferences can contribute to a consumer's product preference and that the decision to continue with consumption is not influenced by price or the presence of substitutes (Tiu, Nancarrow, and Kwok, 2001). For example, some consumers will not switch from consuming rice or "isitshwala" to consuming potatoes or pasta, even if the price of these substitute products were to fall comparative to those of similar foods.

Rapid or unexpected changes in retail food prices will affect some consumers more than others

depending on income levels and the importance of affected foods in consumer budgets (Headey and Fan, 2008). In general, if a product represents a small portion of the consumer budget, a consumer is less likely to respond to a price change. On average, a consumer in Zimbabwe is not likely to react significantly to price changes on staple foods such as bread, "isitshwala or sadza" (thick maize-meal porridge) as they tend to absorb a smaller share of the food budget. On the other hand, high-value foods such as special cuts of meat or sea food represent more expensive foods for most households. Consumers therefore tend to be sensitive prices changes of such high value products (Monroe, 1973; Shapiro, 1983). Sometimes consumers tend to switching to lower quality items within that food category (Andreyeva, Long and Brownell, 2010) – in Zimbabwe the tendency is to switch from beef to goat meat when beef prices rise. Consumers "as households" try to meet their food requirements with their limited budgets. The magnitude of a consumer's disposable income is a significant factor in determining the actual purchasing power. Households with limited budgets spend a larger percentage of their disposable income on food, and these consumers are most probably going to respond less to price changes in basic food categories – in fact, they will sacrifices purchases of most luxury goods so as to meet their basic food requirements. (Regmi, 2001; Gerdtham and Johannesson, 2004).

In conclusion, low-income consumers who spend a large portion of their family budget on food will experience a much greater impact from rising food prices than high-income consumers with a low food budget. The absolute level of disposable income of a household has an impact on a household's response to price changes. Because of this, as the size of a household average income grows, so does their purchasing behaviour. They tend to choose more and more expensive or higher quality foods and products than already found in their present food baskets. They are also quite keen to experiment with new or unfamiliar foods or products (Goetz, 1992). For example, as incomes increase, it is common to see an increase in per capita expenditure on processed foods, higher quality meat cuts, sea food and processed dairy products, like cheese. Conversely, when there is a

decline in consumer spending power, they tend to depart from move away from consuming more expensive options. If the income decline is severe and perceived as permanent or long lasting, consumers can make substantial changes to their food budget choices, sometimes permanently.

Overall, household consumption behaviour in response to perceived changes in income can affect a country's agricultural production or import strategy. Agricultural support initiatives and import-export strategies by government tend to follow such patterns (Giles and Hampton, 1985). Given the above, it is paramount that policymakers, governments and civic organisations monitor household wealth and income levels and the movement of unexpected price changes that may have significant health and economic consequences.

3. DATA AND METHODOLOGY

The basic assumption underlying the model is that some selected macroeconomic variables have a deterministic impact on food inflation in Zimbabwe. The statistical tests were carried out on monthly time series data on the overall inflation index, non-food sub-index and food sub-index in Zimbabwe.

Data

The data series is from January 2010 to January 2016. The CPI data has been re-based to 2012 due to a change in the calculation of the inflation index by ZimStats (2016), as well as the basket of goods used in the composition of the CPI. Macroeconomic variable data was obtained from the Reserve Bank of Zimbabwe (2016) monthly economic bulletins and quarterly economic bulletins. Some of the data used in the study was obtained directly from Stats SA that compiles South Africa related macroeconomic data. The data was verified and tested for accuracy by comparing similar data over the time series for accuracy.

Methodology

The independent variables were used to test the hypotheses below. The models are represented as:

$$\text{Model 1: } \ln CPI\_FOOD_t = a + b\ln M3_t + c\ln CPIX_t + d\ln USAX_t + e_t$$

$$\text{Model 2: } \ln CPI\_NONFOOD_t = a + b\ln M3_t + c\ln CPIX_t + d\ln USAX_t + e_t$$

$$\text{Model 3: } \ln CPI\_ALL_t = a + b\ln M3_t + c\ln CPIX_t + d\ln USAX_t + e_t$$

Where:

- CPI_FOOD represents the Zimbabwe Food and non-alcoholic beverages sub-consumer price index
- CPI_NONFOOD represents the Zimbabwe Non-food sub-consumer price index
- CPI_ALL represents the Zimbabwe All-items consumer price index
- CPIX represents the South African consumer price index
- M3 represents the Zimbabwe broad money supply
- USAX represents the South African Nominal Effective Exchange Rate to the US dollar

- e is a random error term

The hypotheses tested are:

- There is a positive relationship between the CPI_FOOD and M3
- There is a positive relationship between the CPI_FOOD and CPIX
- There is a negative relationship between the CPI_FOOD and USAX
- There is a positive relationship between the CPI_ALL and M3
- There is a positive relationship between the CPI_ALL and CPIX

- There is a negative relationship between the CPI_ALL and USAX
- There is a positive relationship between the CPI_ALL and M3
- There is a positive relationship between the CPI_ALL and CPIX
- There is a negative relationship between the CPI_ALL and USAX

4. ANALYSIS AND INTERPRETATION

Descriptive Statistics

The variables that were analysed were coded as follows: CPI_FOOD (Food and non-alcoholic beverages CPI index), CPI_NONFOOD (Total Non-food CPI index), CPI_ALL (All Items CPI index), CPIX (the South African consumer price index), M3 (the Zimbabwe broad money supply) and USAX (the South African Nominal Effective Exchange Rate to the US dollar). All series were first put through basic statistical analysis to determine the mean, maximum, minimum and standard deviation of the raw data. Figure 1 shows the weights of all CPI-sub indices.

Figure 1. All product categories-CPI weights

- ■ Alcoholic beverages and tobacco
- ■ Clothing and footwear
- ■ Communication
- ■ Education
- ■ Food and non alcoholic beverages
- ■ Furniture, household equipment and maintenance
- ■ Health
- ■ Housing water electricity gas and other fuels
- ■ Miscellaneous goods and services
- ■ Recreation and culture
- ■ Restaurants and hotels
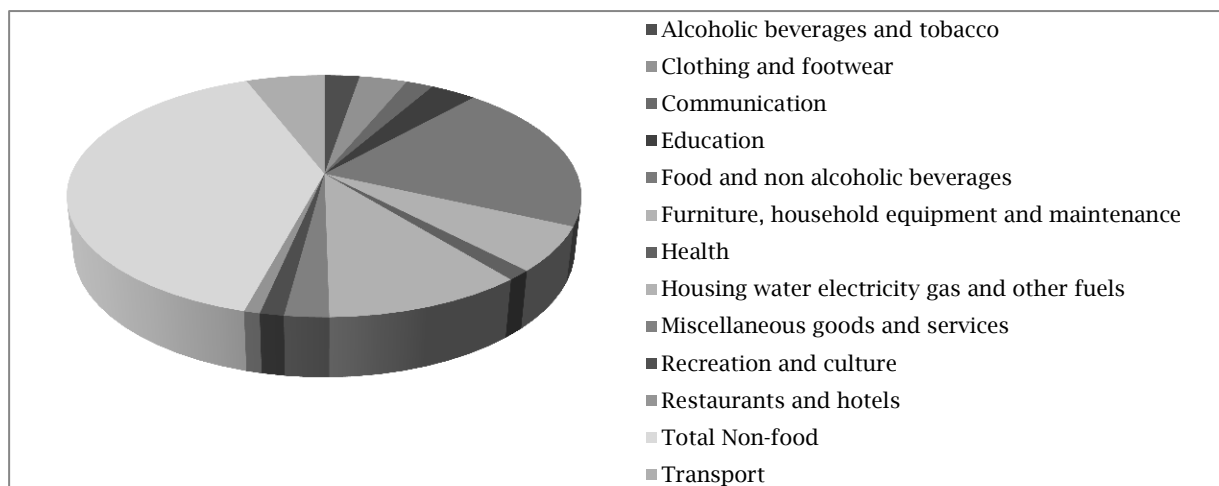- ■ Total Non-food
- ■ Transport

Table 1 shows descriptive statistics of all the variables using raw data.

Table 1. Descriptive statistics – raw data

		CPI_FOOD	CPI_NONFOOD	CPI_ALL	M3	CPIX	USAX
N	Valid	81	81	81	81	81	81
Mean		94.05	98.90	96.95	3 862 234.02	103.31	9.97
Std. Error of Mean		0.43	0.31	0.36	115 658.69	1.22	0.30
Std. Deviation		3.88	2.76	3.27	1 040 928.18	10.98	2.66
Skewness		-0.41	-0.78	-0.84	-1.29	0.16	0.70
Std. Error of Skewness		0.27	0.27	0.27	0.27	0.27	0.27
Kurtosis		-0.30	-0.41	-0.37	1.09	-1.18	-0.54
Std. Error of Kurtosis		0.53	0.53	0.53	0.53	0.53	0.53
Minimum		83.09	92.81	88.73	400 826.40	86.40	6.73
Maximum		100.98	102.97	100.87	5 320 912.00	123.20	16.39

Table 2. Product CPI Sub-Index Categories – Descriptive Statistics

		Alcoho-lic	Clothing	Energy	Furni-ture	Health	Tran-sport	Communi-cation	Recrea-tion	Educa-tion	Cate-ring	Miscella-neous
N	Valid	81	81	81	81	81	81	81	81	81	81	81
Mean		99.95	98.70	96.78	95.56	100.96	95.71	75.10	99.08	106.41	96.46	94.88
Std. Error of Mean		0.67	0.19	0.69	0.36	0.23	0.70	0.20	0.14	1.81	0.56	0.40
Std. Deviation		6.04	1.67	6.24	3.28	2.06	6.30	1.84	1.22	16.29	5.04	3.56
Variance		36.53	2.80	38.93	10.73	4.25	39.69	3.39	1.50	265.45	25.38	12.64
Skewness		-0.99	-0.41	-0.62	-0.15	-0.23	-1.05	1.36	0.52	0.26	-1.04	-1.39
Std. Error of Skewness		0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
Kurtosis		-0.06	-1.05	-1.09	-1.35	-1.67	-0.20	1.95	0.73	-1.15	-0.31	0.48
Std. Error of Kurtosis		0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53
Minimum		82.65	95.51	85.08	89.61	97.24	82.64	72.20	96.90	85.56	83.35	86.51
Maximum		105.92	101.10	104.03	100.21	103.70	101.80	80.64	103.33	137.00	101.26	98.41

Table 2 show descriptive statistics of all CPI-sub indices using their raw scores. All data were

then converted into log form to minimize any problems with heteroskedacity and to improve interpretability of the data. Table 3 gives descriptive statistics of variables after conversion into logarithmic form.

Table 3. Product CPI Sub-Index Categories – Descriptive Statistics (Natural logs)

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Std. Error	Kurtosis	Std. Error
ALCOHOLIC	81	4.415	4.663	4.603	0.063	-1.087	0.267	0.287	0.529
CLOTHING	81	4.559	4.616	4.592	0.017	-0.430	0.267	-1.025	0.529
ENERGY	81	4.444	4.645	4.570	0.066	-0.673	0.267	-1.033	0.529
FURNITURE	81	4.495	4.607	4.559	0.034	-0.181	0.267	-1.327	0.529
HEALTH	81	4.577	4.642	4.615	0.020	-0.244	0.267	-1.665	0.529
TRANSPORT	81	4.415	4.623	4.559	0.068	-1.119	0.267	-0.056	0.529
COMMUNICA-TION	81	4.279	4.390	4.319	0.024	1.287	0.267	1.754	0.529
RECREATION	81	4.574	4.638	4.596	0.012	0.474	0.267	0.609	0.529
EDUCATION	81	4.449	4.920	4.656	0.153	0.087	0.267	-1.299	0.529
CATERING	81	4.423	4.618	4.568	0.054	-1.089	0.267	-0.165	0.529
MISCELLA-NEOUS	81	4.460	4.589	4.552	0.038	-1.417	0.267	0.545	0.529
CPI_FOOD	81	4.420	4.615	4.543	0.042	-0.507	0.267	-0.113	0.529
CPI_NONFOOD	81	4.531	4.634	4.594	0.028	-0.821	0.267	-0.370	0.529
CPI_ALL	81	4.486	4.614	4.574	0.034	-0.885	0.267	-0.278	0.529
M3	81	12.901	15.487	15.108	0.401	-2.807	0.267	10.934	0.529
CPIX	81	4.459	4.814	4.632	0.106	0.030	0.267	-1.228	0.529
USAX	81	1.907	2.797	2.266	0.257	0.362	0.267	-1.023	0.529

It is noted from Table 3 when comparing the standard deviation of CPI_FOOD, CPI_NONFOOD, CPI_ALL and CPIX that food (CPI_FOOD) has a higher standard deviations of 0.042 compared to that of 0.034 for non-food items (CPI_NONFOOD). On the other hand, the standard deviation of Zimbabwe overall inflation (CPI_ALL) is much lower than the standard deviation of South Africa overall inflation (CPIX), 0.034 and 0.106 respectively. This seems to imply that while domestic food prices are more volatile than domestic non-food prices, overall inflation in Zimbabwe is less volatile than South African inflation.

Also of importance is the skewness of the distributions which indicates that they are approximately normal as the individual variables' skewness factors are closer to zero, except for M3. Normal distributions produced a skewness statistic of about zero. The results from this analysis also revealed that the kurtosis values for CPI_FOOD, CPI_NONFOOD and CPI_ALL variables had kurtosis values less than 1, which is good as it is indicative of normal distributions. The negative kurtosis values indicate the possibility of a platykurtic (flat) distribution for all variables except M3. These overall findings provide a general indication that the distributions of the individual variables are normal.

ANALYSIS AND RESULTS

Model Validation

Model validation is critical when determining developing a model for prediction purposes. Statisticians have found that regression model statistics are not always an accurate measure of how well a model will predict the independent variable (Arlot and Celisse, 2010). When working with financial data, instead of using linear equation as a starting point, one may look at using the correlation coefficient as a tool to measure the association between two variables. In order to test the model, Pearson's correlation statistic was used. When Pearson's r is positive it means that as one variable increases in value, the second variable also increase in value. Similarly, as one variable decreases in value, the second variable also decreases in value.

The Pearson's r for the correlation between CPI-FOOD came out significant with broad money supply in Zimbabwe at 0.528. It was insignificant with RSA inflation and the Rand-US dollar exchange rate. Pearson's r for CPI-NONFOOD showed the highest association and was significant for RSA inflation at 0.718. This means that changes in one variable are strongly correlated with changes in the second variable. It was also significant for Zimbabwe broad money supply (0.662) and Rand-US dollar exchange rate (0.593). The CPI-ALL Pearson's r was similar for Zimbabwe broad money supply (0.654) and RSA inflation (0.628) but weaker for Rand-US dollar exchange rate (0.492). Finally, the Pearson's r for M3 was significant for RSA inflation at 0.561 but not so much for Rand-US dollar exchange rate. The Pearson's r for RSA inflation, although not the focus of this study, came out very strongly with a Pearson's r of 0.964. That raises the interest on the earlier result that RSA inflation has a strong association with Zimbabwe CPI-sub indices, mostly Zimbabwe total food inflation. One would therefore expect a strong association between Rand-US dollar exchange rate and Zimbabwe CPI sub-indices. Since our analysis shows positive Pearson's r values, we can conclude that there the variables are positively correlated. It should also be observed that the Sig (2-Tailed) values are all closer to or equal to zero, meaning that the associations are statistically significant at a 1% confidence interval between the variables.

Table 4. Pearson's Correlation Coefficient

		Broad Money Supply	RSA Consumer Price Index	RSA Rand-US dollar nominal exchange rate
CPI-Food and non-alcoholic beverages	Pearson Correlation	.528**	.263*	.109
	Sig. (2-tailed)	.000	.018	.332
	N	81	81	81
CPI-Total Non-food	Pearson Correlation	.662**	.718**	.593**
	Sig. (2-tailed)	.000	.000	.000
	N	81	81	81
CPI-All Items	Pearson Correlation	.654**	.628**	.492**
	Sig. (2-tailed)	.000	.000	.000
	N	81	81	81
Broad Money Supply	Pearson Correlation		.561**	.447**
	Sig. (2-tailed)		.000	.000
	N		81	81
RSA Consumer Price Index	Pearson Correlation			.964**
	Sig. (2-tailed)			.000
	N			81
RSA Rand-US dollar nominal exchange rate	Pearson Correlation			
	Sig. (2-tailed)			
	N			
**. Correlation is significant at the 0.01 level (2-tailed)				
*. Correlation is significant at the 0.05 level (2-tailed)				

In conclusion, the association between CPI_FOOD and the independent variables seems strong with Zimbabwe broad money supply as compared to that of the other two independent variables, CPI_NONFOOD and CPI_ALL. Regression models for the variables CPI_NONFOOD and CPI_ALL dependent variables will then be developed (separately) to determine if the associations can be used to predict these variables.

REGRESSION MODELLING

Multicollinearity tests

Multicollinearity tests were conducted for all the independent variables using Variance Inflation Factors (VIF) and Eigenvalues. Table 5 shows the results of the multicollinearity tests that were done. The variables had very small tolerance levels except for broad money supply. Researchers desire higher levels of tolerance, as low levels of tolerance are known to affect adversely the results associated with a multiple regression analysis. Acceptable levels of tolerance that have been suggested are a value of 0.10 or less (Tabachnick & Fidell, 2001), a value of 0.20 or less (Menard, 1995) and a value of 0.25 or less (Huber & Stephens, 1993).

Table 5. Multicollinearity Statistics (CPI_NONFOOD and CPI_ALL)

	Collinearity Statistics	
	Tolerance	VIF
Broad Money Supply	.563	1.777
RSA Consumer Price Index	.050	19.853
RSA Rand-US dollar nominal exchange rate	.059	17.001

Although RSA Consumer Price Index and RSA Rand-US dollar exchange rate had high VIFs, it is not surprising as the latter has been shown to have a very strong correlation with RSA CPIX (Mpofu, 2011). Secondly, the regression models that are estimated are merely for confirmation of the association of the dependent variables with the independent variables and not as a basis for prediction. The main test was to determine the association of variables which was done via Pearson's correlation coefficient.

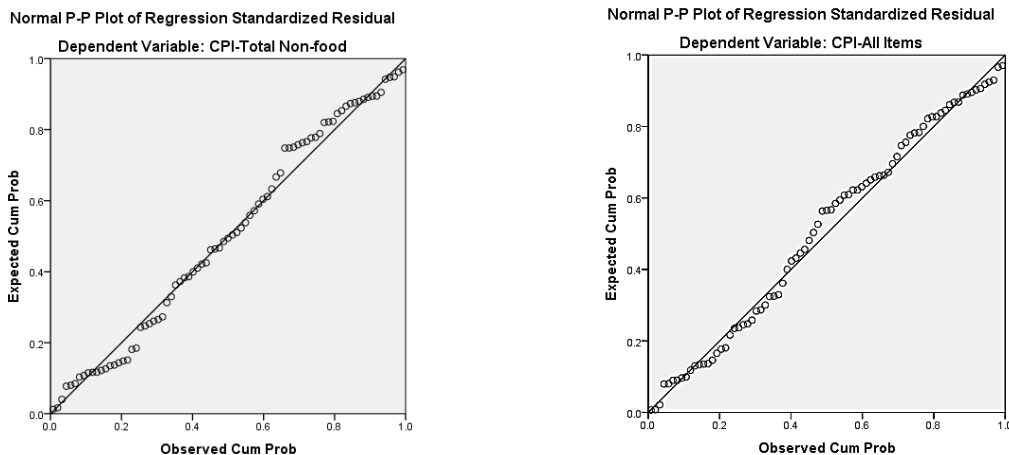**Figure 2.** Normal P-P Plot of Regression Residuals

Table 6. Regression model (CPI for All Non-food items)

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.827[a]	.684	.671	.0161888	.684	55.464	3	77	.000	.218
a. Predictors: (Constant), RSA Rand-US dollar nominal exchange rate, Broad Money Supply, RSA Consumer Price Index										
b. Dependent Variable: CPI-Total Non-food										

Model Summary[b]

The model has an R^2 of 68.4% and an adjusted R^2 of 67.1% indicates that the model is a good predictor of the dependent variable. It implies that the model can be used for estimating CPI_NONFOOD and that 68% of the CPI_NONFOOD can be explained by the independent variables. The standard error of the estimate is very small (0.02), implying that there is a two percent error in estimating CPI_NONFOOD.

Table 7. Regression model (CPI All items)

					Change Statistics					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	.785[a]	.616	.602	.0216174	.616	41.255	3	77	.000	.221
a. Predictors: (Constant), RSA Rand-US dollar nominal exchange rate, Broad Money Supply, RSA Consumer Price Index										
b. Dependent Variable: CPI-All Items										

Model Summary[b]

The model has an R^2 of 61.6% and an adjusted R^2 of 60.2% indicates that the model is an acceptable predictor of the dependent variable. It implies that the model can be used for estimating CPI_ALL and that 62% of the "All items" consumer price index can be explained by the independent variables. The standard error of the estimate is very small (0.02), implying that there is a two percent error in estimating CPI_ALL.

Table 8. Regression coefficients: CPI-All items

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	2.114	.332		6.367	.000		
Broad Money Supply	.023	.008	.272	2.888	.005	.563	1.777
RSA Consumer Price Index	.535	.101	1.662	5.285	.000	.050	19.853
RSA Rand-US dollar nominal exchange rate	-.164	.039	-1.231	-4.230	.000	.059	17.001
a. Dependent Variable: CPI-All Items							

Coefficients[a]

Table 9. Regression coefficients: CPI-Non-food items

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	2.604	.249		10.473	.000		
Broad Money Supply	.016	.006	.229	2.680	.009	.563	1.777
RSA Consumer Price Index	.435	.076	1.639	5.738	.000	.050	19.853
RSA Rand-US dollar nominal exchange rate	-.120	.029	-1.089	-4.119	.000	.059	17.001
a. Dependent Variable: CPI-Total Non-food							

Coefficients[a]

The "t" statistic shown in Tables 8 and 9 are a measure of the possibility that the actual value of each of the independent variables in the models is less likely to be zero. The sig. (t)" also indicates that it is less likely that the actual parameter value is zero. In the models above, the variable broad money supply has a t-value of 2.888 and 2.680 for CPI all-items model and CPI-Non-food items model respectively, with the significance statistics closer to zero (0.05 and 0.09 respectively). The larger the absolute value of t, the less likely that the actual value of the parameter could be zero. This indicates that there is a less than 0.1% chance that the parameter could be zero, and eliminating the broad money supply variable from the model would be incorrect. The "t' values for CPIX are respectively

5.285 and 5.738 respectively, with significance values much closer to zero. USAX 't' values are -4.230 and -4.119 respectively, with significance values also closer to zero. This is indicative of the possibility that the two variables are not only important contributors to CPI_FOOD and CPI_ALL, but have a more significant impact than broad money supply.

DISCUSSION OF FINDINGS

Based on the results of Pearson correlation coefficient, the following table shows the outcome of the analysis of the hypotheses tested.

Table 10. Summary of hypotheses tested

		Broad Money Supply	RSA Consumer Price Index	RSA Rand-US dollar nominal exchange rate
CPI-Food and non-alcoholic beverages	Pearson Correlation	.528	.263	.109
	Accept/Reject Hypothesis	Accept	Accept	Accept
	Strength of Association	Strong	Weak	Weak
CPI-Total Non-food	Pearson Correlation	.662	.718**	.593
	Accept/Reject Hypothesis	Accept	Accept	Accept
	Strength of Association	Strong	Very Strong	Strong
CPI-All Items	Pearson Correlation	.654	.628	.492
	Accept/Reject Hypothesis	Accept	Accept	Accept
	Strength of Association	Strong	Strong	Weak

In general, the CPI is used both as an economic indicator of retail price inflation and as a means of adjusting current-period values for inflation. Over time, the All-Food and All-Items CPIs have moved together, although the All-Food CPI has been consistently more variable than the All-Items CPI. It should be noted that hyperinflation in Zimbabwe was a period of currency instability that began in the late 1990s shortly after the confiscation of private farms from landowners, towards the end of Zimbabwean involvement in the Second Congo War. During the height of hyperinflation from 2007 to 2009, it was difficult to measure Zimbabwe's due to the rate of price changes. However, Zimbabwe's peak month of inflation was estimated at 79.6 billion percent in mid-November 2008. Figure 3 shows overall inflation in Zimbabwe between 1980 and 2006.

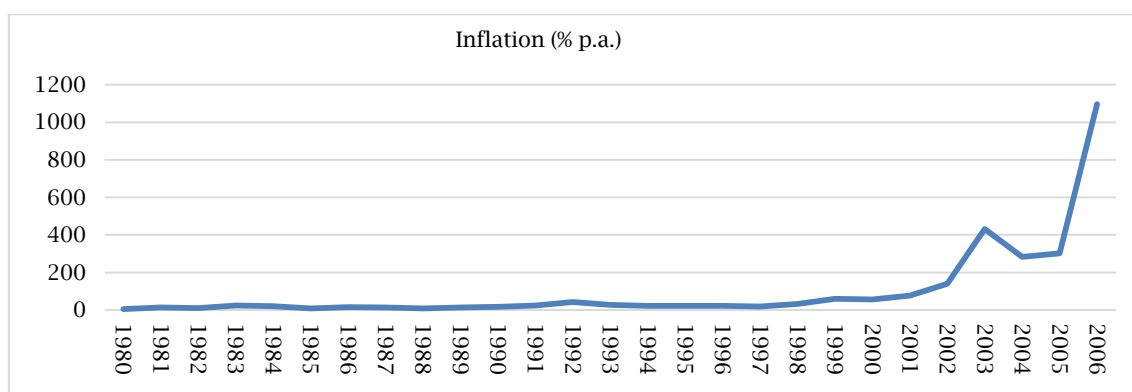**Figure 3.** Zimbabwe overall annual inflation from 1980 to 2006

Figure 4 shows Zimbabwe's inflation from 2010 after the introduction of the multicurrency regime.

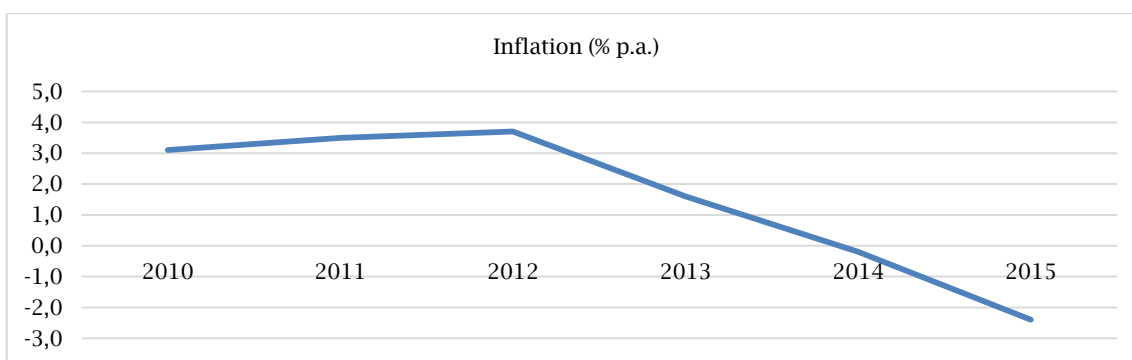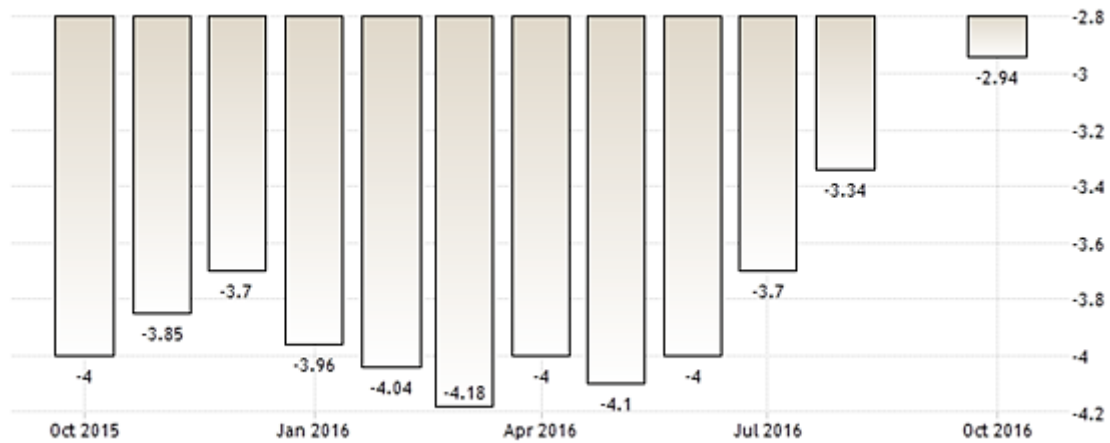**Figure 4.** Zimbabwe overall annual inflation between 2010 and 2015

**Figure 5.** Zimbabwe Food Inflation October 2015 – October 2016

Source: Reserve Bank of Zimbabwe, http://www.rbz.co.zw

Many economists and policymakers believe that the food and energy components of the CPI are volatile and subject to shocks not easily dealt with through government monetary policy. The so-called core CPI is thought to be a useful measure of underlying trend inflation in the short run. The food component of the CPI, although more volatile than the overall CPI, is still substantially less than the non-food inflation.

Figure 6. Monthly Changes in CPI All Groups
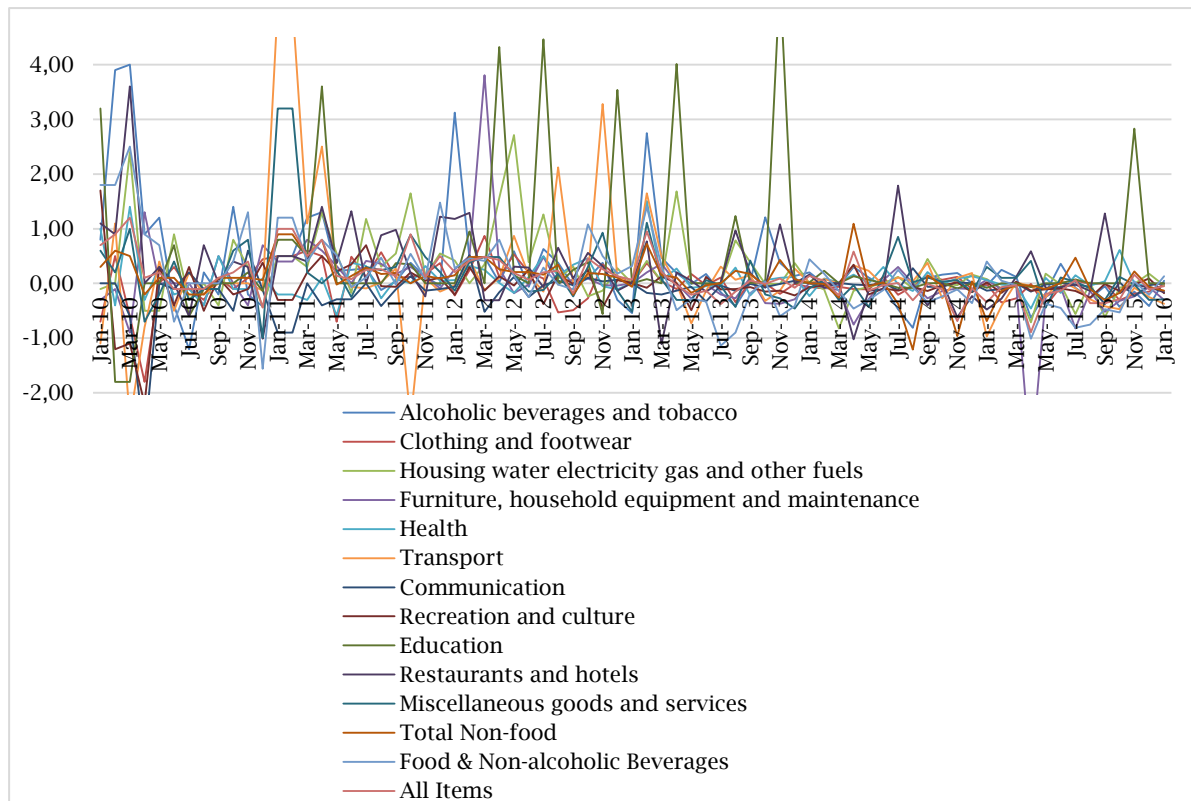
Since 2010 both the All-Food and the All-Items CPIs have been lower (in terms of average values) and substantially more stable (in terms of SDs) than during the preceding years. In contrast, the energy, transport and alcoholic beverages price indices have been more volatile, particularly during 2011. This is an important point because the energy price index has seen its weighted share of the CPI gradually increase over time and, although energy's current weight share of 16.23% is about half that of the food weight share of 31%, energy price inflation is far more insidious than food inflation to the extent that energy costs figure in the retail price of practically every other component of the CPI, especially imported products, mostly non-food items and alcoholic beverages.

Figure 7. Monthly Changes in CPI (Selected sub-indices)
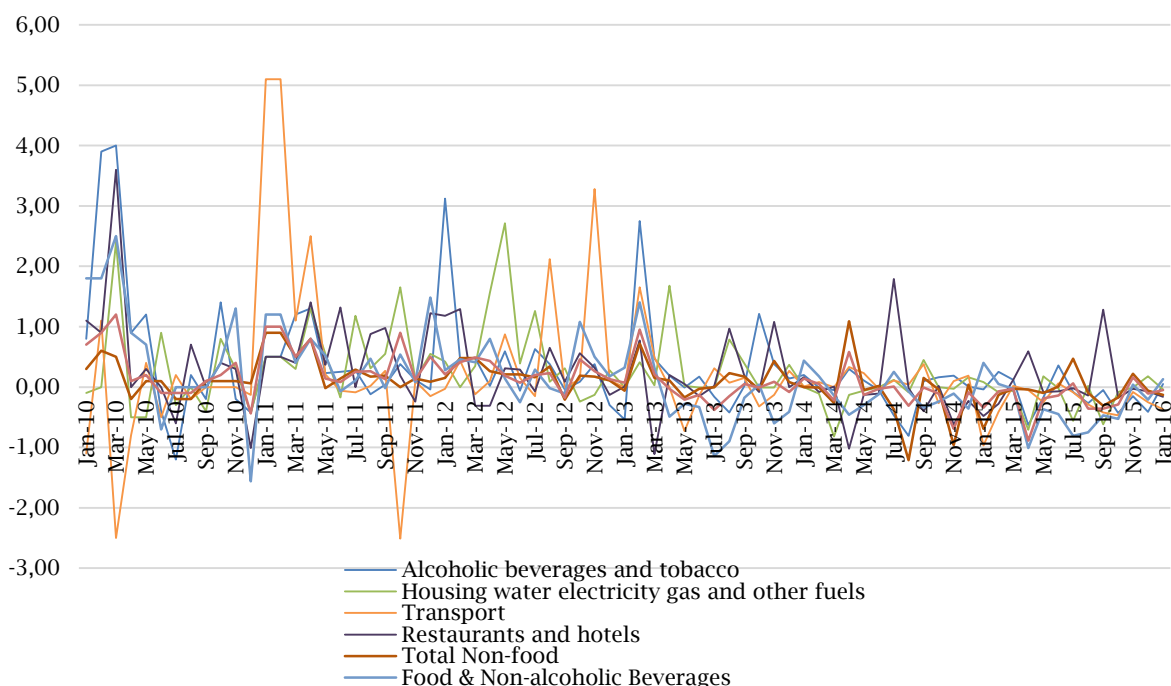
The food budget share is only one indicator of national welfare, and ignores any unfavourable distribution of the food expenditure share. Even the lowest 20% of Zimbabwe households, on average, spent less than 12% of their disposable income on food consumption during the study period and, thus, appear relatively well-off. It should be noted that this study is cursory in nature having just looked at associations and possible strengths of these associations. According to Zimstats (2016), between 2012 and 2015, an estimated 30% of Zimbabwe households were food-insecure at least some time during the course of the year—meaning that the food intake of one or more household members was reduced and their eating patterns were disrupted at times during the year because the household lacked money and other resources for food.

CONCLUSION AND POLICY REMARKS

Annual averages may obscure the significant inter-annual price movements. As a result, it is worth taking a look at the monthly price indexes per major food group to get a better idea of the overall pattern of retail food price movements across the various food groups. A "common theme" between the different inflation sub-indices is a strong deflationary movement associated with the dollarization period that started in 2009, followed by a slow but sustained general upward inflation trend since 2015. However, the food inflation sub-index has remained relatively low and seems to have not reacted to the exogenous impacts of imported inflation as experienced with non-food products. This could be a result of alternative sources of food as consumers bought locally produced commodities, like cereals, grains, bakery products, beef, pork, poultry, dairy products, fruits and vegetables.

The study sought to assess the association of food and non-food prices with money supply, rand-

dollar exchange rate and South African inflation. The study makes a contribution to the literature by understanding the effects of demand, supply and global effects on a country that dollarized and experienced total economic collapse in 2008.

There is an indication that increases in food prices between 2009 and 2016 in some food groups, especially imported ones, have significantly eroded the real purchasing power of households. The real impact of the independent variables on inflation was mostly on non-food items. Given the mostly rural population and the high level of unemployment in Zimbabwe, it can be surmised that the distributional burden of the effects of rising non-food prices between 2009 and 2016 fell mostly on these vulnerable groups as they had the lowest disposable income. In addition, it can also be surmised that domestic production can cushion the impact of rising prices in general, particularly on food. A deliberate policy of increasing domestic food production would therefore go a long way in ensuring lower price changes of both food and non-food items.

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DETERMINANTS OF LEASING BUSINESS IN EMERGING COUNTRY

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Abstract

The primary purpose of this paper is to examine leasing business in Indonesia, if there is any effect of leasing literacy to the access into leasing company, motivation to buy and ability to pay liabilities. The research's object is customers of leasing companies who have been buying leasing products and live around Jakarta. While the methodology used will be the qualitative method by using survey and questionnaire. The outcomes revealed that 68.5% of respondents have the average income of less than 5 million per month, and the type of product leased is dominated by motorcycles and cars. Furthermore, the result of regression analysis is the literacy to the access into leasing company has no effect. But on the other hand, the result shows that there is an effect of literacy on motivation and ability to pay liabilities. From this study, it can be concluded that generally, customers do not care about the insight into leasing business. Most of the customers used the literacy for to get the products and to be able to pay the installments obligations. Hence, they need sufficient information about leasing company and its services.

Keywords: Leasing, Literacy, Access, Motivation, Ability

1. INTRODUCTION

In developing countries including Indonesia, leasing company exists in which the lower classes of society who are cashless have a limited access to the banking services to get loans to buy some products. To diminish the venture of leasing, the literacy factor is an urgent need. In achieving this target, government as a regulator is expected to educate people about leasing services to get some products precisely. The main factors that should be learned are access, right motivation and how to avoid some perils consistently and continuously. Therefore, the Indonesian's government policy concerning the guidance of supervision of leasing business, through Department of Finance Regulation No.43 (2012) had stated the minimum rate of Down Payment (DP) in financing motor vehicles is 25% for two-wheel motorcycle, 30% for three-wheel motorcycle or non-productive purpose vehicles, and 20% for three-wheel motorcycle or productive purpose vehicles. If violating those terms, the company will be punished with administrative sanctions gradually by warning letter, suspension to business activities, and revocation of products leased.

According to Institute of Financial Inclusion Insights (2014), there is a significant relationship between motorcycle ownership and income levels of Indonesian society, lot of customers had difficulty and stuck in paying their liabilities. Although needed

the deeper research, but by observing the people's behavior, the specification of the local economy, the easy access to leasing services, it suggests that the companies have been creeping in various cities up to the urban areas by extensive promotions. In fact, the gripped expansion made lessee fall into debt, trapped with heavy payments with a number of bad loans occurred. Allegedly, some leasing companies still not operating according to the certain regulations, such as the credit performance analysis before the product was sold, and customers were provided with ease but with the stifling interest rates. Likewise, the roles of government by Financial Services Authority as the supervisor and cultivator institution must be improved.

The presence of financing companies including leasing as a financial inclusion system is extremely required because the purpose is to carry unbanked population into the formal financial services like saving, insurance, payment with an inexpensive interest rate (Hannig & Jansen, 2010). By using the service, the customer could purchase some products without having enough money by adjusting the periodic payments according to the agreement. For the lower middle income, credit purchase is the only way to get the product needed. However, the increase of this leasing business is created the new problem for society as a customer, which is the burden of loan payments under contractual agreements. The problem might be overshadowed by

some issues like the lack of literacy and the wrong motivation to gain products. Belly Novanca (2012), analyzed that some dependents variables: motivation, perception, demeanor, personality, and literacy have significant effects on costumers' decision in using leasing products, also conducted the minimum anticipation of default risks due to lease installment payments. Besides, interest rates also tend to be larger than set by the bank; the customers will face the difficulty in paying installment. It was found that more financial literate individuals participate in retirement plans and stock markets actively. It was also found that individuals with higher financial literacy do not need financial advice from the brokers. Meanwhile, Muhammad Rizwan, et.al. (2016), states that there is a significant impact of age and gender on financial literacy. Older investors are more financially literate than younger investors, and the male is more literate than female. Education level and working status of the investors do not affect financial literacy significantly. This research focuses on the leasing literacy, access to the leasing services, motivation to buy products and ability to pay the obligation. In addition, will be analyzed the demographic elements on age, sexual orientation, marital status, current occupation, monthly income, and types of products gained. So, this paper only focuses on the demander side. This paper will be organized as follows, Section two will cover several literature reviews, and the next section contains the research design and methodology, followed by analysis and results in section four. Finally the last part is the conclusion. Hence, the objective is to examine if there is any effect of literacy on some factors like access, motivation, and capable of paying liabilities. Also, this research will study the behaviour of the demand sides that relatively complex in which could be identified by various potential problems and can provide a necessary recommendation for solutions.

2. LITERATURE REVIEW

Leasing can be defined as an activity of financing enterprise in providing capital goods to be used by the company based on a series of periodic payments by voting rights at the due period. By leasing, they can get funds to purchase the capital goods or others product in the certain repayments scheme (Joint Decree of Department of Finance, Industry and Trade, 1974). In Indonesia, those companies were established in 1974, and the growth increase since the 1980s. The advantage of using leasing vs. purchase is that it does not require guarantee and as capital saving, it gives option right at the end of the period, (Siamat, 2014). Many entrepreneurs interested in this business. Recently, there are 106 leasing companies in Indonesia. Based on the types of business activities, some ventures financing have upgraded and build the presences up to the first rank among all finance companies such as credit card and others consumer finance (Financial Services Authority of Indonesia, 2014). The services are focusing on financing customers in providing customers' needs and want such as household products and vehicles. In addition, the activities are providing the investment, working capital, and the others, which can be used in the company operation or proprietorship business (Financial Services

Authority of Indonesia, 2014). Likewise, the purpose of leasing service is to carry the unbanked people into formal financing institution for gaining products easily without undergoing complicated procedure although with the higher interest rate than the one that is set by the bank and other possible ventures. Possessing the literacy of leasing implies an insight and distinct comprehension about leasing including venture choice and default payment. As a customer, people should be clever and capable of selecting the service regarding the installment of payments related to leasing issues. Various leasing makes a differentiation on disclosure of the potential problems either procedure or implementation. John Gathergood (2012) examined the relationship between self-control, literacy and over-indebtedness on consumer credit debt among UK consumers. The study showed that some traits are important for explaining consumer's over-indebtedness. The literature about financial literacy and self-control has sought to find examples how these tenets can be found to explain economic outcomes of using leasing.

Brian T. Melzer (2011) stated that measuring the overall welfare contribution of payday loan access is difficult. Specifically in finding a strong support of the conclusion that loan access increases households' difficulty in paying the mortgage, rent and utility bills. The empirical results suggest that for some low-income households, the debt burden charged by loan hampers their ability to pay important bills. Besides, households' access to financial services is not based on levels of financial literacy but rather on some factors such as income levels, distance from banks, age, marital status, gender, and household. Meanwhile, Oya Pinar Ardic, et.al. (2011), found some suspicion that there is yet much to be done in the financial inclusion arena. 76% of adults in the world do not have access to formal financial service. The situation is even worse in the developing countries with 64% of the adult is unbanked and have the low level of education. However, the probability of a financially illiterate person still become financial excluded is significantly high, calling for the increased investment in financial literacy programs to reverse the trend (Wachira & Evelyne, 2012). Furthermore, the lessor increases the scope of access to finance, improving conditions and funding costs, increase competitive advantages in dealing with lessees. (Berger, 2011).

The company should understand behaviours of their consumers to keep the permanency of the situation and customers to buy. Some factors affecting the consumers' behaviours such as age, occupation, lifestyle and personality (Yakup & Jablonsk, 2012). To know the important motivators in buying products will help the company, authority, government, producer, and seller to find out what motivate customers to buy green products and persuade the customers to buy them. (Kianpour, 2014). Furthermore, Nurhamida Simatupang (2014) stated that finance lease is the financial alternative which is more profitable than bank credit since the tax saving which has been gained through leasing alternative is bigger. There are many factors affecting consumers' behaviour to select, purchase and consume goods and services for their need satisfaction with different processes. Initially, the

consumer tries to find what products they would like to purchase, and then selected only those that promise greater utility. After selecting, the consumer makes an estimation of the available money they could spend. They analyze the prevailing prices of capital goods and make the decision for what should be consumed. Meanwhile, other factors influencing the purchases are literacy, psychological, lifestyle, personality, family, socio-cultural, and others. Irma Zaharoh (2013) concluded that the company should use the finance leasing to procurement fixed assets because it can save some company expenses.

In considering the business leasing is the low cost or low risk for buying products, all risk can be arranged with a given period, with certain requirements like the down payment. The payment will give the flexibility to choose various periods and maximize the time. The point is to avoid the possibility of violating from initial negotiating rules. Oteng Evans, et al. (2014) concluded that lending rates have an impact on the operation of businesses whether it is high or low as well as all financial institutions that have the ability to lend money should adopt the interest rate into their business operation so that borrowers can invest to yield enough profit to service their loans and also make some profit for growth. By using the flat rate system in a given period eventually at the higher rate, resulting the customers in heavy liability, so they should not take this decision lightly. The benefits of outright purchase are generally recognized by the customers, fully realized and understanding on various types and terms or legal aspect of leasing. Therefore, it is necessary to consider about costs of each rental and ownership fairly and accurately. It should be considered carefully including some impute factors like the high-interest rate, opportunity costs, tax advantages, and others. I Made Wijaya Indra (2013) concluded the factors affecting decision; lease equipment is a must to review the company's earning that would be obtained in addition to many other factors. Finally, the results on the relationship between motivation and ability to pay the obligation; suggest that individuals with self-control to avoid the adverse events, achieve and optimal outcomes.

Dermographic Characteristic

Socio-demographic factors refer to a set of variables such as population's age, ethnicity, or socio-economic status, whether they reside in an urban or rural area. Those factors are as important as physical health variables in affecting a person's ability to function normally in everyday life (Koukouli, Vlachonikolis, & Philalithis, 2002). The significant role is explaining differences in subjective functioning, particularly the elderly, for making budgetary planning and programs as the customers' community. The socio-demographic on the functional status, living arrangement, and marital status have significant effects on successful life. For leasing companies, wages or salaries must be considered in a credit analyzed. Meanwhile, education related to the amount of income, despite occasionally the higher individual income is not linear to the level of education and the other way around. Abdulwahab Pourghaz, et.al. (2011), research had demonstrated that there is immediate

connect in the middle-income salary and monetary education.

3. RESEARCH METHODOLOGY

Leasing services refer in this research are all the leasing companies' costumers. This study has conducted on 200 respondents as costumers who lives in the representative area around Jakarta includes Bogor, Bekasi, Tangerang, and Depok, by distributed questionaries that had adopted to research needed (field research). They were selected and determined according to purposive sampling with some terms such as has already become the customer or leased products, has own income and the type of products leased are consumptive and productive. Meanwhile, this study used the qualitative research by using primary data attained from questionnaires. The trait of the questionnaires is a closed question with several possible answers for each question, where respondents only need to choose their answers. All questions will be divided into two categories; the first is on personal features or respondents' demography which could distinguish the chance to gain the leasing product service. Second, based on four research questions consist of literacy of leasing service, access in leasing service, motivation to gain or lease product, capable of complying all obligation gradually. All customers can comprise into leasing system if they have ever bought lease product.

For qualitative research, validity is an important element that must be conducted. Therefore, the preliminary questionnaire should be prepared and given to the respondents with enough time to prepare their answers. Before that, the respondents were asked to read and whether or not agree to be interviewed. The questions prepared were focused on existing problems and the significant information. To maintain the validity of the study, the interviewer is must competence on the field and research's goal. By recording the interview process, the accuracy of information could be ensured. Respondents' identities remain confidential, and they are given the opportunity to read questions to understand and interpreted it correctly. Then, reliability test is to vouch that the research is free from potential errors. It can be achieved with some requirements like there is no change on research, and should have two researchers with similar goal and method to produce the same results. Although in qualitative research, the reliability is not as important because the validity of interviewing research should not give the same results. Therefore, to improve reliability, the same problems will be provided with different questions model to know the consistency of those answers. The outcomes of the interview will be confirmed to the respondents for approval, so the results are free from misunderstanding.

Statistical Analysis

Descriptive statistical was conducted to describe the data that can be displayed with the pictures of demographic that is observed by using binary logistic. Afterward, examines the implication of literacy to access; motivation; and ability to pay the obligation. The last stage of the data analysis or

interpretation is to prepare the necessary conclusions and suggestions. All questionnaires, statistical tools will be utilized to analyze the data. To examine the validity or reliability of questionnaires include regression, used SPSS (Statistical Package for Social Science) version 20.

4. RESULTS AND ANALYSIS

4.1. Profile of Respondents

The first section contains the answer to research questions; demographic socio-analysis had been conducted as follows.

Table 4. Profile of Respondents Related to Leasing Services

Variables	Category	Frequency	Percentage
Gender	Female	73	37%
	Male	127	63%
	Amount	200	100%
Age	< 25 years	117	58.5%
	25 – 45 years	61	30.5%
	46 – 65 years	22	11.0%
	> 65 years	0	0.0%
	Amount	200	100%
Marital Status	Married	141	70.5%
	Unmarried	59	29.5%
	Amount	200	100%
Education	Primary to Junior School	6	3%
	Senior Hight School	49	25%
	Undergraduate	138	69%
	Postgraduated	8	4%
	Amoun	200	100%
Status of Residence	Residence Rent	50	25%
	Stay with familily	106	53%
	Owner	44	22%
	Amount	200	100%
Income per-month	< Rp 3.000.000	67	33.5%
	Rp 3.000.000 – 5.000.000	70	35.0%
	Rp 5.000.000 – 10.000.000	43	21.5%
	> Rp 10.000.000	20	10.0%
	Amount	200	100%
Leased types of product	Motor Cycle	102	51.0%
	Car	48	24.0%
	Property	8	4.0%
	Elektronic/furniture	42	21.0%
	Amount	200	100%
Being a Customers of	Ever	124	65%
Leasing Company before	Never	67	35%
	Amount	200	100%

From the above analysis, depicted that there are some questionnaires distributed to 200 respondents, and all the questionnaires have been returned. The result shows that the respondents consisted of 37% male and 63% female, generally the age under 25 years old is about 58,5%. Then, 70,5% of married respondents. Most of the respondents consist of 69% of undergraduate education. About 53% respondents have the status of residence that is still staying with their family. The average of the revenues that are less than 5 million per month is 68,5%. And the types of leased products dominated by motorcycles. Furthermore, there are 65% return customers of the leasing company and 35% first-time customers.

4.2. Instruments of Research Variables

To analyze each determinant, respondents will be given four questions to represent possible answers: (1) strongly disagree, (2) disagree, (3) agree, (4) strongly agree. The lists of questions are as follows:

4.2.1. Literacy

Q1: As a financing resource, you have to understand about leasing company well.
Q2: You have known that only leasing company sold capital goods on credit.
Q3: By purchasing capital goods on credit, you have anticipated the high peril when you have to pay on due date.
Q4: You have understood that leasing company is not the producer of leasing products.
Q5: You have understood about all the agreement points that have assigned.

4.2.2. Access

Q1: Around your residence, you have difficulty in finding Leasing Company.
Q2: Around your residence, you have to go to the leasing company for asking information or products you needed.
Q3: You have understood about leasing services via advertising or salesmen

Q4: To be a customer of leasing company, your access was by promotion
Q5: Being a customer was by your own effort
Q6: Being a customer of leasing was through your friends, family or neighbour.

4.2.3. Motivation

Q1: You purchased leasing product for business activities purpose
Q2: You purchased leasing product for household or family needs
Q3: The motivation to get leasing product because you didn't have enough money to bought on cash.
Q4: You purchased leasing product for investment purpose
Q5: You purchased leasing product to provide your consumerism.

4.2.4. Ability to pay

Q1: You purchased leasing product because you can pay it in installments.
Q2: The monthly amount payment is less than 30% of your total income.
Q3: The pay in installments does not affect your usual cash outflows.

Based on the descriptive analysis result; for Literacy factor, all questions showed that the agree result is above average. This indicates all respondents are strongly literate about leasing, and it means that people do not have the problem in finding the leasing information. For access factor, the highest average is the fifth question, indicates that respondents being customers were caused by companies' promotion facilities when they wished the access into that company. Meanwhile, there was slight difficulty to look for leasing company around their residence. Motivation factor shows that the highest average is the third question, indicates that most of the respondents do not have enough money to buy products on cash, and those respondents are strongly agreed that the main purpose to buy some products is for business activities. Lastly, for the ability to pay liabilities, the highest average is at first question, reveals that the respondents felt that they will be capable of paying all liabilities according to the scheduled time. Also on the other questions, grains indicate that respondents strongly agreed that there is no problem about their cash flows ability.

4.3. Validity and Reliability Analysis

Table 4.2. Validity analysis

																		Item-scale	
items	q1	q2	q3	q4	q5	q6	q7	q8	q9	q10	q11	q12	q13	q14	q15	q16	q17	q18	q19
Correlated item-Total Correlation	.596	.361	.475.	439	.572	.431	.383	.405	.674	.421	.529	.429	.527	.688	.400	.385	..691	.669	.635
r-test Cronbach's Alpha	.869	.878	.874	.875	.869	.809	.877	.876	.865	.876	.875	.875	.871	.865	.877	.877.	865	.866	.867

Table 4.3. Reliability analysis

Cronbach's Alpha	N of Items
.862	19

Table 4.4. Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.659[a]	.434	.425	.37552	1.575
a. Predictors: (Constant), Ability, Access, Motivation					
b. Dependent Variable: Literacy					

The coefficient of determination is used to define how much the effect of independent variable literacy to dependent variables access, motivation, and ability to pay. Based on the above calculation, it showed the result of the coefficient determination of 0.425 or 42.5%. Means that there is 42.5% literacy can explain and affected the access, motivation, and ability. While 57.5% is influenced by other factors that did not analyze in this study.

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4.5. Partial Analysis

Table 4.5. T-test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.937	.180		5.203	.000
	Access	.058	.079	.050	.736	.463
	Motivation	.242	.080	.230	3.015	.003
	Ability	.400	.061	.459	6.522	.000
a. Dependent Variable: Literacy.						

The t-test is then compared with the value of the t-table. Based on the equation df = n – k– 1 : 200 – 4 – 1= 195, with the significance value 0.05, and obtained the value of t-table which is 1.960, with criteria: If the value of t-test is less than t-table, the hypothesis is accepted, on the other side, if the value of significance is more than 0.05, it means the hypothesis is accepted.

a. Access, the results of t-test is 0.736, less than t-table which is 1.960, or with significance value which is 0.463 or more than 0.05, so the hypothesis is accepted, it means that there is no implication of literacy to access.

b. Motivation, the result of t-test is 3.017, more than t-table which is 1.960, or with significance value which is 0.03 or less than 0.05, so the hypothesis is rejected, it means that there is an implication of literacy to motivation.

c. Ability, the result of t-test is 6.522, more than t-table which is 1.960, or the significance value which is 0.00 or less than 0.05, so hypothesis is rejected, it means that there is an implication of literacy to ability.

4.6. Simultaneous Analysis.

Furthermore, after t-test has been done, then the result of F – test is as follows:

Table 4.6. F-test

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	21.186	3	7.062	50.079	.000[b]
	Residual	27.639	196	.141		
	Total	48.825	199			
a. Dependent Variable: Literacy						
b. Predictors: (Constant), Ability, Access, Motivation						

The F-test then compared with the value of the F-table. Based on the equation df = n – k– 1 : 200 – 4 – 1= 195, with significance value of 0.05, and obtained that value of t-table is 3,41, with criteria: If the value of F-test is less than F-table, so the hypothesis is accepted, on the other hand, if the value of significance is more than 0.05, it means that the hypothesis is accepted.

Based on the result of F-test comparing to the F-table, the interpretation is the F- test 50.079 is more than F-table 3.41, or with significance value 0.00 which is less than 0.05, so the hypothesis is rejected, it means that there is an implication of literacy to access, motivation and ability factors simultaneously.

5.CONCLUSION

The main aim of this study is to examine the implication of literacy of leasing business to access; motivation; and ability to pay leasing in Indonesia. Then, from demography research revealed that there are respondents that consist of 37% male and 63% female and generally their ages are 58.5% less than 25 years old. Then, 70,5% of respondents are married. Most of the respondents have the undergraduate education which is about 69%. About 53% respondents are still staying with their family and 68.5% the average income which is below 5 million per month. Meanwhile, there are 65% of returning customers of leasing companies, and 35% of first-time customers. And the type of leased product is dominated by vehicles.

There were some questionnaires distributed to 200 respondents, and all the queries have been returned. There is 42,5% literacy factor affected the access, motivation, and ability, while 57,5% are influenced by other factors. The main results are: there is no impact of literacy to access, and there is an impact of literacy on motivation, and the last result is there is an impact of literacy on ability. From that study, it can be concluded that generally customers did not care about the insight of leasing business. The literacy just used by the lessee to get the products and to pay the installments obligations. However, they have sufficient information about leasing companies and services since marketing strategy from leasing was disseminated it clearly through various media. The study can act as a guideline for the entrepreneurs, customers, investors and policy makers for understanding the role of financial literacy, access, motivation and ability to pay in the leasing business.

In spite of its completion, this study is having many limitations, and if could be fixed, the next research will have a better results. These are the limitations of research : only takes simply factors or variables and the number of respondents that decisive leasing business in emerging country like Indonesia. Therefore the result can be more better and reliable if the next research would be added several variables and amount of respondents to

detect the determinable's factors deeply regarding to leasing business.

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CITIZEN PARTICIPATION AND NEEDS AS AN INPUT TOOL FOR LOCAL GOVERNMENT QUALITY MANAGEMENT

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Abstract

Citizen participation, which is at the interface between the public and government, directly impacts accountability and the governance process. The purpose of this paper is to focus on the relevance of citizen participation as source of input for local government in it's quality management system. Quality management for local government, with reference to ISO 18091:2104, is a recent attempt to construct a quality management system specifically targeting the requirements of local government. Using a qualitative approach, the paper examines ISO 18091: 2014 and it's contribution to strengthening local governance. Further, the importance of citizen participation at the input stage in the ISO quality management framework is reviewed. This is supported by literature pertaining to the requirements that are necessary to promote the value of citizen input, in ensuring the continued success of local government in achieving the desired results, with respect to fulfilling citizen needs.The paper highlights that citizen participation provides the most significant feedback on needs and challenges facing service delivery at the input stage. Such an avenue for citizen participation in a quality management system is relevant for local government to explore, if it is committed to continuous improvement in service delivery. The author considers citizen participation as necessary, if local government is to respond appropriately to their needs. However, citizen participation has to be managed as a process within the quality management framework, if it is produce the desired and reliable results. The paper proposes that such a process has to consider several quality management indicators from the perspective of citizen capacity, local government capacity and overall capacity to manage the process of citizen participation. Overall, insight is provided on how these elements can enhance local government quality management.

Keywords: Citizen Participation, Local Government, Quality Management, Customer Satisfaction, Accountability

1. INTRODUCTION

Organizational success is largely dependent on systemic management, underpinned by a management system that is driven by continual improvement in the interest of serving the needs and expectations of stakeholders as far as possible. Within the local government context, public participation based on irregular and reactive community meetings initiated by local municipalities without a strategy are generally ineffective. Often this accrues to mere lip service, using a top-down approach. The research aims to highlight through a qualitative methodology, that a well managed system that incorporates citizen participation as part of the local governance system can produce higher levels of performance directed towards addressing citizen needs.

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies who are ISO members, which has developed various quality management guidelines for organisations, to assist management towards higher standards of performance. The generic and foundational ISO 9001:2008 is the world's most established quality framework, currently being used over 1.5 million organizations in 191 countries. In an attempt to strengthen the

quality of governance, ISO 18091 was developed to provide quality guidelines for local government (Gadsden and Finn, 2014: 2). In addition, ISO 9004 provides added value for local governments, by focusing on continual improvement for success as the end goal. If local government adheres to high standards of quality, then it can significantly contribute toward creating sustainable and responsible government in other spheres.

The basic principles of quality management include: a systems approach to management, focus on leadership, customer focus, involvement of people, a process approach, continual improvement, factual approach to decision making, and mutually beneficial supplier relationships. While it is important that these principles are underpinned by policies, goals, objectives, diverse work methods, resource availability and administrative processes and procedures specific for each local government, it is equally important that the quality management system produces effective, sustainable and reliable results aligned to citizen needs. In this regard, Sobol (2008:194) argues that participation explicitly depends on the activities and attitude of the local elected representatives who are working in local government institutions. ISO18091 provides guidelines to local governments throughout the world for understanding and implementing a quality management system that meets the requirements of ISO 9001:2008, in order to meet the needs and expectations of its citizens.

The participation of citizens at the input stage is examined, to highlight that genuine participation is a reliable tool for local government to access reliable information on citizen needs and priorities. Aghion, Algan, Cahuc and Shleifer (2008:9) argue in favour of this in their claim that unilateral government regulation is strongly and negatively correlated with the creation of social capital such as trust in government. Benefits of citizen participation include efficiency; accountability; fair distribution of wealth and enhanced good governance; opportunity for citizens voices to be heard; and the promotion of open minded discussions (Baiocchi, 2003:53; Handley and Howell-Moroney, 2010:602). Additionally, participation through networking and information sharing minimizes the risk of exclusion and non representation of isolated groups (Small and Newman, 2001:30). For these reasons, participation in local government provides the platform for local government opportunities to influence government for the common good of all.

2. LITERATURE REVIEW

Continued success through quality management

Governments have to consistently maintain the confidence of citizens and their institutions at all levels. At the local government level, sustainable local communities are dependent on the quality management of systems by local government in a coordinated and coherent way with other levels of government as well. In doing so, citizen's expectations regarding quality public services can be optimally fulfilled.

A quality management system based on ISO 18091 can provide the following benefits: Improve performance and measurement, support the achievement of strategic objectives, provide a factual approach to decision making, reduce duplication through lean management, optimize efficiencies and effectiveness, strengthen service delivery, provide a framework for continual improvement, enhance citizen, customer and stakeholder satisfaction (Gadsden and Finn, 2014: 3). If governments want to remain in business, they are obligated to continuously serve their citizens at higher levels of customer satisfaction, in the face of shrinking resources. Providing quality services requires adherence to guidelines provided by acceptable and relevant quality management systems, to ensure public confidence in government.

ISO 9001, as an acclaimed quality management standard, provides a tried and tested framework for managing organizational processes and activities in the private sector. Similarly, ISO 18091 is envisaged to help government for the same reason it helps large businesses, by providing management control of diverse operations through the communication of clear and transparent objectives, enhancing the cascading and visibility of information for management, and integrating processes to achieve better service delivery and customer satisfaction (ISO 2014: v). Therefore, improving the governance of service provision according to the needs and expectations of citizens at the grassroots level, requires efficient and effective management by local government. Ensuring efficient and effective management by local government is dependent on a robust quality management system which includes citizen participation. This can be achieved by considering all elements of citizen participation, which include: public participation within the administrative decision making process; bidirectional and interactive communication which provides information between organizations and people; an established process that organizes the involvement of citizens; ensuring citizen participation has impact and influence on the decision (Creighton 2005:8). Such elements of citizen participation provide the impetus for meaningful participation and engagement in evidence-based advocacy by citizens.

ISO 18091 is the first ISO standard providing guidelines for the implementation of ISO 9001 in local government. ISO 18091 aims to: empower both citizens and governments; ensure effectiveness and legitimacy; provide a clearly understood between politicians and technicians; foster comparability across countries and other local governments; serve the local population by making politically viable those things that are technically indispensable; ensure reliability and sustainability; and provide a useful tool to achieve the goals and objectives for a sustainable world and smart cities (ISO 2014: vi). According to the convener of the technical team that developed ISO 18091, Carlos Gadsden, the ISO for local government is a valuable instrument for "local governments to reassure citizens that their needs and expectations are fully understood and met on a consistent basis and in a timely manner" (ISO 2014: vi). The adoption of ISO 18091 by local governments will be indicative of their commitment to global guidelines and standards that reinforce accountability to communities being served. Further, ISO 9004 expands on ISO 9001, by specifically focusing on responding to all stakeholder needs for

purposes of continued success and higher levels of performance, which can be applied to local government as well. While ISO 18091 broadly offers benefits for local government, contextual factors must be considered if the optimal benefits are to be seized. This may require adapting and reframing components within the quality management system , more detailed processes and higher levels of monitoring and evaluation.

Process approach and quality management

Being a series of actions or activities taken to transform an input into an output, the process approach as promoted by ISO 9001 seeks to identify and manage activities using resources within an organization.

The realization of customer needs is the core of a process approach. For any organization to optimize its performance, it has to effectively manage various linked activities within its system in order to produce the expected outcomes of acceptable standards. If local government aims to enhance citizen satisfaction, then it must manage the system of processes within it and the interaction of various processes within the system.

Since local governance plays an important role in providing and consistently improving service quality, the involvement of citizens in ensuring this is equally important as they can provide valuable information regarding the identification of community needs. Citizen participation can constitute one of the activities in a wide range of interconnected processes within a local government quality management system.

The advantage of using the process approach within a quality management process for local government include: understanding and meeting requirements; adding value through control; obtaining results of process performance and effectiveness; and continual improvement of processes based on objective measurement (ISO 2014: XI). By using a process approach, the identification and understanding of the interaction and sequence between the main processes and activities within local government are identified. Within local government, various processes with connecting loops linked to, for example finance; human resources; facilities management; legislation and stakeholder interests, interact. Management has to ensure that such processes are linked to a quality management system, if the goal is to maximize citizen satisfaction.

Maximizing citizen satisfaction requires the quality management of citizen needs, which entails a process as well. Equally important is the identification of processes to implement strategy and policy into quantifiable objectives., while ensuring that measures are in place to manage anticipated risks. The aforementioned prerequisites are vital to avoid "fuzzy institutional arrangements, ill-defined responsibilities and ambiguous political objectives and priorities" (Swyngedouw 2005:1999). Therefore, Bula and Espejo (2012: 342) argue that organizational systems are important, since they create, regulate and produce the meanings that people experience in their life world. To this end, citizen participation as a process in the quality management system needs to be managed in a well coordinated manner to avoid a fragmentation of the process as illustrated in Figure 1.

Figure 1. Quality management between input and output
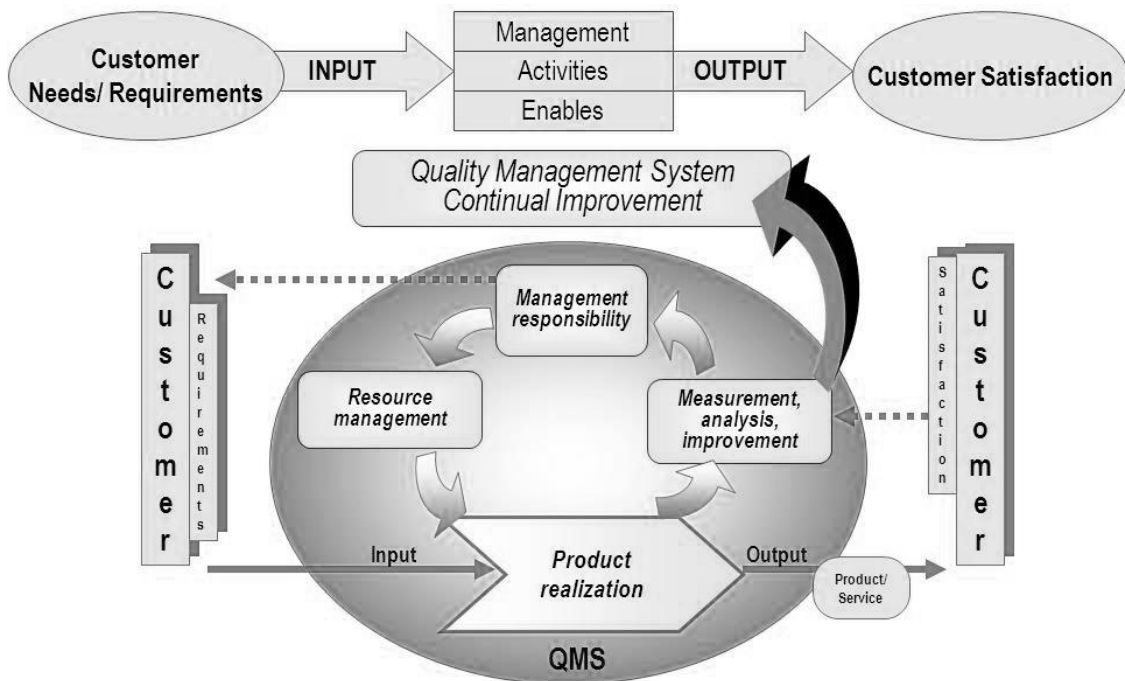
Source: Adapted from The World of "Q" (2016)

The World of "Q" (2016) recommends the incorporation of the following activities in the

process approach, which allows for adaptability to local government, with respect to the identification

of processes linked to citizen participation at the input stage:

- Top management defines the quality policy, purpose and the requirements for the local government quality management system that is consistent with applicable statutory and regulatory stipulations
- Design a manual that addresses the requirements of the quality management system, while guiding decision making.
- Document the processes, activities and resources required to identify citizen needs and expectations.
- Determine the process flow, sequence of interactions and timing of input from citizens.
- Create flow charts to map interconnections between other entities in the process.
- Assign responsibilities for each step to ensure implementation of the process.
- Identify monitoring and measuring mechanisms to be used for processes.
- Determine corrective and preventive actions required to improve the quality of input from citizens.
- Management of effective reviews for purposes of continual improvement.
- Establishment of communication tools to be used for all interested parties.

Citizen participation as a process

The quality and availability of essential public services are a key measure of governance. Public services, which underpin the social contract between states and citizens , reflect the well being and health of a society (Akinboade, Mokwena and Kinfack 2013:458). The continuous provision and improvement of public services is a global challenge. Since the market is not an effective mechanism for identifying needs at the local level, local governments have to devise intervention mechansims to correctly identify citizen needs.

Citizen participation can offer an innovative and reliable means of ensuring appropriate service delivery, while possibly sowing the seed for enhanced "openness, inclusion and empowerment of hitherto excluded or marginalised social groups" (Swyngedouw 2005: 1993). Citizens from diverse milieus can play an influential role in directing citizen interests as a collective. This is consistent with the argument by Tomkins, Herian and Hoppe (2010:5) that more systematic opportunities for broad citizen participation can make government responsive to the actual needs, priorities and preferred modes of service delivery of citizens, rather than what government imagines it to be. Despite the rhetoric of participation, literature alludes to the assertion that participation does not necessarily guarantee an increase in the influence of citizens on decision making (Woodford and Preston 2013: 349). The degree of citizen influence depends on the commitment of local government officials to genuinely consider participation input, which is beyond the control of citizens. This is important in promoting pluralistic local governance. As illustrated in Figure 2, by linking citizen participation to management and operational processes with commensurate support processes, an integrated quality management system is adopted to ensure that the desired output is achieved.

Figure 2. Processes for integrated quality of management of local government
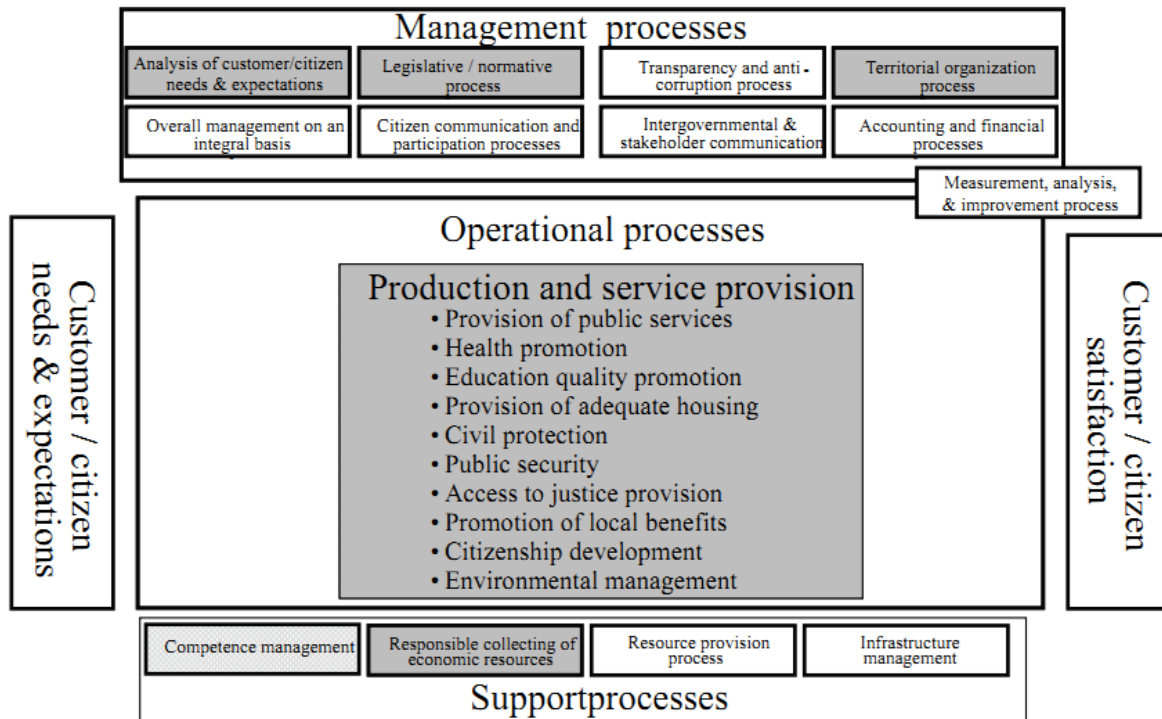
Source: Adapted from ISO (2014)

As the elected representative of citizens' interests, local government through a quality management system can define the conditions for the license to operate; and constrain or enable

initiatives to ensure that citizen participation is well managed (Crane, Matten and Moon 2004:114). Therefore, using citizen participation as a process at the input stage to identify their needs, requires local government to develop a process for this activity and identify how this process will be controlled as part of it's standard operating procedures.

Various processes to engage directly or indirectly with citizens must be identified. Nyugen, Le, Tran and Bryant (2013:38) refer to cooperative participation such as contribution of opinions by citizens and confrontational participation such as complaints as important ways of accessing input about the needs of citizens. Such processes are important in not only identifying needs, but also the geographical location of needs; emerging new needs; and recurring and new challenges facing the satisfaction of citizen needs. This has to be reinforced by a vision and mission of local government that is linked to citizen participation as an integral component in local government management, as well as supported by all stakeholders. The vision and mission must be aligned to a cohesive purpose among all units within local government toward promoting quality in service delivery. This has to be complemented by a legislative framework that guides service delivery as a responsibility of local government. Such considerations can promote a common purpose, collective action, a framework of shared values, continuous interaction and the desire to achieve collective benefits that cannot be gained by acting independently (Rakodi 2003:530). Apart from identifying the needs of citizens, such needs must be reviewed to determine progress towards fulfilling such needs, as well as barriers to achieving the expected results. In this regard, Woodford and Preston (2013:358) suggest that an auditing system be implemented to conduct audits of participation activities, the results of which are made public.

Strategy development to support citizen participation, followed by policy development in this regard has be preceded by plans to support the strategy and policy development and review process. These processes need monitoring mechanisms to be established to ensure that strategy and plans support the needs identification process. ISO 9001 (2009: v) refers to the following important considerations which can be adapted to local government quality management from the perspective of citizen participation:

- Establish unique processes, sequence of processes and process relationships that addresses the needs of local government to manage citizen participation.
- Establish, explain and understand the network of interconnected processes, using the systems approach.
- Establish the efficacy and effectiveness of processes with interested parties.
- Resource provision to support processes.
- Bi-directional communication with all interested parties.
- Improve processes through review and analysis instruments.
- Use process descriptions to set organizational objectives, support process review activities; illustrate relationships between organizational structures, systems, and processes, identify

potential challenges; and identify improvement activities.

The importance of the aforementioned activities is noted by Halachmi and Holzer (2010: 382) who state that since citizens are the "consumers" of government services, knowing their needs through citizen participation, is an important input.

While the strategy and policy process focuses on citizen participation at the input stage, it is important that outputs are identified, so that at the input stage the expected output relating to the needs of citizens are identified. This requires local government to undertake the following at the input stage: requirements of the service specified by citizens; requirements not specified by citizens, but needed for use; statutory and regulatory requirements applicable to service provision (SABS 2015:17). As noted by Halachmi and Holzer (2010: 384), government needs to establish agreement with external stakeholders about what data is needed; how such data is going to be analyzed ; what are the intended uses of the data; and disseminating information that is derived from it as inputs for decision making. Such data sharing not only increases transparency, but also trust in the value of citizen participation.

Figure 3 incorporates ISO 9004, which provides a wider focus on quality management than ISO 9001 as it addresses the needs and expectations of all interested stakeholders (all interested parties) and aims to guide organizations through a quality management approach to achieve sustained success which is now a goal of the standard. Quality management is considered as the means to achieve success as the end goal. ISO 9004 argues that objectives can only be achieved if the organization consistently meets the needs and expectations of its interested stakeholders.

Figure 3 illustrates the important role that citizens play as customers in specifying requirements as inputs. Citizen needs can by evaluated based on their perceptions of expectations of local government at the input stage, as well as their perceptions of satisfaction at the output stage. All processes can be subjected to the "Plan-Do-Check-Act" (PDCA) methodology, which includes the following steps (ISO 2014: ix):

- Plan: establish the objectives and processes necessary to deliver results in accordance with customer requirements and the organization's policies.
- Do: implement the processes.
- Check: monitor and measure processes and product against policies, objectives and requirements for the product and report the results.
- Act: take actions to continually improve process performance.

To ensure the quality of the products/services it provides, citizen participation can be incorporated as a tool at the input (identification of more reliable requirements) and output level (identification of levels of satisfaction with the product\service) within the process approach. A diverse and interconnected range of government processes like the provision of resources and capacity; monitoring and evaluation of service provision; and the establishment of internal and external communication channels are required to

provide quality services to citizens. In activating these processes, it is necessary to address the following (ISO 2014: xii):

• Identification of the internal or external customer.

• Determining the main inputs to the process such as policies, financial resources and legal requirements

• What are the expected outputs such as service specifications.

• Establishing controls and indicators needed to verify results and performance levels.

• Identification of interaction with other input and output processes within the local government system.

• Determining necessary controls for transparency.

Figure 3. Extended model of a process based quality management approach
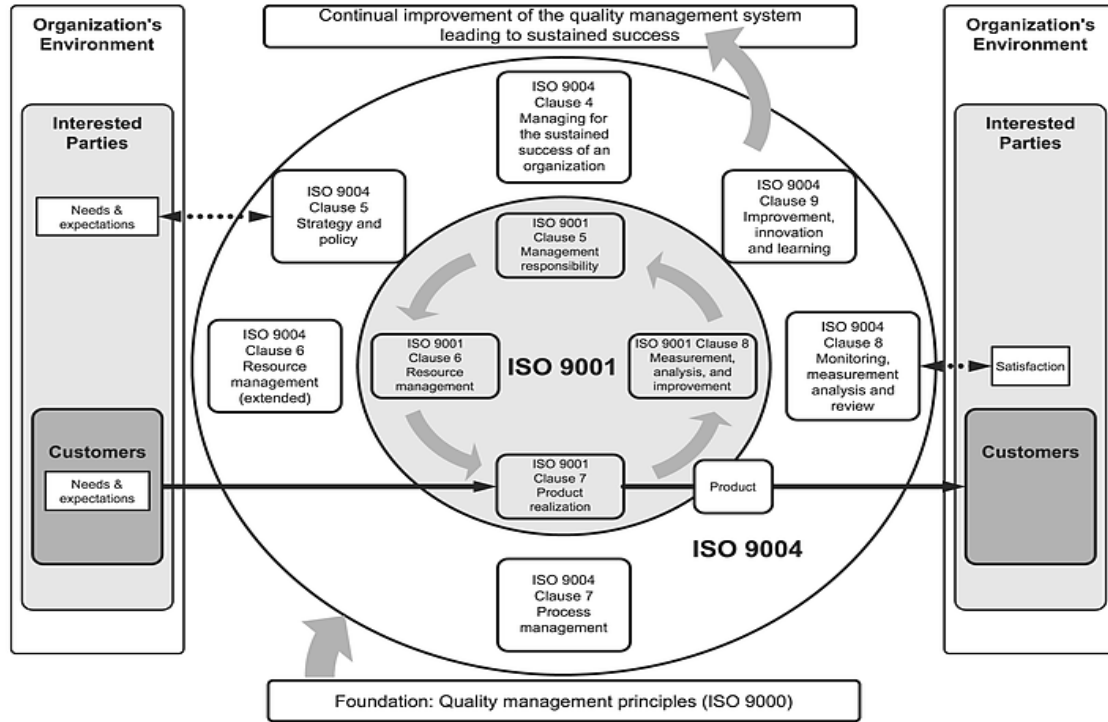
Source: Adapted from IS0 (2009)

The aforementioned is reinforced in Frey's (2008:38) argument that procedural utility is created when citizen needs are addressed through "institutionalized processes" that contribute to a positive sense of the self. This is further supported by research findings of Ott (2010: 360), which highlighted higher levels of connection between citizen happiness and technical quality of governance than with its democratic quality. Therefore, the quality of local government is an important factor, especially in terms of processes that are well managed to produce the expected results, since technical quality can be viewed as the engine of local government success.

In addition, at the input stage (assessing customer needs), the following require attention (SABS 2015:16): Complaints and suggestions from customers/citizens and local government personnel; outcomes of the integral diagnostic analysis; comparative studies in the implementation of systems of other local governments with ISO 18091; budgetary requirements for implementation and operation; monitoring progress of previously decided actions relevant to the quality management system; changes in national or regional government policies and resource provision; changes in statutory and regulatory requirements; changes in local demographic; and risk assessment. The

aforementioned activities should be the responsibility of relevant employees throughout the entire local government. While this requires a clear understanding of the intention of local governance by all parties, there has to be bidirectional sharing of knowledge and concerns to facilitate a holistic approach in achieving best output (Uzzaman 2010:387). Shared responsibility not only strengthens processes achieving their objectives, but overall the quality management system is enhanced.

Citizen participation can be valuable in identifying potential constraints in the input and output management system ; and can help in finding ways to improve active contribution of all relevant stakeholders to enhance standards at the input and output stages. It can be argued that if local government is to succeed in providing sustainable products/services, then citizen participation in identifying needs must be an integral part of the process approach within the overall quality management system. Such participation can determine through various sources the different needs and expectations of citizens, what needs and expectations are changing, as well as what needs and expectations are in in conflict. This can enhance citizen trust in local government engaging in reliable processes to provide effective and efficient services. Therefore, it is integral that if

local government is to successfully respond to the needs and expectations of citizens, then the following require consideration (ISO2009:V):

• Have a long-term planning perspective of how needs are to be identified and addressed.

• Continuously scan the environment to identify changes.

• Identify existing and new stakeholders and how they impact local government performance. assess their individual potential impacts on the organization's .

• Continually engage citizen participation to communicate activities and plans.

• Maintain beneficial relationships with all stakeholders.

• Engage in negotiation and mediation to balance competing need and expectations of citizens.

• Develop a risk mitigation strategy.

• Identify resources needed to address citizen needs and expectations.

• Establish appropriate processes to strategy.

• Engage in regular monitoring and evaluation

• Provide opportunities for continual learning for employees to sustain organisational vigour.

• Implement processes for innovation and continual improvement.

The aforementioned require the use of various innovative approaches, strategies, tools to engage citizens in governance. Farazmand (2012:235) rightfully states that "the capacity to govern requires a capacity to manage, and this requires sound public administration", which are vital in recognising the legitimacy of governance structures and processes. Citizen needs include not only quality services, but also reasonable price; equity in service provision; and sustainable and reliable services. Commensurately, advocates view citizen participation as promoting citizenship values, enhancing accountability, maintaining legitimacy, achieving better decisions, and building consensus (Barber 1984; King, Feltey, and Susel 1998; and Thomas 1995 in Yang and Pandey 2011: 880).

3. RECOMMENDATIONS

Imperatives for citizen participation at the input stage

Before engaging with citizens in a participatory model to enhance service delivery, local government has to be committed in its responsibility to provide services, both specified and unspecified by citizens, in an endeavor to promote the dignity of citizens and their rights. Through the engagement with citizens, local government installs a "relevant step to put democratic values at the local level into practice, and to facilitate the achievement of a more sustainable governance" (Carvalho and Fidelis 2011:

390). It is therefore important that service delivery encompasses several considerations like: safe, accessible and hygienic services; professional and ethical conduct of local government personnel; acceptable waiting and/or response times; acceptable prices for the service provision; convenient service hours; availability of clear information dissemination and communication channel for citizens (SABS 2015: 18).

Various authors have recommended differing imperatives for successful citizen participation as mentioned by Yang and Pandey (2011: 882-883):

• Langton (1978) argued that the quality of citizen participation is determined by citizenship education, elitism, technological complexity, financing, government agency behavior, and representativeness influence the quality of citizen participation

• Rosener (1978) highlighted the importance of planning and matching participation methods to participation purposes.

• Kweit and Kweit (1981) identified participation mechanisms and organizations; characteristics of the target organization; and the environmental characteristics as determining successful citizen participation.

• King, Feltey, and Susel (1998) argued that educating citizens/administrators and enabling facilitative systems/processes to promote better cohesiveness between administrative systems, administrators, and citizens will help in overcoming barriers to effective participation.

• Walters, Aydelotte, and Miller (2000) proposed that participation techniques should be aligned to participation purposes (finding definitions, alternatives, or criteria; educating the public about the issue and proposed alternative; determining public opinion about the alternative; persuading the public toward an alternative; and legitimizing government decisions) and the nature of the issue (level of conflict, the number of stakeholders, level of confidence, the number of alternatives, the knowledge of outcomes, and the probability of the outcomes).

Further, in linking the processes and outcomes associated with public participation in local government, citizen empowerment in guiding administrative decisions is promoted (Olomid 2014:79). This is additionally supported by Iyanyna and Shah (2011:61) who state that the quality of governance encompasses both quality of institutions and processes, as well as governance outcomes. The focus is on exercising authority and control to preserve, protect and enhance the quality of life of citizens. In this regard they refer to the following responsive and fair governance indicators as important considerations, which can guide input and output (Iyanyna and Shah 2011:62):

Table 1. Governance indicators

Responsive governance	• Public services consistent with citizen preferences. • Direct possibly interactive democracy. • Safety of life, liberty and property. • Peace, order, rule of law. • Freedom of choice and expression. • Improvements in economic and social outcomes. • Improvements in quantity, quality and access of public services. • Improvements in quality of life.

Fair governance	• Fulfillment of citizens' values and expectations in relation to participation. • Social justice, and due process. • Access of the poor, minorities and disadvantaged groups to basic public services. • Non-discriminatory laws and enforcement. • Egalitarian income distribution. • Equal opportunity for all.

Source: Adapted from Shah (2008)

The aforementioned indicators of responsive and fair governance can be aligned to Farazmand's (2012:231) concept of sound governance which encompasses (1) citizen participation; (2) the process involving all stakeholders; (3) the structure constituting the regulations, procedures, decision-making frameworks, and authoritative sources that legitimizes the governance process; and (4) the value system of the governance structure or process. Buckwalter (2014: 574) argues that critical resources to build participant efficacy are required to create the platform for participation and empowerment, which are important constituents of sound governance. Additionally, Ngugen et al. (2015:45) argue that the poor or marginalized are in a more disadvantaged position for participation and they therefore need assistance to make their voices heard from government or other organizations. The study by Yang and Pandey (2011:885-890): argued that that while the aforementioned propositions are important in ensuring quality citizen participation, additionally the following factors which extend beyond the citizen- administrator inter-face require consideration:

• Minimizing red tape and bureaucratic administrative rules and requirements that prevent citizens from getting timely and accurate government information to participate or participate effectively.

• Promoting transformational leadership which can focus on the role of citizens and citizenship in formulating and realizing shared goals.

• Using multiple citizen participation mechanisms to foster consensus, responsiveness, and trust in government.

• Educating citizens; improving their knowledge, and enhancing their communication and participation skills can reduce delays in the decision processes and facilitate the achievement of quality solutions.

• Minimise unequal representation through increased citizen competence, which ultimately produces better citizen input, which will be valued by government officials.

Additionally, a study by Shehu, Pollani and Gjuta (2013: 683) point to the following important drivers for successful citizen participation:

• Legalise the rights of citizens in decision-making processes.

• Promote awareness and a culture of the importance of participation in decision making processes.

• Enhance transparency in the process of communication with the public.

• Regularly updating information on the local government website on local government activities.

• Education of citizens on local government functions.

• Expansive use of the media for communication.

The above pointers stress the importance of communication, as reinforced in a study by Vivier et al. (2015: 89), which argued that "limited and differentiated access to information and to communication platforms; the incomplete or inaccessible nature of the information available; and the inadequacy of the types of platforms used", was attributed to poor government communication processes. Communication platforms play a constructive role in supporting substantive citizen participation. It also indicates the importance of linking information exchange to other processes in order to "close the feedback loop" in a quality management system, so that everyone understands the purpose for using the quality management system and its benefits..

Despite attempts by scholars to recommend ways to improve the process of citizen participation, it is inevitable that some cultural and social factors like gender and caste may mitigate successful participation (Sharma, Bao and Peng 2014: 84). Therefore, within the context of quality management, citizens and employees need to be made aware of potential cultural resistance and educated on ways of consensually managing it's possible negative impact. Further, citizens need understanding and empowerment in the following areas:

• They are a valuable resource in local government, which requires their involvement in decision making regarding their needs and expectations.

• Citizen management based on a transparent and socially responsible approach, so that they understand the importance of citizen participation.

• Taking collective ownership and responsibility to solve problems.

• Knowledge and competence development in understanding the purpose and processes underpinning citizen participation.

The aforementioned is supported by Lawton and Macaulay (2013:76) who argue that the above has the potential to develop both expert citizens (professionals with expertise working inside the system of governance) and everyday makers of their own local governance (citizens concerned with local interests and everyday life).

If citizen participation is not well managed, it may delay decisions, increase conflict, disappoint participants, and lead to distrust (Yang and Pandey 20111: 880). In addition, improperly managed formal participation mechanisms have the potential to distract the time and energy of citizens towards irrelevant issues and conflict, while important decisions regarding service are taken by other groups (Lombard 2103: 139). This can result in socially excluded and marginalized citizens competing for the crumbs, while resolutely being distracted from the cake . Therefore, in engaging citizens in helping to determine their needs and expectations, well organised actions are required from local government, which include (ISO 2009: 17):

• Anticipating any potential conflicts arising from the different needs and expectations of citizens.

• Evaluating current performance of local government and problems associated with poor service delivery in the past.

- Maintaining constant communication with citizens on progress and the need for feedback from them.
- Reviewing, updating and reporting on processes within the management system
- Making accessible resources required for improvement.

The aforementioned is consistent with Fung's (2015:513) claim that the "democracy cube" promotes designing participation to include different kinds of participants; different ways of speaking, hearing, and exchanging information; and different levels of empowerment. This provides opportunities for inclusive representation, especially for marginalized citizens with fewer resources (Lombard 2014:137). This requires designing participation at the input stage that clearly articulates the process from participation to satisfaction of the intention, which is meaningful to citizens. Sustaining citizen participation is dependent on citizens supporting the institutions and practices of participation,within a local government context. This offers increased opportunities for improvements in accountability, trust, and integrity in local government as supported by (Wang and Van Wart (2007) and Devas and Grant (2003) in Lawton and Macaulay (2013:1).

Communication and promotion of effective processes to engage citizens is important to foster transparency and local government accountability. Communication and feedback processes to engage citizens can include citizen opinion polls; surveys; complaint's hotlines; meetings; phone services; a website, e-mails, citizen service desks in local government departments; complaints and suggestion mailboxes , and the use of mass media. Such data analysis will provide invaluable information regarding the needs of citizens. In addition, data analysis of citizen satisfaction at the output stage can also be used to enhance analysis of citizen needs. Beyond establishing communication processes, is the need to evaluate the process to mitigate repetitive problems.

In addition, identification of control measures required for each process within each procedure will ensure consistent outputs. There has to be measures to analyse the product and processes so that timeous corrective and preventive action can propogate continuous improvements to satisfy citizens.This has to be supported by available resources. Implementing such control measures can ignite the journey to successful local government performance.

Farazmand (2012:236-239) suggests the following ways in which citizen participation can be optimally used:
- Establishing strong community leadership to learn about citizens at the grassroots level. This provides an avenue for citizens from different professions and ranks to have their voices heard.
- Use of mass media and digital technologies to reach out to citizens. Information about their preferences, problems, issues, and suggestions from these sources can be analyzed and used effectively, thereby promoting motivation; and trust and credibility in the governance process.
- Advisory Boards representing from diverse backgrounds can be a powerful institutional mechanism to engage citizens and use them as messengers back to the communities.

- Collaboration and partnership building can be used to make more informed decisions; enhance creativity, innovation, and synergy through collective action; and promote democratic productivity.
- Use of digital governance to empower citizens and bring them closer to government. Communication can become simpler and faster.
- Citizens can share governance functions, thereby promoting self-reliance. Government can also provide an enabling environment, by allowing citizens to manage certain responsibilities traditionally performed by government.

Farazmand's suggestions can be conceptualized into various stages of citizen participation as proposed by Creighton (2005: 35): inform the public, listen to the public, engage in problem solving, and develop agreements. By informing the public, citizens can contribute to decision making using information that is comprehensive and free of bias. Access to information is increased by listening to citizens, which helps to make decisions collaboratively and consensually.

Avenues to engage citizens provides opportunities to improve overall local government performance in problem solving, decision making, and service delivery. Sound governance through citizen participation can democratically produce the capacity to transform citizen participation into an authentic input tool to determine their needs.

CONCLUSION

In analyzing literature pertaining to quality management using ISO and the development of ISO18091:2104 specifically for local government, it can be concluded that a quality management system that incorporates all activities and processes needed to satisfy the needs and expectations of citizens, while considering the requirements of other stakeholders as well, can assure local government of success. The incorporation of citizen participation as an input tool in a quality management system can promote effectiveness, efficiency, trust, legitimacy and accountability from the local government perspective.

However, it can be posited that mechanisms for citizen participation will not necessarily improve the quality of service provision. Poor governance processes in the administration of local government can result in poor quality of service provision and dissatisfied citizens. If the vision of sound governance is to be brought to fruition, then local governance must not only focus on providing opportunities for participation, but also on the quality and impact of such participation. It can be argued that through constructive efforts, citizen participation can steer the procedural or technical quality of the operations and management of local government in the direction that would not only optimize the benefits to citizens, but also contribute to enhanced quality of local government performance.

This implies that the needs of citizens must be correctly identified and appropriately satisfied. Ultimately, management; employees and citizens must take responsibility for the quality management system and embrace commitment to the continual improvement of processes and the overall system.

While citizen participation may be a time consuming and complex process, it is an important aspect in democratic local governance. It can be asserted that in the absence of such participation in the process of influencing decision making, legitimate democratic decision making is compromised. Local governance provides an avenue for citizens to participate directly and indirectly in governance processes and decision making. Gaining the trust and confidence of citizens is attributable to local governance that is transparent and accountable. Through participation, the needs of citizens are taken into account.

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PRACTICAL APPLICATION OF CORPORATE GOVERNANCE PRINCIPLES IN A DEVELOPING COUNTRY: A CASE STUDY

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Abstract

The importance of examining corporate governance in organisations cannot be overemphasised. Corporate governance failure which has resulted from weak corporate governance systems has highlighted the need for research aimed at contributing to the improvement and reform of corporate governance at business, national and international level. A review of corporate governance mechanisms and their practical application in two retail companies in South Africa was undertaken. The research question that informed the study was: What is the nature of corporate governance mechanisms in the South African retail sector? The research design entailed analysis of secondary data, namely Annual Reports and other pertinent documents, and document analysis was used to show what is accessible to the ordinary share/stake-holder and what is not. Data analysis was conducted both qualitatively and quantitatively. With regard to corporate governance mechanisms, the results and discussion show that the two companies have not yet complied with the King II and III codes. Recommended strategies to strengthen corporate governance mechanisms in the South African retail sector should include a commitment to risk disclosure and revamping of the corporate governance structure of the 'whole' system.

Keywords: Corporate Governance, Retail Companies, King II And III Codes

1. INTRODUCTION

This article examines the concept of corporate governance principles in South Africa. The term 'corporate governance' has been the subject of some controversy, and was rarely used (for example, in discussion of common law) prior to the 1990s. How to ensure that the power of an organisation is harnessed for the agreed purpose rather than diverted in some other direction is a constant theme in corporate governance. Solomon and Solomon (2014) explain that the term 'governance' derives from the Latin *gubernare*, meaning 'to steer' (usually in relation to steering a ship); this implies that corporate governance involves the function of direction rather than of control. The objective of this article was to analyse the practical application of corporate governance in two retail companies in South Africa. Its purpose was to uncover differences and similarities and make recommendations as far as corporate governance is concerned. The focus question is 'What is the nature of corporate governance mechanisms in the South African retail sector?'

1.1. Problem statement

According to Monks and Minow (2008) the global importance of corporate governance became dramatically clear in 2002 as a series of corporate meltdowns, frauds, and other catastrophes led to the destruction of shareholders' wealth, loss of jobs, criminal investigation of dozens of executives, and record-breaking bankruptcy filings. Hence the importance of examining corporate governance in the nation's companies cannot be overstated.

Corporate governance failure which has resulted from weak corporate governance systems has highlighted the need for research aimed at contributing to the improvement and reform of corporate governance at business, national and international level. Not much company-specific research is being undertaken to establish the extent to which corporate governance reforms have been implemented in the country, although the subject has been given attention in Western countries such as the United States of America (USA) and the United Kingdom (UK). The paper identified a gap in research with regard to the nature of corporate

governance mechanisms and broader corporate governance agenda namely Corporate Social and Environmental Responsibility (CSER) in South Africa.

Having introduced the thrust of this article, the next section provides a literature review of the construct of corporate governance and related theories.

2. LITERATURE REVIEW

2.1. Corporate governance

Corporate governance reforms were undertaken in earnest from the beginning of the 1990s due to a number of well-publicised corporate problems and scandals in the late 1980s and early 1990s. From questionable earnings to outright fraud, businesses came under increasing scrutiny by shareholders and regulators alike. Corporate problems of the 1980s (as of today) involved creative accounting, spectacular business failures, the apparent ease of unscrupulous directors in expropriating other stakeholders' funds, and the claimed weak link between executive compensation and company performance (Keasy and Wright, 1997; Mongalo, 2003).

In light of a modern world where many large companies have collapsed due to directors acting in their own self-interest, instances of abuse of corporate power, fraud, criminal investigations, mismanagement and excessive executive compensation have negatively impacted economic systems and undermined investors' and the public's confidence in business management.

There is no single accepted definition of corporate governance. In general, corporate governance is an economic, legal and institutional framework in which a corporate is directed and controlled (Friedman and Miles, 2006). Corporate governance, for the purposes of King IV (2016), is about the exercise of ethical and effective leadership by the governing body, which includes four overarching responsibilities of this governing body: (i) providing strategic direction; (ii) approving policy to put strategy into effect; (iii) providing informed oversight of implementation and performance; and (iv) disclosing.

According to Mongalo (2003:185):

Corporate governance is concerned with the enhancement or fortification of the rules and principles of company direction for the purpose of accommodating the modern environment within which companies operate and the imposition of stricter checks and balances to … alleviate malpractices by those engaged in corporate decision making.

In South Africa the corporate governance principles apply to 'affected companies' as defined in the King II (2002) code – companies with securities listed on the Johannesburg Stock Exchange (JSE). As Mongalo (2003) explains, the term 'corporate governance' has come to be associated only with listed companies, although this is not necessarily the case. In this article corporate governance will be defined as:

"the system of checks and balances, both internal and external to companies, this ensures that companies discharge their accountability to all their stakeholders and act in a socially responsible way in all areas of their business activity" (Solomon and Solomon, 2014:14).

Having provided an introduction to corporate governance, the next section entails discussion of a number of theoretical corporate governance frameworks and mechanisms.

2.2. Theoretical frameworks and mechanisms of corporate governance

First we discuss agency theory in corporate governance, followed by a brief discussion of the King codes, mainly King III (2009). A discussion of corporate governance mechanisms is also presented, mainly from a South African perspective. According to Luo (2009) and Luo and Salterio (2014) these mechanisms entail examining the importance of corporate disclosure, internal control and risk to effective corporate governance.

2.2.1. Agency theory

Although the majority of shareholders own, in part, the investee company, they have little to do with running the company; this is the job of the company directors to whom they entrust their funds (Solomon and Solomon, 2014). According to the King codes (II and III), the company is integral to society, particularly as a creator of wealth and employment. The company is the preferred vehicle in which to pool human and monetary capital. These are enterprisingly applied in the expectation of a return greater than a risk-free investment such as a deposit in a bank. Jensen and Meckling (1976) defined the managers of the company as the 'agents' and the shareholder as the 'principal', and agency theory is mainly concerned with resolving two problems that can occur in this relationship:

- The first problem arises when the objectives of the principal and agents conflict and it is difficult or expensive for the principal to verify the agents' behaviour; and
- The second is the risk-sharing problem that arises when the principal and agents may prefer different actions because of different risk preferences (Luo, 2009; Luo and Salterio, 2014).

Due to the above, principals are worried about self-seeking managerial opportunism. Hence it is important to consider direct ways in which shareholders can 'monitor' company management and help resolve agency conflicts (Solomon and Solomon, 2014).

2.2.2. King III and King IV – 'apply or explain'

Corporate governance was first institutionalised in South Africa with the publication in 1994 of the first King Report on Corporate Governance ('the Code', or King I'), replaced in 2002 by King II. The distinguishing aspects of corporate governance reform have been its focus on a stakeholder-oriented, all-inclusive and voluntary, self-regulated approach. King III was launched and was effective from 1 March 2010, and will be replaced by the King IV draft of 2016. Some of the key changes in the King III Report (King III and Institute of Directors South Africa, 2016) are as follows:

▪ *Boards and directors:* The majority of directors must be non-executive directors (NEDs) and independent. The Board should be directed by an independent non-executive chairperson;

▪ *Remuneration of directors:* Shareholders must approve the remuneration policy, which must be published annually. The chairperson and NEDs must not receive share options;

▪ *Risk management:* The concept that risk management and information technology governance and security is inseparable from the company's strategy and business processes was introduced;

▪ *Compliance with laws, regulations, rules and standards:* This is dealt with in a separate chapter and not as a mere function of the Board;

▪ *Managing stakeholder relationships:* For the first time this is dealt with as a separate chapter and not as part of reporting on sustainability;

▪ *Mergers, acquisitions and take-over:* These are included in the Code for the first time due to changes in the Companies Act; and

▪ *Application of the code:* King III applies to all entities, regardless of the manner and form of incorporation or establishment.

The above key aspects of corporate governance will be used to analyse the extent to which the two companies have complied with the King III Report.

Also importantly, the King III (page 13) report states that "the legacy of apartheid is fundamentally unsustainable – social transformation and redress is therefore an important aspect and needs to be integrated within the broader transition to sustainability". Redress together with Black Economic Empowerment has become crucial in South Africa especially in the post –apartheid era. Therefore, composition of each of the companies will be analysed using the number of black directors and women directors to measure board of directors' transformation.

The Permanent Subcommittee on Investigations of the Senate Committee on Government Affairs, USA Senate (2002) chose to codify a significant part of its governance in an Act of Congress known as the Sarbanes-Oxley Act (SOX). This statutory regime takes the form of 'comply or else'; in other words, there are legal sanctions for noncompliance. The cost of compliance by American companies with section 404 of SOX, which deals with verification of internal controls, by 2008 was estimated at $264bn since the inception of SOX in 2002 (King III). The 56 countries in the Commonwealth, including South Africa and the 27 states in the European Union (including the UK), have opted for a 'comply or explain' basis, in addition to certain governance issues that are legislated. Therefore company directors are required to 'apply' their code or 'explain' the reasons for not doing so. The JSE Limited requires that listed entities must disclose the extent of their compliance with King II and explain areas of noncompliance.

2.3. Why is good corporate governance important?

Many company directors have opposed the ongoing process of corporate governance, considering these initiatives as slowing down decision making and adding unnecessary levels of bureaucracy and red tape. Richard Branson's experiment with the London Stock Exchange in the mid-1980s found that 'excessive' corporate governance hindered his decision making, slowing down his ability to 'make things happen' (Solomon and Solomon, 2014). Nevertheless, there is a growing perception in the financial markets that good corporate governance is associated with prosperous companies (Solomon and Solomon, 2014; KPMG, 2014). For example Luo and Salterio (2014:467) argue that corporate governance reflects and enforces the company's value and contributes to the company's legitimacy and the credibility of its decisions and reporting. Luo and Salterio (2014:469) further posit that a well-functioning corporate governance system can also create a competitive advantage and heighten a company's cohesion, which not only minimises agency costs but streamlines decision-making and stabilises internal operations and management for an individual company. The article turns to the role of auditing as an essential corporate governance mechanism.

In the USA the Permanent Subcommittee on Investigations of the Senate Committee on Government Affairs (2002) commented on the role of the Board in Enron's collapse, and came to the conclusion that Enron's Board of Directors was guilty of fiduciary failure; knowingly allowing Enron to engage in high-risk accounting practices; allowing inappropriate conflicts of interest; exercising inadequate oversight of transaction and compensation controls; and failure to protect Enron shareholders from unfair dealings. In South Africa a Commission led by Judge Nel was formed following a public outcry over the collapse of the Masterbond Group in the early 1990s. The Commission's investigation revealed, among others, an astonishing degree of dishonesty, inefficiency, lack of professional integrity and lack of independence in the collapse of the investment scheme (see Nel Commission Report, 1997).

2.3.1. *Benefits of implementing good governance*

The following are some of the significant business benefits associated with effective management and implementation of good governance frameworks and mechanisms:

▪ **Economic efficiency** – reduced costs, costs avoided such as design for environment, economic innovation and optimal investment strategy;

▪ **Quality management** – better risk management, greater responsiveness in volatile markets, staff motivation and commitment, and enhanced intellectual capital;

▪ **License to operate** – reduced costs of compliance, planning permits and licences, enhanced reputation with stakeholders, influence with regulator and government;

▪ **Market advantage** – stronger brands, customer preference loyalty, lower costs of capital, new product process and services, and attracting the right talent; and

▪ **Sustainable profits** – increased market share and enhanced shareholder value.

Implementation of corporate governance mechanisms may require a shift in the existing policies, systems and practices within a business, which would require participative management, with the emphasis on 'substance over form'.

Implementation steps, according to King III (2009), entail having a long-term, gradual plan; aiming to implement simple and robust objectives; not reinventing the wheel; applying the 80/20 rule (start with big issues); marketing the corporate governance and sustainability concepts; being flexible and realistic; and taking bold steps (King III, 2009; King IV, 2016).

2.4. The importance of auditing

According to Luo (2009:33), independent (internal and external) auditing of corporate affairs is a prerequisite for a discipline-based governance mechanism. Failure of the audit function was one of the principle factors that contributed to the downfall of Maxwell, Barings, and Enron. The UK Cadbury Report (1992:36, para. 5.1) and King II (2002) emphasise that:

The annual audit is one of the cornerstones of corporate governance ... The audit provides an external and objective check on the way in which the financial statements have been prepared and presented.

2.4.1. Internal audit

The primary goal of internal auditing is to evaluate the company's risk management, internal control, and corporate governance processes and ensure that they are adequate and well-functioning (King III, 2009). Therefore a company should seek to implement a risk-based approach to internal audit rather than a compliance-based approach that adds little value to the governance. The holding company of healthcare firm Macmed went into liquidation in October 1999 owing 16 banks R1 billion in unsecured loans, making it the most expensive corporate failure in South Africa to date. The holding company's Annual Reports, which had allegedly been 'though the corporate governance process' and had been signed off by the company's auditors and the audit committee, failed to reflect the extensive funding of the Malesela expansion out of the company's cash flow (Naidoo, 2003). Furthermore, it came to light that the company secretary of Macmed was an unrehabilitated insolvent (Naidoo, 2003).

2.4.2. External audit

An external audit is an independent examination of the financial statements of an organisation by a third person called an external auditor. The external auditor expresses a fair opinion on the financial statements in accordance with specific rules and laws, because the auditor has knowledge and skills in the accounting and auditing field. An independent external audit evaluates an organisation's accounting procedures and is intended to certify the financial statements as *'a'* true and fair view rather than *'the'* true and fair view of a company's health (Marnet, 2009; Luo, 2009). An underlying assumption is that the auditing process can be impartial and free of bias. Presumably this can be achieved if an auditor of 'good standing' 'watches out' for potential conflicts of interest and bias.

However, repeated audit failures highlight concerns that assumptions of auditor impartiality and the absence of bias are perhaps somewhat unrealistic (Marnet, 2009). Arthur Andersen, the now defunct former Big-5 accounting company, may provide an extreme example of the intrusion of bias in the auditor-client relationship. The *In re Enron Securities Litigation* document (Class Action, 2005, February 7) emphasises that Andersen was a repeat offender, with a history of failed audits, conflicts of interest and document destruction in some of the most egregious cases of accounting fraud in history. The KPMG (2014) report indicates that for an audit committee to be effective in upholding stakeholder interests it should do the following:

- Increase the emphasis on risk and control, including levels of authority;
- Demonstrate the Board's intention to exercise cautiousness in reviewing financial statements;
- Enhance non-executive directors' knowledge of the organisation's finances;
- Improve the communication between Board and external auditors; and
- Help to improve the quantity of financial reporting by providing greater focus.

2.5. Other corporate governance mechanisms

2.5.1. Accountability and transparency

Corporate governance involves corporate fairness, transparency, and accountability (Hughes, 2012; King III, 2009; King IV, 2016). Thus accountability is both a key element of as well as a requirement for corporate governance. To achieve this end, an effective information and communication system within an organisation is crucial (Luo and Salterio, 2014; King IV, 2016). Therefore governance issues that should be considered here include: executive compensation, auditing standards, investment decision procedures, rights and responsibilities of executives and directors, and compliance programmes. These issues have a considerable effect on the interests of stakeholders, who have the right to know how such governance issues affect their interests.

2.5.2. Disclosure

Disclosure is critical to the functioning of a capital market. The term 'disclosure' means a whole array of different forms of information produced by companies, such as the Annual Report, which includes the director's statement, Operating and Financial Review (OFR), profit and loss account, balance sheet, cash flow statement, remuneration chapter and other mandatory statements. It also includes all forms of voluntary corporate communications such as management forecasts, analyst presentations, details of the annual general meeting, press releases, information placed on corporate websites and other corporate reports, such as stand-alone environmental or social reports (Healy and Palepu, 2001; Solomon and Solomon, 2014). According to Kim and Verrecchia (1994) academic research indicates that investors perceive a value to corporate disclosure.

2.5.3. Internal control

From an agency theory perspective a company's system of internal control represents another corporate governance mechanism that can be used to align the interests of managers and shareholders. The Rutteman Working Group (1994:1) defines internal control as "the whole system of controls, financials and otherwise, established in order to provide reasonable assurance of effective and efficient operations…". According to King III (2009) an effective internal control system should enable the company to:

- Identify key objectives and those risks that may impact on business delivery;
- Measure performance of staff, systems, and processes in managing these risks;
- Manage the process through timely and meaningful communication of relevant information available via workable and effective reporting structures; and
- Monitor the effectiveness with which risk is identified, measured and managed.

2.5.4. Identifying and minimising risk

Risk is an inherent and unavoidable element in the conduct of any business, hence maintaining the optimum balance between risk and return is fundamental to business success. Every company, regardless of size or corporate structure, must at some level anticipate and plan for the business risks it faces so as to improve prospects for its long-term survival (Boritz, 1990; Naidoo, 2003).

Corporate risk disclosure represents an important, specific category of corporate disclosure. Risk has been extensively addressed in King III (2009); this highlights its significance to a company. The Board should approve the company's chosen risk philosophy and also adopt a risk management plan (see King III, 2009 and King IV, 2016). The following questions, adopted and summarised in Table 1 from Solomon and Solomon (2014), attempt to present the 'ideal' ingredients of a corporate risk disclosure framework.

Table 1. Possible ingredients of an ideal corporate risk disclosure framework

A Environment 1. Should risk disclosure remain voluntary or mandatory?
B Level of risk disclosure 2. Is the current level of information that is disclosed adequate? 3. Would increase disclosure help investment decision making?
C Location 4. Where in the Annual Report should risk be disclosed? 5. Is the OFR, for example, the most appropriate vehicle for risk disclosure?
D Forms of risk disclosure 6. Should every risk be reported individually or should all risk information be grouped in a general statement for external reporting purposes?
F Risk disclosure preference 7. Should all risk be reported with equal importance? 8. Is there a distinct preference for some types of risk information by users?
G Investors' risk attitude 9. Are investors', e.g. institutional investors', attitude toward risk disclosure influenced by their general attitudes towards corporate governance? 10. Are these investors' perceptions of corporate governance related to their risk information requirements?

Source: Solomon and Solomon (2014:44).

Solomon and Solomon (2014:45) point out that there is a strong link between the above issues (Table 1), since internal control has recently become a central aspect of corporate governance reform.

2.6. Brief analysis and discussion of the retail sector in South Africa

The retail landscape is inhabited by a few large competitors with their considerable buying power and scale operations; supermarkets are able to charge lower prices than convenience stores (referred to as general dealers, corner cafés, spaza shops and tuck shops), and as a result command a large share of consumer spending on food. Three South African retailers appeared on the global ranking of the top 250 retailers (National Retail Federation, 2016). According to Crotty and Bonorchis (2006), in the retail industry size is critical – hence most of the retail companies in the country have pursued a growth strategy that has relied heavily on buying size through acquisitions, rather than through a slower process of organic growth. This is especially so because many retailers regard this industry as over-traded.

3. RESEARCH METHODOLOGY

This article adopted an analytical and descriptive case study of the phenomenon – corporate governance – within a real-life context (Creswell, 2014). The purpose of phenomenological research is to describe or capture lived experiences (or phenomena). Phenomenology is both a philosophy and a research method (Yin, 2002; Creswell, 2014). The analytical component of this research involves in-depth study and examination of available information in an attempt to explain complex phenomena, namely corporate governance.

The descriptive part of this research provides an accurate portrayal of the corporate governance structure in place at two companies. Descriptive

studies are a way of (1) discovering new meaning; (2) describing what exists; (3) determining the frequency with which something occurs; and (4) categorizing information (Selltiz et al., 1976; Burns and Grove, 2005). Examination of the practical application of corporate governance warrants the use of a case study approach. The real business of case study is particularization, not generalization – taking on a particular case and knowing it well, not primarily as to how it is different from others but what it is and what it does.

According to Yin (2002) selecting the cases for a case study should not simply be a matter of finding the most convenient or accessible site from which to collect data. The selection process needs to incorporate the specific reasons for selecting a particular group of cases. Five candidate companies were screened beforehand. After three months of careful consideration, two retail companies were selected because the intention was to undertaken an in-depth analysis of the corporate governance mechanisms. The process involved collecting sufficient data that assisted in deciding whether the two companies met the following subjective criteria:

i. Being among the top listed companies on the JSE, ranked by market capitalization;

ii. Being among the top five influential retail companies; and

iii. Being best suited for the purpose of peer comparison.

In order to maintain consistency, for better comparison, with a critical and independent approach to the subject matter and secondary data, Annual Reports of the two retail companies were analysed. A review of other pertinent documents was done to supplement the Annual Reports, including the two companies' websites and those of non-governmental organisations and the JSE, and corporate governance journals and literature, particularly research policy, government commission reports, books, magazines, prospectuses, and other Internet-published information. The next section outlines the results and discussion.

Data analysis technique

This study adopted an analytical and descriptive case study of the phenomenon – corporate governance – within a real-life context. The purpose of pragmatic phenomenological research was to describe and capture lived experiences. The pragmatic research design adopted provided the basis for undertaking mixed-method data analysis quantitatively and qualitatively. The quantitative data was analysed using MS Excel (this was quite limited), allowing for data interpretation, while the qualitative data was analysed with the aid of NVIVO and MS Word computer software.

4. RESULTS AND DISCUSSION

We now look at the results of comparison of the two retail companies' corporate governance mechanisms. Table 2 below compares the two companies' Boards in order to determine the extent to which the two companies have complied with King III. The total number of directors and the total number of independent directors, as defined by the company, are recorded. The number of black directors and women directors is also recorded. Based on the previous discussion, if the independence of the Board is questionable a 'yes' is recorded and the number of directors in question is recorded The table records whether or not NEDs were awarded share options, whether or not the Annual Report has a chapter on remuneration, whether or not shareholders vote for executive and NEDs' remuneration, whether share options were treated as part of the remuneration package, and lastly whether the Chief Executive Officer (CEO) is a member of the Remuneration Committee. Given that there were 10 questions, the total possible score was 10 and the lowest 0. In this subjective test each company has to score more than 5 points to be compliant. Company A scored 17% while company B scored 23% in terms of performance with regard to corporate governance.

Table 2. Corporate governance scores

Corporate governance	Performance		Score	
Criteria	Company A	Company B	Company A	Company B
Total number of directors	12	13	N/a	N/a
Are there black directors?	Yes - 1	Yes - 2	1	1
Are there women directors?	Yes - 2	No	1	0
Is the Chairman independent?	No	No	0	0
Number of independent directors	7 out of 8	5 out of 6	N/a	N/a
Is the independence questionable?	Yes - 5	Yes - 3	0	0
Share options for NED present?	No	Yes	1	0
Chapter on remuneration present?	No	No	0	0
Seeks approval of shareholders on executive remuneration?	No	No	0	0
Seeks approval of shareholders on non-executive remuneration?	No	Yes	0	1
Are gains of share options treated as part of the remuneration package?	No	Yes	0	1
Is CEO is member of Remuneration Committee?	No	Yes	1	0
Total score			4/10	3/10
True independence of the Board (%)	$\frac{2}{12} \times 100$ =17%	$\frac{3}{13} \times 100$ =23%		

Table 2 confirms the earlier findings that the Boards of both Company A and Company B are remarkably untransformed, since both failed the corporate governance subjective test. Table 2 further shows that even in areas where the companies have scored a point, there is still a lot to be desired in terms of the absolute figures of, for example, women and black directors. There is no woman director on the Board of Company B.

Integrating sustainability and social transformation in a strategic and coherent manner in both companies would give rise to greater opportunities, efficiencies, and benefits, for both the companies and society with regard to board transformation initiatives.

According to Company B approval is sought for NEDs' pay, but since the company does not have a chapter on remuneration, apart from some notes on the financial statements, the company can be said to be forcing shareholders to vote on an issue that is not well laid out. Also, in the case of both companies remuneration data are theoretically public, but in reality they are very hard to find. In the words of the then Securities and Exchange Commission (SEC) Chairman, Richard Breeden, echoing Harold Williams, his predecessor from the Carter administration in late 1970s: "The best protection against abuses in executive compensation is a simple weapon – the cleansing power of sunlight and the power of an informed shareholder base." According to Monks and Minow (2008:275), "Compensation should be seen as one item – and an important one – on the board's report card". This does not mean that executives will be paid less, it means that they will be paid better.

The analysis shows that the percentage that could be considered to be truly independent in the two companies is low. This shows that Board transformation is a prerequisite for successful functioning of the two company Boards. The Board should be led by an NED chairman, who should be independent (King III). This is not the case at these two companies.

Analysis of the ownership of Company A shows a concentration of power within the hands of a few individuals (family shareholders-dominated system). According to Mongalo (2003) in companies that have a majority shareholder there is no separation of ownership and control; this implies that a corporate governance issue which really matters is constraining those owning large blocks of shares. Thus an issue that requires urgent attention at Company A is the need to protect minority shareholders. On the other hand, analysis of Company B ownership shows no dominant shareholder. In such a case, Mongalo (2003) contends, the corporate governance issue that matters is the strengthening of managerial accountability standards or reduction of agency costs (Hughes, 2012), since such a company possesses characteristics of the Anglo-American 'outsider' or 'arm's length' system of ownership and control. PIC is a major shareholder in both companies (Monks & Minow, 2008). According to King III the inertia of share owners and, more particularly, institutional shareowners is largely responsible for the non-enforcement in terms of the breach of duties by directors and managers.

In both companies the 'independent' NEDs also hold other executive positions in other companies (interlocking directorship and inbreeding). One advantage is that the Boards' members are likely to share inter-organisational views on corporate governance. However, these individuals possess 'power' due to centralised decision making across company boards, and hence dominate committee meetings, which discourages the desirable conflict and debate necessary in an organisation. According to King II and III the Board members should manage conflicts of interest, and carefully consider the number of additional chairmanships and directorates that they hold in companies.

In this regard, several director-selection practices should be avoided as they limit the Board's independence. Examples include celebrity directors with no corporate governance understanding, overly committed directors who serve on eight or ten boards while holding down a full-time job, personal friends of the CEO, and those directors who simultaneously serve as high-priced consultants or suppliers to the corporation.

Both companies have shown an increase in the number of employees; however, since the two companies have been involved in aggressive acquisition, as shown in the Annual Report, it is not possible to determine whether the number has increased as a result of these acquisitions or new additions to the workforce. Given the nature of the consolidation process resulting from these acquisitions, more jobs may have been lost through retrenchment than were created. Similarly, as discussed, it is not possible to determine the nature of these newly created jobs, and whether they are permanent or casual. As Crotty and Bonorchis (2006) contend, this is a form of what politicians and commentators refer to as 'dual economy' – the existence of First World executives receiving exorbitant remuneration and the Second World where casuals and flexi-timers earn below the basic survival wage. The Bench Marks Foundation evidence suggests that Company B pays at level 2, and that it must consider improving on wages and consider the ideal of level 5 for a sustainable community wage.

As observed in the results and in the Annual Report information, in both companies attributable profit has increased over the years; since 2004 dividends have been rising and the value-added statement is impressive. With regard to risk, the results show that both companies have recognised that efficient and effective risk management is a requirement of the King II report, which all listed JSE companies have to comply with. Hence both companies have ensured that risk processes and procedures are adequate to identify, assess, manage and monitor company-wide risks. Communication of risk is a significant factor in reducing the cost of capital and raising market confidence.

In general, the two retail companies have not complied effectively with King II and III. This will have an adverse effect on the two companies with respect to the Companies Act and the King IV report of 2016.

5. CONCLUSION

This article has explored corporate governance frameworks and mechanisms mainly from a South

African perspective, and has attempted to show that corporate governance is (Solomon and Solomon, 2014:14):

the system of checks and balances, both internal and external to companies, this ensures that companies discharge their accountability to all their stakeholders and act in a socially responsible way in all areas of their business activity.

The article examined the ways in which corporate governance may be improved by targeting a range of corporate governance mechanisms, and also showed that audit management is inseparable from the company's strategic and business processes. The agency theory in the understanding of corporate governance was discussed, as well as the Kings III and IV codes that provide corporate governance direction in South Africa.

In terms of the research questions as to what is the nature of corporate governance mechanisms in the retail sector, the results and discussion have shown that the two companies have not yet complied with the King II and III codes. Company A can be said to have a better governance profile in comparison to Company B, which does not have a significant corporate governance profile. Company A provided Annual Reports that are specific and easy to understand and comprehend. However, some issues (such as the Annual Report) are difficult for stakeholders to comprehend, since among others there is no clear-cut point as to where Company A stores end and where the Holdings begins. With respect to Company B, the results have shown that the company should lean towards providing more complete information – substance over form. In both companies the Annual Reports consists mainly of insertions and advertisements that hinder readability and affect download time from the companies' websites, and the nature of employment is not clear. Neither company has a chapter on remuneration. Hence, both companies should attempt to be accountable not only to shareholders but to a number of disparate parties ('stakeholders'). The two companies will function most effectively when the stakeholders – providers of capital, financing, skills, labour, services, and context – work together towards the long-term good of these two undertakings.

RECOMMENDATIONS

Based on the findings of this study, the recommendations outlined below are made.

Both companies should conduct ongoing Board assessment. The Boards should conduct their own evaluation on their performance on a broad array of both metrics, not just shareholders' return. These corporate governance ratings should appear on the companies' proxy and shareholders' information webpage. The ratings would look at factors such as Board structure, executive pay, financial performance, director education, and the compensation philosophy of the King codes. Both companies should strengthen their remuneration policies. As observed in the results and discussion, both companies should include a chapter on remuneration in their Annual Report.

Both companies should also ensure that their committees consist entirely of truly independent directors. The companies should also establish a

Corporate Governance Committee that ensures that corporate governance structures are in line with national and international standards, and are both appropriate and effective.

Strategies to strengthen corporate governance mechanisms in the South African retail sector should therefore include the following:

- *Risk disclosure.* Better risk disclosure will enable both companies to improve the investors' decision-making process. Risk disclosure can be achieved by providing a separate chapter on corporate risk, such as in an augmented OFR. Improving information flow between the companies and their shareholders represents one effective way of reducing information asymmetry, thereby reducing the agency problem inherent in South African corporate governance.

- *Restructuring of the organisation of corporate governance as a whole.* In both companies the committees must be free to render judgements and act upon what they see without undue management influence. Changes such as the company CEO ceasing to be a member of the Remuneration Committee would afford the committees some degree of independence, as would replacing independent NEDs that have served for more than 10 years. Both companies should address the issue of interlocking directorate and inbreeding, and make changes where necessary for the good of the business.

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THE ROLE OF ENTERPRISE RESOURCE PLANNING (ERP) SYSTEM IN ADVANCING THE COUNTRY OF JORDAN TOWARDS INTERNATIONAL STANDARD ACCOUNTING PRACTICES AND ACCOUNTING MECHANISMS

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Abstract

The paper seeks to counter several functionalities of the Enterprise Resource Planning system as brought up in the title. Essentially, the system's role will be viewed in the perspective of regenerating better accounting practices in an advanced business setting and considering the size of the enterprise. However, a satisfying part of the paper attempts to bring out a clear depiction of the Enterprise Resource Planning paradigm/system as the main tool to take any credit made in the business accounts mechanics and base criteria. Subsequently, through this paper, all the roles of the tool at hand in enhancing accounting practices will substantially be played up. This research uses Jordan as the suitable setting for the realization of ERP's comprehensive capabilities. An empirical research on Jordanian mining industry is used for sampling results as well as a theoretical critical review on the organisations adoption of the ERP system on their accounting systems (Naash & Khamis, 2009). Similarly, the Jordanian banks are briefly highlighted on a theoretical mode in phase of testing the both the alternative and null hypothesis. The empirical study is analyzed using a custom bucketing methodology on measuring the trends in the open-ended questions and attributed to efficiency. The latter are the variables tested on the open-ended questions. On the other hand, the closed questions are subjected to the analysis of variance (ANOVA) where the variances between the "yes" and "no" responses is checked. The two analytical approaches of the questionnaires yields are interrelated because of the homogeneity of the question types. Objectively, the null hypotheses H_o is tested by implying on the risk factors and challenges facing the system implementation in the organization; it is from the corresponding findings where the research infer its recommendations. The alternative hypotheses H_I implicates on the massive encroachments of ERP on the Jordanian Accounting sector. The proposition is thusly tested by the overall results from bucketing and ANOVA of Jordanian Bromine and Arab Potash companies conducted surveys. The research methodology quantitatively utilized Jordanian Bromine Company and Arab Potash Company companies to test whether the was any role played by Enterprise resource planning, commonly abbreviated as (ERP), system in advancing the country of Jordan towards universal standard accounting practices and accounting mechanisms. Notably, the data as per two studies relied on for feedback on the implementation and application of the ERP paradigm/system on the structure of the Jordanian Bromine Company and Arab Potash Company companies. The final result proved true the deduction that the overall ERP structure (Enterprise Resource Planning System) greatly impacted the accounting mechanisms and standards in the Jordanian organizations. Recommendations aimed at integrating different sectors in Jordan, including the Jordanian Bromine Company and Arab Potash Company companies with the banking sector and financial institutions so that the entire system can work collaboratively under the protocols, rules and requirements of the universal standard accounting practices and accounting mechanisms.

Keywords: Enterprise Resource Planning, International Standards, Accounting Information System

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1. INTRODUCTION

Jordan as a country has businesses that are well structured and expanding into multinational corporations. It also has small and medium sized enterprises that are growing exponentially and have the need of conforming with international standards of accounting. This will make these businesses and enterprises acquire cutting-edge advantages such as easily entering into multi-billion dollar mergers and acquisitions.

ERP has been integrated into more developing countries faster nowadays since technology is growing at an expedite rate. To start off our model, it is necessary to cut into the details concerning the enterprise resource planning system. The step is vital to the realization and understanding of the rest of the information cluster focused afterward in this paper. An enterprise resource planning system is software achieved through a quite sophisticated consolidation process so as to suite all functions of a business organization. The software is thus asserted under the company management software package. Nevertheless, it should not be confused with the traditional system development; enterprise resource planning system is eased faulty transactions and output runs on different platforms and uses a database for the repository of data (see Mabert, Soni and Venkataramanan [2011]. Considering the great type functions the system provides functionality for, many activities bound to the business have been simplified and relatively supplied. In layman's, the system can be proclaimed to have automated the whole cumbersome business bodily functions.

Similar to the native human workforce, the system relies on input data of the enterprise for manipulation; this time redundantly fast. The enterprise resource planning software sequentially; collects, puts in, manage and makes sense of data as required (Naash & Khamis, 2009). This high art of artificial intelligence serves an industry engaging in a summon resources throughout the year. Ranging from service delivery and manufacturing, management of inventory, sales and marketing and finally product planning and cost, this software kind is evidently saved the industry well (Al-Akra et al., [2009]). Besides enhancing the activities of each department, the system creates an auto loop of communication between the various staff. Earlier during the infant stages of the system, only functions of the business offices were considered necessary to automate. However, it took very minimal time to pull in the public most vital functions such as e-commerce systems, Customer Management (CRM) and Supplier Management (SRM).

Following is a precise operation of how accounts are made through an enterprise system. Reckoning a company using e-commerce; for instance, an Amman-based franchise of shoe manufacturer based in China managed well. In case, the franchisee receives an order for customized shoes from a customer in Africa. The franchisee prepares a quote using the enterprise system which is sent to the client. If the customer accepts the quote, the franchise will proceed to check for their credit limit and if enough, books the order. A specification of the client's preference will then be sent to the manufacturer in China with a click (Al-

Jaghoub & Westrup, [2003]). The system will also determine the best routing channel for shipment besides scheduling it. It is evident on how the procedure which traditionally would have taken almost a month can now be achieved in a week. In the company's side, an update is made to the sales and production calculate. Similarly, the franchise or sales person account is quoted by the required commission. Also, the company makes a computation of the production cost and profitability. Finally, the process is all recorded in all the relevant consolidated balance sheets, account payable and receivables (Schniederjans & Yadav [2014]).

Enterprise systems packages provide for different accounting processes disposable to enthusiast companies as follows:

    I. Asset accounting
    II. Financial Consolidation
    III. Profitability analysis
    IV. Profit center accounting
    V. General ledger
    VI. Executive information system
    VII. Cost element and Center analysis
    VIII. Standard and period related accounting
    IX. Cash management and forecasting
    X. Account receivables and payables

The above functions will be focused into later sections in the paper in relation to the enterprise resource planning system planning and subsequent implementation in Jordan. Relatively, significant to the previous, is the need to make a comparison to the traditional ways of preparation so as to make clear on its benefits which makes a greater scope of the research. Similarly, getting to know the extent to which the enterprise resource planning system is used for standard accounting commits in Jordan preferably backed up by a number of reasons proceeds. Considering the system implementation between both the public and private companies in the country will also create room for finding the true view and level of acceptance by the industries of Jordan. Hence, analyzing the impacts of the system in revolutionizing business operations.

In spite of the fact that there are a few associations that like to add to their projects, either by themselves or through experts, multi-business organizations as of late embraced the utilization of comprehensive business frameworks contain a few sub-frameworks including bookkeeping framework. These structures are known as ERP which is an abbreviation for Enterprise Resources Planning's framework, which is portrayed by giving coordinated incongruent results to the divisions and help them to enhance the nature of their choices and the planning of far-reaching incorporated arrangements.

The Motivation for this study

The motivation of this study is drawn from the fact that despite advancement in information systems and increased use of enterprise systems by many companies, Jordan has been slow to adopt these practices. Similar to other developing countries, Jordan harbours several national and organizational cultures to an extent hinder the adoption of enterprise systems. Furthuremore, the status of the economy in third is also a great hindrance to adopting enterprise systems considering the high

level of cost it requires for initialization (Naash & Khamis, [2009]). Third is the infrastructure, putting through a nation to the cloud requires great advancement on the internet base development. Extensive studies on the performance of information systems presents contrary outcomes regarding the gains and value of enterprise resource planning systems (ERP). Performance of IS is mainly measured in three main areas: quality, effectiveness and efficiency. Accordingly, this research is motivated to explore the value of ERP system in Jordanian business and accounting environment while utilizing empirican test to supporting the study outcome. Despite the value of ERP in business practices having been investigated by a number of scholars, this studies have not been adequately extended into accounting sector and more particularly in Jordanian accounting sphere. This study is therefore, set at identifying the significance and impact of ERP in accounting within the Jordanian business sector.

a. Background to the Study

Worldwide monetary and sovereign obligation emergencies of late years have delineated the need of better budgetary reporting by governments worldwide and the requirement for auspicious enhancements in the administration of open segment assets. Actualizing IPSAS is a significant stride forward as the Ministry of Finance attempts to understand its vision of driving an excellent open budgetary administration framework. Similarly regarding an organization that adds to improving monetary and financial security; over the Kingdom and in light of a legitimate concern for the Jordanian individuals (Seo, 2013). IPSAS urges open part elements to receive a collection based, rather than the native money based bookkeeping strategies. The adopted pattern is of a hearty advantage as it will enhance monetary administration and expansion straightforwardness. Resultantly, it brings about a more far reaching and precise perspective of the administration's budgetary posit.

To better understand the foreseen welfare, the GFMIS, is an electronic monetary framework that deals with the money related procedures of all divisions and organizations of the Jordanian government (DAI, 2015). The need resulted from a yearning to update people in general assets systems and raise the level of administration given to spending plan foundations in Jordan. GFMIS was an enormous change upon prior, un-coordinated personal computer based frameworks already utilized at the Ministry of Finance and different services. Expanding the proficiency and viability of the administration's money related administration is a focal mainstay of Jordan's financial and monetary change process. It specifically underpins the points of the Jordan 2025 national methodology (Schniederjans and Yadav [2014]). Recently, congress men from the three institutions; Jordan's Ministry of Finance, the Fiscal Reform Project and the GFMIS held a conference of almost a week on the discussions concerning the standards actualization. Similarly, the meeting covered on the prior and post – troubles to anticipate; before, during and after running the set up planned for the project (Al-Akra et al, 2009).

Expanding the proficiency and adequacy of the administration's money related administration is a focal mainstay of Jordan's financial and monetary change process. The former thusly plans to handle the difficulties and monetary weights Jordan is confronting, fundamentally as an after effect of different outside stuns and the geopolitical environment. As all around perceived and embraced measures, IPSAS empowers the general population area to enhance choice providing so as to make dependable money related information and upgraded appraisals of asset allotments. Jordan enterprises mostly use audit firms for their accounts. The practice creates quite an unnecessary imperfection in the process which can easily be solved through an integration of the ERPS to each of the firms audit functions (Joshi, Bremser & Al-Ajmi, 2008]). Regardless of the claims by different audit firms purpoting to be complying with the International Standards on Auditing (ISA); substantial differences on their works are disputable. Due to the difference in size of firms and their level of finance; indifferences are created between the audits of large firms frequently differ from those of small ones. However, despite of the ability to finance for better audits the enterprises choose to deliberately or ignorantly violate standards. Therefore, employing ERPS would mean a great remedy for the country and the industry. The auditing process will be neutralized from the current biased site. Similarly, ISA- based practice manuals are sometimes not available to all audit firms hence creating the excuse of ignorance. Enterprises arrested for not complying with the nation's accounting standards would make an excuse from the deficiency of access let alone interpretation. The latter would have been a no case with the existence of the ERPS (IFAC, 2012).

Many countries especially land-locked ones have no access to reliable internet connections. Government regulation at times restricts for further growth of enterprise adoption for purposes termed best for the nation. In addition to the various drawbacks to the acceptance of the system, Jordan faces an extra assess taking to point that it is an Arabian country. As earlier mentioned the western perspective of organization operations has greatly been merged into the enterprise system as they also take substantive credit for champing its development. Nevertheless, the extremism of the Arab community in Jordan let alone the rest of Arab nations in the Middle East; dominantly Muslim cannot let through the adaptation of such a depravity to their culture (Rabaai, 2009).

Enterprise Resource Planning achievement relies on upon a consistency between the host society and also its framework society. In the Middle East setting they highlight the requirement for consideration regarding the IT administration variables, and particularly the requirement for aggregate responsibility, authority and determination inside of an organization. Enterprise Resource Planning innovation is additionally known for forcing inflexible standards of work processes. Additionally, specific practices upon working environments are inflicted and it is very much noticed that the system requests changes to authoritative society. It is this perspective, as opposed to any specialized deficiency; both of the

item or usage groups that can fundamentally influence achievement.

The paper attempts to find aid from a variety of resources for the actualization of the objective as per the generated hypothesis. Consequently, different case studies regarding the involvement of the Enterprise Resource Planning System in Jordan will be amply employed for justification of the presumption on its maturation in Jordan. Instances of Information on various companies, how conducted their accounting practices over the years prior and after the system's implementation is an excellent strategy.

2. LITERATURE REVIEW

Numerous researches and studies have been conducted over the years in Jordan and other Middle East nations regarding the involvement of the Enterprise Resource Planning System in most companies operations. Resultantly, questions may arise as to why Jordan is the picked setting and more focus by studies lies on them regarding the incorporation of ERP system. Answering to the questions are various reports by different studies; as they will be highlighted in this section (Jordan [2009]). Nevertheless, pointing out to that regard is the fact that Jordan is a known third world country with cultural influences on their economy. As such, conducting a study on the issue would clear up the uncertainty of the system's acceptance and reliability in the region. The section however opts to generalize the studies to a common look due to the numerous accounts of the issue by researches. Among various exact studies which have explored the relationship in the middle of ES and administration bookkeeping (Al-Akra et al, 2009).

The inefficiency of theories and the constrained experimental proves on these issues have made the need to lead preparatory examination interviews with organizations managers implementing ERP frameworks. Resultantly, exploratory meetings were utilized to encourage the examination process and the overview plan. Fundamentally, the meetings have helped Enterprise Resource Planning to organize the questionnaires utilized as the instrument for information gathering. In particular, interviews with two noteworthy ERP suppliers and two organizations embracing ERP frameworks have helped in building up the important issues and deciding the course of this study. The meetings were directed utilizing open-finished inquiries covering issues, for instance; purposes behind ERP adoption, the merits attained and changes acquired the accounting process. A rundown of elements to consider in connection with ERP benefits and conceivable changes in the bookkeeping forms have been created from those meetings and the appropriate case writings (Nordheim, 2009).

According to Beheshti (2006), organizations need Information Technology to enhance communication flow all around its operational sections and lessen production and maintenance costs in the process which in turn streamlines business forms. Keeping in mind the end goal to stay effective and hold their intensity. Grabski and Leech, (2007) expressed that undertaking asset arranging Enterprise Resource Planning (ERP) frameworks might be the most vital improvement in

the corporate utilization of data innovation. Subsequently, numerous associations need to enhance their focused position by actualizing ERP frameworks.

Utilizing ERP frameworks can decrease time and aggregate expense of operations and that the ERP framework has been utilized and implemented as a workable model by most Jordanian businesses. Naturally, ERP frameworks as business models are accepted to give the fundamental data all through the association and even the inventory network to encourage the choice making and authoritative exercises (Al-Akra et al., [2009]). Organizations would benefit by such data sharing identified with inventory chains. They also would save cash and salvage time for ERP execution in regions such as: stock magnitude, request planning variance, institutionalization applied on generation procedures, client request mix, institutionalization of human asset data, expanding item differences, stock time conveyance and viable collaboration with inventory network.

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A Greek study by (Galani, et al., 2010) examined clients' fulfillments concerning the impact and resultant effects of the Enterprise Resource Planning Systems on the Accounting Information System (AIS) and the pattern acts of the accountingmanagerial for a specimen of Greek organizations. The outcomes demonstrated that the Enterprise Resource Planning Systems (ERP) expanded level of fulfillment for clients of the accounting information system, framework execution and quality, decrease the expenses, and enhance the general execution of organizations. Another Jordanian study by (Naash and Khamis, 2009) tried the effect of accountants in creating accounting information systems on the frameworks productivity and application on money related execution, besides digging into the impact of the utilization of those frameworks on the money related execution for the Jordanian modern firms. The uncovering showed that there is an essentialness measurable relationship between partaking accountants, all phases of the bookkeeping data frameworks and the execution of those frameworks. Resultantly, there are crucial factual contrasts between performance pointers prior and after the utilization of the framework aside from deals working wage (Nordheim, 2009).

Supplementing the intensity of the role of Accounting Information Systems (AIS) through The ERP, a full content of all journals recovered trashed in the definite inquiry of the information and accounting system records inspected by required accountants together with the bookkeeping data frameworks diaries were liable to examination keeping in mind the end goal to distinguish their

propriety for incorporation. To date, various experimental studies have researched the relationship in the middle of administration accounting. Notably, positivist specialists more often than not complete studies or analyses, while interpretivist analysts ordinarily lead contextual investigations (Booth et al. 2000). On the premise of the above three classes, a survey of the writing is currently led.

An audit of thesis studies demonstrates that the review strategy has been utilized broadly (Nordheim, 2009). Different researches have additionally assisted consideration on the key part of administration viewing so as to bookkeeping ERP frameworks as empowering agents of refined bookkeeping systems such as the; action based costing (ABC) and the benchmarking, balanced scorecard (BSC). In any case, following the creators needed to analyze ERP clients and also non-ERP clients, select a random organization that has an ERP experience being applied under thought (Naash & Khamis, 2009).

ERPs that have extensively been evaluated and assessed have seen bookkeeping advantages that were found by the specialists which include; enhanced adaptability of data era, enhanced nature of reports and expanded coordination of utilizations (Al-Akra et al., [2009]). Specifically, while the previous demonstrated that ERP executions are not essentially connected with the appropriation of modern bookkeeping methods, the last uncovered that few organizations used such procedures close by ERP frameworks (Nordheim, 2009). The discoveries likewise recommend that ERP frameworks build the utilization of various customary administration bookkeeping practices for instance; change examination, standard costing, minor implementing and running any Enterprise Resource Planning Systems by firms is considerably a hassle as it involves quite a bulk of housekeeping tasks.

The event of globalization implies that all around utilized advances are most certainly not just to be endorsed additionally adjusted into neighborhood societies and to their predominant standards. There is clear potential for a social conflict when these don't fit the receiving society's standards. Conflict levels on the way of life installed in the ERP package with the organization's hierarchical society has been distinguished by Zhou-Sivunen (2006). ERP achievement relies on upon consistency between the host society and the ERP framework society. Implementation of an ERP framework in a worldwide situation can be divided because of the internal culture of the enterprise, which is illustrative of societal culture. The way ERP frameworks are seen, treated, and incorporated inside of the business assumes a basic part in the achievement or disappointment of the implementation. At the point when a Western created ERP framework is executed in a nation where the way of life varies extraordinarily from that of the engineer, execution might require confinement with a specific end goal to be effective. In doing as such, vital advantages of ERP frameworks might be diminished (Srivastava and Gips, 2009).

Rasmy et al (2005) moreover affirmed that ERP usage turns out to be more testing in Egyptian setting where national and hierarchical society was confused. These variables can result in undesirable configuration reality crevices, which tend to lead to failing to meet expectations frameworks (Motwani et al., 2007; Zu et al., 2006). Unlike conventional programming improvement approach, which advances building frameworks starting with no outside help, ERP embodies reusable best business hones dissimilar to conventional programming advancement approach, which advances building frameworks starting with no outside help; ERP catches reusable best business hones. All specialty units at various nations had their own specific manner of doing things in light of various business procedures and nearby necessities produced by national and nearby contrasts (Otieno, 2010). Hence, the allowing so as to begin arrangement must be changed restricted arrangements and decentralized ERP executions, all together to get away from the contentions (Zhou-Sivunen, 2006).

3. HYPOTHESIS DEVELOPMENT

In the following research, examination of Jordan's adoption to the ERP procedural system will be categorized into two dimensions. Initially, the paper's level of comprehensiveness calls for the need for a relatively comprehensive design. Hence, bearing objective in justifying the system's role in enhancing the accounting standards and mechanisms; both the null and alternative hypothesis creation will propel to the quest to exemplify the role of the Enterprise Resource Planning System in Jordan's organizations. Probing our research in the null hypothesis form, the following:

H_o - Jordanian firms, notably Jordanian Bromine Company and Arab Potash Company companies, have a bunch of challenges to tackle and an equivalent risk factors involved concerning adoption of the Enterprise Resource Planning System.

With regard to the null hypotheses, this research will derivatively expound on the issues the System is prone and to a degree limiting its potency.

Similarly, the research would consider examining the hypothesis in an alternative form so as to reach the positive role of ERPS in Jordan. Therefore the alternative hypothesis reckoned;

H_I - The Enterprise Resource Planning System has revolutionized the accounting organization in Jordan.

4. RESEARCH DESIGN

In this section, the paper presents its basic framework of research regarding the Enterprise Resource Planning System application and implementation in Jordan by two sectors of its economy; the firms and banks, distinctively. This study is going to handle the subject in two perspectives.

4.1. Theoretical Approach

First, the theoretical approach; where the supporting concepts of the Enterprise Resource Planning System limitations in the Jordanian economy as per (H_o) will be highlighted; as well as its foreseen and experienced encroachments in the country's

economic sectors measured through the firms and banks contexts as with the alternate hypothesis (**H₁).** Backing up the conceptual set up, the study uses factual evidences from studies through raw to processed data frame ups. The sections are first build and expounded on the paper through a theoretical methodology. Subsequently, the primary objective is dug into sufficiently by the defined hypothesis earlier on. First delving into the literary criticism on Jordan's potential on handling the Enterprise Resource Planning System and the other means on justifying on the encompassing adoption. Reaching the supposed laid out contrive was considered possible by analyzing existing data on the Jordan's Companies performance records hence presenting on a qualitative approach.

The aforementioned is laid out in the research theoretically based on secondary data from pertained studies. Subsequently, the research progresses to the considerably gist account of justification on the corresponding vantages in the accounting standards as well as the mechanisms as per the alternative hypothesis. Derivatively, a bright outlook on the limitations that turned out in the infant stages on the Enterprise Resource Planning System's (ERP) adopting in Jordan commercial banks and firms will help test the accuracy of the null hypothesis. Similarly, some of the ongoing challenges concerning the adoption proofs will back up the prior on answering for the sub-possibilities made about the system's adopting. Finally, due credit on the phenomenal impacts and positive effects, the Enterprise Resource Planning System in Jordan will substantially be covered with backing resources (Al-Akra et al., [2009]).

4.2. Practical Approach

Building up the second take of the papers research design is the practical approach. The section will be founded on quantitative grounds. The part establishes a practical basis of the research on the Jordanian organizations and bank contexts. Raw data is retrieved from the two settings primarily through the employees by formulated questionnaires. The questionnaires were assigned to two Jordanian companies; the Arab Potash and The Jordanian Bromine Company. However a general outlook was made upon the Jordanian banking sector; with a great coverage on the Internet banking adoption. The research designed both open and close questions purposefully; first, the open questions were made to expose the respondents to a sort of liberation in expressing their thoughts regarding the system's adoption. The technique was also foreseen as appropriate for retrieving; detailed information, feelings and understanding levels from the respondents, reducing the respondents disregard on reading the questions which closed questionnaires are prone to as well as building the qualitative aspect. Nevertheless, limited closed questions yet sensitive were also formulated to create a rigid basis of deduction in form of variables on the data analysis process. Closed questions would enable a quantitative analysis on data collected; similarly allowing for information consistency and distinction. The retrieved data from the closed ended questions would thus be computed statistically on comparison.

5. ANALYSIS

Sampling several Jordanian companies, narrowing down to Jordanian Bromine Company and Arab Potash Company companies, data as per two studies relied on for feedback on the implementation and application of the ERP system. Qualitatively, selective information is rooted from the several studies and credible databases such as the Journals of Management System by the Macrothink Institute TM and several other online accounting databases. Empirical studies on the Jordanian Bromine Company, Arab Potash Company and one on the local and foreign Jordanian banks are used to build up the secondary data. Precise analysis on feedback retrieved from the two companies in Jordan will be used to describe some of the subsequent challenges and vantages arising from the ERP system adoption. Similarly, a review conducted on the 'Journal of Accouing – Business and Management' puts for Talal and Abu Kadhra's survey on the banks Computerized Accounting Information Systems (CAIS) adoption hence a great resource to meeting this research's objectives. Several factors described regarding the limitations of the system in Jordan are expounded on a technical basis; as per the derived studies. Similarly, the two Jordanian Mineral Companies will be used as sufficient samples to describe the potency of the ERP System nationally (Adhikari & Sarmishtha, [2006]). Testing hypothesis involved a critical analysis on the responses found from the studies. Therefore, as per the research's design, the theoretical frameworks kick starts the quest for the paper's objective: outlining the ERPS' failures and impacts on Jordanian firms and banks as per the null and alternative hypothesis respectively.

Later on in the paper, a practical design approach; where primary data is manipulated from the conducted research on the two Jordanian companies (Jordanian Bromine Company and Arab Potash Company companies) which were used to retrieve the research's secondary data is conducted. A statistical analysis is conducted on variables as per the closed questions responses. Consequently, the research conducts two separate analyses of the primary data. The first analyses includes all the respondents, categorized on the basis of their assigned experimental conditions. I separated the respondents into two classes according to the most suitable closed questions. Preferably, a distinction between the respondents who think the ERP system has improved the accounting process in an effective way from those disagreeing from the notion. Similarly, other questions that are put into consideration include;

i.   Does the ERP system provide for easy data entry and processing methods to obtain the required output? **[YES] [NO]**

ii.   Does the ERP system generate accounting archives and libraries for all files, programs and data processed since its implementation? **[YES] [NO]**

They are sample questions testing for the effectivity and efficiency of the Enterprise Resource Planning System. The methodology purposefully employed the three questions for statistical data analysis for clear elaboration by increasing the output data eminence. Moreover, the approach concurs with a random assignment of the

questionnaires although the research provides a delimiting take on that aspect. Centering the research's primary analysis on the respondents and distinguishing their preferences through standard questions grounds the research to a very powerful test of the hypothesis.

5.1. Theoretical Design

5.1.1 Adoption of the ERP System

Starting off the analysis is an elucidate testing of the null hypothesis stating that Jordan Information Systems do not have viable control systems. To clear up any relating oppugn, the paper takes in a deep consideration to a test made in several countries of the Middle East with Jordan companies as the principal source of information feedback. Questionnaires were sent to the Jordanian Bromine Company and Arab Potash Company companies and also almost twenty businesses in Jordan inquiring for the management's view on the Accounting Information Systems Design impacts on the accounting system in their companies hence the nation. The introduction of individual models of accounting such as the Resource Events Agents (REA) and also another implementation and subsequent application, running and mainatance of the ERP System; whether it is object-oriented and relational; object-oriented database systems were a great bear on. The technologies were attributed to a revolutionary accounting system in the companies as well as in other business strategies (Adhikari & Sarmishtha, [2006]). Unlike the traditional accounting model based on credits and debits, the Resource Events Agents model is founded on economics. Resultantly, the model has enabled companies to gain control on both historical and future financial data as well as non-financial.

According to the test, four variables were used to determine the extent of the Accounting Information System namely; aggregation, integration, timeliness, and scope. The estimations of the builds were embraced by past studies.

5.1.2. ERPS Implementation

Implementing and applying thoroughly Enterprise Resource Planning Systems by Jordanian Bromine Company and Arab Potash Company companies and other Jordanian firms is considerably a hassle as it involves quite a bulk of housekeeping tasks (Adhikari & Sarmishtha, [2006]). Therefore, the paper looks forward to offset on some of the stages undergone by firms regarding to adopt the system.

  I. Pre-Implementation:

This stage incorporates all arrangements organizations construct prior getting in the execution process. These arrangements consolidate the modules to be actualized, picking the execution group, the usage procedure and preparing. Initially, the heart of ERP framework pronounces in the unique combination of its modules. Association expected to actualize all modules in the event that it needs to get point of preference of the entire advantages. This strategy is referred to as; "Vanilla Implementation" and it's excessively costly, making it impossible to embrace. However, organizations can choose certain modules rather as per its

financial plan and prerequisites. Consequently, the expense will extensively diminish. The implementation team must be precisely chosen and seriously prepared adequately enough time prior to the framework's execution to ensure that the group is qualified to hold the usage handle professionally and proficiently. Ideally, workers get taught and prepared on the framework on this stage so they will demonstrate less resistance amid the execution. Another essential choice the top administration ought to make in this stage is whether organizations should better reengineer its procedures to fit ERP modules or modifying it to meet its extraordinary necessities. This choice is extremely basic in ERP venture and organizations ought to be totally mindful in the preferences and disservices of each alternative then taking the one that can fit its circumstance the most.

  II. Implementation:

There are three fundamental ways to deal with actualize ERP frameworks: "Big Bang" approach, Local-wise methodology and Module-wise methodology. (Parthasarathy, 2007). In the "Big bang" approach, organizations actualizes all modules in the meantime so it can profit from framework. Nevertheless, this alternative is unreasonable, unsafe and tedious. Rather, organizations can portion the execution forms either on an area astute by executing it in a specific branch, territorial office or module-wise by executing chose module. The last two choices impressively decrease costs, dangers and length of time. In the event that easily gone, association then can then expand the execution procedures to incorporate the rest areas and modules. This stage incorporates introducing and designing the framework, moving information from old to new framework, guarantee coordination among modules, building up security and access powers, running pilot test and testing and checking yields. Sumner (2005) asserted that "ERP usage incorporates tending to arrangement issues, moving information from the old framework to the new framework, building interfaces, executing reports and pilot testing". Re-building of business procedures done in this stage and any required customizations. End-clients ought to be prepared on the framework in this stage if not prepared on the arrangements stage.

  III. Post Implementation:

Finally, several coherent issues need to be looked at after the Enterprise Resource Planning Implementation which relatively induces challenges on organizations. This stage incorporates exercises that back the continuous and change of ERP framework, including; consistent follow-up and assessment for the system, maintenance, preparing new clients, redesigning, preparing on the new forms and troubleshooting the system of any faults.

5.2. Jordanian Firms (Jordanian Bromine Company and Arab Potash Company Companies)

The research referred to secondary study on an empirical analysis conducted on the Jordanian firms, Jordanian Bromine Company and Arab Potash Company companies, regarding the adoption of ERP pricesly the; Control Systems effectiveness and appropriateness in Computerized Accounting Information Systems (CAIS). The study proposes that

the ERP system has greatly enhanced against fraud on the banking sector. However, the system is also attributed to a limitation on covering for effective output security controls. The exploration populace comprised of all Jordanian local firms notably focusing on Jordanian Bromine Company and Arab Potash Company companies (nearby and remote). The quantity of local firms in Jordan incusion of the Jordanian Bromine Company and Arab Potash Company companies was twenty-three firms; three of which were prohibited from the examination due to their late foundation as they were built up just in 2005. The examination secured just the firms headquarters where the targeted respondents were expected to exist. The focused on respondents constituted of the parties that had the capacity and learning to address it; consequently, the poll was dispersed to the inner examiners and head of computer divisions (HOCD). Forty polls were circulated; thirty were gotten in a usable configuration. However, it is imperative to note that the entire research focused on the Jordanian Bromine Company and Arab Potash Company companies, but included several other firms so as to reduce result bias and to increase number of questionnaire's respondents.

a) Documentation Standards

About 90% of the respondents reported that their banks set up well-characterized standards and methods for information preparing, including the avocations and approval of new frameworks and framework changes. In addition, 60% of the respondents trusted that their banks kept documentation depicting each application framework, including account material, stream outlines and program postings. A lower percent of the respondents (half) trusted that the documentation that was kept in their banks portraying what was expected to run a system, including the gear design, projects and information documents and additionally methodology keeping in mind the end goal to setup and execute the employment. 70% of respondents reported that clients were given directions for imparting potential security ruptures to the data security group considering the end goal to screen these occurrences and to be assessed. Lastly, a lower percent (56.7%) guaranteed that current documentation contained methods that guaranteed that the issues of non-comliance with framework security approaches were speedily tended to and the remedial measures were tackled a convenient premise. This finding is supported by those of Karim (2011) who also noted that many businesses including financial instutions have considered the use of information systems in their day to day operations in facilitating and attaining effective decision making and realizing smooth operations.

b) Internet, Communication and e-banking controls

As expected by the survey, the majority of the respondents reported that their firms and banks put antivirus software, which incorporates infection sweeps of incoming email messages and infection marks that were upgraded at any rate week after week. Again, 100% of the respondents guaranteed that their banks introduced firewalls (Software and Hardware) to control and ensure correspondence between the inside system, and the outer systems (e.g. the Internet). 63.3% of the respondents trusted that their banks appointed a particular ceiling (e.g. 2000 JD) for the monetary transactions that underwent e-banking administration. Just 43.3% of the respondents reported that their banks gave two client ID's to E-Banking administration, One ID for general asks and the other for transfers and financial exchanges. A higher rate of the respondents (66.7%) trusted that the client's record was enacted when fruitful login that was scrambled through a 128-piece SSL session. Additionally, 76.7% of the respondents asserted that financial moves in their banks were limited to the records in the same bank. Simply 50% of the respondents accepted that the unused e-keeping money accounts in their banks were cleansed consequently by the bank framework. Most of the respondents (83%) reported that the login access in their banks was ended after three unsuccessful login endeavors. On the other hand, 76.7% of the respondents trusted that their bank utilized 128-piece secure sockets layer (SSL) encryption for transmission of private or secret data over open systems, including client's IDs and passwords. Moreover, clients were required to redesign their program to the most recent adaptation tried and endorsed by the security executive. These findings aligns well with the observation of Costa et al, (2016) who explains that enterprise systems offer a unified database and integrated software modules which can be used in planning, controlling and planning business process in a more effective manner.

c) Output Security Controls

All respondents trusted that their banks have control over access to sensitive data and limited it just to the approved clients in the appropriate time. A lower percent of the respondents (86.7) reported that sensitive computer yield in their banks was secured in a lock bureau. Just 60% of the respondents trusted that the framework output was stamped with the date and time. Additionally, 83.3% of the respondents reported that their banks performed printing and circulating information and data under legitimate supervision and just by approved persons in the bank. On one hand, 76.7% of the respondents trusted that destroying machines were accessible and utilized for delicate information transfer, while, 70% of the respondents reported that destroying these delicate archives was confined just to security-cleared workforce. Ultimately, 76.7% of the respondents guaranteed that their banks performed irregular yield/information evaluating on consistent premise with a specific end goal to check right preparing. According to an article by the Financial Times (2015), banks are now more sensitive to the security of their systems owing to a consistent rise of cyber threats (Scannell and Gina, 2015).

Table 1. Output security controls (frequencies)

Control Procedure	Does not exits		Exists	
	Freq.	Percent	Freq.	Percent
Authorized access to sensitive information should be controlled and restricted only to the authorized users during the authorized time	0	0.0%	30	100%
Sensitive computer output secured in a locked cabinet	4	13.3%	26	86.7%
Hard copy output stamped automatically with Date /time	12	40.0%	18	60.0%
Printing and distributing data and information Performed under proper supervision and only by authorized persons in the bank	5	16.7%	25	83.3%
Shredding machines are available and used for Disposal of confidential data	7	23.3%	23	76.75
Shredding sensitive documents is restricted to Security cleared personnel	9	30.0%	21	70.0%
Random output/input auditing regularly Conducted to verify correct processing (e.g. check book order against check books).	7	23.3%	23	76.7%

a) *Implementation problems*

Executing an ERP framework requires procuring experienced specialists who will consider the business procedures to decide the achievability of embracing an ERP framework. The statutory ERP framework to be installed tests the framework to ensure the majority of the organization's necessities have been satisfied, lastly prepare the clients for the best way to utilize the structure. Now and again, the predetermined execution period won't be met because of activity arrangements not being appropriately drawn, not apportioning the right number of assets to see the execution process through, insufficient client preparing, and customizations requested by the clients; either taking additional time than initially arranged or not being feasible.

Dillard and Yuthas (2006), asserted that a fair size of various enterprises have commenced applying, running and mainaitiaing ERP systems within their organizational structures. According to Helo et al., (2008), unlike other information systems, the significant problem sof ERP are unrelated to innovation, for instance, any mechanical intricacy, similarity, institutionalization, and so forth. Rather, general organizations and human-genrated and related issues like; reluctance and imperviousness to change, authoritative society, contrary business forms, project bungle and top administration commitment.

b) *Cost problems*

There are two sorts of costs entrapped with receiving an ERP framework. The first is obvious costs spoke to in the full cost of introducing the structure while the other is covered up fetched. Preparing costs, mix and usage costs, information change and information movement, high counseling costs, and time allotments not being met are shrouded costs which are usually underrated and ignored. According to cashlessindia (2016)an EPR framework has a typical aggregate expense of responsibility for million yet compensates the business with a standard negative net present estimation of $1.5 million. Organizations, companies and enterprises must understand the ever increasing price of ERP execution together with survey on the off chance that it sporadically increases preparedness. It is imperative to note that ERP usage mandates an extensive variety and rich inclusion of information together with outside skill; without external offer it would be truly hard for any organization to have the capacity to execute ERP effectively.

c) *Management Change*

Change administration or management change can be described as the procedure of dealing with various transitionals revolving around people, distinguished groups, and association to a sought future state. Following the explanation for executing another ERP, the framework is to enhance the association's execution and rate of profits by improving its representatives' execution. This can be a noteworthy change for an organization, particularly at the point when the execution process has poor venture administration and end clients, who have never utilized an ERP in the past and have no information on what the framework can accomplish for them.

Project and Change are two key orders required to acquire transformed life, in light of the fact that:

I. Venture administration is the use of information, abilities, apparatuses and procedures to venture exercises to meet venture necessities. Notably, the entire administration venture comprises of its execution, commencing with various activities such as implementation, evaluation, execution, maintainance and control.

II. Change administration system, strategies and instruments applied so as to control and man any society's process of growth in order to enhance business which will operate condusively along administrative apparatuses.

d) *Customization*

Since customization is considered as a major aspect of an advancement exertion, it should be tried commonly to ensure that it doesn't contain any bugs. This implies setting up a testing domain and in situations where bugs are available re-coding the customization and retesting. This will likewise incorporate numerous customization overhauls with each new framework discharge. Information relocation is the procedure of reassigning information between storage spaces, organizations,

or PC frameworks. It is an essential thought for any ERP framework execution. Most organizations use spread sheets to follow along of their financials and stock before changing over to ERP frameworks; which implies that information must be changed over into another configuration with a specific end goal to be utilized as a part of the recently introduced framework. Being that as it may, a few errors, for example, covered up data, or information is not being completely relocated may happen amid information relocation because of inability to affirm and test the information to be relocated. Also, preparing is critical in an ERP usage venture not just to adjust clients to the new ERP framework additionally to help in the hierarchical change process.

Resultantly, below are some of the arousal effects on the ERP systems implementations in Jordan from the cultural aspect.

Management culture

The investigation of national social contrasts and resultant repercussions for management has been overwhelmed by the portrayal of society along an assortment of predetermined attitudinal measurements or inclinations to activity. Understanding society is a key action for top administrators since it influences key development, effectiveness, and learning at all levels of management. Initiative society is a key to the achievement of IS reception and successful authority is the methods by which the way of life is made and oversaw. Administration dispositions and qualities concerning control, administration, and correspondence can block fruitful execution. As indicated by Srivastava and Gips, (2009) it was exceptionally basic in China that there was an absence of key hope for ERP reception and administration did not see the vital advantages. Cross-utilitarian collaboration was lacking since the same number of directors put the necessities of their specialty over the necessities of the project. Consequently, they acted on the fact that the undertaking was thought of as IT related and did not have a vital center or support in top administration

thus the IT staff played the lead parts on the task groups.

Cultural change

ERP perspective is process-based, as opposed to functional-based in this manner inciting problematic hierarchical changes (Nordheim, 2009).ERP innovation is likewise known for forcing rigid standards of work processes and specific practices upon work environments and it is all around noticed that ERP requests on changes to authoritative society (Rabaa'i, 2009; Jha and Joshi, 2007). Whenever national or social borders are crossed, execution in a worldwide environment tackles another measurement. Nations with long histories of very conventional society such as Jordan have a tendency to have the society implanted in the present day hierarchical society, which affects business choice making (Srivastava and Gips, 2009). Jordanian business society sees change uniquely in contrast to Western society, setting awesome quality on the past and are hesitant to change, which confines process development.

Subcultural diversity

Sub-social dissimilarities exist due to contrasts between assignments, aptitude and exercises fulfilled by various authoritative gatherings. Given these distinctions, an authoritative society can't essentially be affirmed to be an accumulation of different subcultures (Kalbasi, 2007). On his part, Anheier et al, 2010 explains that subculture speaks to a particular arrangement of shared qualities, attitudes and standards that mirrors a gathering's social character. Gelder (2007) points out that the sub-society contrasts as a result of paradigmatic differing qualities between hierarchical individuals. This might block cross-functional joint effort and the usage of far reaching activities. The need to consider the flow of sub-social contrasts while investigating the procedure of ERP reception inside of a hierarchical connection (Nordheim, 2009).

Table 2. *V*arious constituent failures regarding the Enterprise Resource Planning System as per a case study undertook on four companies in Jordan of different sizes

Failure factors	Company A	Company B	Company C	Company D
Over-reliance on heavy customization		x		x
Poor go live support	x	x	X	
Poor knowledge transfer	x		X	
Poor project management effectiveness	x	x	X	
Unclear concept of the nature and use of ERP System from the user perspective	x		x	X
Unrealistic expectations from top management consuming the ERP system	x			X
Users resistance to change	x			X

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Organization A is a quickly developing business, experienced in offering biomedical machines and supplies to centers and healing centers. Organization B offers refreshments while organization C is had practical experience in conveying card installment and ATM administration policies to its clients, and lastly, organization D is a primary quick moving customers products in the

Jordanian market. It was found while watching the components, which prompted ERP execution disappointments in these organizations, and meeting the clients, that different reasons were behind ERP failures in numerous phases of the execution process.

Organization A has the most elevated rate of disappointment variables took after by organization

D in correlation with organizations B and C. Yet three of out four organizations offer two critical disappointment variables, which are poor go live backing and poor undertaking administration. Moreover, poor learning move was normal in organizations A and C and the indistinct idea of nature also, utilization of ERP framework from the clients' point of view were comparable. Disappointment variables in organizations A, C, and D, overreliance on overwhelming customization was found in organizations B and D, lastly, improbable desires from top administration concerning the ERP System and User's imperviousness to change were normal in organizations A and D.

The null hypotheses has thus been adequately addressed; from already conducted studies, the implementation and application and implementation of ERP System has been attributed to the five major hindrances. The justification is yet to be primarily comported in the practical foundation, later in this research.

5.1.3. Impacts and effects of the Enterprise Resource Planning System

After the clear elaboration; considerably testing for the alternate hypothesis, the paper takes a paradigm seeking to test for the alternative hypothesis. A deep scrutiny on the operations of two Jordan's companies in the mining and mineral processing industry keeps on the analysis, seeking to find the implications of the ERP system and structure in the country. Notably, the ultimate aim and objective of the section is to highlight the impulses created by the Enterprise Resource Planning (ERP) System in companies; especially regarding accounting standards and mechanisms.

Table 3. Reliability Analysis

Factors	Cronbach Alfa
Functional sophistication	.806
Managerial sophistication	.845
Cost leadership strategy	.795
Environmental conditions	.800
AIS design	.751
IT benefits	.803

On the table above, the factors are a derivation of the variables used in the study to determine the level of reliability of the accounting information system design as per the feedback from the two hundred and eighty questionnaires gathered from the different firms in Jordan. The factors are gauged at a five point like scale. Evidently each factor ascribed to over average (.5) score. The outcome portrayed that all the elements of the system were enjoyed by the organizations; acknowledging the ascertaining response by the accountants of each company.

5.2. Jordan Bromine Company Study

This study expected to distinguish the effect of progress administration on the utilization of ERP systems and structure and its application's viability in the casee study of the Jordan Bromine organization. It is important to note that this objective was realized b the poll having been filled with 28 different questions which was tied to 125 workers so as to increase the consistency, reliability and validity of the entire research process. Notably, immediately when the process of dissecting information is done, the results depict that the restoration degree and the level of proficiency increased to an all time high of '4.69' mean in mathematics and a considerably high standard devisation of 42%.

Table 4. Column portraying a sample questionnaire used in collecting opinions on the employees of the company of Jordan Bromine Company regarding implications and effects of Enterprise Resource Planning as a system

1. Strongly disagree	2. Disagree	3. Neutral	4. Agree	5. Strongly agree

Table 5. The transactional consistency of the tool of study.

Dimension	Repeated Consistency	Cronbach's alpha
training	0.85	0.83
Dissemination of knowledge in the company	0.87	0.86
Select and adjust expectations	0.85	0.86
total	0.90	0.92
Application of ERP management system	0.90	0.89

As appeared in Table 5, the study device has depcietd a considerably high level of consistency that ranges from 85 to 90% for all measurements. According to the presentations of the study's results, the table below outlines the outcome with a highlight on the issues touching to the relevance of the ERP system as reported by the staff. The has been used in justification of the alternative hypotheses stating the impacts of the ERP system and its structure in the country of Jordan, with Accounting Information System (AIS) to be precise. Using the Cronbach's Alpha to measure the quality of feedback of the questionnaires, a (0.75) aggregate

was achieved. Table D is also depicting feedback on the level of ERP system implementation which measured at a substantive (0.89). Similarly, IT benefits are were highly appreciated by the respondents aggregating to (0.80).

Reliability of measurement

On the determination of the quality of responses, the arithmetic mean is used to gauge the dependability of the response on a question as shown in Tables E. Derivatively, Table 6 below establishes the alternative hypothesis that the

Enterprise Resource Planning System has greatly been adopted by the Jordanian Industries hence the business enterprises.

Table 6. The response retrieved from questionnaires forwarded to Jordanian bromine mining firm concerning a variety of issues; a substantial number pointing to the Enterprise Resource Planning System on their operations

No.	This column is for 'Reponse'	This column is for 'Mean'	This column is for 'S.D'	This column is for 'Rank'	This column is for 'Degree'
1	Knowledge on management entails to realsiation of goals and objectives	3.99	.4751	2	high
2	Devemploment training from a managerail stand are imperative	3.89	.78	6	high
3	Sharing of data and knowledge is enabled by the new structure	5.67	.12	3	high
4	Change management can only be reaslised through knowledge	6.45	.78	3	high
5	The knowledge being introduced must not be rejected by the staff and workers	4.31	.45	7	Medium
6	Change management involved publis knowledge dissemination	2.67	.59	5	Medium
7	Networking enhances sharing and spreading of knowledge	3.56	.45	3	Medium
8	Enterprise Resource Planning System cannot be exhausted completely	6.90	.78	6	Medium
9	The company should be able to deal with any future changes	4.75	.45	5	high
10	Change management helps organisation to adapt to the sorrounding environment and help them grow and survive	4.34	.53	1	high
11	The results of the actual application is similar to the excepted results	4.21	.60	2	high
12	ERPS help to explore unanticipated investment and opportunities	4.86	.73	4	high
13	ERPS can avoid various environmental threats	4.78	.75	3	high
14	ERPS has the ability to create balance between the company's capacity and and the external variables	4.78	.83	5	high
	TOTAL	4.61	0.65		HIGH

As showed in the Table 6 that the aggregate number juggling mean came high with (4.61) number-crunching mean and (0. 65) standard deviation, which shows that the similarity of estimates of the genuine utilization of the Enterprise asset arranging framework (ERP) in the Jordan Bromine Company was high.

The outcomes showed a measurably huge impact for staff preparing on the powerful utilization of the Enterprise asset arranging framework (ERP. It could be because of that preparing is a vital procedure in any association. Enterprise asset arranging framework (ERP) needs a prepared staff, so preparing is a standout amongst the most critical elements of the Department to raise the execution levels of workers, all together for the wanting to be fruitful staff must be prepared. The outcomes demonstrated a measurably meaningful impact of scattering information between staff on the viable use of the Enterprise Resource Planning framework (ERP). It might be credited to the spread of information when the organization executed the system, and help the agents to get data about it and associate with others to share information prompts on the powerful use of the system.

From the secondary data collection, the table above was derived from the Companies feedback analysis on the reliability of the Accounting Information Systems incorporated through the Enterprise Resource Planning System in their various differentiated accounting mechanisms.

Table 7. The Accounting Information System's internal control under the ERP system

Ser. No.	Statement	Arithmetic Mean	Dev. Standard
1	ERP improves the controls of breaking through or trespassing the system	0.690	1.188
2	ERP regulates the access of professionals to the system according to their level of authorization	0.797	1.402
3	ERP contributes in separating the discrepant tasks among the organization employees	0.823	1.819
4	ERP improves the execution of all works of the organization in smooth & effective way	0.760	1.104
5	ERP enables the linkage of all in and out terminals of the organization properly and appropriately	1.099	0.930
6	ERP enables the organization to follow up all the in and out operations of the organization accurately	1.286	0.723
7	ERP deals with all appropriate methods which provide security against the internal and external threats (example . antivirus)	0.901	1.843
8	ERP enhances the possibility of following up the workers or users performance to ensure proper on time completion of work and accurately	0.822	0.937
9	ERP facilitates the proper operations that enable the controller to follow up and evaluate the work in accurate way	0.186	1.286
10	ERP provides proper documents that enable the controller to follow up work and evaluate the performance accurately	0.973	0.785
11	ERP provides the methods that ensure proper data entry and processing to the obtain the required outputs	0.828	1.159
12	ERP provides a library and archive to all files. Programs and data which can be stored in separate tools	1.150	0.663
13	ERP helps to make sure make sure that the input data are accredited to the organization and were entered properly	1.290	0.548

6. EMPIRICAL RESULTS AND RECOMMENDATIONS

6.1. Results 1: Bucketing

The open ended questions were classified into six buckets after a critical analysis on their responses.

Question 1 Responses

Integrated Applications of the ERP system

Integrated Applications of the ERP system

	Bucket 1	Bucket 2	Bucket 3
No. of respondents	25	25	7
	Software package: Postbooks Technologies - C++, JavaScript, PostgreSQL	Software package: Adaxa Suite Technologies - Java	Software package: Postbooks & Adaxa Suite Technologies - Java, C++, JavaScript, PostgreSQL

Question 2 Responses

	Bucket 1	Bucket 2	Bucket 3
No. of respondents	53	3	1
	The ERP system has fastened the accounting decision making process.	The ERP system has made the accounting decision making process quite slow as everyone gets to share their own opinion	Regardless of the ERP system fastening and including many in the accounting decision making process, it changes nothing on the quality of the decision as the top officials make the ultimate one.

Question 3 Responses

	Bucket1
No. of respondents	57
	The ERP system generates accounting archives and libraries for all files, programs and data processed

Question 4 Responses

	Bucket 1	Bucket 2	Bucket 3
No of respondents	20	17	20
	The ERP system tracks all the accounting data inputs and outputs accurately through the accounting clerks	The ERP system allows for input and output data authentication.	ERP system have simplified and fastened the input data transactions and generation of the bookkeeping records.

Question 5 response

| | Bucket 1 | Bucket 2 | Bucket 3 |

No. of respondents

34	13	12
The ERP system has ultimately transformed the accounting process making it fast, convenient and accurate	The ERP system has made the accounting process very imbalance levying the accountants from duties which are left for the clerks.	ERP system has equally challenged and improved the accounting process by increasing the number of times workers have to refer to the records and improving the record accuracy respectively.

Question 6 responses

| | Bucket 1 | Bucket 2 |

No. of responses

25	32
The ERP system has ultimately changed the organization culture since the hardcopy files were to a great extent replace by computers to every office.	The ERP system has impacted the organization's culture quite negatively as many employees keep checking on the social media sites during work hours.

Question 7 responses

| | Bucket 1 | Bucket 2 | Bucket 3 |

No. of responses

34	13	12
The ERP system has ultimately transformed the accounting process making it fast, convenient and accurate	The ERP system has made the accounting process very imbalance levying the accountants from duties which are left for the clerks.	ERP system has equally challenged and improved the accounting process by increasing the number of times workers have to refer to the records and improving the record accuracy respectively.

Consequently, the responses retrieved from the open ended questionnaires were integrated to the close ended questions response weighing of the efficiency and effectiveness variables. Distinctively, the results open ended questions; 1, 4 and 5 were categorized to efficiency whereas questions; 2, 3 and 6 on effectiveness of the ERP system on accounting mechanisms and standards. Derivatively, the weights of the variables with regard to the open ended questions were made by finding the average of the upper quartile numbers of respondents on their justification.

$$\frac{Question1 + Question4 + Question 5 \ (No. \ of \ Respondents)}{3}$$

$$\frac{25 + 20 + 34}{3}$$

Efficiency = 28

$$\frac{Question2 + Question3 + Question 6 \ (No. \ of \ Respondents)}{3}$$

$$\frac{53 + 57 + 32}{3}$$

Effectiveness = 47

From the above process, the open ended questions therefore depict a greater belief of the systems effectiveness compared to efficiency. As per the calculation, twenty eight respondents of the survey attributed the system to efficiency compared to a significant forty seven of the fifty 57 respondents who agreed on the systems effectiveness. Explaining the depiction would be more accurate on calculating the percentage of the two weights.

Efficiency: $\frac{28}{57} * (100) = 49.12\%$

Effectiveness: $\frac{47}{57} * (100) = 82.42\%$

Results 2:

<u>ANOVA</u>

This analysis is made on only two options of the close ended questions, "yes" or "no"; keeping in mind that the survey tested only twelve of the questions yet relevant to reaching to the research's objective. The results are anticipated to yield to the paper's thesis decision on determining the impacts and subsequent results of the Enterprise Resource Planning System on the accounting process and standards as well as posing a recommendation on the same regard. The aforementioned is made possible by the analysis of the proceeding survey response on the closed ended questions. This analysis was limited to the results of the closed questionnaires hence;

<u>Independent variables</u>
1. Yes
2. No

<u>Dependent variable</u>

1. Efficiency and effectiveness

The choice of variables for the study was simple as depicted. The responses retrieved from all the returned questions were regarded as the independent variables whose event influences the effectiveness and efficiency of the ERP sstem thus, dependent variable.

Table 8. Efficiency and effectiveness

Yes	No	Questions
34	23	1
46	11	2
42	15	3
24	33	4
34	23	5
45	12	6
39	18	7
29	28	8
45	12	9
53	4	10
56	1	11
50	7	12

F- Test

The following is an f-test analysis conducted on the twelve questionnaire questions.

Table 9. F-Test Two-Sample for Variances

	Yes	*No*
This stands for the Mean	41.41666667	15.58333
This stands for the Variance	94.62878788	94.62879
This stands for the bservations	12	12
This represents 'df'	11	11
This respresents 'F'	1	
This respresents [P(F<=f) one-tail]	0.5	
This slot is for [F Critical one/tail]	2.81793047	

Table 10. This table blow depicts Anova: Single respresents 'Factor'

SUMMARY						
respresents *Groups*	*Numbers*	*Additions*	*Average*	*Disparities*		
Yes	12	497	41.41667	94.62879		
No	12	187	15.58333	94.62879		
This respresents ANOVA						
Source of Variation	respresents *SS*	respresents *df*	respresents *MS*	respresents *F*	respresents *P-value*	respresents *F crit*
Occurrence in Groups	4004.167	1	4004.167	42.31447	1.52E-06	4.30095
Within Groups	2081.833	22	94.62879			
Total	6086	23				

The above test measures the analysis of variance on the collected information of the assigned close ended questionnaires. The test fundamentally checks for the differences between the means of the two research weights: the "no" and the "yes" responses according to the survey's closed

questions. The test is relevant to the prediction of the reported impacts and positive effects of the Enterprise Resource Planning System as per the respondents' view which is likely to be the case hence relied on by this research. The deduction is allowed by the results based on the twelve characteristics of the system's implementation asked on the questionnaire. The ANOVA test ultimately develops and confirms the results of the conducted survey data.

It was best suited for the research due to its attributed effectiveness on comparative experiments; especially with the surveys interest on "yes" as the confirmed outcome. Measuring the significance of the process is the ratio of the two variances; with a less ration indication reliability on the test. In this case the ANOVA implies an equal ration of the variance on the tested groups with a 94.62879 to 94.62879. This justifies the accuracy of the test considering only two distinct groups were examined. Consequently, the paper can now settle for a deduction that the Enterprise Resource Planning System greatly impacted the accounting mechanisms and standards in the Jordanian organizations.

RECOMMENDATIONS

Resultantly, this research develops an array of propositions pointing to remedy the adverted flaws on the Enterprised Resource Planning System in Jordnanian enterprise and bank sector accounting mechanisms. Several instances were adequately explicated so does the section seek to recommend on their remedies respectively. Regarding the Jordnanian banking sector and Jordanina companies' implementation of the system, the major flaw expressed by respondents included the inefficiency of its documentation standards. Contending on the issue, the paper proposes that the system development process for new enterprises and maintenance for the existing ones to employ the most recent technologies as asserted by Al-Akra et al., [2009]. For instance; a new organisation seeking to put up the ERP system should consult the best vendors of the system of the functionalities to avoid inheriting generic plartforms which doesn't icorporate their business philosophies.

The cultural issues brought up after the system's incorporation in Jordan posses the greatest challenge (Al-Akra et al., [2009]). However the paper considers the ERP system's attribute to custom-make the solution. Companies in Jordan which find hitches or the mismatches in the Western engineered business plartform can through a software developer or vendor order for a custom model. The consequent factor includes all aspect on the requirement's specification by the architechture model including language.

CONCLUSION

Finally, a recap on the main elements of the paper explains a perfect overview of the research. Introducing the paper was a brief introduction; defining the Enterprise Resource Planning System, the step was fundamental for the advancement of the paper's further elaboration. Subsequently, the paper stated two hypothesis of the study due to

conduction. The null hypothesis posited a negative proposition concerning the adoption of the Enterprise Resource Planning System, presuming some of its limitations. On the other hand, the alternative hypothesis declared a positive suggestion regarding the system. Following the hypothesis was the research design taken by the research. A theoretical approach was the preference for the study considering the objectives precision. However, the approach was fully backed up by sufficient data from previous related studies (Naash & Khamis, 2009).

Evidence on several companies implementing the system was used concerning portraying its impact on the accounting mechanisms. Comparably, the ideas of the ERP and society of progress have been appeared to be firmly related and commonly supporting. Fundamentally, the theoretical studies are subsequently backed by a series of empirical test on both the open and closed questionnaires. Bucketing techniques is utilized sufficiently to elaborate the role of ERPS on the Jordanian Bromine Company and the Arab Potash companies. Similarly, closed questionnaires of the survey are tested through the Analysis of Variance (ANOVA). The mining organizations contribute to change from the ERP which builds the way of life progress, thusly it will go ahead in the focused globalized environment (Naash & Khamis, 2009). Having set up the collaborations between the ERP what's more, culture of progress, the administration challenge now is to advance the build up the implications and suggestions emerging from the consolidated use of this control.

The cost and schedule overruns necessitates that businesses and particularly financial entities obtains sufficient funding in order to install and implement ERP in their systems effectively. This implies that the government has to ready itself in according any possible assistance to such institutions in order to generate financial, accounting and reporting benefits of ERP.

Ultimately, the documentation issue can be solved by ensuring that every employee is informed of their reckonment by a section of it. That can be enhanced by developing a clear outline of the system's functionalities and phases of operations according to the organisation's hierarchy. Regarding the cost problem on adopting the system, organisations may opt to indulge in extra income generating activities such as leases, share repurchases, merging or opt for loans from the banks. Preferrably, merging between two organisation is efficient since the cost is shared to incorporate the generic system and later the individual companies customize to suite their needs.

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APPENDIX 1: QUESTIONNAIRRE

The Questionnaires

The appendix was a framework of the questionnaires with questions that were used to retrieved information from the Jordanian companies Account departments. Open-ended dichotomous questionnaires and closed ended ones were administered to the firms' financial managers and the accountants. The questionnaires were uploaded to the companies' web portal; precisely in the Finance Department page through the systems manager from the boards consent. Certain measures were employed to ensure that the respondents got access to the page conveniently. Among them was the request to present the questionnaire as a popping ad in the web portal so that the respondents can easily access it. However, the employee identification was required to authenticate the assignment. To enhance the response also was the technique to present the questionnaire as a webpage; hence had to be designed as opposed to attaching a document file which would be quite unamusing to fill. On the other hand, the survey was considerate of the fact that not all respondents would be suited by the online platform; therefore, traditional hardcopy document files were made for the same and issued to the department as well. Further elaboration of the questionnaire design will be elaborated later in the paper.

Population of the Study

<u>Bromine Company and Arab Potash Jordanian Companies</u>

A total thirty five hard copy questionnaires were assigned to Jordan Bromine Company Finance and Accounts department so is to the Arab Potash Company. That was considered adequate for the number of respondents who were not conversant with online procedures on taking the survey. Similarly, the number of the hard copy questionnaires was considered suitable for the survey in case of any system faults from the online survey platform in input, network connection inconveniences or power failure. Consequently, the number of respondents expected to take the survey

here was estimated to thirty five, consisting of; the vice president, the director/controller, accounting managers, accountants and analysts, accounting clerk and finally the file clerk. File clerks and accounting clerks were asked to fill the survey questions purposefully, to distinguish the work design employed after the implementation and consequent applcaitional usage of the Enterprise Resource Planning System. The survey seeks to outline the roles of the mentioned hierarchical workforce of the companies' accounting department so as to layout an understanding of their relevance in this survey.

a. The Vice President

Also referred to as the Chief Financial Officer (CFO). At the highest point of the bookkeeping hierarchical outline is the CFO or VP of bookkeeping, or finance, contingent upon organization structure. What number of chiefs are under the CFO or VP relies on upon the extent of the organization; however only single heads were reported on both of the survey companies. Small organizations would just have a supervisor or controller straightforwardly underneath this position. The CFO or VP is an individual from the official group and for the most part reports specifically to the head of operations, the president or the chief administrative officer, however the organization is set up. In the case of Jordan Bromine and Arab Potash companies, the VP of bookkeeping answers to the Chief Administrative Officer. However the VP of the head office self-hoveringly deals with the bookkeeping exercises at the particular area.

b. Controller or Director

Since the survey organizations oversee generation at a few unique offices; they have a controller or chief who reports to the VP of finance or CFO at the corporate or head office level. In the contrary, in little organizations, this position would be an accounting administrator's position, as there would not be a controller or chief.

c. Bookkeeping Managers

The Jordanian Bromine and Arab Potash companies have three accounting directors, including: a records receivable supervisor, a records payable chief and a finance head or administrator. In a little organizations, there would be one individual dealing with every one of these viewpoints in bookkeeping. Accounting supervisors report specifically to the controller, the VP or the CFO, again relying upon the organization size.

d. Accountants and Analysts

Bookkeepers and investigators come next in this progressive natural pecking order. Bookkeepers have direct obligation regarding their field of mastery - investigation, reporting, finance, invoicing, accounts payables or receivables, seller capability and the sky is the limit from there. In the survey's organizations, these obligations are however isolated on account of the workload; hence the accountants and analysts. In little organizations, the bookkeeper may perform these obligations. Bookkeepers and investigators report specifically to the bookkeeping chief or controller. Nevertheless, the study regarded the position as the same for the reason of its extensiveness. Isolating the positions would unnecessarily highlight on a similar characteristic of the respondents.

e. Bookkeeping Clerk

The agent handles the everyday exchanges and, similar to the bookkeepers, reports to the bookkeeping administrator or controller, yet more often than not works under the auspices of the bookkeepers and analysts. Agents enter the information into the PC and may prepare creditor liabilities, finance, accounts receivables and then some. The inclusiveness of the position was considered meaningful in the survey considering the study's thesis and the role impacted by ERP systems in the traditional role of the position.

f. File Clerk

To wrap things up in the bookkeeping pecking order is the document assistant. Typically prepared as a reinforcement to the bookkeeping representative, the document assistant guarantees all records are stayed with as indicated by strategy, documented conveniently, and gets appointed assignments from those higher up in the chain as required. The file clerk is an important respondent in the survey as a speculation was made that the individuals barely find a role to play considering the ERP system functionalities.

Table 1 below depicts the number of respondents used for the integrated studies on Jordanian companies. Distinctively, the two companies were mineral based; The Arab Potash and Jordan Bromine Company. According to the response obtained, the top three positions in the hierarchy received full response (100%) comprising of the VP, Controller and the Accounting managers. However the subsequent positions in the hierarchy received invariable response due to various expected and unexpected circumstances. The subsequent table 1.1 depicts the copies assignment according to the department's workforce.

Table 1. Traditional Questionnaire Survey Copies

Company	Number of Questionnaires	%
Jordan Bromine Company	35	50
Arab Potash Company	35	50
TOTAL	70	100

Table 1.1

Departmental Postions	Number of Qustionnaires Issued	Number of Returned Questionnaires	Response Analysis (%)
The Vice President	2	2	2.9
Controller or Director	2	2	2.9
Bookkeeping Managers	6	6	8.6
Accountants and Analysts	40	34	48.6
Bookkeeping Clerk	10	7	1
File Clerk	10	6	8.6

TOTAL RESPONSE
57 respondents
72.6 %

RISK AND OPPORTUNITIES CONNECTED TO THE ADOPTION OF INTERNET BANKING IN AN EMERGING MARKET

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Abstract

This research investigate the adoption of Internet banking among Gaborone`s working class and university students. Internet banking comes with convenience and lower costs, which encourage customers to adopt it. Hindering factors to Internet banking adoption include lack of trust and awareness. The study is based on a quantitative research approach. The results suggest that Internet banking adoption is almost the same between the working class and university students. The main factors that support Internet banking adoption are perceived ease of use, perceived usefulness and compatibility. The study findings are consistent with previous studies done in other countries, which show same factors that promote and hinder internet banking adoption. The study therefore contributes to our understanding about factors that promote and hinder internet banking by customers. Furthermore studies may focus on the rate of internet adoption among age groups, income and social status.

Keywords: Internet Banking, Risk And Opportunities, Information Communication Technology, Technology Acceptance Model, Innovation Diffusion Theory

1. INTRODUCTION

Wide Internet availability has resulted in new service offerings in various business sectors and the financial sector has not been left behind. The transformation that the internet brings to the financial industry is considerably greater, considering that it depends on information that can be easily sent through the internet. The Internet is used in areas such as customer relationship marketing (CRM), offering products online and other internet banking services. Within the last decade banking services have become increasingly digitized, the term which refers to Internet banking services (Graupner, Melcher, Demers and Maedche, 2015). Aljaafreh and Al-Ani (2014) define Internet banking services as the ability of the bank to offer their services to customers through the Internet.

Internet banking services involve the use of technology by customers to make transactions and receive information from the financial institutions where their accounts are held. These services to individual customers and businesses include access to accounts, processing transactions, obtaining information on financial products and services

through a public or private network (Prakash and Malik, 2008). The range of services varies from bank to bank in different countries. In the developed world, countries have complete online banks, in which all transactions from opening an account, depositing, and making cash withdrawals can be done without walking into a bank branch (Bankwatch, 2006). Some countries have not progressed so well regarding Internet usage and have opted for a mixture of Internet and branch (brick and mortar) banking. This combined physical and internet banking is what is being practised in Botswana as well.

The shift from traditional physical to Internet banking services has been accelerated by customers' ability to access the Internet and has seen a reduction in the number of physical bank branches in many countries (Graupner et al., 2015). Some USA states require a minimum of one branch, so there are almost 500 banks with a single physical branch and the rest are online (Bankwatch, 2006). The shift to Internet banking services has many benefits to both customers and banks. Some of the associated customers' benefits include convenience, independence from time and space (anytime and anywhere) and cost savings (Koufaris & Hampton-

Sosa, 2004; Carter & Belanger, 2005; Aljaafreh et al., 2014). Internet banking benefits to the bank include: lower operational costs, improved banking services, retaining customers and expanding the customer base (Cheung, Chang & Lai, 2000). This in turn, increases profitability and customer loyalty. Internet banking has experienced huge growth and has transformed traditional banking practices which previously entailed the customer visiting a bank. However, previous studies have indicated that the adoption rate of Internet banking services is relatively low in developing countries compared to developed countries (Statista, 2012; Aljaafreh et al., 2014).

1.2. Background of the Study

Financial services form the backbone of a strong economy because they facilitate economic transactions, from individual, organizational, and national to international level. The advent of the Internet, and Internet banking in particular, and its exponential growth, means Botswana has to adopt Internet banking as well. Despite there being a good number of products or services that can be transacted via Internet banking, uptake appears to be low in Botswana. Not much study has been done with regard to the adoption of Internet banking in Gaborone. This study investigates the level of Internet banking adoption in Gaborone`s working class and university students. The study seeks to understand factors that promote and hinder the adoption of internet banking in Gaborone. The results of the study are expected to assisting in planning for Internet banking in the country. An understanding of factors affecting adoption may also help remedy challenges facing Internet banking in Botswana and other countries as well.

Although bank customers appreciate the benefits of Internet banking in terms of cost and convenience, there have been concerns about security and difficulty of use (Mavetera & Kesemoletse, 2007). This study seeks to understand whether the same factors apply to Botswana. For Botswana to make a regional and global economic impact, it needs to benchmark with other countries, so that it aligns its economic models with those of the best including financial services and Internet banking in particular. This research also helps to understand how Botswana differs from other countries in relation to Internet banking. This is important in order to institute appropriate remedies for the Botswana situation. The main research question for the study is therefore: **What are the main factors influencing and hindering customers' adoption of Internet banking in Gaborone?** This paper is organised as follows: - **Section 2** literature review, **Section 3** research methodology, **Section 4** results and S**ection 5** discussions and conclusion. The next section discusses the literature pertaining to Internet banking.

2. LITERATURE REVIEW

Internet banking is the provision of banking products and services such as account management, the provision of financial advice, electronic bill payment, and the provision of other electronic payments through the Internet (Oxford Online dictionary, 2012). Internet banking includes systems (websites) that enable financial institution customers, both individuals and businesses, to access accounts, process transactions, or obtain information on financial products and services. This can be done through a public or private network, including the internet or mobile phone. Customers access Internet banking services using an intelligent electronic device, such as a personal computer (PC); personal digital assistant (PDA); automated teller machine (ATM); kiosk, or cell phone.

The emergence of Internet banking has seen many banks rethink their information technology (IT) strategies in competitive markets. The banks that fail to adopt Internet banking are likely to lose customers as the cost of offering Internet banking services is low compared to traditional branch banking. This is supported by a study done by Jasmuddin (2004) that examines the role of Internet banking services in Saudi Arabia. He suggests that if the Saudi Arabian banking industry wishes to be successful in the global economy, it needs to integrate Internet technology into its banking strategy. The success of Internet banking is generally dependent on bank and government support as well as acceptance by clients. Internet banking has high start-up costs and it requires many customers for there to be a reasonable return on investment. Government has to implement supportive legislation and help with the infrastructural setup. Internet banking acceptance is also important as the costly investments will go to waste if not used.

Acceptance of Internet banking services involves three main stages: infusion, diffusion and adoption. Infusion refers to Internet banking being put in place; diffusion is people being made aware of the services, and adoption is the actual uptake of the services (Online Oxford dictionary, 2012). In other words, the bank must first see to it that the Internet banking services are available and customers have to be made aware of them before they can actually use them. Banks adopted Internet banking to gain a competitive edge, improve customer services and reduce operational costs. Technological developments in computing and communications have catalysed the Internet banking adoption process (Jayawardhena & Foley, 2000). Customer demands have also risen and banks cannot afford to rest on their laurels.

Some new entrants into banking have embraced technology, so the traditional banks had to adjust quickly, otherwise they were set to lose market share (Jayawardhena et al., 2000). In other words, there is a need to satisfy customers, deal with increased competition, and address pressure on the supply chain to deliver services quickly and continuously develop new and innovative services for differentiation from competitors (Jayawardhena et al., 2000). Internet banking in developed markets is maturing and some emerging markets are adopting the western Internet banking models. Success is registered against the backdrop of continuous economic, legal, technological, political and banking reforms. With these reforms in place and strong information and communication technology (ICT) infrastructure, Internet banking will enable economic benefits to accrue within countries and globally (Simpson & Evans, 2003).

2.1. Benefits of Internet Banking to the Customer

Despite the several challenges in the use of Internet banking, the benefits far outweigh the disadvantages; especially now that many people have good Internet connectivity. A customer can have all accounts aggregated, so that all accounts (current, savings, and mortgage accounts) will be presented on a single page. This enables customers to have a quick glance at their financial portfolios. In most cases, funds can be transferred from one account to another in the comfort of a customer`s home anytime, anywhere where there is connectivity. Internet banking therefore brings convenience to banking anytime, anywhere which is very important for people with busy schedules. Now with Internet connectivity through mobile phones, banking transactions can be done while on the go. Internet banking makes it easy to open accounts and access other services online. Internet banking costs less than branch banking, since there are fewer buildings to maintain and less involvement of salaried employees. All these savings allow the bank to offer higher interest rates on savings and lower rates on lending. Some banks are now offering free bill-paying services to encourage customers to do their banking online.

With Internet banking customers can easily compare offers from several banks within a short time to get best deals, higher interest rates on savings and lower rates on lending. Other services which can be easily checked are availability of credit cards, loan terms and banks' own rating. Internet banking users can easily check their bank balances before writing cheques, so the number of refer-to-drawer cheques should decrease thus avoiding the penalty fees that banks charge. Bank reconciliations are made easier with Internet banking. Monthly statements can be downloaded and reconciliation done with just a few clicks. It is also easy for the customer to budget and track where the money has gone. Some banks have a facility that allows customers to view copies of the cheques they have written each month.

Ability to view accounts any time makes it easier to catch any fraudulent activities early. This is more so with accounts that send alerts each time a transaction takes place in an account. Unauthorised withdrawals can be detected immediately and appropriate remedies instituted rather than waiting for the monthly statement, which might be too late. These benefits have encouraged banks to provide an increasing range of easy-to-use services via the Internet. Customers cannot resist the convenience that Internet banking provides as it gives them convenience and better control over their money.

2.2. Benefits of Internet Banking for Banks

Internet banking has many benefits for the bank as well and profitability is one of the major benefits. Operations can be easily expanded without needing branch expansion. In other words there is avoidance of the huge costs which accompany managing branches, since there are lower infrastructure costs and fewer salaried employees. Banks will be able to reach customers in areas in which it is not feasible for them to set up a branch. Internet banking tends to attract high value customers who have potential to promote the bank as well, such as young professionals, managers, executives and the elite who have access to Internet connectivity. These people have higher than average incomes and some have many sources of income. They are the ones who also tend to save or even just have large bank balances which boost a bank`s credit creations. These customers tend to have a high demand for banking products. Most of these customers use online channels regularly for a variety of purposes, so they quickly adopt Internet banking (Berger & Gensler, 2007).

Increases in bank profitability, after adding Internet banking come mainly from increases in non-interest income from service charges on deposit (Young, Lang & Nolle, 2007). It is now also possible for banks to sell and manage services offered by other banks (often foreign banks). This promotes small banks with a limited product range (Young et al., 2007). Internet banking has resulted in increased credit card lending, since these transactional loans can easily be delivered over the internet and internet bill payment has also been rising rapidly (Young et al., 2007). These Internet banking related banking practices have rapidly expanded revenue streams. It has become easier for banks to expand with the advent of Internet banking since it bridges the high start-up and maintenance costs. Now a bank with a traditional customer base in one part of the country or world can attract customers from other parts, as most of the transactions do not require a physical presence.

2.3. Factors for Internet Banking Adoption

Previous research in this area suggests six main success factors for the adoption of Internet banking services: perceived ease of use; perceived usefulness, compatibility (similarity to what one is already doing); trialability (having a chance to test before use); trust (being sure that it is safe) and awareness (being informed of its existence) (Sohail & Shanmughan, 2003; Yu & Lo, 2007; Yiu, Grant & Edgar, 2007). Many of these studies have been done in developed western countries, the Middle East, Australia and Asia. Despite considerable diffusion and adoption of consumer Internet banking in many countries, banks still seek further market expansion. Market expansion is needed more in developing countries such as Botswana where the diffusion and adoption appears to be low. Ignoring technology is no longer an option for any organization and technology has to be fully exploited to achieve efficiency and survival. An essential role is played in automating business processes, finding networking business and providing information for management decision-making and planning. These changes are not leaving banking behind but will grow even faster considering that most banking services can easily be offered online. The next section discusses the theoretical framework underpinning the study.

2.4. Theoretical framework

This section helps to clarify the theoretical background of the research. It discusses the classical models that have been used in technology adoption and some of the modifications to the models. A couple of models in technology adoption are

analysed and relevant constructs adopted to give the research framework. Common factors which promote and prohibit Internet banking adoption are examined in detail.

2.4.1. Technology Acceptance Model (TAM)

The Technology Acceptance Model is a widely used model in technology acceptance. It proposes that perceived ease of use and perceived usefulness of technology are predictors of user attitude towards using the technology, subsequent behavioural

intentions and actual usage. In this regard, the perception in turn influences the behaviour and the actual uptake. Perceived ease of use is also considered to influence perceived usefulness of technology (Davis, 1989). Fishbein and Ajzen, 1975 posit that TAM is derived from a theory of reasoned action (TRA), which proposes that individual behaviour is driven by behavioural intention where behavioural intention is a function of an individual`s attitude toward the behaviour and subjective norms surrounding the performance of the behaviour.

**Figure 1.** Original TAM (Davis, 1989)
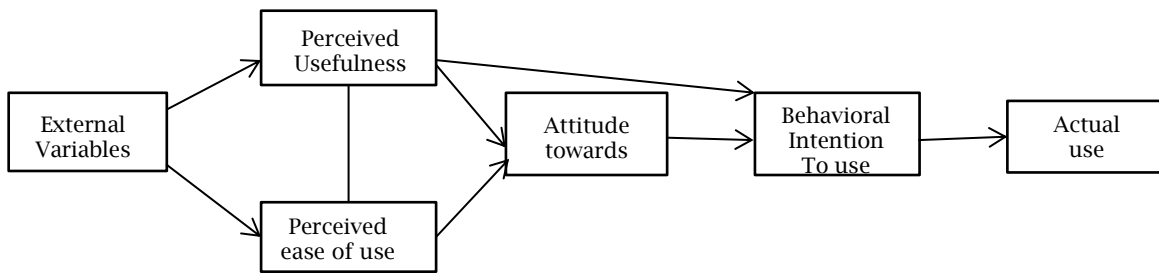
In TAM, perceived usefulness refers to the degree to which the user believes that using the technology will improve his or her work performance, while perceived ease of use refers to how effortless he or she perceives using the technology will be. Both are considered distinct factors influencing the user's attitude towards using the technology, though perceived ease of use is also hypothesized to influence perceived usefulness and attitude towards using the innovation (Davis, 1989). Over the years many researchers have modified TAM as they saw fit. Flavian, Guinalin & Torres (2006) modified TAM to suit Internet banking absorption by adding security and trust to the ease of use and perceived usefulness. The ease of use and usefulness aspects were further broken down into

perceived benefits in service, resistance to change, price, availability of technology, image, comparative advantage and compatibility (Flavian et al., 2006)

Hosein (2009) developed a generic framework on the key factors in Internet banking adoption. This framework contains aspects of TAM but it is now broken down and tailored to Internet banking adoption as shown in Figure 2 below. Internet experience, Internet usage, knowledge and support align well with the ease of use aspect in TAM. Convenience also accompanies the perceived usefulness. Attention awareness, which means being told of the availability of the service and the ability to access it, is also important for one to actually adopt Internet banking.

Figure 2. Consumer adoption of Internet banking, a generic theoretical framework (Hosein, 2009)
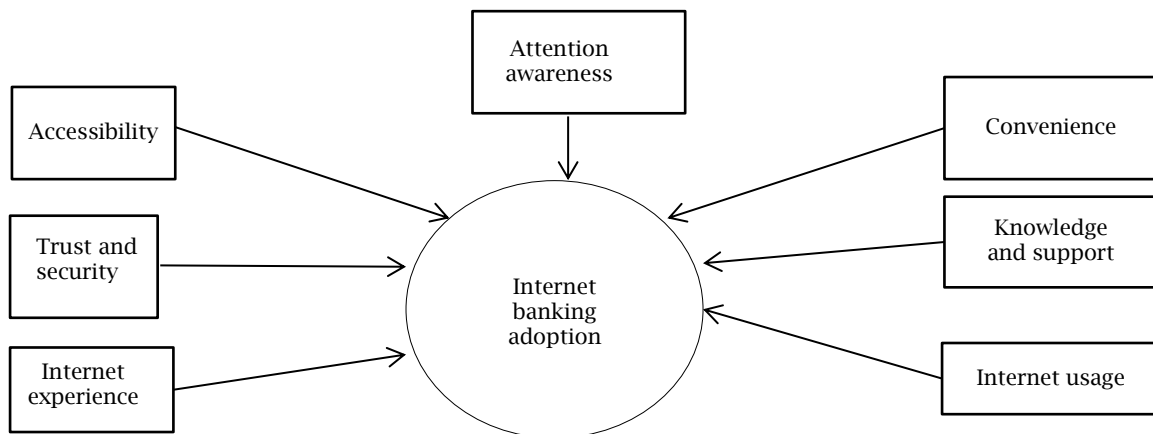
Other modifications to TAM include an extended TAM (Venkatesh & Davis, 2000; Wang et al., 2003). The Venkatesh and Davis (2000) modification adds the subjective norm construct and it is known

as TAM 2. These modifications help to tailor-make the models to the situations that will be in place, but the basics of perceived usefulness and ease of use seem to be upheld. TAM has been used in many

researches, mostly concerning technology adoption, like adoption of online learning, adoption of ATMs, and it has been the main model in Internet banking adoption. This is the main reason that TAM was adopted in this study, but with some modifications.

2.4.2. Innovation Diffusion Theory

The Innovation Diffusion Theory (IDT) has also been used in some research (Rogers, 1983; Tornatzky and Klein, 1982). The IDT model states that the

determinants of behavioural intention are; relative advantages (benefits), compatibility (similarity with what one uses), complexity (level of difficulty), observability (ability to see as one uses it) and trialability (time to test) (Rogers, 1983). Rogers' Innovation Theory has its own extensions and one was done by Moore and Benbasat (1991) who added constructs of image and voluntariness of use. These extensions bring in more clarity and explanatory power to the models (Cheng, Lam & Yeung, 2006).

Figure 3. Innovation Diffusion Theory (IDT), Rogers, 1983
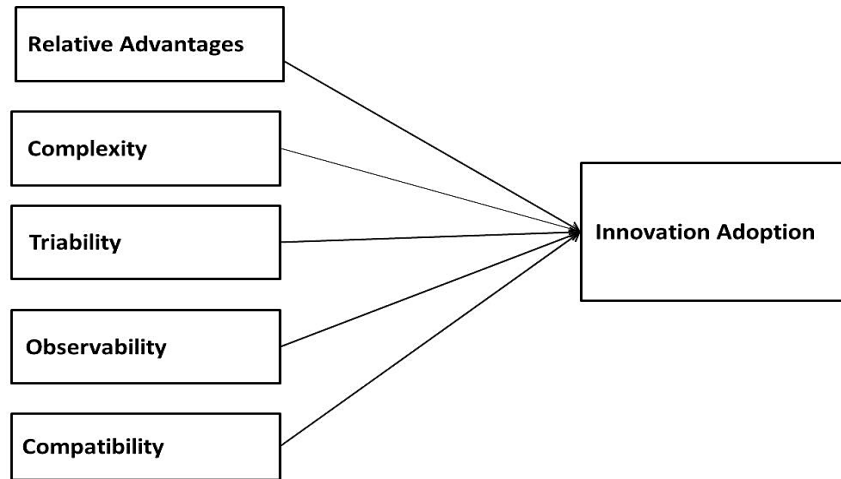
2.5. Adopted Research Framework

This research used a framework which combines constructs from TAM, perceived usefulness and

perceived ease of use with constructs from the IDT. There have been adjustments so that the framework is more specific to internet banking adoption.

Figure 4. Adopted Framework
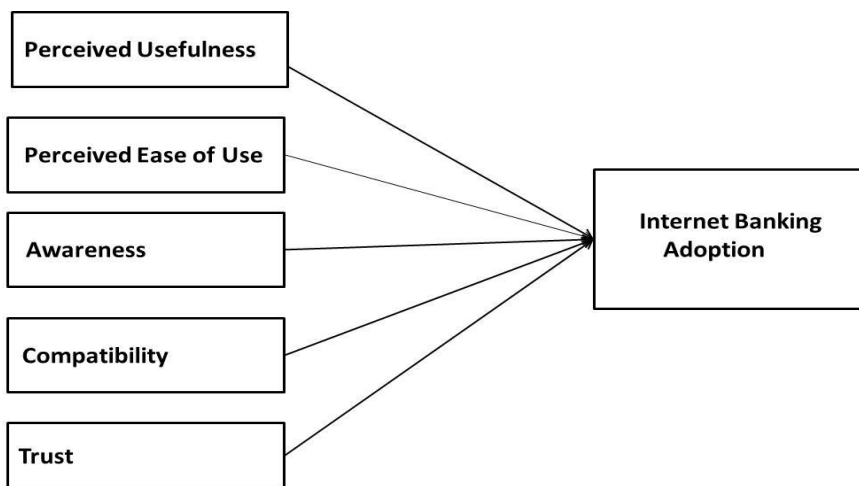
2.5.1.   Hypotheses review

This section outlines the hypotheses to be used in this study to test the link between independent variables (Perceived usefulness, Perceived ease of use, Awareness, Compatibility, Trust) and dependent variable (internet banking adoption).

- **Perceived usefulness (PU)**

Perceived usefulness is defined by Davis (1989) as "the degree to which an individual believes that using a particular system would enhance his or her job performance." Many previous studies found positive significant linkages with Internet banking adoption (Eriksson, Kerem & Nilsson 2008; Yiu et al., 2007; Gounaris & Koritos, 2008; Ozdemir, Trott & Hoeicht, 2009). This study hypothesised positive linkage as follows:

H1: Perceived usefulness has a significant and positive influence on internet banking adoption (IBA)

- **Perceived Ease of Use (PEOU)**

This construct, adopted from TAM, is defined by Davis (1989) as "the degree to which an individual believes that using a particular system would be free of physical and mental effort". In this study, this has been related to the use of the Internet in general and accessing the services on the bank`s website. Past studies have found a significant relationship of perceived ease of use and Internet banking adoption (Sohail et al., 2003; Yu et al., 2007; Yiu, et al., 2007; Gounaris et al., 2008; Ozdemir, et al. 2009). This study hypothesised positive linkage as follows:

H2: Perceived ease of use has a significant and positive influence on Internet banking adoption (IBA).

- **Compatibility**

Compatibility plays a big role in the diffusion of innovation. The study by Tornatzky et al., (1982) found that an innovation is more likely to be adopted when it is compatible with the individual`s job responsibilities and value system. Internet banking has been viewed as a delivery channel that is compatible with the profile of a modern-day banking client, who is likely to be computer literate and familiar with the Internet. Compatibility can even spread to group values and beliefs. This is evident in large numbers of US customers who shop online. Internet banking services are therefore very compatible for them. According to Rogers (1983), compatibility refers to "the extent to which the innovation is perceived as superior to all other options". It has been found to be a determinant in technology adoption in general and Internet banking adoption specifically (Hernandez & Mazzon, 2007; Eriksson et al, 2008). Hence, the hypothesis:

H3: Compatibility has a significant and positive influence on IBA.

- **Trust in Internet Banking Services**

Trust is probably the most common factor which recurs in many researches on internet banking adoption. Several studies noted that trust play vital role in internet banking services adoption as it affects customers' behaviour to adopt new technologies (Gefen et al., 2003; Kim et al., 2004). Customers fear that other people will gain access to their sensitive information and even take away their monies electronically (Alsajjan & Dennis, 2009; Suh & Han, 2002). Several studies find a strong relationship between trust and Internet banking adoption (Eriksson et al., 2005; Yu et al., 2007; Guerrero, 2007). This prompted to hypothesize positive linkage as follows:

H4: Trust has significant and positive influence on IBA.

- **Awareness of internet banking services**

People need to be aware of the availability of Internet banking services before they can start to use them. This was found to be a significant factor in studies done by Sohail et al., (2003). Lack of awareness was also found to be a main factor leading to customers' slow adoption of online banking (Sathye, 1999). These findings lead to discovering the relationship between awareness and IBA.

H5: Awareness has a significant and positive influence on IBA.

3. RESEARCH METHODOLOGY

This section outlines the process of how the sample was chosen, how data was collected and the validity of the data (Bryman, 2008). It goes to greater depth in clarifying the procedure, so that any other researcher can use the same tools in almost similar conditions and be able to come up with a comparable set of results.

3.1. Research design

This study was based on a cross-sectional quantitative research approach. The study explored factors affecting Internet banking adoption among the working class and the university students in Gaborone. The design was sufficient for the study because it examined only the current Internet adoption levels and reasons for adopting or not adopting Internet banking. The groups in this study consisted of tertiary education students and the working class (employers, employees and self-employed).

3.2. Target population and sample

Clear definition of the target population is very important in order to select a good sample and for accurate findings (Sullivan, 2001; Neuman, 2006). The target population was customers of retail banks of all races, residing in the greater Gaborone area. The participants were roughly from the ages of 18 to 65 years and included those who used Internet banking and those who did not. There are very few banked people below the age of 18 and over the age of 65 in Botswana, and this is why they were not targeted. The banked population in Botswana (i.e. those with bank accounts and access to banks as well) is 45% of the whole population, which translates to over 900 000 people.

3.3. Study Sample

A purposive (non-probability) sample was used in this study to ensure more focus on people who are banked, and likely to use the Internet for banking. A sample size of 100 was used for the study. The participants were mainly bank account holders between the ages of 20 and 50. There were 30 tertiary education students and 70 working class respondents from Gaborone. Large samples generate high accuracy and are important where there are many variables examined simultaneously in data analysis (Neuman, 2006). The majority of the participants came from those who still used traditional banking methods, but possibly used Internet banking as well. It was appropriate to find both. This stratum was conducive to obtaining a good mix for the study. It was very important to obtain the views of the students' stratum, because they were generally knowledgeable about technology, so finding their Internet banking

adoption status would help in predicting the future. This would also help for comparative purposes in terms of age, income levels and internet usage.

There were some purely Internet bank users who visited the branch very rarely, so to get them, the appropriate way was to go into organizations and their work places. This was the main reason why some questionnaires were taken into organizations and small businesses. The composition of the sample was appropriate for finding Internet and non-Internet bank users. This ensured that all the research goals were met, since this group was technologically knowledgeable, and used the Internet a lot and most likely used Internet banking.

3.4. Data collection

There are three main universities in Gaborone (University of Botswana, Botho College and Limkokwin). Ten students from each of the three institutions were randomly given questionnaires during lunch time. Almost all employees in big organizations and all public servants in Botswana have bank accounts. Organizations were randomly chosen and not more than ten questionnaires were randomly distributed to the employees of each of the organizations depending on the size (number of people in an organization). This was done to cover as many organizations as possible.

A simple questionnaire was used in this study, consisting of five segments: demographic, internet usage, internet banking usage, perceptions and attitude on Internet banking and lastly the comments section. The demographic information section looked into age, gender and educational status, monthly earnings and occupation. The Internet usage section looked into knowledge about the Internet, accessibility and frequency of usage. The Internet banking usage section probed knowledge and usage of Internet banking. The perceptions and attitudes regarding Internet banking section dealt with security, convenience and general customer perceptions of Internet banking. A questionnaire was appropriate to simultaneously cater for different variables at a reasonable cost. The study had five independent variables and one dependent variable (Internet banking adoption). Each of the independent variables had items from the questionnaire that related to the descriptive statistics variables.

The questionnaires were pre-tested and corrections were done accordingly. Two research assistants were trained to help in the gathering of data. Students were given about 20 minutes to complete the questionnaire and return it. Those in the organizations were given the questionnaires which were collected the following day. This enhanced the return of completed papers. All 30 of the questionnaires given to students were returned but 9 of the 70 questionnaires given to the working class were not returned. Data collection took about a month to cover the respondents. The data was analysed using the Statistical Package for Social Sciences 21 (SPSS).

3.4. Validity and reliability

Validity pertains to correctness and accuracy, so that the instrument measures what it is supposed to

measure (Oppenheim, 1984; Peterson, 2000). Valid measures are believed to be free from error, which makes it critical for research. In this study, validity was ensured first by the alignment of the questionnaire with existing models, TAM and the innovation diffusion theory. These models have been used in previous studies of Internet banking adoption. The questionnaire items were also comparable to some TAM- based questionnaires and to the one used by Tan and Teo (2000) in their study on Internet adoption in Malaysia. Questionnaire items were been aligned with the research goals. Validity was also tested statistically as shown in the results section.

Reliability is concerned with consistency regarding obtaining the same results (Oppenheim, 1984; Peterson, 2000). If another researcher does the same study, he or she should arrive at reasonably similar results. Reliability is closely related to validity because if a measure is valid, it will give reliable results. This study used sets of questions to measure different aspects of the same concept. Litwin (1995) points out that using several items makes the data set richer and more reliable. The results of the pre-test and the actual study were consistent, which also aided the reliability. Internal consistency was also tested statistically by Cronbach`s coefficient alpha.

3.5. Ethical considerations

Social researchers are bound to ethical considerations in their studies (Sullivan, 2001). As the study was a simple social one without an invasive procedure or too sensitive information required, there was no need for a signed consent form. The participants had to freely agree to complete the questionnaires and no names were used apart from questionnaire numbers. Each questionnaire had a covering letter from the university to show that it was for academic purposes.

4. RESEARCH RESULTS

This section presents research results. The results pertain to the 85 valid questionnaires completed by the respondents. This section is organized as follows: the next sub-section presents the demographic characteristics of the respondents; sub-section 4.2 presents the frequencies of internet knowledge and access, sub-section 4.3 presents Internet banking, sub-section 4.4 presents reliability analysis, sub-section 4.5 presents correlation results and finally sub-section 4.6 presents multiple regression analysis.

4.1. Demographics

Of the 30 students, 28 (93.3%) were in the 20 to 25 years age group and only two (6.6%) were between the ages of 25 to 30. No students were older than 30. This is consistent with the ages of many university students. The working class respondents were mainly in the 26 to 35 age group. No participants were younger than 20 or older than 50. Only one student was Indian and the rest were black. The students` highest attained educational qualifications were as follows: 60% - 'O' Level, 23% -

diplomas and 17% - certificates. Most of the working class had a diploma or a degree as their highest qualification.

Table 1. Profile of respondents

		Students		Working class	
		Frequency	Percentage	Frequency	Percentage
Gender	Male	21	70,0	19	35,0
	Female	9	30,0	36	65,0
Age	20-25	28	93,3	17	28,7
	26-30	2	6,7	23	39,0
	31-35	0	0,0	15	25,4
	36-40	0	0,0	3	5,1
	41-45	0	0,0	4	6,7
	46-50	0	0,0	3	5,1
Race	Black	29	96,6	50	93,0
	Arab	0	0,0	1	2,0
	Indian	1	3,4	1	2,0
	Coloured	0	0,0	2	3,0
Monthly income	<P2 000	28	93,3	3	5,1
	2 001- 5 000	2	6,7	11	18,6
	5 001- 10 000	0	0,0	15	25,4
	10 001- 15 000	0	0,0	12	20,3
	15 001- 20 000	0	0,0	8	13,5
	>20 000	0	0,0	6	10,1
Highest educational qualification	Junior certificate	0	0,0	1	1,7
	'O' Level	18	60,0	5	8,5
	Certificate	5	1,7	6	10,1
	Diploma	7	2,3	16	27,0
	Degree	0	0,0	24	40,7
	Masters	0	0,0	3	5,0
Occupation	Labourer	0	0,0	6	10,2
	Professional	0	0,0	45	76,1
	Self employed	0	0,0	4	6,7
	Student	30	100	0	0,0

There were 11% with 'O` Levels and a certificate as highest qualification. Close to 82% of the working class were professionals, 10% were labourers and the remaining 8% were self-employed. The self-employed were mainly owners of small business organizations. More than 93% of the students had a monthly income below P2000, mainly from government allowances. The remaining 6.6% had monthly incomes between P2001- 5000. Probably these were students sponsored by their employers and they continued to receive salaries. The bulk of the working class (69%) earned between P2001 and P15 000. A quarter (25.5%) earned salaries over P15 000 and the remaining 5.5% had incomes below P2 000.

4.2. Internet Knowledge and Access

All the participants in this study knew, used and had access to the Internet. The numbers of participants who had access to the Internet using either wired or wireless devices, were almost equal, with a slight inclination towards wireless devices. A proportion of the working class (39%), had access to the Internet on both wired and wireless devices. The working class mainly had Internet access at work (60%); 58% accessed the internet through mobiles and only 20% at Internet cafés. Some participants had Internet access in more than one mode.

Figure 5. Duration on internet per day (students)
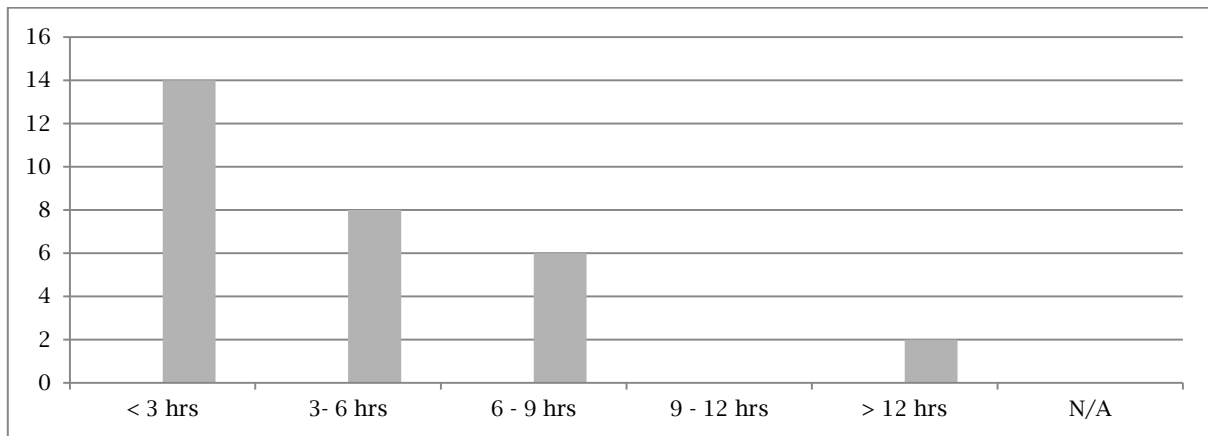
More than half (63%) of the students accessed the Internet through their mobiles (laptops, phones and tablets) mostly using a university wi-fi system; 23% had Internet access at home and only 6% accessed the Internet at their work places. Probably they were part-time students. There were overlaps as well, as some could access the Internet in more than one mode. Among the working class participants, Internet usage was as follows; 23.7% used it for business; 91.5% for entertainment; 45.8% for study and 3.7% for banking. Among the students, 6.6% used the Internet for business; 83.3% for entertainment, 86.6% for study and 33.33% for banking. Overlapping occurred in usage in both working class and tertiary education students. Almost half of the students (46.6%) accessed the Internet fewer than three hours per day; 26.6% between three and six hours and 20% for six to nine hours. The remaining 6.6% spent more than 12 hours on the internet. The working class spent up to six hours on the internet, with very few spending more than nine hours.

4.3. Internet Banking

A high proportion (84.7%) of the working class participants expressed knowledge about Internet banking while 15.3% had no idea. 66.6% of tertiary education students knew about Internet banking and the remaining 33.4% did not know. The sources of knowledge about Internet banking among working class participants were as follows: 44% from banking staff; 18.6% recommendations from others; 35.6% advertisements and 6.7% from the Internet among working class colleagues. The students' main source of knowledge was advertisements (56.6%), followed by the Internet (33.3%), banking staff (20%) and recommendations from others (6.6%).

Of the tertiary education students, 33.33%, and of the working class respondents, 32.7% used Internet banking. Almost all non- users intended to use Internet banking except for 6.7% from the working class who indicated that they did not want to use Internet banking. All Internet banking users among both the working class and the students used it for checking balances. 60% of the working class respondents and 50% of the students use it for bank statements and transfers. No one used Internet banking for cheque requests. 40% of the working class participants and no students used it for online buying.

4.4. Reliability Analysis

Table 2. Reliability Analysis

Variable	Code	No. items	Mean	Cronbach`s alpha
Perceived ease of use	PEOU	2	2,124	0,781
Perceived usefulness	PU	4	2,204	0,823
Compatibility	COM	4	2,052	0,814
Trust	TRUST	4	3,524	0,852
Awareness	AWARE	3	3,423	0,782

Cronbach`s alpha was used to assess the reliability of the measures. It evaluates the degree of variance attributable to the true score of the variables to be measured. Reliability focuses on the instrument used in the study, by showing consistency of the measure. It is recommended that Cronbach`s alpha should be over 0.5 but there is more reliability if it is over 0.7. The reliability for this study is shown in the table above and all the variables have values over 0.7, which shows that they have sufficient reliability.

4.5. Correlation Matrix

Table 3. Correlation matrix

	PEOU	PU	COM	TRUST	AWARE
PEOU	1	0,345	0,231	0,123	0,211
PU		1	0,430	0,324	0,362
COM			1	0,311	0,234
TRUST				1	0,341
AWARE					1

The correlation matrix shows whether there are relationships between the independent variables,

since they are supposed to be independent of one other. This is very important to do when a construct has multiple items. The correlation coefficient should not go beyond 0.8 to avoid multicollinearity (Field, 2005). The highest correlation coefficient in this study is 0.430, which is far below 0.8, so there was no multicollinearity among the independent variables.

4.6. Multiple Regression Analysis

Multiple regression analysis was used to test the hypotheses. This was the most appropriate method since there was a need to analyse the relationship between a single dependent variable and several independent variables. The table above shows the standardised regression coefficients results (β) which will be on the "path". These values are very important in confirming or rejecting the hypotheses. All the hypotheses were supported. R^2 for internet banking absorption was found to be 0.752, which shows a strong relationship between the independent variables and the dependent variable.

Table 4. Multiple regression analysis

Model	Beta	Error	Sig
PEOU	0,235	0,045	< 0,05
PU	0,241	0,051	< 0,05
COM	0,213	0,055	< 0,05
TRUST	0,451	0,062	< 0,05
AWARE	0,153	0,060	<0,05

Figure 6. Frame hypotheses results
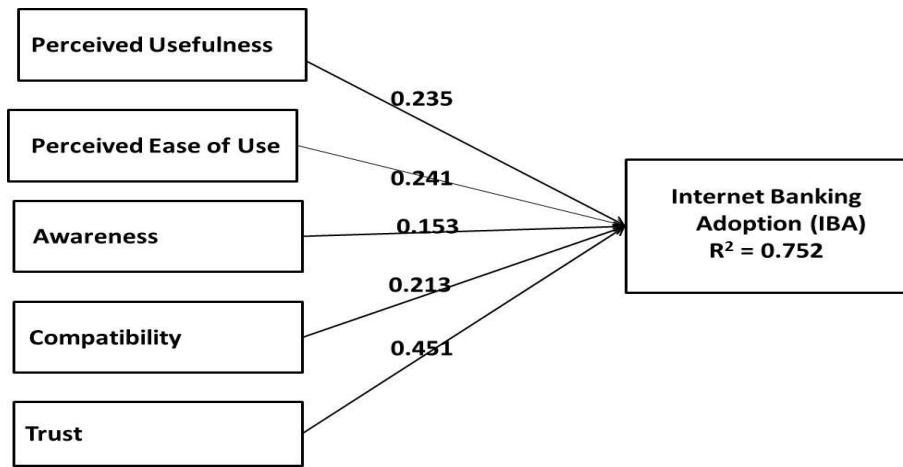
The figure above shows that all the hypotheses were supported through the positive β values on the paths from independent variables to the dependent variable. R^2 of 0.752 (75.2%) also shows that IBA is explained mainly by the five variables; only about 24.8% will be explained or related to other variables which are out of these five.

5. DISCUSSION

This section discusses the results of the study, from profiles of the respondents, descriptive statistical analysis, to the support or non-support of the hypotheses. The implications of the findings were weighed up as well. The interpretation was done in relation to the theory and other previous studies. Limitations of the study are acknowledged and suggestions for future research pointed out.

5.1. Confirmation or rejection of hypotheses

The study results showed that all five variables were significant at 0.05 significance level βPEOU was 0.230; βPU was 0.241; βCOM was 0.213; β TRUST was 0.451; and β AWARE was 0.153. This therefore showed that the independent variables: perceived ease of use; perceived usefulness; compatibility; trust and awareness, had a positive influence on Internet banking adoption. At R^2 of 0.752 (75.2%),

Internet banking adoption was highly explained by these five variables. The next sub-sections focus on answering the research questions.

5.2.1. Internet Banking Adoption

The results from the study indicate that Internet banking adoption among the working class respondents was 32% and among university students, 33%, in Gaborone. Almost all non-users indicated that they intended to use Internet banking, except 6.7% of the working class respondents who indicated that they did not want to use Internet banking. This is very reasonable for a developing country but there is still room to increase that adoption level. Internet connectivity in Gaborone is very high and almost all participants had access to and made use of the Internet. This creates a good platform for Internet banking.

5.2.2. Factors That Promote Internet Banking

This sub-section discusses study results with regard to factors promoting Internet banking adoption in Gaborone. The main focus is on factors that promote Internet banking adoption; in other words, the factors that help to draw people into using Internet banking.

- **Perceived ease of use**

Perceived ease of use was confirmed in the hypothesis as having a positive impact on Internet banking adoption with a β of 0.23. This is consistent with studies conducted by Davis (1989) and Vankatesh and Davis (1996). The perceived ease of use construct had ease of Internet use and ease of website navigation as items. The implication is that those who found the Internet easy to use would most likely adopt Internet banking. Ease of website navigation was also considered very important for people wishing to make use of the website. This is important for banks to take note of, so that they make the website user friendly. Clients should find it easy to open and perform their transaction on the website. The website must simulate the interaction offered in the physical branch as much as is possible to encourage clients to use it for most of their banking needs.

- **Perceived usefulness**

The perceived usefulness construct had necessity of Internet and Internet banking, convenience and cost effectiveness as items. The hypothesis was supported with a β of 0.241; which was consistent with studies by Tan and Teo (2000): relative advantages would draw people to adopt Internet banking. Perceived usefulness was found to have positively influenced the consumers' behavioural intention to use computer systems (Hsu, Wang & Chiu, 2009). Convenience was found to be important as well in studies by Nielsen (2005) and Munene et al. (2002). It is important for one to realise the importance of Internet banking before one can actually adopt it; this is driven by the difference that Internet banking will bring into one`s life. Convenience and cost were also seen as critical for one to adopt Internet banking. The cost saving comes in lower bank charges, transport and time and it is also a huge saving to the bank in overheads and expansion costs.

- **Compatibility**

Compatibility construct items included knowledge and access to the Internet, frequency of access and time spent on the Internet each day. A person who knows and uses the Internet often and for a long time, will not find Internet banking adoption to be very difficult, since Internet banking uses almost the same tools. The hypothesis was supported with a β of 0.213. Previous researches suggested that past experiences and values of consumers had a significant impact on their willingness to adopt Internet banking. This was probably the reason for there being an almost equal number of university students and working class participants using Internet banking despite students having very low incomes. Students make use of the Internet very often in their school work and for entertainment purposes, so they could easily transfer these skills to Internet banking.

5.3. Factors That Hinder Internet Banking Adoption

This section discusses factors that hinder Internet banking adoption and relates them to previous studies. These factors are trust and awareness of internet banking.

- **Trust**

Trust has been confirmed as being positively linked with Internet banking adoption with a β of 0,451. The trust items include security of Internet banking, confidence that transactions will be completed and recommendations of Internet banking to others. This was consistent with studies by Sathye (1999). Security, privacy and trust concerns appeared to be the main hindering factors to Internet banking adoption. Security issues caused many people to doubt the safety of Internet banking and stop them from using it. Confidence in completion of transactions would make people trust the service and later recommend it to others. Lack of this trust would hinder many people from adopting Internet banking. Banks should continue to improve their security and privacy measure and keep reassuring both Internet banking users and non-users. This is very important since Internet security is challenged time and again and there is need to keep upgrading in order to maintain total security.

- **Awareness**

The awareness construct includes knowledge about Internet banking; intention to use it; perception on the level of advertisement and making people aware of Internet banking. The hypothesis for this variable was supported with a β of 0.153; which shows its importance in Internet banking adoption. This was consistent with the studies done by Sohail et al., (2003) and Sathye, (1999). Customers therefore need to be fully aware of what Internet banking is all about. Promulgation of knowledge has to go further than just an advertisement on a billboard or simply brochures. Banks have to realise that there are some hindrance factors which need to be dispelled by providing clients with full explanations, rather than waiting for them to enquire.

6. CONCLUSION

The internet banking adoption by the working class and tertiary students in Gaborone is very reasonable at over 32%, especially for a developing country. This is mainly due to the availability of Internet connectivity in the city and more specifically for these two strata. The working class respondents and the students also made use of the Internet in their everyday lives, so they were well used to the technology involved. The banking staff also educated them about Internet banking, since they were the most likely to make use of it. Internet is part and parcel of modern life and it brings efficiency and simplicity as part of other benefits. Internet banking enjoys some of these benefits, but not everyone is taking advantage of them. This study`s main purpose was to look at the adoption of Internet banking among Gaborone`s working class and university students. Internet adoption was found to be almost the same between the working class and university students. The main factors which were found to support Internet banking were perceived ease of use, perceived usefulness and compatibility.

As Internet banking uses almost the same platform as general Internet usage, and this target group has high internet access and usage, it was possible for them easily to adopt Internet banking. Internet banking comes with convenience and lower costs, which also encourages people to adopt it. Hindering factors to Internet banking adoption were lack of trust and awareness. Internet banking was not fully trusted regarding security of personal information and the ability to complete a transaction without problems. Many people are adopting a wait-and-see attitude. If the current adopters do not experience problems, they will also try Internet banking. Awareness programmes of Internet banking were limited to advertisements and did not broadcast a wide range of products and benefits. Banks have a lot of work to do in dispelling the fears and making people aware of Internet banking. This will eventually benefit the banks as well. Banks have a huge opportunity to tap into.

These findings were consistent with previous studies done in Malaysia, Australia, and South Africa to name a few, which show that measures to address the low adoption rate are similar. There should be some similarities in the same target population in cities and towns with the same conditions as in Gaborone. Some differences will emerge if the same study is conducted with full representation of the whole country. The limitation of the study was that it was confined to university students and working class participants, who had a high degree of Internet access and formed the banked component of the society. It was also conducted only in Gaborone, so it cannot be generalised to the whole country, since the conditions may be different. In order for the study to be representative it needs to cover larger areas in the whole country. This therefore offers an opportunity for further study with full a representation sample of the whole country. Furthermore, studies can also be conducted on the rate of Internet adoption among groups according to age, income and social status.

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DOES GOODWILL IMPROVE FIRM PERFORMANCE? EVIDENCE FROM THE MENA REGION

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Abstract

As one of the main components of intangible assets appearing in the balance sheet, Goodwill has long been considered a as a driver of sustainable competitive business and corporate advantages. Yet, does goodwill really improve performance of firms in the MENA region? This paper documents the effect of goodwill on firm performance during the period between 2005 and 2015. The results of our analysis show that high level of goodwill has a positive impact on firm performance in large firms. Yet, at small firms, goodwill was not proved to improve performance. This can be explained by the fact that only good performing firms invest in goodwill while smaller firms simply struggle to generate tangible assets.

Keywords: Goodwill, Corporate Reputation, Firm Performance, Emerging Markets

1. INTRODUCTION

Researchers and practitioners have reached a general consensus that intangible assets play a vital role in the success and survival of firms in today's economy. In recent decades, focus has shifted from the traditional financial statements that focus on tangible assets into intangible assets like innovation, knowledge, intellectual property, and goodwill. In the United Kingdom, businesses in 2011 had a £137.5 billion investment in intangible assets (Goodridge et al., 2014).

Actually, there is no universally accepted definition of intangible assets. Still, there is a number of characteristics that most definitions have in common. Intangible assets are non-physical, potential sources of future economic gain. These sources are generally retainable and tradable. They include Research and Development, patents, trademarks, human resources and capabilities, organization competencies, relational" capital (customer and supplier networks, organizational design and process), and corporate reputation (sometimes referred to as goodwill) (OECD 2006)[6]. Another characteristic that differentiates intangibles from other assets is that most of them are not traded in an active and transparent market. When goodwill is traded for example, detailed information are usually not available to the public.

Several studies proved that intangible assets have a positive impact on firm performance and value. Rodov & Leliaert (2002) confirm these findings and explains this value gap by the fact that the assets reflected in companies financial statements are calculated less than the actual value of the company. These results were strengthened by Satt (2016), as cited by Gamayuni (2015), who proved, in his study of 3500 companies in the United States, that the current book value was only 28% of market value (in 1975 still 95%), and in the last 20 years there is a dramatic increase in the value of intangible assets. The significant gap between the book value of equity and the equity markets value, and the high intangible assets in recent years incited researchers to prove whether the intangible asset is a significant factor in increasing the value and performance of the company. Gamayuni (2015) provides empirical evidence that intangible assets have positive and significant influence on financial performance (ROA) and firm value.

Goodwill, sometimes referred to as corporate reputation, is one of the main components of intangible assets appearing in the balance sheet. For many years, the view that corporate reputation positively impacts firm performance has been documented. Reputation is an intangible asset increasingly seen as a driver of sustainable competitive business and corporate advantages (Roberts & Dowling, 2002; Mishra & Suar, 2010; Neville et al., 2005; Eberl & Schwaiger, 2005).

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[6] OECD, 2006.The Knowledge-based economy, OECD/GD (96)102

Goodwill is the reputation an organization enjoys based on the publics of that organization derived from information about the organization's relative position to other organizations in the industry. It can also arise out of consumers' experience with the company's products. Therefore, the value of goodwill can be inherited from an organization's past strategies.

2. LITERATURE REVIEW

Prior literature establishes a positive relationship between firm corporate reputation (goodwill) and its financial and equity market performance (Bennett & Kottasz, 2000; Helm, 2007; Bontis et al., 2000). Chung et al. (1999) focus on how a company's reputation influences the value of its stocks in the stock market. They found that firms with highly ranked corporate reputation outperform, on a total equity return basis, firms with lower reputation.

Again, Brammer & Pavelin (2004) demonstrate that investors make abnormal returns when purchasing stocks of firms whose reputation has risen significantly. Other studies suggest that a good corporate reputation lead companies to increase the prices of their products/services (Iwu-Egwuonwu, 2011). That is, organizations that have higher reputation put higher price tags on their products than would lower reputed organizations. This suggests that reputation or goodwill works as a signal for quality. In another study that analyzes how corporate reputation affect the pricing power in electronic markets. Ghose & Yang (2009) demonstrate that reputation not only helps corporate performance but also that a negative reputation hurts more than a positive one helps. The authors demonstrate that good corporate reputation substantially improves firm performance.

Goodwill is increasingly researched as sources of sustainable advantages. Researchers, consultants and practitioners are now active in the development of tools to measure the intangible brand equity such goodwill (reputation). Reputation may be seen as an output of different activities in the professions (Schwaiger, 2004). Though reputation is an intangible concept, a good reputation demonstrably increases corporate worth and provides sustained competitive advantage (Karim, 2006).

Tan (2007) affirms the empirical evidence that corporate reputation is positively correlated with superior earnings quality. He demonstrates that corporate reputation not only leads to superior earnings quality but also helps in producing superior total sales in Chinese public companies.

In this work, we tend to extend the above strand of literature by documenting whether the value of goodwill (corporate reputation) improves firm performance. Schwaiger (2004) notes that reputation is seen, in accounting, as a kind of goodwill. In this study, we measure corporate reputation by goodwill since it is measurable with a numeric value in the balance sheet. Goodwill is also used for other reasons as explained later in the following section.

Our study will be performed at a large scale, including listed companies from the MENA region. To the best of our knowledge, this is the first attempt to relate goodwill to firm performance in Morocco and the MENA region.

The remainder of the paper is organised as follows. Section 2 provides the theoretical framework and hypothesis development. Section 3 summarizes the data. Section 4 presents and discusses the empirical findings. Section 5 discusses implications of our findings and Section 6 concludes.

In our research paper, we tend to examine whether the value of goodwill (corporate reputation) improves firm performance. We focus on goodwill as a measure of corporate governance for many reasons. First, goodwill represents a significant amount on a company's balance sheet transmitting present and forward looking information relevant to a firm. Second, preceding literature suggests that goodwill data provide a useful perspective on the hard-to-measure going concern (reputational) value component of firm economic value (Chauvin & Hirschey 1993). Third, the goodwill has been shown to have information content and recognized goodwill to be value relevant (Al Jifri & Citron 2009). Finally, goodwill losses are considered as a leading indicator of a decline in future profitability (Bens et al. 2011; Satt 2015).

To test the findings of the literature above, we examine in this work whether the value of goodwill, as a measure of corporate reputation, positively affects firm performance. Hence, we test the following hypothesis:

H1: There is a positive relationship between goodwill and firm performance

3. DATA

3.1. Goodwill

This paper examines whether goodwill positively affect firm performance in the MENA region. We select Morocco, Jordan, Bahrain, Egypt, Kuwait, United Arab of Emirates, Saudi Arabia, and Qatar. We define goodwill by the value appearing in the balance of firms in the sample. The sample period is from 2005 to 2015. Panel A document descriptive statistics for each year, while Panel B and Panel C document similar statistics for each country and each industry respectively.

Panel A presents descriptive statistics for each year, while Panel B and Panel C presents similar statistics for each country and each industry respectively. Our results in Table 1, Panel A, show that goodwill gradually increased from 0.1998 in 2005 to 2.0981 in 2015. It shows gradual improvement in the value of goodwill in the MENA region. Furthermore, Table 1, Panel B, shows that firms headquartered in Qatar, Saudi Arabia, and United Arab Emirates have the highest level of goodwill in the region. We report average goodwill value of 2.9871 Qatar, 2.0987 in Saudi Arabia, and 3.7612 in United Arab Emirates. Table 1, Panel B, also reports that firms in Bahrain and Egypt have the lowest levels of goodwill in the region. The results in Table 1, Panel C, show that firms belonging to Telecommunication sector have the highest level of goodwill. It is intuitive because most of Telecommunication firms are large and very profitable firms in the region.

Table 1. Descriptive statistics for Goodwill

The following table documents the descriptive statistics for Goodwill in the MENA region, i.e. Morocco, Jordan, Bahrain, Egypt, Kuwait, United Arab of Emirates, Saudi Arabia, and Qatar. The sample period is from 2005 to 2015. Panel A document descriptive statistics for each year, while Panel B and Panel C document similar statistics for each country and each industry respectively.

Panel A: Levels of Goodwill in different years

Years	Average	Standard Deviation
2005	0.1998	0.8497
2006	0.2998	1.0966
2007	0.4911	1.1211
2008	1.0439	2.1206
2009	1.3901	2.6122
2010	1.2245	2.9981
2011	1.2899	3.1122
2012	1.8661	2.3321
2013	1.8801	3.0012
2014	1.9088	3.0998
2015	2.0981	3.1123

Panel B: Levels ofGoodwill in different countries

Countries	Average	Standard Deviation
Bahrain	0.4887	0.2230
Egypt	0.7871	1.2334
Jordan	0.8763	0.9272
Kuwait	1.9873	1.9951
Morocco	1.8977	1.2872
Qatar	2.9871	1.1100
Saudi Arabia	2.0987	0.2332
United Arab of Emirates	3.7612	2.9881

Panel C: Levels of Goodwill in different industries

Industry	Average	Standard Deviation
Oil and Gas	0.1651	0.9318
Basic Materials	0.9000	1.5111
Industrials	0.1810	1.6066
Consumer Goods	0.5601	0.9353
Healthcare	0.6000	0.8139
Consumer Services	0.5350	1.5351
Telecommunication	5.1600	5.6119
Utilities	1.6385	1.1816
Financials	0.1851	1.9611
Technology	1.1538	3.1904

3.2. Firm Performance

This paper measures firm performance by market-adjusted returns (RET). We define RET as the difference between stock returns and market returns. Stock prices and market index are obtained from the Datastream. The stock price data and the market index data was obtained for the first and the last day of a given year to compute RET.

3.3. Control Variables

This paper uses the following firm-specific characteristics as control variables. The data for control variables is obtained from the Worldscope.
- **EVA**: The economic value added (EVA) measures the firm's performance from an accounting perspestive. Data of the sample are obtained from the Datastream.

EVA is the surplus left after making an appropriate charge for the capital employed in the business. It was calculated in the following way.

$$EVA = NOPAT - (TCE \times WACC)$$

Where:

NOPAT = Net operating profit after tax
TCE = Total capital employed
WACC= Weighted average cost of capital

Actually, many organizations use profit-based measures as the primary measure of their financial performance. This measure might raise two main problems related to profit (Sharma & Kumar, 2011). First, profit ignores the cost of equity capital. Companies only generate wealth when they generate a return in excess of the return required by providers of capital (equity and debt). Accountants

take into account the cost of debt, but ignore the cost of equity. Second, Profits calculated in accordance with accounting standards do not truly reflect the wealth that has been created, and are subject to manipulation by accountants. The Economic Value Added is a performance measurement system that aims to overcome these weaknesses. The use of the EVA as a controlling variable of firm performance has also been supported by many other studies. Lovata & Costigan (2002) demonstrate that the EVA helps in reducing Agency conflict and improve decision making. Maditinos et al. (2006) convey that EVA is more strongly associated with stock return than other measures. Finally, Erasmus (2008) demonstrates that EVA adds more informational content in explaining stock returns.

- **SIZE:** We measure size by log of market capitalization. Literature suggests that large firms have lower agency problems due to increased interest from stock market participants. Lower agency problems should lead to better performance of large firms (Fang et al., 2009). Additionally, Bhattacharyya and Saxena (2009) demonstrate that larger firms have better bargaining power over their suppliers and competitors, which leads to a better performance.

- **LEVERAGE:** We measure leverage by total debt to total asset ratio. High leverage exposes firms to greater financial risk and therefore to lower performance (Mitton, 2002).

- **GROWTH:** This paper measures GROWTH by growth in earnings per share. Jegadeesh and Livnat (2006) argue that firms with higher growth have better performance.

- **PoR:** It is defined as percentage of earnings paid as dividends. Prior literature shows that dividends are considered as a tool to reduce information asymmetries (Jensen, 1976; La Porta et al., 2000).

- **VOLATILITY:** It is the measure of a stock's average annual price movement to a high and low from a mean price for each year. We expect firms with high volatility to exhibit low stock price performance.

Table 2 documents the statistics for our control variables during our sample period. Panel A documents the descriptive statistics for control variables used in our analysis and Panel B documents the correlation between different control variables. As is expected, Table 2, Panel A, shows that firms in the MENA region pay low fraction of their earnings as dividends. Our results show that the PoR is 40.4313 % for our sample firms compared to 80% in developed countries. Table 2, Panel A, also shows that firms in the MENA region have very low leverage. This observation is consistent with prior literature that shows that firms in the MENA region rely on their retained earnings for their long-term financial needs (Achy, 2009). Furthermore, Table 2, Panel B, shows low correlation between our control variables, which allow us to include these variables in our regression analysis.

Table 2. Statistics for control variables

The following table documents the statistics for control variables used in regression. The sample comprise of firms from Morocco, Jordan, Bahrain, Egypt, Kuwait, United Arab of Emirates, Saudi Arabia, and Qatar. The period of analysis is from 2005 to 2015. Panel A document descriptive statistics for control variables, while Panel B document correlation between different control variables.

Panel A: Descriptive statistics for standardized Mean, Median and Standard deviation

	Mean	Median	Standard Deviation
EVA	3.2105	0.1344	13.3025
SIZE	3.4643	9.4533	4.4454
LEVERAGE	14.3542	14.3342	14.3584
VOLATILITY	20.3121	45.5361	11.7444
PoR	40.4313	31.1022	45.2361
GROWTH	10.1245	4.7141	55.2347

Panel B: Correlation matrix

	EVA	SIZE	LEVERAGE	VOLATILITY	PoR	GROWTH
EVA	1.0000					
SIZE	0.4445	1.0000				
LEVERAGE	-0.0443	-0.0063	1.0000			
VOLATILITY	-0.3254	0.4442	0.0345	1.0000		
PoR	0.3426	0.0214	-0.0706	-0.3612	1.0000	
GROWTH	-0.0340	-0.0432	0.0074	-0.0643	-0.3240	1.0000

4. METHODOLOGY

This paper aims to document the effect of goodwill on firm performance in the MENA region. In order to test this hypothesis, we estimate a regression equation with market-adjusted returns (RET) as a dependent variable and two variables representing goodwill (GOODWILL) and square of goodwill (GOODWILL * GOODWILL) as independent variables. Goodwill was squared after performing "RAMSEY RESET" Test in order to make sure that the relationship between Goodwill and performance is a linear one. Furthermore, as mentioned above, we include a number of control variables in our regression equation. These variables are Economic Added value (EVA), log of market capitalization

(SIZE), total debt to total asset ratio (LEVERAGE), stock price volatility (VOLATILITY), dividend payout ratio (PoR), growth in earnings per share (GROWTH), and year dummies (YDUM). Our basic regression takes the following form. We need to mention here that we used panel data regression with fixed effects for our analysis. We used Hausman test to distinguish between fixed effect and random effects.

$$
\begin{aligned}
\text{RET} = &\ \alpha + \beta_1(\text{GOODWILL}) + \beta_2(\text{GOODWILL} * \text{GOODWILL}) \\
&+ \beta_3(\text{EVA}) + \beta_4(\text{SIZE}) + \beta_5(\text{LEVERAGE}) + \beta_6(\text{VOLATILITY}) \quad (1) \\
&+ \beta_7(\text{PoR}) + \beta_8(\text{GROWTH}) + \sum_{\text{Yr}} \beta^{\text{Yr}}(\text{YDUM}) + \varepsilon
\end{aligned}
$$

The results of our analysis are reported in Table 3. Our results show that goodwill improves firm performance only at high levels. We report significant and positive coefficient of GOODWILL*GOODWILL. However, for GOODWILL, the coefficient was surprisingly negative and significant, which was against our expectations. As expected, the EVA, which was used as an accounting firm performance measure, had a positive and significant coefficient, as expected. VOLATILITY, Por, and GROWTH had average significance; given an R^2 of 52%.

Table 3. Effect of Goodwill on firm performance

The following table documents the effect of Goodwill on firm performance in the MENA region (Morocco, Jordan, Bahrain, Egypt, Kuwait, United Arab of Emirates, Saudi Arabia, and Qatar.). The period of analysis is from 2005 to 2015. The panel data regression with fixed effects is performed using Equation (1). The coefficients with 1% significance are followed by ***, coefficient with 5% by **, and coefficients with 10% by *.

	Equation (1)
Goodwill	-0.0083***
Goodwill*Goodwill	0.0045***
EVA	0.0233***
SIZE	0.9873***
LEVERAGE	0.0022
VOLATILITY	-0.0387**
PoR	0.03443**
GROWTH	0.0322**
Year Dummies	Yes
No. of Observations	432
F-Value	23.11
R^2 within	0.5211

We re-estimate Equation (1) for different sub-samples. Results of our analysis are shown in Table 4.

We report that our results hold true in both civil law and common law countries, keeping in mind that the majority of our sample observations belong to the common low. Therefore, segregating our sample by legal traditions didn't bring up new conclusions. However, for the size and leverage, firms with high leverage and large size had demonstrated a positive coefficient for GOODWILL*GOODWILL and a negative one for GOODWILL at a significant level. On the other hand, low leverage and small size firms didn't bring up any new conclusions.

Both of these groups have lower information asymmetries. Larger firms enjoy high levels of Goodwill. Our results are aligned with the results of Dharan (1996). This former had performed a study about US listed companies where he was able to demonstrate that firms with highest total assets value have the highest Goodwill-to-assets ratio. Regarding leverage, the same conclusions can be drawn for firms with high debt, where GOODWILL coefficient is negative and significant while GOODWILL*GOODWILL coefficient is positive and significant. R^2 ranged 32% and 62%. Goodwill is more value relevant in sub-samples of firms with low information asymmetries (high leverage and large size) while it is not at all significant nor relevant in firm with high levels of information asymmetries (low leverage and small size).

Table 4. Effect of Goodwill on firm performance in different sub-samples

The following table documents the effect of Goodwill on firm performance in different sub-samples (Large/Small, High Leverage/Low Leverage, Common Law/Civil Law). The sample comprise of firms from the MENA region (Morocco, Jordan, Bahrain, Egypt, Kuwait, United Arab of Emirates, Saudi Arabia, and Qatar.). The period of analysis is from 2005 to 2015. The panel data regression with fixed effects is performed using Equation (1). The coefficients with 1% significance are followed by ***, coefficient with 5% by **, and coefficients with 10% by *.

	Size		Leverage		Legal Traditions	
	Large	**Small**	**High**	**Low**	**Common Law**	**Civil Law**
Goodwill	-0.0584***	-0.0733	-0.1037***	-0.0436	-0.0342*	-0.0945*
Goodwill*Goodwill	0.0073***	-0.0384	0.0071***	0.0060*	0.0072**	0.0034**
EVA	-0.0168**	0.3197***	0.0310*	0.0377***	0.0630***	0.0076***
SIZE	0.819**	0.3323**	0.7435***	0.8241***	2.1738***	0.7937***
LEVERAGE	0.0039**	-0.0047*	0.0032*	-0.0039*	0.01730*	0.0072*
VOLATILITY	-0.0331***	-0.0279***	-0.0343	-0.0384***	-0.0493***	0.0078*
PoR	0.0073**	-0.0004*	0.0018**	0.0034**	0.0034**	0.0034*
GROWTH	0.0049**	0.0031***	0.0072***	0.0015**	0.0027**	0.0030***
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
No. of Observations	275	157	255	177	312	120
F-Value	33.10	29.71	37.33	17.74	34.80	17.37
R² within	0.4435	0.3472	0.4308	0.4454	0.6238	0.3218

5. DISCUSSION OF RESULTS

Our results show that high level of goodwill has a positive impact on firm performance. We argue that high level of goodwill are translated into firms with high levels of performance, only good performing firms invest in goodwill while small merely struggle to generate tangible assets.

In order to test our assumption, we introduce two more variables in Equation (1). These variables represent interaction between goodwill and economic added value (GOODWILL*GOODWILL) and interaction between square of goodwill and economic added value (GOODWILL*GOODWILL*EVA). Our modified equation takes the following form:

$$RET = \alpha + \beta_1(GOODWILL) + \beta_2(GOODWILL*GOODWILL) + \beta_3(EVA) + \beta_4(GOODWILL*EVA) + \beta_5(GOODWILL*GOODWILL*EVA)$$
$$+ \beta_6(SIZE) + \beta_7(LEVERAGE) + \beta_8(VOLATILITY) + \beta_9(PoR) + \beta_{10}(GROWTH) + \sum_{Yr}\beta^{Yr}(YDUM) + \varepsilon \qquad (2)$$

The results of our analysis are reported in Table 5. As expected, our results are aligned with our previous conclusions at a more prominent level. GOODWILL coefficient was still negative but insignificant. However, GOODWILL*EVA coefficient turns to be positive. Concerning GOODWILL*GOODWILL coefficient, it is still positive as expected but at less significance compared to GOODWILL*GOODWILL*EVA coefficient. Introducing EVA to our goodwill variables in order to capture the interaction in between had only strengthened our conclusions and made them more robust.

Table 5. Effect of Goodwill on informativeness of earnings

The following table documents the effect of Goodwill on informativeness of earnings in the MENA region (Morocco, Jordan, Bahrain, Egypt, Kuwait, United Arab of Emirates, Saudi Arabia, and Qatar).The period of analysis is from 2005 to 2015.

The panel data regression with fixed effects is performed using Equation (2). The coefficients with 1% significance are followed by ***, coefficient with 5% by **, and coefficients with 10% by *.

	Equation (2)
Goodwill	-0.3897
Goodwill*Goodwill	0.0044**
EVA	1.4400*
Goodwill*EVA	0.9831*
Goodwill*Goodwill*EVA	0.0033***
SIZE	0.9842***
LEVERAGE	0.0034
VOLATILITY	-0.4400**
PoR	0.0044**
GROWTH	0.0090***
Year Dummies	Yes
No. of Observations	432
F-Value	30.33
R² within	0.6527

6. CONCLUSION

Though goodwill is an intangible asset, it has been demonstrated to increase corporate worth and to provide sustained competitive advantage (Tan, 2007).

This research paper documents the impact of goodwill on firm performance in the MENA region during the period between 2005 and 2015.

The results of our analysis show that high level of goodwill has a positive impact on large firms' performance. We demonstrate that high levels of goodwill are translated into high levels of performance. Yet, at small firms, goodwill was not proved to impact performance. This can be explained by the fact that only good performing firms invest in goodwill while smaller firms simply struggle to generate tangible assets. We also show that our results hold across different sub-samples characterized by different characteristics. For instance, our results are qualitatively the same in both civil law and common law countries, keeping in mind that the majority of our sample observations belong to the common low. Therefore, segregating our sample by legal traditions didn't bring up new conclusions. However, for the size and leverage, firms with high leverage and large size had demonstrated a significant impact only at high levels of goodwill. On the other hand, low leverage and small size firms didn't bring up any new conclusions. We introduced the economic added value (EVA) to our goodwill variables in order to strengthen our previous conclusions. The results show similar conclusions and made them more robust.

7. LIMITATIONS

Definition of goodwill was one of our main limitations; we didn't want to get into the accounting specifications of goodwill. Different accounting systems define goodwill differently; some would include research and development, others wouldn't; in our study we tried to focus purely on the amount of goodwill that is mentioned on the balance sheet, regardless of the components that were included under this account. Moreover, the availability of data was one of our main limitations, especially when discussing such a topic in MENA region.

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MANAGEMENT ACCOUNTING TECHNIQUES AND CORPORATE PERFORMANCE OF MANUFACTURING INDUSTRIES

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Abstract

This research is to investigate that some factors affect the new adoption in management accounting techniques on the Indonesia manufacturing industries, specifically in Jakarta, Bogor, Depok, Tangerang and Bekasi regions. The research can give a clearer portrait of how some factors can significantly affect the adoption of management accounting techniques. The research used some questioners which were sent to respondents who work in manufacturing industries as a middle level management. The methods are used to distribute the questioners to respondents were by door to door, by e-mail and by media telecommunication (what's app or close relationship) up to hundreds questioners. We obtained 45 respondents but we eliminated one respondent, because it is not suitable to the research requirements. The research model contains the two paths. The first path contains 7 variables that divided by six exogenous variables to affect one endogenous variable and the next path model is from the three variables, that are divided to the one mediating variable and the other one exogenous variables to affect one endogenous variable (like path modelling). The research result shows that high competition does not affect the new accounting adoption but the other five variables; cost system changing, technology changes, organization climate, consumer demand and size significantly affect the new accounting adoption. For the next path, the research finds that the new accounting adoption can significantly affect corporate performance and also corporate performance measurement perception.

Keywords: New Accounting Adoption, Exogenous Variables, Endogenous Variables and Management Accounting Practices

1. INTRODUCTION

A number of theories and practices in management accounting have been used to figure out the implementation of the theories and concepts of management accounting within an organization. For example, some studies have used a metamorphosis such as translation, imitation, and models to explain the process of change of new ideas among the members of a community system (Rovik, 1996). Wang, Heng, and Chau (2010) have been addressing several theories to explain the processing of the spread of an innovation or implementation of changes in an organization, namely: the theory of transaction cost economics, the stakeholder theory, the theory of organizational learning, the institutional theory, the theory of transaction costs, and the theory of social costs. In connection with this, the spread of innovation theory (Rogers, 2003) has been used to describe the process of change and implementation of the techniques/new practices in an organization. This theory states that a comprehensive coverage of contextual factors such as organizational strategy, organizational culture, organizational structure, the characteristics of innovation, communication channels, and environmental factors, and others can affect the spread of innovations in the organization (Adam & Fred, 2008; Al-Omiri & Drury, 2007a; Askarany 2006;

Askarany & Smith 2004, 2008; Askarany & Yazdifar 2009; Askarany & Yazdifar, 2012; Berling, 2008; Englund & Gerdin, 2008; Qian & Ben -Arieh 2008; Yazdifar & Askarany, 2012; Yazdifar, Askarany, Askary, & Daneshfar, 2005). Some problems of implementation from theories and the metamorphosis of some mentions have previously found some relationship between changes in management accounting or implementation and some contextual factors, but the findings were merely inconclusive, inconsistent, and a mixture of both (Al-Omiri & Drury, 2007a; Askarany & Yazdifar, 2012; Baird, 2007; Baird, Harrison, & Reeve, 2007; Cobb, Innes, & Mitchell, 1993; Innes & Mitchell, 1995; Innes, Mitchell, & Sinclair, 2000; Langfield-Smith, 1997; Pierce, 2004; Yazdifar & Askarany, 2012). Furthermore, from the perspective of the organization, there are factors that contribute to the innovative behavior in the organization and organizational decisions to continue with the changes that are so dynamic, but this is still in relative terms, inconclusive and inconsistent (Cho & Pucik, 2005).

The problem questions can be constructed that contains as below:
1. Do some factors influence corporations to adopt new management accounting techniques.
2. How do some factors significantly influence corporations to adopt new management accounting techniques.
3. Does the new management accounting techniques adoption significantly influence to corporate performance.

The above questions aim for the whole research purpose and it can provide the clear picture.

Consequently, that research questions attempts to find what some factors influence the new management accounting techniques adoption particularly, in manufacturing industries based on Indonesia circumstance. It also aims to provide a view of the new management accounting techniques adoption to influence corporate performance.

This paper is structured as follows; the first section is an introduction section. The next section indicates theoretical and literature review. significance of the research, followed by reviewing the literature which carried out in MAPs, research design, research methodology, research results, and finally the research conclusions.

2. THEORETICAL AND LITERATURE REVIEW

The research is planned to show that overall change on management accounting has been introduced and practiced over the last three decades (Al-Omiri & Drury, 2007b; Anderson & Young, 1999; Askarany 2003; Askarany, Smith, & Yazdifar, 2007a, 2007b; Askarany & Yazdifar 2007; Askarany, Yazdifar, & Askary, 2010; Baird, 2007; Gosselin, 1997; Langfield-Smith, 1997). Those researches have been done in Australia through some researches like the one by Chenhall and Langfield-Smith (1998) that has found that the level of adoption for the whole techniques and concepts in management accounting. With respect to the foregoing, the following rating on the rule level of adoption of some techniques in traditional management accounting was found: "financial budgeting and planning analysis (1),

capital budgeting (2), and a performance evaluation by using return on investment (3)". Similarly, some studies were published that relate to the spread of innovation management accounting in the UK and New Zealand and they found a similar picture (Abdel-Kader & Luther, 2006; Al-Omiri & Drury, 2007a; Askarany et al., 2010; Cotton, Jackman, & Brown, 2003; Yazdifar & Askarany, 2009).

This research is to observe and analyze what the factors are to management accounting change from a managerial angle by taking account of the critical role of leaders in change process (Cobb et al., 1995). Therefore, we aim to analyze the impact of drivers and barriers on the attitude of managers and their willingness to adopt sophisticated accounting methods. The theory of reasoned action suggests that a person's behavior is determined by his/her intention to perform a specific behavior and that this intention is, in turn, a function of his/her attitude towards that behavior and his/her subjective norm (Ajzen and Fishbein, 1980). The best predictor of actual behavior is intention. Intention is the cognitive representation of a person's readiness to perform a given behavior, and it is considered to be the immediate antecedent of behavior.

The individual's attitude towards management accounting change plays a major role in the analysis of the drivers of and barriers to change. Even if the attitude does not directly necessitate the outcome, it has great impact on the behavior of the individual during the decision making process (Ajzen, 1996). Therefore, a closer look at the antecedents of attitude is needed. Only if the antecedents of attitude are analyzed in greater detail is further research on the decision process from a behavioral perspective feasible in order to understand the final decision for/against management accounting change. We also find this approach in research into IS change: Nicolaou et al. (1995) use the respondent manager's intention to change a system as a dependent variable.

However, exception for some (eg, activity-based costing and the balanced scorecard) other management accounting changes and innovations have relatively received little publicity in the literature. Therefore, very unclear changes or other management accounting innovations are faced by the organization. Innovation of management accounting was in the past few decades, Björnenak and Olson (1999: 327) have identified the major costs which have recently been developed by techniques of management accounting (which have received practitioners' attention). These are as follows: (1) Standard Costing (SC), (2) Activity-based costing (ABC), (3) Activity management (AM) and activity-based management (ABM); (4) Balanced Scorecard (BSC); (5) Life cycle costing (LCC); (6) Target costing (TC).

Key performance indicators (KPIs) are resource accounting and budgeting (RAB), zero-based budgeting (ZBB), functional analysis or functional analysis, and resource management (Lapsley & Wright, 2004), in line with the technique mentioned above. Chenhall and Euske (2007) refer several innovations of management accounting as the most under management control system as follows: activity-cost-management, target costing, life cycle

costing, quality costing and management innovation performance such as economic value added (EVA), shareholder value analysis (SVA), the value based management (VBM), and balanced score card (BSC). There is no universal consensus regarding to which technique is the latest innovation management accounting (Cadez & guilding, 2008). Some researchers argue that some management accounting techniques drawn from other disciplines such as engineering and economics (Miller, 1998; Miller, Kurunmäkii, & O'Leary, 2008). According to Miller et al. (2008), practices such as standard costing, discounted cash flow (DCF), the difference between fixed and variable costs, break-even analysis, and others are drawn from disciplines other than accounting and later adapted and formed as the core of accounting. However, with no regard to the authenticity of which is drawn from the techniques of management accounting, according Chenhall and Langfield-Smith (1998), a most popular technique was recently developed which has received great attention by the Australian practitioners and can be described as follows: ABC; ABM; BSC; benchmarking; SMA; and TC.

3. RESEARCH METHODS

3.1. Population and Sample

This research seeks to describe and illustrate the fact that actually occurred in the implementation of the theories and concepts of management accounting as well as its development and changes. This research method is a descriptive and causal relationship research by using primary data through direct observation to a sample location in the study. The study population is manufacturing firms located in Jakarta, Bogor, Depok, Tangerang and Bekasi. The method of sample selection is convenience categorization by industry, type of company, corporate size, and region of residence.

3.2. Research Variables

The research objects observed are the theory, concepts and techniques of management accounting that have been practiced by corporates. The dependent variable (endogenous variable) of this study is - New Adoption Management Accounting Techniques, while the independent variables (exogenous variables) of this study are: Organization Size, High Competition, Changing System Cost, Technology Change, Climate Organization and Consumer Demand. This model is for the first path. The next path (Second Path) is to test for the two variables like new adoption management accounting techniques and corporate performance perceived as exogenous variables (independent variables) relate to the one variable like corporate performance (stock price) as a endogenous variable. The first stage is to use survey method through the deployment of a number of questionnaires given and sent to manufacturing companies in every region of the Greater Jakarta.

3.3. Data Collection Techniques

The first phase of this research was conducted by some survey and distributing questionnaires to several manufacturing corporates in the Depok area. This is to aim for knowing factually on the implementation of management accounting techniques and concepts, as well as this research is to test the level of implementation and adoption the management accounting techniques applied in Indonesia, specially located in Jakarta, Bogor, Depok, Tangerang and Bekasi.

The Respondents were asked to identify the targeted level of implementation of management accounting techniques that divided to the six most widely in the organization as follows: SC; ABC; ABM; BSC; LCC; and TC. In an open question, respondents were asked to inform management accounting techniques which were adopted, but it is not contained in the questionnaire or introduced concepts and theories in the organization (company).

By replicating Booth and Giacobbe (1998), the way in which the questionnaire was designed to search for information about the level of implementation of the change or innovation management accounting techniques, which are as follow:
• No introduction or discussion in the management of the company regarding the use of techniques that are innovative management accounting (with a weighting of 1);
• A decision had been taken not to introduce innovation management accounting techniques (with a weighting of 2);
• Some consideration has been given to the introduction of innovation (with a weighting of 3);
• Innovation management accounting techniques have been introduced on a trial basis (with a weighting of 4);
• Innovations have been implemented and accepted (with a weight of 5).

Referring to the above scale, respondents who have been selected are asked to identify the level of implementation of the six changes or management accounting techniques following inside the organization (company): SC; A B C; ABM; BSC; LCC; and TC. In an open question, respondents were also asked to list any other management accounting techniques that have been implemented, discussed or introduced in the organization (company). The questionnaire includes two open-ended questions seeking more information about the major strengths and weaknesses of management accounting techniques that have been implemented as contextual factors that influence the manager's decision to implement (or not) management accounting changes in the organization (company).

The trial of the instrument was originally done with a group of university academics, managers and management accountants. Before the survey instrument has been submitted through the google form to the organizations that are being investigated, the validity of the content has been resolved by asking a group of faculty of management accounting and graduate students with an experience that is adequate to review the instruments for clarity and purpose and to improve the design and focus on the content from the contents of the question. Modifications have been developed and made as deemed necessary to help motivate the respondent to answer all questions the contents better.

3.4. Research Hypothesis

The hypotheses are as follows:

Hypothesis 1: states organization size factor (OS) to affect the adoption of new management accounting technique (NAMA).

Hypothesis 2: states high competition factor (HC) to affect the adoption of new management accounting technique (NAMA).

Hypothesis 3: states cost system changing factor (CSC) to affect the adoption of new management accounting technique (NAMA).

Hypothesis 4: states a technology change factor (TC) to affect the adoption of new management accounting technique (NAMA).

Hypothesis 5: state organization climate (OC) to affect the adoption of new management accounting technique (NAMA).

Hypothesis 6: states consumer demand factor (CD) to affect the adoption of new management accounting technique (NAMA).

Hypothesis 7: states the adoption of new management accounting technique (NAMA) to affect corporate performance (PKOBP).
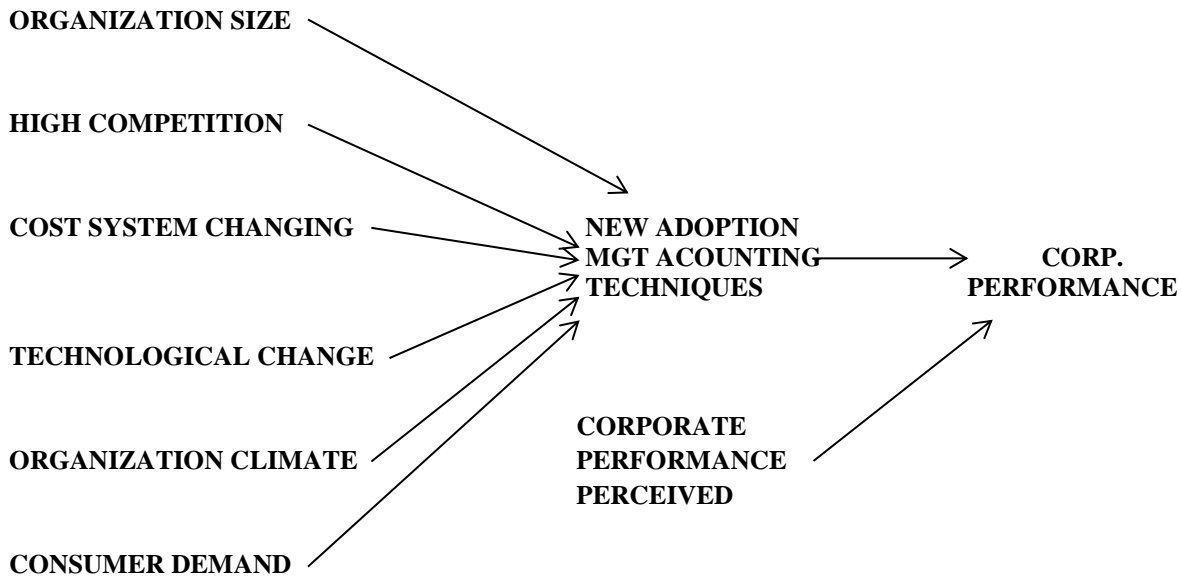
Hypothesis 8: states the perception of importance Corporate Performance Measurement (PPKP)

Changes affect Organizational Performance Compared to Competitors (PKOBP).

3.5. Research Model

Research model can be depicted for as follow:

Figure 1. Research model

Note: Research flow is from the previous articles : Booth and Giacobbe (1997), Van Nuyen and Brooke (1997), Abdel-Kader & Luther (2008), Narong, (2009), Fei and Isa(2010b), O'Regan and al. (2005), O'Regan P, Kennedy T, O'Donnell D, Bontis N, Cleary P (2005).

The above picture is to describe research models that can be divided by :

- First path model is to describe that there are six factors (exogenous variables); high competition (HC), technology change (TC), consumer demand (CD), organization size (OS), cost system changing CSC), organization climate (OC) affect to new adoption management accounting techniques.

- Second path model is to describe that there are two factors (exogenous variables); new adoption management accounting techniques and corporate performance perceived (PPKP) to affect corporate performance.

4.RESULTS AND ANALYSIS

4.1. Respondent Characteristic

The firstly, several industrial areas are visited by us to spread the questionnaires, but unfortunately we can't get through directly to right respondents in their office or manufactures. This is because our research team does not have close relationship to personnel in the industrial area were able to answer this questionnaire. Moreover, the questionnaires have some difficulties in terminology. Therefore, there are many questionnaires which did not respond and delivered our team. Finally, the research questionnaires were sent via google form and we hope students respond well. Questionnaire is distributed via google form to maintain the confidentiality of respondents as many as 1,101 companies and as many as 513 undelivered remember the email address has changed, so it sent 588, but so many who do not respond so that 544 questionnaires filled only 44. The 44 samples is returned those questionnaires which can be described the characteristics of respondents based on the field work and long work in table 5.1 below.

Table 1. Job Field dan Respondent Work Life

Job Field	The # of Responden	Precentage (%)
Auditor	1	2,27%
Accountant	27	61,36%
Director	1	2,27%
Entrepreneur	1	2,27%
Finance dept.	1	2,27%
Inventory Dept.	1	2,27%
Purchasing	1	2,27%
Personnel Dept.	2	4,55%
Production Dept.	6	13,64%
Marketing dept.	2	4,55%
Unidentified	1	2,27%
Total	**44**	**100%**
Work Life		
Less than 5 years	23	52,27%
5 s/d 10 years	11	25%
More than 10 tahun	9	20,45%
Unidentified	1	2,27%
Total	**44**	**100%**

The other side that we can depict based on corporate characteristic into industry classification, corporate type, the number of workers, corporate size and corporate location for as below:

Tabel 2. Corporate Characteristics

Industry Classification	# Respondents	Precentage (%)
Bata & Semen	1	2,27%
Consumer Financing	1	2,27%
Consumer Health Care	1	2,27%
Customized Machinery	1	2,27%
Medical and Medicines Firms	3	6,82%
Woods and Processing	3	6,82%
Chemistry	3	6,82%
Consultant	1	2,27%
Foods and Beverages	8	18,18%
Otomotive, Components and Spare Parts	5	11,36%
Foods for Pakan Ternak	1	2,27%
Home equiptment and Tools	3	6,82%
Plastics & Packaging	6	13,64%
Pulps & Papers	1	2,27%
Cements	2	4,55%
Garments and Textiles	2	4,55%
No Answer	2	4,55%
Total	**44**	**100%**
Corporate Type		
Foreign	5	11,36%
Joint Corporation Foreign and Local	6	13,64%
Local	32	72,73%
No Answer	1	2,27%
Total	**44**	**100%**
Corporate industry		
Labor Intensive	19	43,18%
Capital intensive	21	47,72%
No Answer	4	9,09%
Total	**44**	**100%**
The # of Labors		
≤ 150 Labors	17	38,64%
151-1.000 Labors	14	31,82%
≥ 1.000 Labors	12	27,27%
No Answer	1	2,27%
Total	**44**	**100%**
Size		
Small	11	25%
Medium	21	47,72%
Large	11	25%
No Answer	1	2,27%
Total	**44**	**100%**
Location		
Jakarta	26	59,09%
Bogor	2	4,55%
Depok	0	0
Tangerang	9	20,45%
Bekasi	1	2,27%
Others	5	11,36%
No Answer	1	2,27%
Total	**44**	**100%**

Table 3 is to present the details description from Respondent Answers to The New Adoption Management Accounting Techniques, this details are from the whole questioners that returned to our team. The details can be viewed for as below:

Table 3. Respondent Answer related to New Adoption Management Accounting Techniques

	Score 1	Score 2	Score 3	Score 4	Score 5	No Answer	Total
SC	7	1	4	10	21	1	44
ABC	12	4	6	8	11	3	44
ABM	12	3	8	4	12	5	44
BSC	13	3	6	8	10	4	44
LCC	13	1	9	8	8	5	44
TC	7	1	9	8	14	5	44
Other: *Just In Time*							

The above table 3 can be analyzed that column for *score* 5 indicate management accounting techniques practiced based on ranking that in sequential from upper to lower level like : Standard Costing (SC)(21), Target Costing (TC) (14) , Activity Based Management (ABM) (12), Activity Based Costing (ABC)(11) , Balance Scorecard (BSC)(10) ,and for the last is Life Cycle Costing (LCC) (8). This table is to sequence from score 1 which indicate the contrary from score 5 as follow: Balance Scorecard (BSC)(13) ,and for the last is Life Cycle Costing (LCC) (13,). Activity Based Management (ABM) (12), Activity Based Costing (ABC)(12), Standard Costing (SC)(7), Target Costing (TC) (7).Based on this result, this table can be described that the whole respondents have specified characterization a vice versa between the most and the less management accounting practiced..

4.2. Reliability and Validity Indicators for Latent Variable (Exogenous Variables)

The model testing require to fulfill some qualification like reliability and validity indicators In order to achieve the perfect condition for research result. The testing result for validity and reliability indicators such as table 4 below:

Table 4. Composite reliability coefficients

HC	CSC	TC	OC	CD	SIZE
0.922	0.952	0.939	0.929	0.909	0.935

Table 4 can be viewed for the whole latent variables (Exogenous variables) have composite reliability coefficients more than 0.6. It means that the whole latent variables like : HC, CSC, TC, OC, CD and Size to fulfill internal consistency measurement.

The other testing for reliability can be obtained by knowing the Cronbach alpha and the result as below from table 5:

Table 5. Cronbach's alpha coefficients

HC	CSC	TC	OC	CD	SIZE
0.898	0.946	0.928	0.912	0.882	0.860

Table 5 indicate Cronbach alpha for the whole latent variables are more than 0.6. It means the entire latent variables (exogenous variables) have fulfilled reliability requirement.

On table 5, the result is for average variances extracted (AVE) that aim to test for convergence validity. Table 6 can viewed for as below:

Table 6. Average variances extracted (AVE)

HC	CSC	TC	OC	CD	SIZE
0.664	0.573	0.588	0.597	0.562	0.877

The above table indicates AVE values for the entire latent variables are more than 0.5. This result means the entire variables can be as indicators for at any block.

4.3. Structural Model Testing

On structural model testing stage, the research has to fulfill the specified requirements that are under specific circumstance like this research has only 44 respondents. Because of this, the research has to use specific method to run the data by using partial least square method (small sample). For those sample, partial least square can be used to test a structural model through the R-square value for one endogenous variable in this model (Nama as new adoption management accounting techniques) (first path) that connect to six variables exogenous variables (HC, CSC, TC, OC, CD Size also as latent variables). Beta (regression) coefficient of any exogenous variables (latent variables) can indicate that variable has a significant connection to the one endogenous variable (new adoption management accounting techniques). At this stage the significance value can also be determined by the p-value of each relationship between each of the exogenous variables (latent variables) with an endogenous variable, as shown in Figure for the next page:

Figure 1. Research model of testing result presentation
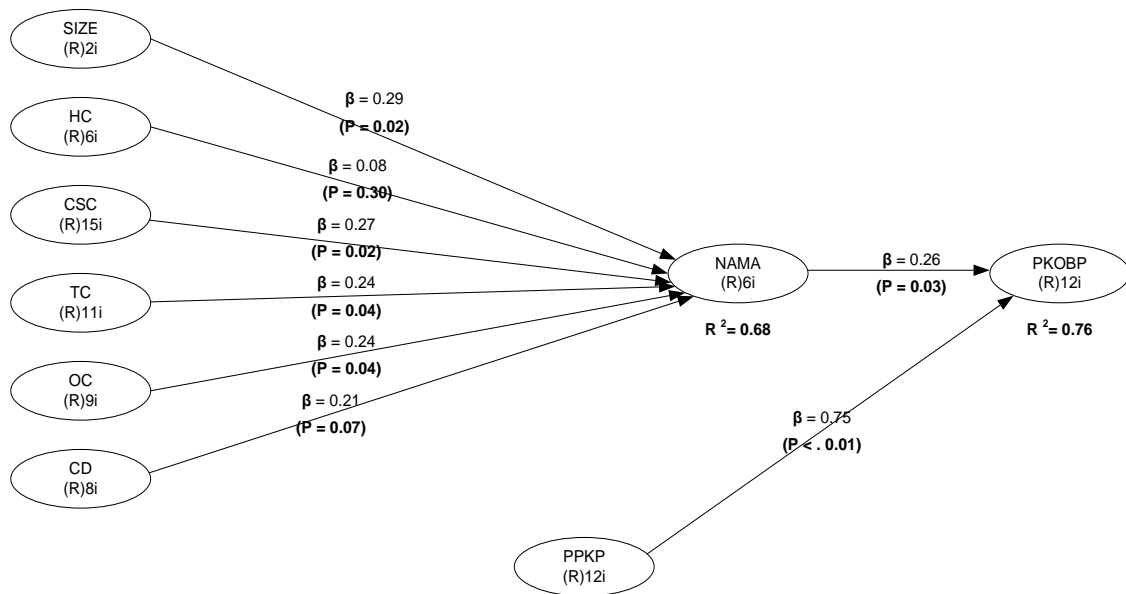
On the above figure, the figure indicates the testing result from every exogenous variables (Size, HC, CSC,, TC, OC and CD) (Latent variables) affect to endogenous variable (NAMA) (New adoption management accounting techniques) for as below:

1. Organization size (SIZE) (Latent variable or exogenous variable) significantly affect to new adoption management accounting techniques (NAMA) as an endogenous variable). Because the result is for beta coefficient 0.29 with p-value 0.02 indicate the p-value is less than 0.1.

2. High competitiveness (HC) (Latent variable or exogenous variable) does not significantly affect to new adoption management accounting techniques (NAMA) as an endogenous variable). Because the result is for beta coefficient 0.08 with p-value 0.30 indicate the p-value is more than 0.1.

3. Cost system changing (CSC) (Latent variable or exogenous variable) significantly affect to new adoption management accounting techniques (NAMA) as an endogenous variable). This result is because the beta coefficient 0.27 with p-value 0.02 indicates less than 0.1.

4. Technology change (TC) (Latent variable or exogenous variable) significantly affect to new adoption management accounting techniques (NAMA) as an endogenous variable). This result is because the beta coefficient 0.24 with p-value 0.04 indicates less than 0.1.

5. Organization Climate (OC) (Latent variable or exogenous variable) significantly affect to new adoption management accounting techniques (NAMA) as an endogenous variable). This result is because the beta coefficient 0.24 with p-value 0.04 indicates less than 0.1.

6. Consumer demand (CD) (Latent variable or exogenous variable) significantly affect to new adoption management accounting techniques (NAMA) as an endogenous variable). This result is because the beta coefficient 0.21 with p-value 0.07 indicates less than 0.1.

7. New adoption management accounting techniques (NAMA) (Latent variable or exogenous variable) significantly affect to corporate performance (PKOBP) as an endogenous variable). This result is because the beta coefficient 0.26 with p-value 0.03 indicates less than 0.1.

8. Perception of corporate performance measurements (PPKP) (Latent variable or exogenous variable) significantly affect to corporate performance (PKOBP) as an endogenous variable). This result is because the beta coefficient 0.75 with p-value less 0.01 indicates less than 0.1.

Sequentially, from number 1 up to 6 is the first path (stage) that performs the influence of the factors that have been stated Size, HC, CSC, TC, OC and CD as exogenous variables (latent variables) to new adoption management accounting techniques as an endogenous variable. On the next path (stage), the path shows the influence of new adoption management accounting techniques and the perception of corporate performance measurement as two exogenous variables (both as latent variables) that affect the corporate performance as an endogenous variable. The result has indicated that the two latent variables significantly affect to corporate performance.

5.CONCLUSION, CONSTRAINT AND FUTURE RESEARCH

5.1. Conclusion and Constraint

This research has explored a model of factors to affect new adoption of management accounting techniques using Partial Least Square (PLS) approach. This approach found that coefficient determination for the first path model is 68 %. The meaning is those factors like; Organization Size, HC, CSC, TC, OC and CD influence is around 68% to new adoption of management accounting techniques from research samples. The remaining is 32% from the other factors to affect this variable (new adoption of management accounting concepts).

For the second path, this research found coefficient determination is 76%. This means the perception of corporate performance and new

adoption of management accounting techniques to affect corporate performance are 76%. The remaining is 24% from the other factors to affect to corporate performance.

This result is to describe some factors can affect new adoption techniques, even one variable from high competition (HC) does not affect to new adoption of management accounting techniques. The meaning of this research is this research finds organization size, cost system change, technological change, organization climate and customer demand significant influence the new management accounting techniques adoption, but the whole independent variables (OS,CSC,TC,OC and CD) are not too strong to influence the dependent variable (NAMA) by looking to the table 7 that indicate beta coefficient for independent variable from the first

path model are **less than 0.5 (OS, HC, CSC, TC, OC, CD)**.

The new management accounting techniques adoption and the perception of corporate performance significant influence corporate performance. The two independent variables (NAMA and the perception of corporate performance) are strong by looking to the table 7 that indicate beta coefficient for independent variables from the second path model are **more than 0.5 (NAMA and the perception of corporate performance)**. Specifically, **NAMA** is really to aim to increase the capacity earning by it could be like some new mechanism in management reporting and decision quality.

The summary of research result is for as below:

Table 7. Summary of Research Result

Dependent and Independent Variables	New Mgt. Adoption β Coefficient	Acct. Tech. P Value	Corporate β oefficient	Performance P Value	R Square From the first path model	R Square From the second path model
Organization Size	0.29	0.02	--	--		
High Competitiveness	0.08	0.30	--	--		
Cost System Change	0.27	0.02	--	--		
Technological Change	0.24	0.04	--	--	0.68	
Organization Climate	0.24	0.04	--	--		
Consumer Demand	0.21	0.07	--	--		
New Mgt. Acct. Tech. Adoption	--	--	0.26	0.03		0.76
The Perception of Corp. Performance	--	--	0.75	0.01		

This research faces some constraint, for as below:

1. Knowledge of respondents does not match with the form questioners.

2. The form questioners are too long and high level language.

3. It is not easy to find respondents to fill this questioner like, lack time, busy time and some tight procedures.

4. This research sample is small only 44 respondents that can perfectly answer as reseracg requirements.

5. The research can only use specific statistical software to run small sample, PLS software.

5.2. Future Research

The research must simplify the form of questioners to make respondents to fill that questioner easily. This also aims to increase amount of respondents to participate in this research. We propose to include some variables and indicators in order to obtain perfect model. If the research sample is big data, therefore we can use the right software and get a best result to generalize this finding or the research can accomplish new finding or new theory in this field research.

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