# Financial Institutions and Services

# Operational Diversification and Financial Performance of Sub-Saharan Africa Commercial Banks: Static and Dynamic Approach

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**Abstract:** Diversification is a key area in financial institution since their activities have gone beyond the traditional intermediary role. It is in this view that the study examines the effect of operational diversification on bank performance using the pooled, fixed, random and System GMM for the period 2006 to 2015 across 250 commercial banks from 30 countries in the region. Due to the robustness of SYS-GMM, the findings of this study reveal that using Herfindahl Hirschman index, all the dimensions of operational diversification; asset, liability, deposit and income including control variables such as bank size, liquidity, loan loss ratio, cost to income ratio and the lagged return on average asset (ROAA (L1)) are significant at 1% level with only deposit diversification (HHIde), liquidity (LOD) and cost to income ratio (CIR) which is a measure of banks' efficiency having negative relationship with ROAA. Therefore, this study concludes that diversification of operational activities in SSA commercial banks have direct and significant effect on their financial performances. But, greater attention should be taken to monitor the diversification strategy so as to ensure that no dimension of banks' activities is neglected.

**Keywords:** Herfindahl Hirschman Index; Structure Conduct Performance; operational diversification; System-GMM; Sub-Saharan Africa.

**JEL Codes**: G21; F39

## 1. Introduction

It has long been posited under the capital market theory that there is a trade off relationship between returns and risks in an entity and banking sector is not left out. The more an entity is willing to take up risk in its operations, the more returns are embedded there in. However, these risks are the market risk and the systematic risk that can't be easily diversified. Hence, following this trade off

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relationship, a well diversified bank is expected to yield higher financial returns on its fleets of investment than banks with little or no diversification.

Diversification has been a major research area for financial intermediaries in both developing and developed countries because banks' activities have gone beyond their traditional intermediary role they perform between the surplus and deficit unit of the economy but into different kinds of activities in the financial market and rendering other financial services. Following the postulations of the traditional theory of portfolio, diversification is a means of reducing risk of investment portfolio by reducing the level of risk exposure via increase in their risk appetite. Research on diversification in banking sector is required because of the conflicting predictions given by theoretical and empirical papers on the impact of greater banking activities diversity on their financial performance. Despite the fact that banks benefit from diversification in terms of economies of scale, it is a process that can also intensify agency problems (costs) due to the fact that managers (insiders) may expand the financial activities in the bank in as much the diversification process accords them private benefits from the institution. Even though operational diversification may ease information asymmetries and enhance the efficient allocation of resources via internal capital markets, banks may still be inefficient in the design of managerial incentive contracts by witnessing controversies in aligning process of outsiders and insiders (Rotemberg & Saloner, 1994). It is possible for managers to continue diversifying activities and hinder financial performance of the bank in as much their extra personal gains exceed the loss incurred or reduced performance.

However, for diversification to actually fulfill its expectations there must be adequate monitoring of all the activities diversified into. For banks to actually attain the ultimate goals of diversification in all dimensions, proper monitoring of the activities involved must be put in place. Reverse is the case of commercial banks in most of the SSA countries, instead of diversification to spur the performance of banks, it always results into crisis and they continue to struggle for solvency and survival despite the fact that they render more services than their traditional roles. Instead of diversification to minimize agency problem, the problem keeps compounding that most of the banks continue to merge and remerge. Could it be that the activities diversified into are not well managed or diversification has no significant effect on SSA banks' financial performance? It is impossible for commercial banks to beat down agency costs and maximize shareholders' wealth without spreading their tentacles through diversification means so as to enjoy economies of scale. Surprisingly, commercial banks still struggle for survival despite the level of their diversification of loans, deposits, assets and liabilities. It is certain that diversification of banking operations exposes the banks to diverse kinds of new risks and management team lacks the required expertise to control these risks effectively and efficiently. Also,

diversification may lead to conflict of interest between investors and the banks itself which thereafter post a negative effect on their financial performance (Berger & Ofek, 1996; Demsetz & Strahan, 1997). Conversely, despite all the demerits of diversification, findings of Landi and Venturelli (2001); Berger et al. (2010) to mention a few found out that banking sector tends to benefit more diversification in terms of stable and higher returns from assets; escape from unsystematic risk and enhancement of more efficiency in the bank.

Obviously, all these benefits have not manifested in SSA commercial banks as the key role of economies of scale in minimizing agency problems has not been evident in commercial banks globally (Goetz et al., 2013). Since the global financial crisis of 2009, the commercial banking system of most economies in the region have been transformed either by merger and absorption, this has led to the increase in size and only South African economy in the region, has developed banking institution while others still remain impoverished and underdeveloped (Mlachila et al., 2013).

The global financial crisis of 2007 to 2009 spelt out the need for banks to be more liquid, less levered, more transparent to shareholders in terms of dividend and less prone to excessive risk (Cohen, 2013). The above makes the banks' ability to widen their scope very important in order to be able to increase risk appetite and absorb the market risk incidence faced as a result of their activities. Viewing diversification from performance dimension, managers diversify in an attempt to improve performance or make excess profit that can be distributed to the dividend income-oriented shareholders in order to satisfy their urge for dividend. Jensen and Meckling (1976), however, noted that managers can because of their private benefits pursue diversification of firms' activities, hence agency (problem) cost. From the review of literature, there are studies on the impact of diversification on financial performance in developed economies but not many of them have been conducted in SSA. Efforts in this direction in SSA countries include Teimet et al. (2011); Amediku (2012); Senyo et al. (2015) to mention but a few, all investigating income diversification in relation to performance. Those studies, however, are noted to have certain shortcomings, namely the omission of some variables or important measures and dimensions of diversification in banks such as deposit, asset, loan and operational diversifications as a whole. Therefore, this study of operational diversification and financial performance of banks in Sub-Saharan Africa intends to narrow down the gap in the literature by vividly assessing assets, loans, deposits and liabilities diversification in banks which were seen by Mulwa et al. (2015) as the core dimensions of banks' operational diversification. This study is necessary to confirm if banks need to diversify across various activities or they should focus and specialize on their main role of rendering intermediary services. The effect of diversification in minimizing risk and maximizing returns in banking sector has been scanty in banking literature

focusing the countries in SSA but, this study is unique by considering a wider geographical scope (SSA region) and to the best of the researcher's knowledge; it is the first of its kind in SSA region because this lacuna necessitates further study on the subject matter, hence the current study.

Given the above introduction, the rest of this paper is structured as follows for logical presentation. The next section focuses on literature review, followed by the research design, methodology and model specification, followed by analysis of data, interpretation, discussion of analysis and implication of the findings. The next section concludes the paper and makes relevant recommendations while the last section suggests for further study on dividend policy to address the limitations of this present study.

## 2. Literature Review

### 2.1. Conceptual Review

### 2.1.1. Managerial Entrenchment and Diversification Strategies

Managerial entrenchment concept was developed by Shleifer and Vishny (1989). This concept describes the attitude of managers building up empire and making them irreplaceable or costly to replace for the shareholders. This entrenchment trait can only be detected by their choices of investment, contracts and the motive behind diversification initiated by them. Excessive growth in firms signals managerial entrenchment because managers have higher incentive to invest more such as higher wealth, fame or consumption of perquisites attributable to them from increased investment. This concept needs to be monitored because it creates costs to shareholders in terms of social inefficiency and expropriation of wealth from shareholders to managers via rent seeking.

Managers' motive behind diversification at times leads to poor financial performance even though other underlying industry conditions that render managers' effort useless might be the cause. It is pertinent to know that managerial entrenchment is a costly burden shareholders have to bear; hence diversification strategy might fail to create value to firms if not monitored. Simmilarly, the following mechanisms were suggested to solve the problem of managerial entrenchment in firms' diversification strategies; first, there must a knowledgeable board of director who can properly evaluate the new investment ideas or projects proposed by the managers so as to know if they are viable or otherwise. Secondly, right managers must be selected by the nominating committees of the board of directors and lastly, board of directors must choose to make managers' pay lucrative and also grant them voting control of the firm. By the effect of those three corporate governance strategies, the managers possess ownership stake in the firm which will overcome the pursuit of selfish interest by

the managers and eradicate the invaluable diversification strategies perpetrated by managerial entrenchment problems in the firm.

### 2.1.2. Managerial Hubris and Diversification Strategies

This concept was developed in the seminar paper of Roll (1986). This postulation of this concept is that managers diversify into so many activities with the intention to take over the firm. They achieve this selfish aim by over valuation of the firm so as to meet up with their own target valuation. According to Gaughan (2005), managers believe that their valuation is superior to the market's valuation because of pride. Generally, there are indicators of managerial hubris; viz, praise of the management team; excellent organisations success, managers' self-importance or overconfidence in the firm. All these indicators must be considered before institutionalising diversification strategies in the firm because mangers' rise in power and prestige will not aid value creation which is the ultimate goal of diversification. Thus, proper corporate governance must be put in place to ensure that the Chief Executive Officer (CEO) is not the chairman of the board of directors.

### 2.1.3. Operational Diversification Strategy

There are different administrative linkage mechanisms to respond to organisational changes at the entrance into new diversified activities. Generally, firms pursue diversification so as to explore the available investment opportunities by taking exploit of underutilised resources within the firm and take advantage of market imperfections so as to create new growth opportunities. Diversification strategy can be classified in terms of the degree of diversification (quantitative) and the type of diversification (qualitative). As noted by Datta et al. (1991), diversification degree refers to dispersion of firm's assets across various markets while the type of diversification simply means the active diversity across different businesses which could also mean operational diversification even though it might be related or unrelated. Commercial banking sector because of their peculiarities operates the related diversification where the activities involved offer more opportunities to share capabilities, assets and other relevant financial resources. Therefore, operational diversification in banks enhances banks to enjoy more economies of scope because the core dimensions of diversification of banking operations (asset, loan, income, deposit) are related.

The dimensions of operational diversification have empirical evidences from past research on diversification. For instance, Liang and Rhoades (1991) provide evidence that banks diversify their loan portfolios across diverse kinds of loans subsequent to their geographical diversification. Also, Saksonova and Solovjova (2011) aver that commercial banks can diversify not only their liability portfolio but also their deposits and investments. Another dimension is the asset diversification which is measured as the sum of squared of net earning assets, non

earning assets, liquid assets and fixed asset to total assets. It is the distribution of a bank's assets across the various categories of assets such as lending (liquid) assets, non-lending (fixed) assets and so on (Doumpos et al., 2013; Elsas et al., 2010).

## 2.2. Theoretical Review on Diversification

### 2.2.1. Market Power Theory

Diversification is one of the strategies to curb competition by enabling firms to increase market power because of the conglomeration of power from the diversified activities. Diversified firms build up market power to compete because of their stake in other markets in which their activities have been diversified into. The argument of market power theory originates from the study of Porter (1980) who used different strategies to distinguish a firm's position among the competitors. Market power theory posits that diversification propels higher profitability in firms because firms with market power can cross subsidize, that is; use the gain derived from one market to support marauding pricing of other markets; mutual and reciprocal buying and selling in such a way that potential competitors find it hard to enter the industry.

### 2.2.2. Resource Based View (RBV) Theory

This theory originates from the seminar paper of Penrose (1959) and advanced further by Rubin (1973). RBV theory is based on the assumption that firms attain sustainable competitive advantage by undertaking deliberate managerial efforts. This theory explains the resource-benefit a firm enjoys such that the firm resources can build barriers to ensure that resource holders are able to enjoy the competitive advantage in relation to other parties. The main postulation of this theory is that firms usually have productive resources that can be used to exploit productive opportunities that give room for growth. According to Contractor et al. (2003), firms derive benefits from sharing tangible resources, technology know-how, vertical integration, coordinated strategies and pooling together their negotiating power. By taking advantage of all these, the firms generate economies of scope and scale by increasing their efficiency in the continuous use of these resources. Conclusively, firms through diversification across many activities maximise the exploitation of their valuable resources and hence increase their financial performance, thus, this theory recommends diversification through resource building in entering new market which provides cost benefits to the firm.

## 3. Research Designs, Scope, Data Description and its Sources

This study falls under the positivism paradigm and the approach adopted is deductive. It falls under this paradigm because it is a pure quantitative study. 250 commercial banks with up-to-date data available on dividend policy in Bloomberg

and Bank Scope database are used for this study for the period covering 2006 to 2015. The 250 banks are selected using proportionate stratified simple random sampling techniques from 30 SSA countries with similar economic nature and banking characteristics.

## 3.1. Model Specification

Upon all the reviews of theories on diversification strategies in banks, the objective three that addresses the effect of operational diversification on banks' performance is hinged on the Resource Based View (RBV) theory. This theory is chosen because of its postulations that firms should use their available resources to enjoy competitive advantage, scale and scope efficiency from synergy. Commercial Banks are endowed with wider categories of operational resources that can be diversified, for example assets, loans, deposits (main banks' liability) and income. Thus if all these resources are efficiently utilised, there is the need to quest for its impact on their financial performance. Also, this study is based on the Manson's Structure Conduct and Performance (SCP) Paradigm following the recommendations of Mishra and Sahoo (2012) and Nabieu (2013) as the best hypothesis for testing the relationship between structure, conduct and performance of banking sector. SCP hypothesis shows the relationship that subsists among market structure, firm conduct and firm performance. The model avers that what chiefly determine a firm's profit are the barriers of entry, concentration or the diversification of their activities. In banking context, the term "structure" in the SCP framework means the concentration or diversification of activities; and the number of banks in the industry, hence, market structure of banks is affected by internal variables such as diversification, concentration, regulatory controls and other external factors such as economic conditions (Nabieu, 2013). The term "Conduct" in the framework denotes how the banks behave in the market which includes their response to occasional withdrawals, price fluctuation, marketing strategies and the innate behaviours of the banking business. Lastly, the term "Performance" refers to the quantity of returns generated from banks' products and services rendered (Nabieu, 2013). SCP hypothesis affirms that firms' market structure affects their conduct and after all affects the performance of the firm. It is of no doubt that diversification in firms affect their returns because of its possibility of minimizing risk via spread of activities (Turkmen & Yigit, 2012).

Why SCP Model?

 SCP paradigm affirmed that the conduct of the firm which is invariably affected by the market structure of a firm is a core determinant of firms' performance. Due to this fact, it has been widely utilised. SCP model is suitable for banking sector and it is chosen for this study because of its advantages over other hypotheses such as:

(i) SCP clearly reveal how banks are operating; it shows and clarify the diverse forces affecting bank operations and make it clear for these banks whether to expand or place restrictions on the scope of their operations in the industry at large; (Nabieu, 2013)

(ii)SCP framework helps in interpretation of different productivity sources; (Delorme Jr et al., 2002)

(iii) SCP hypothesis gives a rational and widely accepted basis for banking behavioural analysis in the absence of any concrete theory. (Nabieu, 2013)

Following the mathematical simultaneous equation framework of SCP hypothesis as used by Delorme Jr et al. (2002); Mishra and Sahoo (2012) and Nabieu (2013), this study adopts the performance equation generated from the hypothesis;

$$S = f(C, P, W) \dots\dots\dots\dots\dots\dots\dots\dots (1)$$

$$C = f(S, C, P) \dots\dots\dots\dots\dots\dots\dots\dots (2)$$

$$P = f(S, C, W) \dots\dots\dots\dots\dots\dots\dots\dots (3)$$

Equation 3 is the performance model; where, S stands for Market Structure of the bank; C stands for the conducts of the bank; P is the performance variable and W stands for the vector of control variables that can affect the dependent variable.

Therefore, explicitly writing the model in panel data econometric form;

$$P_{it} = a_0 + \sum_{i=1}^{n} S_{it} + \sum_{i=1}^{n} C_{it} + \sum_{i=1}^{n} W_{it} + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots (4)$$

Explicitly to reflect the diversification and other selected variables,

$$ROAA_{it} = f(DIV, SIZ, LOD, LLR, CIR) \dots\dots\dots\dots\dots (5)$$

According to Berger et al. (2010) and Mulwa et al. (2015), banking operations could be diversified into four major dimensions; Income, loans, deposits and assets.

Hence,

$$ROAA_{it} = f(DIVas_{it}, DIVde_{it}, DIVlo_{it}, DIVin_{it}, SIZ_{it}, LOD_{it}, LLR_{it}, CIR_{it}) \dots\dots\dots\dots (6)$$

$$ROAA_{it} = a_0 + \beta_1 DIVas_{it} + \beta_2 DIVde_{it} + \beta_3 DIVlo_{it} + \beta_4 DIVin_{it} + \beta_5 SIZ_{it} + \beta_6 LOD_{it} + \beta_7 LLR_{it} + \beta_8 CIR_{it} + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (7)$$

Equation (7) is the operational diversification model of commercial banks in SSA.

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Based on the fact that diversification has been an interesting research area of research, different indices have been used to measure diversification degree but with larger percentage of Herfindahl Hirschman Index (HHI). Numerous studies have used HHI across countries in SSA regions, emerging markets and other developed countries such as Ugwuanyi and Ugwu (2012) in Nigeria; Amediku (2012) in Ghana; Simpasa and Pla (2016) in Zambia; Kiweu (2014) in Kenya; Amidu and Wolfe (2013) in emerging markets; Mishra and Sahoo (2012) in India; Vieira and Girão (2016) in Brazil; Behr et al. (2007) in Germany; Kurincheedaran (2015) in Sri Lanka. All these studies conclude that HHI is a commonly accepted index to measure corporate diversification and it is the most suitable for measuring diversification in financial sector. Thus, in this study, HHI index is used to measure the degree of operational diversification.

Conclusively, the operational diversification model of SSA commercial banks is:

$$ROAA_{it} = a_0 + \beta_1 HHIas_{it} + \beta_2 HHIde_{it} + \beta_3 HHIlo_{it} + \beta_4 HHIin_{it} + \beta_5 SIZ_{it} + \beta_6 LOD_{it}$$
$$+ \beta_7 LLR_{it} + \beta_8 CIR_{it} + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(8)$$

In the dynamic form for the purpose of System-GMM, the operational diversification model takes the form;

$$ROAA_{it} = a_0 + \beta_1 ROAA_{i(t-1)} + \beta_2 HHIas_{it} + \beta_3 HHIde_{it} + \beta_4 HHIlo_{it} + \beta_5 HHIin_{it} + \beta_6 SIZ_{it} + \beta_7 LOD_{it}$$
$$+ \beta_8 LLR_{it} + \beta_9 CIR_{it} + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(9)$$

Taking clue from the above model, $ROAA_{it}$ is the financial performance measure, $a_0$ is the constant term, $\beta_2 - \beta_5$ is the estimated coefficient of operational diversification, $\beta_6 - \beta_7$ is the estimated coefficient of the variables that proxy banks conduct, $\beta_8 - \beta_9$ is the estimated coefficient of the control variables, $\varepsilon_{it}$ is the stochastic error term, $HHIas_{it}$ stands for the asset diversification; $HHIde_{it}$ stands for the deposit diversification; $HHIlo_{it}$ is the loan diversification; $HHIin_{it}$ is the income diversification; $SIZ_{it}$ is the bank size; $LOD_{it}$ is the loan to deposit ratio which measures banks' liquidity; $LLR_{it}$ is the loan loss ratio; $CIR_{it}$ is the cost to income ratio; $i$ is the cross-section (banks) and $t$ stands for the time period.

Apriori Expectation

Following the SCP paradigm postulations, Resource Based Value (RBV) theory and the empirical findings of the aforementioned literatures $\beta_1 - \beta_8 > 0 and \beta_9 < 0$ .

## 4. Model Estimation and Data Analysis

### 4.1. Descriptive Statistics of the Variables

This section shows the purview of the pooled observation of variables used in this study for the period under investigation of the operational diversification of SSA banks with reference to the mean, standard deviation, skewness, kurtosis, minimum and maximum statistics of the variables. The panel data used to capture these variables are on yearly frequency with all in ratio form except SIZ that is in natural logarithm form.

**Table 1. Summary Analysis of the Series: ROAA, HHIas, HHIde, HHIlo, HHIin, SIZ, LOD, LLR, and CIR**

|        | ROAA     | HHIas     | HHIde     | HHIlo        | HHIin        | SIZ          | LOD          | LLR          | CIR          |
|--------|----------|-----------|-----------|--------------|--------------|--------------|--------------|--------------|--------------|
| Mean   | 1.8598   | 7892328   | 267600.3  | 0.842746     | 370380.1     | 13.191 35    | 4.3608 18    | 5.1738 58    | 65.680 95    |
| Med    | 1.8550   | 0.08594   | 0.1316    | 0.4067       | 0.6043       | 13.14        | 0.636        | 3.013        | 59.21        |
| Max    | 38.713   | 3.12E+09  | 9394044   | 611.75       | 8.38E+08     | 18.30        | 3960         | 100.0        | 850.0        |
| Min    | -54.733  | 6.38E-06  | 7.59E-07  | 0.0000       | 4.33E-06     | 3.7776 91    | 0.000        | 0.000        | 0.0000       |
| St-D   | 3.3494   | 1.29E+08  | 3954318.  | 12.90130     | 17615701     | 1.5695 93    | 96.669 50    | 7.1782 65    | 48.334 02    |
| Skew   | -1.600   | 18.263    | 17.444    | 46.919       | 47.560       | -0.864       | 35.48        | 6.125        | 7.285        |
| Kurt   | 60.816   | 360.873   | 340.36    | 2221.8       | 2263.0       | 8.997        | 1351         | 65.52        | 89.91        |
| Prob   | 0.000    | 0.000     | 0.000     | 0.000        | 0.000        | 0.000        | 0.000        | 0.000        | 0.000        |
| Obs    | 2265     | 2265      | 2265      | 2265         | 2265         | 2265         | 2265         | 2265         | 2265         |

*Source: Author's Computation, 2017*

The table 4.1. above shows the descriptive analysis results of all the activities regarding the operational diversification and financial performance of commercial banks in SSA for the period 2006-2015. The return on average assets (ROAA) measured the performance of the banking industry while HHIas, HHIde, HHIlo, HHI in which are proxies for asset, deposit, loan and income diversification are used to measure operational diversification of banks. The average rate of ROAA is 1.859869% implies that the average performance of the SSA commercial banking industry is not low but encouraging. It is evident from the result that all the series display a higher level of consistency as their mean, median and standard deviation values consistently fall within the range of minimum and maximum values of the series. Also, the relatively low value of standard deviations for most of the series except income diversification (HHIin) indicates the small level of deviation of actual data from their mean or expected average value. From the skewness statistics, only performance measure (ROAA) and bank size (SIZ) are negatively skewed because their distribution have long tail to the left while other variables in the series are positively skewed because their distribution have a long tail to the

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right. However, the kurtosis of the financial variables showed that all the variables under consideration are leptokurtic nature because the kurtosis coefficient indexes are all positive. But probability values of 0.000 for all the variables in the series shows that the model is of good fit and all the variables in the study is expected to significantly impact the financial performance of SSA banking industry. Due to availability of data, only 2265 observations are recorded for all the variables in the series instead of 2500 observations.

### 4.2. Correlation Analysis

In an attempt to show existence and direction of association or relationship between pairs of variables in the operational diversification model, this section presents the correlation coefficients matrix. However, correlation analysis only depicts the degree and direction of linear relationship between pairs of variables.

**Table 2. Correlation Matrix of the series ROAA, HHIas, HHIde, HHIlo, HHIin, SIZ, LOD, LLR, CIR**

| VARI-ABLE | ROAA | HHIas | HHIde | HHIlo | HHIin | SIZ | LOD | LLR | CIR |
|---|---|---|---|---|---|---|---|---|---|
| ROAA | 1 | | | | | | | | |
| HHIas | 0.005 | 1 | | | | | | | |
| HHIde | -0.016 | 0.800 | 1 | | | | | | |
| HHIlo | -0.000 | -0.001 | -0.001 | 1 | | | | | |
| HHIin | 0.003 | 0.010 | 0.007 | 0.001 | 1 | | | | |
| SIZ | 0.125 | -0.363 | -0.392 | 0.020 | 0.035 | 1 | | | |
| LOD | -0.343 | -0.002 | -0.002 | -0.001 | -0.001 | 0.095 | 1 | | |
| LLR | -0.145 | -0.035 | -0.014 | -0.013 | -0.011 | -0.013 | 0.095 | 1 | |
| CIR | -0.420 | -0.011 | 0.006 | -0.004 | 0.000 | -0.218 | 0.009 | 0.042 | 1 |

*Source: Author's Computation, 2017*

From Table 4.2. there is a mixture of the nature of relationship among the variables. While asset diversification (HHIas), income diversification (HHIin) and bank size (SIZ) depict a positive but weak relationship with bank financial performance (ROAA), other variables such as deposit diversification, loan diversification, liquidity measure, loan loss ratio and cost income ration shows a negative relationship of -0.016; -0.000; -0.343, -0.145; -0.420 respectively even though the deposit and loan diversification correlation degree is extremely low and weak but the degree of liquidity (LOD) and Cost to income ratio (CIR) that are a bit high is still not a signal of multi-colinearity as it is not up to the 0.8 which is the rule of thumb. From the asset diversification perspective, only deposit and income diversification proxies are positively associated with asset diversification while all other variables in the series are negatively correlated with asset diversification. In the stream of deposit diversification, only income diversification and cost to income ratio is positively related while other remains negative but none is high to

depict multi-colinearity. In loan diversification stream, only income diversification and bank size posits positive correlation while others remain negative but all extremely weak. While bank size and cost to income ratio have positive but very weak correlation with income diversification, liquidity and loan loss ratio posits a negative relationship. For bank size (SIZ), liquidity (LOD) and loan loss ratio (LLR) and cost to income ratio (CIR), only CIR and LLR posit negative relationship with SIZ to the tune of -0.013 and -0.218 respectively. Conclusively, form the correlation matrix of this series, no evidence of strong relationship that can lead to the problem of multi-colinearity in our estimations but correlation matrix is limited because it cannot show reliable relationship among variables with the inclusion of other explanatory variables. The degree and direction of association between pairs of variables derived from correlation matrix does not give the result of each variable's association with all other explanatory variables in the series. This informs the reasons for this study to proceed further to multivariate regression analysis such as static-Pooled, fixed effect, random effect frameworks.

## 4.3. Pooled, FEM and REM Regression Estimation

Pooled estimation places restrictions on the heterogeneity/uniqueness of the cross sectional units by stacking all the observations without taking into account their cross sectional or time series features Relative to the pooled regression estimator, fixed effect estimator takes cognizance of subject and/or period heterogeneity/uniqueness that may exist in the regression model while random effect estimation assumes that the heterogeneity is random rather than fixed and that the random effect is incorporated into the error term thus forming a composite error term.

**Table 3. Regression estimations of Series: HHIas, HHIde, HHIlo, HHIin, SIZ, LOD, LLR, CIR with Dependent Variable: ROAA**

|  | POOLED |  | FEM |  | REM |  |
|---|---|---|---|---|---|---|
| VARIABLE | COEFF | P>/t/ | COEFF | P>/t/ | COEFF | P>/t/ |
| C | 3.511268 | 0.000 *** | -0.889230 | 0.407 | 1.565398 | 0.043** |
| HHIas | 6.98e-10 | 0.364 | 1.81e-10 | 0.895 | 1.07e-09 | 0.270 |
| HHIde | -2.75e-08 | 0.309 | -4.41e-09 | 0.880 | -2.34e-08 | 0.365 |
| HHIlo | -6.18e-10 | 0.853 | -3.35e-10 | 0.912 | -3.93e-10 | 0.895 |
| HHIin | 0.0001626 | 0.972 | 0.0009624 | 0.815 | 0.0007296 | 0.858 |
| SIZ | 0.0372227 | 0.379 | 0.3331882 | 0.000 *** | 0.160817 | 0.004 *** |
| LOD | -0.011417 | 0.000 *** | -0.010833 | 0.000 *** | -0.011067 | 0.000 *** |
| LLR | -0.044473 | 0.000 *** | -0.024109 | 0.016 ** | -0.030196 | 0.001 *** |
| CIR | -0.028335 | 0.000 *** | -0.022458 | 0.000 *** | -0.024572 | 0.000 *** |
| R-square | 0.3015 | | Within=0.2729 Between = 0.3139 Overall = 0.2785 | | Within=0.2708 Between = 0.3815 Overall = 0.2971 | |
| Adj R-Squared | 0.2990 | | | | | |
| F-stat | F(8,2256)=121.71 | | F(8, 2010) = 94.32 | | | |
| Chi2-Stat | | | | | Wald Chi2(8)= 882.13 | |
| Prob | Prob>F = 0.0000 *** | | Prob>F = 0.0000*** | | Prob>Chi2 = 0.000*** | |

*Source: Author's Computation, 2017. Note that ***, ** denotes significance at 1% and 5% level respectively*

Table 4.3. above shows the static regression estimate of pooled, fixed and random effect model of operational diversification in SSA banks. From all the three estimates, none of the dimensions of operational diversification (that is, asset, deposit, loan and income) are statistically significant, but the direction of relationship as recorded in the coefficients is different for all the estimations. For pooled, FEM and REM, deposit (HHIde) and loan diversification (HHIlo)'s coefficients were negative which denotes that a higher deposit and loan diversification in banks leads to a lower bank financial performance even though they are too small to be significant at any level. Asset and Income diversification's coefficients for all the estimations are positive but also insignificant to explain the financial performance of banks in SSA. This depict that, for SSA banks, as income classified as interest income or fees and commissions are being used for different spread of the banking activities, it causes a decrease in the banks' financial performance. Likewise the increase in asset delegated into fixed, liquid and non earning asset to finance different activities brings down the financial performance of banks. Liquidity captured by loan to deposit ratio (LOD) and the control variables; Loan loss ratio (LLR) and cost income ratio (CIR) are statistically significant at 1% but all with negative relationship with SSA banks financial

performance measure (ROAA). While LOD and LLR oppose a priori expectation, the negative effect of CIR aligns with a priori expectation because a reduction in CIR depicts managerial efficiency which is also a signal of increased performance. This negative effect of all these ratios implies that the higher all these ratios, the lower the performance for SSA banks. But bank size posits a positive relationship with financial performance in all the estimations and significant at 1% for FEM and REM estimation, while pooled effect remains insignificant.

Conclusively, the significance of the constant term at 5% shows that the models are well fitted to explain the operational diversification of banks in SSA. The R-Square of pooled, FEM and REM are 30, 31 and 38% respectively.

### 4.4. Post Estimation Tests

To verify the best estimator which is relatively efficient and consistent amidst the likes of Pooled GLS regression estimator, FEM estimator and REM estimator, Restricted F-test and Hausman test are conducted.

### 4.4.1. Restricted F-test of Fixed Heterogeneity Effect

The summary of test statistics used to validate the presence of heterogeneity among cross-sectional units (banks) is shown in this section so as to know whether there is significant difference between the constant terms (differential intercept) across cross-sections. This is done with the aim to validate whether there is an established validation for the restriction of the pooled GLS estimation.

**Table 4. Restricted F-Test of Heterogeneity**

| Null Hypothesis | F-statistics | Probability | Degree of Freedom |
|---|---|---|---|
| Ui=0 | 4.57 | 0.0000 *** | (246, 2010) |

*Source: Author's computation, 2017. Note that *** denotes significance at 1% level*

From the table 4.4 above, F-statistics values of 4.57 with probability values of 0.0000 implies that there is enough evidence to reject the null hypothesis that all differential intercept corresponding to the cross-sectional specific units are equal to zero. Therefore, it can be concluded, that there is cross-sectional uniqueness/heterogeneity effect among the 250 SSA commercial banks used in this study to quest for the effect of operational diversification on financial performance. Thus, pooled regression estimator restriction is not valid as cross-sectional heterogeneity effect is too significant to be overlooked and ignored.

### 4.4.2. Hausman Test

In an attempt to know the most reliable estimation between the fixed effect estimation and the random effect estimation, Hausman test is conducted to test if there is a substantial difference between the estimates of the fixed effect estimator and that of the random effect estimator. The null hypothesis underlying the test is

that, fixed effect estimates do not differ substantially from the random effect estimates. Notably, the test statistics developed by Hausman has an asymptotic chi-square distribution.

**Table 5. Hausman Test of FEM and REM**

| Null Hypothesis: there is no substantial difference between fixed effect and random effect estimates | | |
|---|---|---|
| Test-Estimate | Chi-Square Statistics | Probability |
| chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B) | 34.22 | 0.0000*** |

*Source: Author's Computation, 2017. Note that \*\*\* denotes 1% significant level, b = consistent under $H_0$ and $H_1$; obtained from xtreg and B = inconsistent under $H_1$, efficient under $H_0$; obtained from xtreg*

From the Table 4.5 above, chi-square value of 34.22 alongside a probability value of 0.0000 shows that there is enough evidence to reject the null hypothesis, hence, the difference in coefficients is unsystematic and highly substantial. This implies that there is correlation between the random effects incorporated into the composite error term and one or more of the independent variables. Thus, the FEM estimation becomes the best model that is most efficient, consistent and preferred, while REM estimation is considered inefficient.

From the foregoing, out of the three estimators (pooled regression estimator, fixed effect estimator, random effect estimator) used for static analysis of examining operational diversification and financial performance in SSA banks, fixed effect estimator is the most appropriate estimator. Nonetheless, privy to the fact that in a model where there is large N (cross-sections) and T (time period) is relatively small; the fixed effect estimator becomes inconsistent because it is just an OLS estimator based on first difference. In this situation, GMM estimator becomes more reliable, efficient and superior (Han & Phillips, 2010).

The model used for this study is for 10 years (2006-2015) due to availability of data. Also, as noted by Han and Phillips (2010), when T is small, the estimator becomes asymptotically random. System GMM was proposed by Arellano and Bover (1995); Blundell and Bond (1998) and Hsiao et al. (2002) to solve this problem because system GMM uses level equation based moment conditions with the usual orthogonality conditions of Arellano and Bond GMM type. Hence, this study proceeds to the System GMM analysis due to the inconsistency of the FE estimator selected by Hausman test.

### 4.5. Dynamic Panel Analysis: System Generalised Method of Moments

This section presents the result of the dynamic analysis conducted to determine the effect of operational diversification on banks financial performance in SSA when the influence of past realization of return on average asset (measure of financial

performance) is put into consideration. Although, GMM can be used for diverse purposes in econometric analysis, for the purpose of this study, it was used to measure the effect of past realizations of the dependent variable. Notably, Arellano and Bond (1991b) pointed out that GMM estimators relative to first-difference estimator, OLS estimator, IV estimator etc, exhibits bias and variances, thus, the rationale behind the choice of estimator (Two- step) employed in this study.

**Table 6. Two Step SYS-GMM of the series: HHIas, HHIde, HHIlo, HHIin, SIZ, LOD, LLR, CIR with Dependent Variable: ROAA**

| No of groups: 246 | | |
|---|---|---|
| No of Instrument:110 | | |
| F (9, 245) = 1.54e+06 | | |
| Prob (F) = 0.0000*** | | |
| Variable | Coefficient | p>/t/ |
| C | 2.559945 | 0.000*** |
| ROAA(L1) | 0.1711913 | 0.000*** |
| HHIas | 6.84e-10 | 0.000*** |
| HHIde | -2.07e-08 | 0.000*** |
| HHIlo | 9.59e-09 | 0.000*** |
| HHIin | 0.0058587 | 0.000*** |
| SIZ | 0.0438818 | 0.000*** |
| LOD | -0.0062261 | 0.000*** |
| LLR | 0.0037591 | 0.000*** |
| CIR | -0.0238368 | 0.000*** |

*Source: Author's computation, 2017. Note that ***, ** denotes significance at 1% and 5% level respectively*

From SYS-GMM analysis on Table 4.6 above, all the variables of interest including the lagged return on average asset (ROAA (L1)) were significant at 1% level with only deposit diversification (HHIde), liquidity (LOD) and cost to income ratio (CIR) which is a measure of banks' efficiency as having negative relationship with ROAA. The significant and positive effect of asset, loan and income diversification conforms to the resource-based value (RBV) theory that postulate how firm can boost their performance with their available resources via competitive advantage, scope and scale efficiency from synergy. Asset, income, loan and deposit are various resources at the disposal of commercial banks which they can actively utilise to boost their performance and growth. The negative effect of deposit diversification, though with a very small coefficient may be due to the problem of managerial entrenchment and hubris. Also, it's a newly introduced dimension of diversification in banking sector because banks concentrated only on revenue diversification strategy and this has reduced the market power degree banks posses in deposit diversification (Skully & Perera, 2012). Deposit is the main

liability of banking sector with larger proportion from customers (customers' deposit) and managers are the people in charge of its utilisation to induce growth and wealth maximisation. Most managers due to agency problem view diversification as an opportunity to raise their power and prestige hence fail to run diversified activities in such a way to create more value to the firm. The positive and significance of asset, loan and income diversification conforms to the findings from the study of Ugwuanyi and Ugwu (2012); Turkmen and Yigit (2012); Gurbuz et al. (2013); Senyo et al. (2015); Sissy (2015); Mulwa et al. (2015) where they found that diversification reduces systematic risk, reduces earnings volatility, reduce agency but oppose the findings of Behr et al. (2007); Mishra and Sahoo (2012); Armstrong and Fic (2014) where they posited that diversification in banks has failed to create value and banks with greater operational diversification tends to witness fluctuations in financial performance due to the failure in setting the optimum degree and inability to know the right and viable diversification areas. Furthermore, the negative findings of deposit might be due to the economic instability and challenges faced with most of the countries in SSA used for this study during the sampled time frame because the major component of bank deposit is from customers and the degree of market power of banks in this deposit diversification is still low to witness the hit of competition that will enable them to enjoy economies of scale and scope from bank deposit. Notwithstanding this finding conforms to the finding of Baele et al. (2007).

The findings of all other control variables conform to the Apriori expectation except liquidity (LOD) that has negative relationship with bank performance. In reality commercial banks in most of the countries in SSA operates beyond the prudentially prescribed liquidity ratio limit because of the high proportion of their liquid asset so as to absorb the unexpected liquidity shocks that can hinder their stability and growth. The negative effect of liquidity calls for prompt attention to ensure that banks are not over or under liquid as this can cause agency problem (cost) due to the unjust use of the free cash flow or lack of finance on the other hand. While over liquidity in banks implies that banks will be incapacitated to meet unexpected or occasional withdrawals of fund, under liquidity of low liquidity implies that banks may not have enough finance to explore opportunities and hence, generate low earnings (Demirgüç-Kunt & Huizinga, 2010). In essence, banks must be careful in choosing dividend policy such that the liquidity of the bank will not be jeopardised. As dividend payout reduces free cash flow, dividend retention policy also gives room for adequate financing of viable projects that justifies the banks' growth.

Bank size's (SIZ) positive and significant effect on financial performance conforms to the findings of Stiroh (2004); DeYoung and Rice (2004); Stiroh and Rumble (2006), Afzal and Mirza (2012). Bank size is a variable used in banking sector to control for risk and cost difference. Its finding in this study implies that the higher

the total asset of banks, the more they are able to diversify into viable investment opportunities, explore diverse business lines, build market power and hence, create more value that will boost the exploitation of economies of scale and scope and hence better and greater financial performance.

Regarding the cost income ratio, it is pertinent to know that a higher CIR depicts an increasing inefficiency (poor performance) and a reduction in CIR depicts managerial efficiency which is expected to boost banks financial performance (Goddard et al., 2008). Hence, the negative effect of CIR on banks performance implies a decreasing cost inefficiency which is a good signal of managerial efficiency and going-concern concept for banking sector in SSA because performance of commercial banks is improved whenever they are cost and operationally efficient (Simpasa & Pla, 2016).

## 4.6. Diagnostic Test for SYS-GMM

Despite the numerous merits attached to dynamic data analysis, presence of auto correlation or serial correlation and over-identification of instrument has been the common problem attached with generalised method of moments (GMM). These problems limit the efficiency of GMM estimators (Hayakawa, 2014). As also, noted by Hayakawa (2014), there are two main factors that determine the GMM estimator finite sample behaviour; viz, the numbers of moment conditions and the strength of instrument identification. To test for the identification problem validity in GMM, J-test (Hansen/Sagan test) has been the widely accepted test but the validity of the instrument and the reliability of SYS-GMM estimation is checked using the Hansen test while the serial correlation is tested using the Arellano and Bond (1991a) order one and two tests.

Therefore, following Pathan and Skully (2010), Hansen test for over-identification of instrument, AR (1) and AR (2) tests for auto correlation are used as the post estimation check for the justification of efficient estimate in our dynamic panel analysis conducted for operational diversification and financial performance of banks in SSA.

**Table 7. Hansen Test**

| Ho: There is no over-identification of instrument | | |
|---|---|---|
| $Chi^2$ (100) | 93.13 | |
| Prob>$Chi^2$ | 0.562 | |
| Hansen test for all levels | | |
| Excluding group | Chi2(50) | 52.03 |
| | Prob >Chi2 | 0.395 |
| Difference (H0=exogenous) | Chi2 (50) | 45.10 |
| | Prob >Chi2 | 0.670 |

*Source: Author's Computation, 2017*

Using bank size (SIZ) as the instrument for orthogonal deviation, the results from Table 4.7 above shows that the probability value of Hansen tests for both including and excluding group (56.2, 39.5 and 67% respectively) are greater than 5% and considered insignificant. Hence, we conclude that our SYS-GMM estimation is efficient and reliable with valid instrument as the null hypothesis is accepted that there is no over specification of instruments used in the operational diversification model analysis.

**Table 8. Arellano and Bond AR (1) and AR (2) Serial Correlation Tests**

| Ho: There is no serial correlation | | |
|---|---|---|
| Order | Z | Prob>Z |
| AR (1) | -3.59 | 0.000*** |
| AR (2) | 1.42 | 0.156 |

*Source: Authors' computation 2017. Note that "***" represent 1% level of significance*

The Table 4.8 above shows the AR (1) and AR (2) results of the test for serial/auto correlation. At order one, it is expected that there will be serial correlation irrespective of the lag length but to correct itself at order two. From the findings in Table 4.8, we reject the null hypothesis in the AR (1) with 0.000 probability value and accept the null hypothesis at AR (2) with 15.6% at lag structure (2/2) used to estimate the SYS-GMM. The acceptance of the null hypothesis at order two implies that there is no evidence of serial correlation at the chosen lag length. Thus, the findings from operational diversification model estimation in SSA banks are efficient, consistent and reliable.

## 5. Conclusion and Implication of Findings

Privy to the inestimable merits and robustness of SYS-GMM analysis, the findings form SYS-GMM will be the basis of conclusions and recommendation on SSA banks' operational diversification model. Hence, this study concludes that diversification of operational activities in SSA commercial banks have direct and significant effect on their financial performance. But, greater attention should be taken to monitor the diversification strategy so as to ensure that no dimension of banks activities is neglected. It is better for banks to build market power from all its resources as this serves as a weapon in the midst of competition. Also, managers' pecuniary benefits and incentives should be under a control to ensure that the problem of managerial hubris and managerial entrenchment is reduced to the barest minimum as it has been averred by Aggarwal and Samwick (1999) that greater diversification is characterised by higher managerial incentives which can perpetrate exorbitant agency cost that hinders bank performance if not monitored. Managers love to take advantage of diversification due to the quest for dignity and prestige, diversify to suit their purse alone. It is possible for them to maximise

profit but not wealth because of their own fringe benefits. This can be the reason for SSA banking sector (South Africa excluded for obvious reasons) to still remain immature despite the fact that they are highly diversified with high rate of competition that makes them to build up their individual market power. For instance, Kenyan banking sector consist of 43 commercial banks and even Nigeria which has the second largest banking market have launched into other activities aside their primary intermediation role such as Banc-assurance, financial advisers, mortgage banking, asset advisory and management, pension administrator and export-trade financing. By implication, following the RBV theory, all these operational resources (assets, loans, deposit and income) are tools in banking sector to utilise such that they can explore wider, new and viable investment opportunities in addition to their traditional intermediary role to an extent that they will have a strong market power that can withstand competition as the sector is highly competitive in the region, but should involve human capital training, development and deployment so that the goal of the diversification will be adequately and totally achieved.

The fact that the number of instrument (110) is far less than the number of group (246); all the Hansen, AR (1) and AR (2) tests are passed and the F-test of joint significance of independent variable depicts that all the independent variables on the operational diversification model are jointly significant at 1%, the SYS-GMM estimate is an efficient estimate and the basis upon which our recommendation will be made at the end of the study.

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# Drivers for the Formation of Informal Financial Associations by Immigrant Entrepreneurs in South Africa: the Case of Cameroonians

## Linus Nkem[1], Robertson K. Tengeh[2]

**Abstract:** The sometimes, selective exclusion by the legislation and the financial houses of the host country, force immigrants of African origin to setup stokvels to sustain their businesses and livelihood in South Africa. **Aim:** To provide the basis for inclusive policy initiatives, this paper investigated the drivers for the formation of business support stokvels by Cameroonians in South Africa. **Method:** The paper adopted a mix research paradigm with the survey questionnaire and personal interviews as the tools of choice. The purposive sampling technique was implored to reach the 132 respondents. **Results:** It was apparent that the participants form stokvels to compensate for the lack of access to finance from formal financial intermediaries. The dire need for startup and later expansion capital drove them to form stokvels and even to belong to multiple stokvels as they strive to improve their chances. Beyond this, stokvels provide the platform for the mobilization of savings and the opportunity to run their own bank on their own terms. **Implications:** while aligned to the Cameroonian community, other minority groups can draw vital lessons. Beyond this, the paper informs the inclusive finance debate and may therefore be relevant to policy makers and academics.

**Keywords:** Stokvels; informal financial institutions; immigrant-owned businesses; Cameroonians; Cape Town.

**JEL Classification**: E21; O13; G31

## 1. Introduction and Background

There is an upsurge for the startup and sustainability of new businesses today than ever before. Particularly premised on the fact that the start-up and growth of such entities will curtail poverty through job creation, present day South African is one of the many supporters of this argument. Given the thin spread of factors of production, some countries and groups tend to be particularly disadvantaged with regards to mobilizing resources for business startup and growth (Tengeh, Slabbert, & Ballard, 2012).

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As one of the most essential factors of production, financial intervention through the provision of financial services takes central stage in the promotion of economic growth and development (Tengeh et al., 2012; ILO, 2016). Reasonable access to savings and credit would promote household sustainability besides, enterprise creation and accompanying spillover for the economy as a whole (Porteous, 2003). In South Africa where the financial resources are already stretched and skewed, it becomes even more difficult for small businesses, let alone for immigrant-owned to gain access to the much-needed financial resources.

Like other African immigrants in South Africa, Cameroonians residing in the Cape Metropole, encounter a number of difficulties in obtaining loans from formal financial institutions. Against this backdrop Cameroons have setup informal financial associations popularly known as Njangis or Stokvels in South Africa to meet their burning desire for capital for business purposes. Having been pushed to engage in entrepreneurial activity by limited job opportunities and with limited support, the number of immigrant-owned businesses that take off the ground let alone grow is curtailed significantly. Amidst the hype and the perceived competitive advantage accorded to immigrant owned-businesses vis-à-vis their Native counterparts, it is still not clear what role stokvels play towards their success.

Given that lack of finance is a renowned factor that hinders the start-up and operation of a business in South Africa, and the fact the amount as well as the sources of finance indirectly influence the survival of a business, this study sought to ascertain the drivers for formation of immigrant run stokvels, using Cameroonian entrepreneurs as the lens.

## 2.2. Literature Review

### 2.1. Immigrant Entrepreneurship in South Africa
Post 1994, many immigrants and particularly those of African origin have made South Africa their new home away from home (Rogerson, 1997). Regardless of their reasons for immigration, the current literature notes their inability to gain meaningful employment in the South African labour market and hence their preponderance in entrepreneurial activities (Kalitanyi & Visser, 2010; Tengeh et al 2011; Tengeh, 2013).

Although most immigrants go into developing their own business because of the limited job opportunities in South Africa (Tengeh, 2013), it is evident that most of the challenges faced by immigrant business owners are similar to those faced by small businesses in general. Some of the possible challenges that immigrant (African foreign) entrepreneurs go through in South Africa are outlined below.

## 2.2. Small Business Start-up

Pivotal in the drive to ensure full employment and substantial economic growth by governments around the world today is the need to promote the startup and sustainability of small businesses (Van Praag, 2010; Lose & Tengeh, 2015). It is believed that the start-up and growth of small businesses will alleviate poverty through employment creation. The process of creating and sustaining business would be much more easier if the necessary resources (factors of production) were readily available and accessible to all (Tengeh, 2013). Besides, the dependence on availability of entrepreneurs, land, and labour, access to capital continue to be critical and is in short supply for disadvantage communities.

### 2.2.1. Typical Challenges to Business Start-ups in South Africa

It has been documented that there are typical challenges that business overcome to start a business and immigrants may even endure more (Tengeh, et al., 2011). While some of these problems can be overcome with minimal and collective efforts from the entrepreneurs, others cannot. Cumbersome registration and taxation requirements (Chikamhi, 2011), high rental (Khosa & Kalitanyi, 2014); limited business space (Fatoki & Garwe, 2010) and limited access to bank loans (Chikamhi, 2011; Fatoki & Garwe, 2010; Tengeh, 2011; ILO, 2016) and so forth continue to dominate the current literature on the challenges that small businesses have to contend with.

While limited access to finance from formal organizations is a problem faced by most prospective entrepreneurs and small business owners, immigrant entrepreneurs tend to be affected most. The most important reason why people borrow money as noted by The National Credit Regulator (NCR) is to start or buy a business in South Africa. Unfortunately, just about 2% of SMMEs are able to access bank loans in South Africa and this is perhaps due to their limited credit history and lack of collaterals (Fatoki & Garwe, 2010). Tengeh (2011) and ILO (2016) note that finance is a major hindrance to the startup and growth of a business in both developed and developing countries.

### 2.3. Overview of Informal Financial Institutions in South Africa

Informal financial associations are popularly referred to as stokvels in South Africa. Believed to be first associated with English-speaking settler farmers in South Africa, the term "stokvel" is a combination of the words "stock "and "fairs" (NASASA, 2015). Hence, the local farmers pool resources together (latter known as stokvel) to trade livestock at fairs. Believed to have started began in the early 19th century in the Eastern Cape province of South Africa, stokvels in South Africa had an estimated worth of about 25 billion Rand by 2014, with an estimated 8.6 million members in about 421,0000 stokvels (African response, 2014). Having been excluded from fully participating and benefiting from mainstream economy and formal financial activities, black South Africans relied on stokvels for savings

and credit, (NASASA, 2015). This notwithstanding, informal financial associations in South Africa are well organized compared to those of other African countries. In fact, the National Stokvel Association of South Africa (NASASA) coordinates and regulates the activities of stokvels in South Africa.

### 2.3.1. Types of Stokvels in South Africa

It is believed that one can distinguish stokvels based on the motives for participations. According to NASASA (2015), there exist different types of stokvels in South Africa performing both economic and social functions.

### 2.3.1.1. Rational Stokvels

The main characteristic of this group is that members contribute a fixed amount of money during their regular meetings. At every assembly, one of the members would benefit a lump sum, which they then have the right to use the way they wish. In such a group, a fixed sum of money is paid out every meeting session either weekly or monthly depending on the interval that members agree upon.

### 2.3.1.2. Savings Stokvels

Saving stokvels are informal financial associations where members contribute a fixed amount and it is either paid to a member or used by the group for a specific purpose or event. Such a group`s intention is always set up a target and collectively save to achieve it. In such a group, money is not paid out to any members or used at any meeting but saved until it is needed.

### 2.3.1.3. Burial Stokvels

Burial stokvels otherwise known as burial societies are formed in order for members to gain financial assistant in an event of a death in their family. It is almost like an insurance policy. Members contribute a fixed amount when they meet, and pay out a pre-determined amount to a member in their time of need.

### 2.3.1.4. Grocery Stokvels

Grocery stokvels are groups, which have as purpose to save money for bulk groceries purchases. Most groups save for regular bulk purchase, where each member will receive an equal share of the groceries bought. These bulk purchases may occur annually or more frequently.

### 2.3.1.5. Investment Groups

These are groups, which do not come together only to save money, but also to generate more revenue. They either collect a lump sum from each member or take monthly contribution from each. The money may be invested through a financial institution in order to gain interest or used to start or buy into a business.

**2.3.1.6. Party Stokvels**

Party stokvels refer to groups that have entertainment as their main objective. These types of groups often organise parties that are open to the public, would charge an entrance fee as well as sell food and drinks. Profits are then shared amongst members, saved by the group or paid to the hosting member if the event rotates from house to house.

**2.3.1.7. Borrowing Stokvels**

The main objective of such groups is to pool funds together in order to provide loans to group members. These types of groups require a fixed contribution from each member. Members are able to apply for loans from the group and the loans are often paid out at a very high interest rate.

**2.3.1.8. Multi-purpose Stokvels**

These are groups that exist for more than one of the above-mentioned reasons. They are usually large groups that have evolved over several years.

**2.3.1.9. Business Support Stokvels**

Also known as business groups are associations that consist of business owners, usually in the same line of business. Just like traditional stokvels, members are required to make a fixed contribution to the group. Such group often exists with the aim of making bulk purchases to be shared amongst their businesses and for collective bargaining.

**2.4. The Importance of Stokvels**

Maluku and Kaseke (2014) in their article *"The role of stokvels in improving people`s lives: The case of Orange farm Johannesburg-South Africa"* came out with a number of reasons that members participate in stokvels otherwise known as benefits of participating in stokvels. The following were brought forth by these authors as reasons identified by their participants for belonging to such groups:

**2.4.1. Ability to Meet Basic Needs**

Participating in stokvels enables participants to meet up with their basic needs. According to them, their participants acknowledged that since joining stokvel, they have been able to overcome basic needs such as food insecurity. This therefore confirms Chikadzi and Lusenga`s (2013) observation that stokvels enable women to achieve what they would not be able to achieve on their own.

**2.4.2. Platform to Save and Invest**

Stokvels create an opportunity for members to save and as a result, they tend to engage in huge projects like building houses (Matuku & Kaseke, 2014). Stokvels also give participants the opportunity to invest in household property. Chikadzi and

Lusenga (2013) rightly pointed out that women participation in stokvels give them that chance to break the cycle of poverty.

### 2.4.3. Easy Access to Credit and Mini-Loans

Another important benefit that participants derive from stokvels is easy access to credit and mini-loans. Chikadzi and Lusenga (2014) noted that borrowers from stokvels are always charged a reasonable interest, which helps to increase savings. Members' contribution and interest charged combine together to enable the stokvel to have a reasonable sum which is given out in the form of loans to both members and non-members, thus creating the impression that many stokvels operate as credit institutions where people can lend money at affordable interest rates compared to formal financial institutions.

### 2.4.4. Women Empowerment

Chikadzi and Lusenga (2014) also pointed out that stokvels act as a source of strength to women. Hence, participants view stokvels that promote savings as a tool for women empowerment. Most of participants (women) often depend on their partners for initial contribution but as time goes, they are able to break that culture of over dependence on men by standing up for themselves. Mashigo and Schoeman (2010) initially observed that stokvels contribute to social empowerment because they promote income generation, responsible behaviour and economic independence.

### 2.4.5. Moral Support/Mutual Assistance

Matuku and Kaseke (2014) revealed in their study that moral support and/or mutual assistance is one of the benefits of belonging to a stokvel. Members are there for each other and support one another in times of difficulties such as the death of a loved one thus confirming the fact that stokvels embody the notion of *"ubuntu"* which comes along with the spirit of unity or togetherness (Verhoef, 2001).

### 2.5. Access to Start-Up Capital for Immigrant Entrepreneurs

Enough capital is needed by immigrant entrepreneurs to achieve success. To highlight the significance of capital, Bates (1997) posits that there is a relationship between the size of the start-up capital and the survival and/or growth of immigrant-owned businesses. Though a vital component of business startup, most often, the capital is not within the reach of immigrants in most host economies. As such they tend to depend on personal savings and family members. It was observed in India, and Vietnam that dependence on family members and friends as sources capital inhibits the size of startups and growth thereafter of immigrant owned businesses (Bates, 1997). On the contrary, the reverse is true of Natives. The implication is that entrepreneurs who rely on formal financial institutions for business start-up are likely to survive. However, this conclusion is of less

importance to the immigrant entrepreneur because in general, immigrant entrepreneurs do not rely on formal financial institutions of mainstream society for financial support. This is because the profile of an immigrant entrepreneur does not permit him/her to have easy access to loans from financial institutions of mainstream society (Tengeh et al, 2012). They are ethnic minorities and are often victims of ethno-racial discrimination. They are poor and lack that convincing credit history or asset to serve as collaterals for their loan applications- hence they must rely on informal sources for financial support. Hence, this classic discriminations forces ethnic minorities to depend on informal financial association for finance.

Light and Bonacich (1988) noted the role of Rotating Credit Association (RCA), particularly in some Asian communities in the United States. The degree of access to financial resources will depend on the quality of the ties that were developed in their ethnic social networks and in particular the trustworthiness that they have created in it. If the profile of the immigrant entrepreneur forces them to rely on their ethnic social network for their financial needs, this financial source provides them with various advantages. This is somehow suitable, as they can avoid the high interest rates as well as the cumbersome process of applying for a bank loan. In a South African study, Tengeh et al, (2012) highlighted the increase use of informal sources of finance by African immigrants in recent years.

## 3. Research Design

Research methodology is a framework that defines the procedures and methods to be used when collecting and analysing data collected. Zikmund (2003) concurs that there are typically three research methods: qualitative, quantitative and mixed method that is a combination of qualitative and quantitative methods.

Following Tengeh et al., (2011), the current study has adopted this mixed position by combining questionnaires and personal interviews as methods within the quantitative and qualitative research paradigms. It is believed that these methods complement each other and by so doing compensates for the weakness of one (Tengeh et al., 2011).

### 3.1. Target Population

Population as defined by Dorsten and Hotchkiss (2005) is understood to mean a defined collection of all individuals or other units such as families, corporations, videos, textbooks from which data can be collected. The targeted population for this study was Cameroonian immigrant business owners who carry out their business activities within the Cape Metropolitan area.

It is believed that the unit of analysis of a study refers to what or who should provide the data and at what level of aggregation (Zikmund, 2003). In this study,

Cameroonian immigrant business owners operating within the Cape Metropole were the unit of analysis because the researcher relied on them to provide relevant responses that are required.

## 3.2. Research Site and Sampling Technique

The research was carried out in the Cape Metropolitan area in the Western Cape of South Africa. The sampling method used in this work was judgment, or purposive sampling. Purposive sampling is a type of non-probability sampling method in which an experience individual selects his or her sample depending on his or her judgment about some appropriate characteristics required of the sample members. The researcher selects the sample to serve a specific purpose, even if this makes a sample less than fully representative (Zikmund, 2003).

For the purpose of this study, purposive sampling was used because the researcher was able to identify Cameroonian Immigrants stokvels in the Cape Town area. However, it was discovered that not all the members were involved in economic activities. This therefore gave the researcher the option to choose his sample only within those members who carry out entrepreneurial activities.

## 3.4. Sample Size

The sample size reflects a representation of the unit of analysis. Due to a number of restrictions including time, money and limited access, it was not possible to either collect or analyse data from the entire population. Drawing from Saunders (2009), who noted that 8-12 interviews should be deemed as sufficient to study a fairly homogenous group, ten interviews were deemed suitable for the qualitative component of this study.

Determining the sample size for the quantitative component of the study was more challenging given that there is no official database of immigrant-owned-businesses in South Africa (Tengeh et al, 2011). This highlights the challenge to obtaining a reliable estimate of the population and sample size of studies of this nature. To bridge this gap, the current study relied on other empirical studies on immigrant entrepreneurship in South Africa in general and Cape Town in particular (Khosa, 2014; Tengeh et. al, 2011; Rogerson, 1997), on which an average sample of 118 was met. Following this pattern, this researcher therefore decided to concentrate on a sample size of 123 respondents.

The researcher was able to identify 22 njangi groups belonging to Cameroonian immigrants in the Cape Metropole with an average membership of about 16 members per group. Having observed that some members of these groups are not actively involved in entrepreneurial activities, the researcher utilised the purposive sampling technique to reach those involved.

### 3.5. Data Collection and Analysis

The survey questionnaire was the major tool utilized because it provides a quicker, cheaper but efficient, and accurate means of assessing information about a population.

## 4. Results and Discussions

### 4.1. Results of the Quantitative Tool

### 4.1.1. Problems Faced During Business Start-Up in South Africa

According to the results, it can be concluded that the two most serious challenges confronting Cameroonian immigrant entrepreneurs during business start-up are the lack of finance and the lack of customers. The lack of skilled employees and language barriers are also key issues of concern. The result showed the following:

- An overwhelming 88.6% indicated limited finance as an obstacle;
- 22.0% noted lack of expertise in business area as an obstacle;
- 30.1% acknowledged the lack of skilled employees as a challenge;
- 64.2% point to the lack of customers as an obstacle faced during start-up;
- 12.2% complained that lack of information was a hindrance to them;
- Only 6.5% indicated the lack of proper documentation as a problem;
- 39% reported language barrier as one of the problems they faced when they started their businesses.

**Table 1. Problems faced during start-up**

|  | Number of responses | Percent of responses | Percent of cases |
|---|---|---|---|
| Lack of finance/credit | 109 | 33.7% | 88.6% |
| Lack of expertise in business area | 27 | 8.4% | 22% |
| Lack of skilled employees | 37 | 11.5% | 30.1% |
| Lack of customers | 79 | 24.5% | 64.2% |
| Lack of information | 15 | 4.6% | 12.2% |
| Lack of proper documentation | 8 | 2.5% | 6.5% |
| Language barrier | 48 | 15% | 39% |
| Total | 323 | 100% | 262.6% |

### 4.2. Number of stokvels in which respondents belong to

According to the survey results, a vast percentage of the respondents (83.7%) belong to just one stokvel group. A further 14.6% of them belong to two different

stokvel groups while just 1.6% of the respondents belong to more than two different groups. These results are reflected in table 2.

**Table 2. Number of stokvel groups that respondents belong to**

|  | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Only one | 103 | 83.7 | 83.7 | 83.7 |
| Two groups | 18 | 14.6 | 14.6 | 98.4 |
| More than two | 2 | 1.6 | 1.6 | 100.0 |
| Total | 123 | 100.0 | 100.0 |  |

### 4.3. Reasons for Belonging to more than one Stokvel Group

Analysis of this data (Table 3) indicates that 51.5% of those respondents who belong to more than one stokvel group do so because they want to improve their chances of getting required funds for their business while 12% do so because they want to spread their risk in case of default by members or collapse of the group. Just 4% of them do so because their funding needs grow as the business expands.

**Table 3. Respondents` reasons for belonging to more than one stokvel**

|  | Number of responses | Percentage of responses | Percentage of cases |
|---|---|---|---|
| To improve my chances of getting the required funding | 17 | 51.5% | 13.8% |
| Because my funding needs grow as the business grows | 4 | 12% | 3.3% |
| Spreading my risk in case of default by members or collapse of the group | 12 | 36.5% | 9.8% |
| Total | 33 | 100.0 | 26.9% |

### 4.4. Stokvels Provides Capital for Business Start-Up

The results (Table 4) on this data show that an overwhelming majority of respondents (65%) agree that stokvels provide capital as far as start-up is concerned. 27.6% of them strongly agree to this while only 7% disagree. Only 2% of them were undecided.

**Table 4. Stokvel provides start-up or seed capital for business**

|  | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| Disagree | 7 | 5.7 | 5.7 |
| Undecided | 2 | 1.6 | 7.3 |
| Agree | 80 | 65.0 | 72.4 |
| Strongly agree | 34 | 27.6 | 100.0 |
| Total | 123 | 100.0 |  |

### 4.5. Stokvel Serves as a Saving Scheme to Members

According to the results of the analysis, all the respondents agree that stokvel serves as a saving scheme to member. In fact, 43.9 percent of them strongly agree to this. None of them disagree or doubt this fact which is therefore an indication that stokvel is really a place to serve money. See table 5 below for details.

**Table 5. Stokvel as a saving scheme to members**

|  | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| Agree | 69 | 56.1 | 56.1 |
| Strongly agree | 54 | 43.9 | 100.0 |
| Total | 123 | 100.0 |  |

### 4.6. Stokvel as a Platform to Discuss Business Ideas

While the results show that a majority of respondents (52.8%) view stokvel as a place to discuss business ideas, 20.3 percent of them disagree while a sizeable proportion of 25% were undecided as presented in table 6.

**Table 6. Stokvel as a platform to discuss business ideas**

|  | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| Disagree | 25 | 20.3 | 20.3 |
| Undecided | 31 | 25.2 | 45.5 |
| Agree | 65 | 52.8 | 98.4 |
| Strongly agree | 2 | 1.6 | 100.0 |
| Total | 123 | 100.0 |  |

### 4.7. Stokvel Grants Interest-Free Loans to Members

Table 7 notes that a total of 73.2% and an additional 8.1% of respondents agree and strongly agree that stokvels grant interest free loans to its members. These results reaffirm the importance of stokvels in the life cycles of immigrants businesses. This result also falls in line with the main research question, which tries to find out the role that stokvels play in Cameroonian immigrants` own business. 17.1% of the respondents however disagree that stokvels provide interest free loans to members. The point here might be that since not every member benefits at an earlier stage, some of those members who only become beneficiaries towards the end might not necessarily see it as interest free loan, hence their reason for disagreeing.

**Table 7. Stokvel grants interest-free loans to members**

|                   | Frequency | Percent | Cumulative Percent |
|-------------------|-----------|---------|--------------------|
| Strongly disagree | 1         | .8      | .8                 |
| Disagree          | 21        | 17.1    | 17.9               |
| Undecided         | 1         | .8      | 18.7               |
| Agree             | 90        | 73.2    | 91.9               |
| Strongly agree    | 10        | 8.1     | 100.0              |
| Total             | 123       | 100.0   |                    |

## 4.8. It is Relatively easy to Obtain Start-Up Loan from Stokvels

According to the results presented in table 8, an overwhelming majority of 88.6% and a further 10.6% of the respondents agree and strongly agree that it is relatively easy to obtain business start-up loan from stokvel. This again further confirms the importance of stokvels in Cameroonian immigrants businesses.

**Table 8. The ease to obtain start-up loan from stokvel**

|                   | Frequency | Percent | Cumulative Percent |
|-------------------|-----------|---------|--------------------|
| Strongly disagree | 1         | .8      | .8                 |
| Agree             | 109       | 88.6    | 89.4               |
| Strongly agree    | 13        | 10.6    | 100.0              |
| Total             | 123       | 100.0   |                    |

## 4.9. It is Relatively Easy to Obtain Loan for Business Growth or Expansion

Almost all the respondents, giving a combined 99.2% agree and strongly agree that it is relatively easy to obtain loan from stokvel for business growth or expansion. The results are presented in table 9.

**Table 9. The ease to obtain loan for business growth or expansion from stokvel**

|                | Frequency | Percent | Cumulative Percent |
|----------------|-----------|---------|--------------------|
| Undecided      | 1         | .8      | .8                 |
| Agree          | 110       | 89.4    | 90.2               |
| Strongly agree | 12        | 9.8     | 100.0              |
| Total          | 123       | 100.0   |                    |

## 4.10. Stokvel members must present business plans to obtain loans

Most of the respondents (49.6% disagree and 2.4% strongly disagree) do not support the idea that member should present business plans before obtaining loans. This in other words may mean that they want the loan granting process to be as

simple as possible. Only 21% of them support the fact that business plans should be provided before loans can be granted. See detailed results in table 10.

**Table 10. Members must present a business plan to get loan**

|  | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| Strongly disagree | 3 | 2.4 | 2.4 |
| Disagree | 61 | 49.6 | 52.0 |
| Undecided | 30 | 24.4 | 76.4 |
| Agree | 26 | 21.1 | 97.6 |
| Strongly agree | 3 | 2.4 | 100.0 |
| Total | 123 | 100.0 |  |

**4.11. Need for Reasonable Explanation for Loan Applications**

Table 11 presents the results as to whether stokvel members should give reasonable explanations why they need loans. Most of the respondents (48 %) agree that at least members should provide reasons as to why they need loans. This might be because of security reasons. Another 1.6% of the respondents strongly agree to this. However, 35.8% of the respondents do not agree with this idea while 14.6% choose to be undecided.

**Table 11. Members must present a reasonable explanation for why they need a loan**

|  | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|
| Strongly disagree | 1 | .8 | .8 | .8 |
| Disagree | 43 | 35.0 | 35.0 | 35.8 |
| Undecided | 18 | 14.6 | 14.6 | 50.4 |
| Agree | 59 | 48.0 | 48.0 | 98.4 |
| Strongly agree | 2 | 1.6 | 1.6 | 100.0 |
| Total | 123 | 100.0 | 100.0 |  |

**4.12. Need For Collaterals Or Sureties To Get Loans**

The results (Table 12) show that 53.7% of the respondents disagree that collaterals or sureties should be provided and only 30.1% really support this point with another 1.6% strongly in support.

**Table 12. Members must present collateral or surety to get a loan**

|  | Frequency | Percent | Cumulative Percent |
|---|---|---|---|
| Strongly disagree | 1 | .8 | .8 |
| Disagree | 66 | 53.7 | 54.5 |
| Undecided | 17 | 13.8 | 68.3 |
| Agree | 37 | 30.1 | 98.4 |
| Strongly agree | 2 | 1.6 | 100.0 |
| Total | 123 | 100.0 |  |

### 4.5. Selected Results of the Qualitative Instrument

### 4.5.1. Motivations for the Formation of Stokvels

*Question: What can you say was the motivation behind the formation of your stokvel group?*

One of the objectives of the interview exercise was to establish the motivation for the realization immigrant-run stokvels. Though in different sittings, all the participants interviewed concurred the formation of stokvels was premised on their limited access to banking services. Hence, the best option was to pull their resources together so that they can help one another just as it is done back home (their country of origin). For instance, one of the participants **(Respondent A)** had this to say:

*"Being a stranger in another country means your financial choices are limited and so we had to cooperate amongst ourselves by forming this njangi so that we could easily afford the needed finances since almost all of us are businessmen and women"*

Similarly, **Respondent C said this**:

*"Because we are in a foreign land and since we understand that we have no voice, we decided to form this group in order to get mutual support. The group helps us to grow our businesses and also to save our money. Remember it is not easy for a foreigner to open a bank account in South Africa. A majority of us foreigners do not possess the type of documents that the banks need so the only option left for us is to form our njangis after all, we don`t need any documents to form them".*

## 5. Conclusions

Generally, limited access to finance is a recurring theme in most studies on entrepreneurship development in South Africa and this is particularly acute for immigrants. It has been noted that discrimination in the labour market of the host economy pushes immigrants into entrepreneurial activities. The sometimes, selective exclusion by the legislation and the financial houses of the host country, force immigrants of African origin to setup stokvels to sustain their businesses and livelihood in South Africa. To provide the basis for inclusive policy initiatives, this paper investigated the drivers for the formation of business support stokvels by Cameroonians in South Africa. It is generally believed that one can distinguish stokvels based on the motives for participations. The results support this assertion as those who join financial support association tend to the common objective of supporting their businesses. Hence, these types of stokvels tend to fill the void resulting from exclusion in the financial market and business support systems of the host economy.

Even members that acknowledged having bank accounts (87.3%) concede that they cannot obtain loans from banks due to a number of structure and legislative issues. This not withstanding the vast majority (92.6%) proclaimed that stokvels provide start-up capital for their businesses while almost all of them (99.2%) testified that stokvels provide business growth loans to them. Besides this, they concurred that stokvels served as a saving scheme. These views were clearly articulated by one of the participants as follows:

*"Because we are in a foreign land and since we understand that we have no voice, we decided to form this group in order to get mutual support. The group helps us to grow our businesses and also to save our money. Remember it is not easy for a foreigner to open a bank account in South Africa. A majority of us foreigners do not possess the type of documents that the banks need so the only option left for us is to form our stokvel after all, we don`t need any documents to form them"*.

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# Theoretical Antecedent of Customer Relationship Management of Banks in India

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**Abstract:** This paper has attempted to study the theoretical antecedents of CRM in banks and validate the instrument scale for CRM especially for customer perspective. The researcher has developed the hypothetical model of CRM Practices for banks. Due to insufficient literature in CRM model development study, the researcher has concentrated universal study to focus and form the study conundrum. The research design of the present study is both descriptive and empirical in nature. The sample was identified with the help of online sample service portal. The study data collected with the sample size of 384 with judgment sampling method. At the time of analyzing the data for envisage the results the researcher applies training and hold out sample method was adopted for better results. To achieve the validity aspects of scale used for this study evaluated with factor analysis. Both factor analysis methods were adopted. To check the existing theory latent construct Exploratory Factor Analysis is conducted and its results validated through Confirmatory Factor Analysis. At the end of the process the researcher offers recommendation for better development and practices for CRM in banks of India.

**Keywords:** Customer Relationship Management; Validity and Reliability; Scale development; Confirmatory Factor Analysis and Explorative Factor Analysis

**JEL Classification:** E50

## 1. Introduction

The use and expression of customer relationship management has been started since 1990's. There is lot of contradiction and definition to domain the term CRM. Even though, the acronym of Customer Relationship Management itself sometimes contradicted. Most of the researcher and academicians would consider CRM as the concept of relationship marketing. The other part of the society those who opposed as relationship marketing, they tend to describe CRM as a software application that

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do different functions of business as well as marketing. Likewise, professionals belongs to information technology, they believe and emphasize that CRM is a marketing tool and/or software application. Thus, approach enhances to develop and maintain long lasting relationship with customers. Nevertheless, the above said opinions are due to explained fact of CRM such as strategic, operational, analytical and collaborative (Buttle, 2009). The concept of CRM is differing from author to author based on their perceived value and believes (Rootman et al, 2007). In order to achieve high market share and offer better service to the customers, CRM is an essential factor. It identifies past to present and future market is to progress the innovative services. The successful integration of business is adopting key strategy, technology and business progress is depend on the understanding the needs and desires of the potential customers (Kanti, 2012). As same to the acronym of CRM, business in different sector had change their approach regarding relationship marketing. According to the relationship marketing view of business is carried out through relationship, neural network and interaction (Lindgreen & Antico, 2005). The bank marketing part is integrated the marketing process with CRM policy. This integration tunes the strategies for dynamic banking services with the help of CRM. Further, CRM is essential ingredients for effective bank marketing. In Indian context many factor evident to us to adopt the CRM in banks. The researcher has outlined the source of the evident from published sources.

- Bank account penetration increased from 35 per cent to 53 per cent;

- Only 39 per cent of all account holders in India own a debit or automated teller machine (ATM) card;

- 21 per cent of people took loans for finance health care needs, 10 per cent for finance education, 9 per cent for business and just 4 per cent for mortgage;

- With a dormancy rate of 43 per cent, accounts for about 195 million of the 460 million adults with a dormant account around the world. (Express News Service, 2015)

In order to avoid unhealthy competition and get high market value it is advisable to the bank to adopt CRM practices. While considering issues of CRM especially in banking sector, the study was undertaken by the researcher to demonstrate what are the CRM practices followed by the banks in India with perception of the bank customers. Further, the researcher has checked the existing theoretical construct for CRM practices of banks in India.

## 2. Literature Review

The following comprehensive review section offers strong empirical investigation on CRM practices and Model development.

The perception of CRM emerges due to vast change in business environment. The More formal B2C Marketing has been replaced by CRM (Hui & Weikong, 2011). Although, the CRM became a powerful concept to align the interest of a firm and its customers. The focus of CRM is now shifted to how firms implement CRM to enhance profits Boulding et.al. (2005). The implementation of CRM creates an urge for development and identification of key construct on CRM practices. Thus, insisted in CRM practices was improve theoretical development or knowledge Gummesson (2004) and also Baser et.al. (2011) to measure the perception of CRM practices. It should need different defining construct theory building piece of work the dimension extraction is based on the definition of CRM in the initial year.

Sin et.al (2005) articulated four dimensions based on the definition of CRM namely Customer focus, CRM organization, Technology-based CRM and knowledge management. Further Lu and Shang (2007) identify six factor dimension of CRM in Freight Forwarder Service. The dimension consists of Customer Acquisition, Customer Response, Customer Knowledge, Customer Information System, Customer value Evaluation and Customer Information Process. Among the six factors "Customer Knowledge" dimension has high loading factor than others. The reliable scale development to measure CRM practices not only to end itself with customer.

Rootman et.al. (2008) identifies two dimension attitude and Knowledge ability of employees' about CRM. The selected two dimensions have positive relationship with CRM. The author highly recommends attitude and knowledge ability of bank employees leads to good impact on CRM in banking sector. Banks have realized the significance of CRM Practices.

Hui-I Yao and Kok Weikong (2011) conducted the model development study and predicted the three dimensions namely Acquisition, Enhancement and Recovery. These dimension focuses the Customer Life Cycle of CRM practices.

Izah Mohd Tahir and Zuliana Zulkifli (2011) conducted the pilot study under five dimensions namely Customer acquisition, Customer Response, Customer Knowledge, Customer Information System and Customer value evaluation. In Indian contest CRM is still lacking due less attention among the Researcher and academicians.

Sanjay Kanti Das (2012) conducted the study with ten dimension, six dimensions were explored by the research cited by Lu and Shang (2007) namely Customer acquisition, Customer Information System, Customer Value Evaluation and

Customer Information Process. The results indicated there is no positive relationship in perception of CRM practices and Demographic factors.

Zuliana Zulkifli and Izah Mohd Tahir (2012) developed and validating construct of Customer Relationship Management Practices. The scale instruments were adopted from the work of (Sin et. al., 2005; Lu & Shang, 2007; Rootman, 2008). After the panel recommend 48 scale statements are retained out of 51 scale statements. The result after applying the EFA for CRM construct, it has reduced to 29 statements under five dimensions. The sixth dimension Customer Information was dropped due to low loading factor. Conceptually developed and validated CRM scale catering to Indian banking sector, that help the bank managers to implement the CRM and create the attention of the unfocused area.

Arun Kumar Agariya and Deepali Singh (2012) initially developed 50 scale items from the work of Agariya and Singh (2011). The critical factor identified with the help of multivariate data analysis, that identified CRM construct consists Organizational structure and Customer support, service quality, Trust, Technology, and Personalization and Market orientation.

There are so many studies have focused either in the form of customer perception on CRM and its implementation at banks. There is limited studies has conducted on the linkage of theory and scale construct. So support of the existing selected review of literatures the author develop and construct five factor dimension of CRM practices in banks based on original work of Lu and Shang (2007) followed by Sanjay Kanti Das (2012), Sheik Abdullah et.al (2016). Here the researcher only uses the five factor dimension to construct and validate the model. Therefore 43 statements is used for validate the model under five dimension.

## 3. Contribution of the Study

The studies conducted previously have not examined which dimension more accounted for CRM practices. Although the researcher also examines which dimension more accounted for CRM practices construct. Simultaneously the researcher has form the new model to measure the CRM practices influence on customer satisfaction towards banking services. Based on the results of past empirical research and collected literature the structured framework model has proposed by the researcher.

## 4. Objectives of the Study

The main objective of the study is to validate the existing model of CRM practices in Banks and to analyse the CRM practices in different constituent factors.

## 5. Methodology

### 5.1. Panel Interview

The face and content validity of the instrument is evaluated with the panel of experts. The panel members are asked to offer recommendation about the scale items adopted for the study from past literature. After availing panel members opinion the researcher has make appropriate changes in the scale item in the latent construct which is measuring the CRM practices. After the panel recommendation, the data collection instrument reliability and validity measured through pre-test. The pre-test was conducted with 40 respondents. The internal consistency of the scale measurement Alpha value found as 0.784 to 0.924 (if item deleted method). Thus, indicates a good internal consistency of scale item used for this study.

### 5.2. Sampling Design

The banking customers are large in number and it is not feasible to collect the data from all the banking customers from the study area. Therefore, it is decided to apply sampling technique to study the current problem. The *www.surveysystem.com* is used to identify the sample size. According to this website, 384 are identified as appropriate sample size.

In Virudhunagar District, there are 8 Taluks. Among these, there are 16 public sector banks and 13 private sector banks having totally 191 branches doing banking business. The researcher has selected 48 respondents from each Taluk and the sample respondents are identified through judgement sampling method. The detailed sampling methodology is shown in Table 1.

**Table 1. Taluk Wise Distribution of Sample Customers**

| S. No. | Taluks | Total Branches (in No's) | No. of Respondents |
|--------|--------|--------------------------|--------------------|
| 1 | Aruppukottai | 16 | 48 |
| 2 | Sivakasi | 49 | 48 |
| 3 | Srivilliputtur | 22 | 48 |
| 4 | Sattur | 14 | 48 |
| 5 | Kariapatti | 7 | 48 |
| 6 | Rajapalayam | 40 | 48 |
| 7 | Tiruchuli | 16 | 48 |
| 8 | Virudhunagar | 27 | 48 |
| | *Total* | 191 | 384 |

*Source: Computed Data*

### 5.3. Statistical Tools used for Analysis

The confirmatory factor analysis is a statistical tool which is used to test the reliability and validity of the variables included in each factor identified by the EFA. The important statistics drawn from the CFA are the standardized factor

loading of the variables, its t statistics, composite reliability and average variance. These are computed for the purpose of testing the content, convergent, and discriminant validity of the factor extracted by the EFA. For analytical convenient, the randomly selected 50 per cent of the sample is used for exploratory factor analysis to find the latent relationship, further the hold out sample of another 50 per cent is used for confirmatory factor analysis.

In the present study, the CFA is applied to test the reliability and validity of variables included in each factor extracted by the EFA.

## 6. Results and Discussion

### 6.1. Analysis of Five Factors relating to CRM Practices in Banks

The researcher focused on the five factors and which are relating to CRM practices in banking, they are customer acquisition, customer response, customer knowledge, customer information system and customer value evaluation. By using this factor, the researcher has able to test the CRM Practices in banks.

### 6.1.1. Customer Acquisition

Customer acquisition is one of the processes of acquiring new customers. Customer acquisition requires forethought and strategies. For acquiring new customers, it is helpful to purchase banking products and services. Using appropriate customer acquisition strategies helps bank to acquire the right customers in a cost effective way. The following Table 2 shows the customer acquisition in banking sector.

**Table 2. Customer Acquisition**

| S.No. | Customer Acquisition | SA | A | NA-DA | DA | SDA | Total |
|---|---|---|---|---|---|---|---|
| 1. | Adaptability of different measures to meet customers' urgent requirements. | 106 (27.60) | *235* *(61.20)* | 16 (4.17) | 15 (3.91) | 12 (3.13) | **384** **(100)** |
| 2. | Accept different approaches to attract targeted customers. | 65 (16.93) | *173* *(45.05)* | 45 (11.72) | 85 (22.14) | 16 (4.17) | **384** **(100)** |
| 3. | Dissemination of information to attract new customers. | 51 (13.28) | *140* *(36.46)* | 65 (16.93) | 107 (27.86) | 21 (5.47) | **384** **(100)** |
| 4. | Offers a variety of service items and information. | 47 (12.24) | *155* *(40.36)* | 70 (18.23) | 93 (24.22) | 19 (4.95) | **384** **(100)** |
| 5. | Banks ability to tailor its products and services to meet customers' needs. | 44 (11.46) | 117 (30.47) | 75 (19.53) | *124* *(32.29)* | 24 (6.25) | **384** **(100)** |

| 6. | Bank actively seeks to provide total financial solution. | 46 (11.98) | *141* *(36.72)* | 50 (13.02) | 117 (30.47) | 30 (7.81) | **384** **(100)** |

*SA-Strongly Agree A-Agree NA or DA-Neither Agree or Disagree SDA-Strongly Disagree*

It is noted from the above Table 2 that, out of 384 respondents opinioned towards customer acquisition that, 235 respondents are agreed that the bank adopt different measures to meet customers' urgent requirements, 173 respondents are agreed that the bank accept different approaches to attract targeted customers, 140 respondents are agreed that the bank would dissemination of information to attract new customers, 155 respondents are agreed that the bank offers a variety of service items and information to their customers, 124 respondents are disagreed the bank to fulfill the needs of customers about its products and services and 141 respondents agreed that the bank would provide financial solution to its customers.

### 6.1.2. Customer Response

Bank plays a crucial role in customer response. No one can wait for no one in the busy world. In this sense, the customer can expect quick response from bank. If the bank offers quick response, then only their customers are always loyal to them. Response becomes trust and loyalty to the customers about the bank. It is very difficult to create trust and loyalty of the customers. If there is any grievance arising from customers, the bank can ask the customers grievance directly or indirectly and it is valuable to rectify the customers' grievance as soon as possible. It is a challenging job of banking sector. They can offer services without any delay and it automatically convert their customers are loyal to them. The following Table 3 shows the customer response

**Table 3. Customer Response**

| S. No. | Customer Response | SA | A | NA-DA | DA | SDA | Total |
|---|---|---|---|---|---|---|---|
| 1. | Bank uses varied communication channels. | 45 (11.72) | *135* *(35.16)* | 59 (15.36) | 123 (32.03) | 22 (5.73) | **384** **(100)** |
| 2. | Understanding on the customer's requirements and expectations by bank. | 67 (17.45) | *131* *(34.11)* | 73 (19.01) | 97 (25.26) | 16 (4.17) | **384** **(100)** |
| 3. | Bank offers convenient services to customers. | 51 (13.28) | *126* *(32.81)* | 54 (14.06) | 122 (31.77) | 31 (8.07) | **384** **(100)** |
| 4. | Bank offers a wide range of credit facilities to meet customer's requirements. | 55 (14.32) | 103 (26.82) | 60 (15.63) | *142* *(36.98)* | 24 (6.25) | **384** **(100)** |
| 5. | Bank offers useful online products and services. | 45 (11.72) | 102 (26.56) | 65 (16.93) | *145* *(37.76)* | 27 (7.03) | **384** **(100)** |
| 6. | Bank offers products that reflect customer's earnings | 71 (18.49) | *106* *(27.60)* | 96 (25) | 87 (22.66) | 24 (6.25) | **384** **(100)** |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | and wealth. | | | | | | |
| 7. | Bank provides enough information to customers about different products and services. | 82 | *108* | 104 | 61 | 29 | **384** |
| | | (21.35) | *(28.13)* | (27.08) | (15.89) | (7.55) | **(100)** |
| 8. | Bank staffs are sufficiently empowered to solve difficult banking problems. | 81 | *137* | 91 | 47 | 28 | **384** |
| | | (21.09) | *(35.68)* | (23.70) | (12.24) | (7.29) | **(100)** |
| 9. | Bank takes actions for customer's erroneous transaction. | 87 | *140* | 73 | 55 | 29 | **384** |
| | | (22.66) | *(36.46)* | (19.01) | (14.32) | (7.55) | **(100)** |

*Source: Primary Data*

*SA-Strongly Agree A-Agree NA or DA-Neither Agree or Disagree SDA-Strongly Disagree*

It is evident from the above Table 3 that, out of 384 respondents majority of them opinioned towards customer response that, 135 respondents are agreed that bank uses varied communication channels, 131 respondents are agreed that the bank would understanding the customer's requirements and expectations, 126 respondents are agreed that the bank offers convenient services to the customers, 142 respondents are disagreed that the bank offers a wide range of credit facilities to meet customer's requirements, 145 respondents are disagreed that the bank offers useful online products and services, 106 respondents are agreed that the bank offers products will reflect customer's earnings and wealth, 108 respondents are agreed that the bank provides enough information to their customers about different products and services, 137 respondents agreed that the bank staffs are sufficiently empowered to solve difficult banking problems and 140 respondents are agreed that the bank takes immediate actions for customer's transaction.

### 6.1.3. Customer Knowledge

Customer knowledge is one of the most valuable things in today's scenario. Bank provides various innovative services to their customers in order to attracting them. Dump the customer knowledge is not motive for the bank. They provide services for improving the customer knowledge regarding their products and services and also it is a chance for conveying to other customers. Bank can also come forward to know the individual customer needs and want. On the basis of their want, terms and conditions are easy to understand by them. Table 4 shows the customer knowledge.

**Table 4. Customer Knowledge**

| S. No. | Customer Knowledge | SA | A | NA-DA | DA | SDA | Total |
|---|---|---|---|---|---|---|---|
| 1. | Bank's operating hours are convenient to customers. | 61 (15.89) | *126* *(32.81)* | 116 (30.21) | 58 (15.10) | 23 (5.9911) | **384** **(100)** |
| 2. | Bank offers comprehensive range of investment products. | 68 (17.71) | *130* *(33.85)* | 86 (22.40) | 69 (17.97) | 31 (8.07) | **384** **(100)** |
| 3. | Bank offers with innovative loan services. | 77 (20.05) | *129* *(33.59)* | 85 (22.14) | 55 (14.32) | 38 (9.90) | **384** **(100)** |
| 4. | Bank understands individual customer's needs and circumstances. | *168* *(43.75)* | 132 (34.38) | 47 (12.24) | 23 (5.99) | 14 (3.65) | **384** **(100)** |
| 5. | Bank often encourages individual customers to introduce other's to purchase their products and services. | 67 (17.45) | *172* *(44.79)* | 96 (25) | 34 (8.85) | 15 (3.91) | **384** **(100)** |
| 6. | Bank often insists customers in using bank's services and products. | 88 (22.92) | *131* *(34.11)* | 102 (26.56) | 44 (11.46) | 19 (4.95) | **384** **(100)** |
| 7. | Bank has clear objectives and strategies to meet customers' needs and the performance of bank-customer relationships. | 59 (15.36) | 109 (28.39) | 76 (19.79) | *111* *(28.91)* | 29 (7.55) | **384** **(100)** |
| 8. | Bank does not misuse its customer's knowledge. | 87 (22.66) | *107* *(27.86)* | 79 (20.57) | 57 (14.84) | 54 (14.06) | **384** **(100)** |
| 9. | The terms and conditions of bank are better than other bank. | 92 (23.96) | *117* *(30.47)* | 80 (20.83) | 74 (19.27) | 21 (5.47) | **384** **(100)** |

*Source: Primary Data*

*SA-Strongly Agree A-Agree NA or DA-Neither Agree or Disagree SDA-Strongly Disagree*

From the Table 4 that, out of 384 respondents majority of them opinioned towards customer knowledge that, 126 respondents agreed that bank working hours are convenient to them, 130 respondents agreed that the bank offers comprehensive range of investment products, 129 respondents are agreed that the bank offers innovative loan services, 168 respondents are strongly agreed that the bank also understand individual customer's needs and circumstances, 172 respondents are agreed that the bank often encourages customers to introduce other's to purchase their products and services, 131 respondents are agreed that the bank often insists customers in using bank services and products, 111 respondents are disagreed that the bank has clear objectives and strategies to meet customers' needs and the performance of bank-customer relationships, 107 respondents are agreed that the

bank does not misuse its customer's knowledge and 117 respondents are agreed that the terms and conditions of bank are better than other bank.

### 6.1.4. Customer Information System

Technology has become a key factor in the competitive world. Banks are aware of customer's need for new services and plan to make them available. Information technology has increased the level of competition and forced them to integrate the new technologies in order to satisfy their customers. For the customers, the bank offers information system services like self inquiry facility, any time banking, tele-banking and electronic banking etc., So that, it reduces the waiting time of customers. The following Table 5 shows the customer information system in banking sector.

**Table 5. Customer Information System**

| S. No. | Customer Information System | SA | A | NA-DA | DA | SDA | Total |
|---|---|---|---|---|---|---|---|
| 1. | Bank's information system allows performing banking needs. | 99 (25.78) | *113 (29.43)* | *113 (29.43)* | 35 (9.11) | 24 (6.25) | **384 (100)** |
| 2. | Bank implemented modern equipments and technologies. | 62 (16.15) | *137 (35.68)* | 119 (30.99) | 46 (11.98) | 20 (5.20) | **384 (100)** |
| 3. | Bank provides tele-banking and other internet banking facilities. | 98 (25.52) | *118 (30.73)* | 80 (20.83) | 59 (15.36) | 29 (7.55) | **384 (100)** |
| 4. | ATM machines are available at convenient places. | 66 (17.19) | *131 (34.11)* | 84 (21.88) | 55 (14.32) | 48 (12.5) | **384 (100)** |
| 5. | Every bank transactions are computerization. | 98 (25.52) | *122 (31.77)* | 94 (24.48) | 50 (13.02) | 20 (5.21) | **384 (100)** |
| 6. | Bank adapted new technologies to improve communication with customer. | 73 (19.01) | *145 (37.76)* | 90 (23.44) | 53 (13.80) | 23 (5.99) | **384 (100)** |
| 7. | Ensure simplified business dealing with the bank. | 60 (15.63) | *143 (37.24)* | 89 (23.18) | 71 (18.49) | 21 (5.47) | **384 (100)** |
| 8. | Banks are conversant with automated technology in the sphere of marketing, sales and service functions. | 103 (26.82) | *111 (28.91)* | 84 (21.88) | 58 (15.10) | 28 (7.29) | **384 (100)** |
| 9. | Banks ensure proper security system to protect customer's transaction. | 88 (22.92) | *109 (28.39)* | 91 (23.70) | 56 (14.58) | 40 (10.42) | **384 (100)** |
| 10. | Bank implemented core banking solutions. | 73 (19.01) | *119 (30.99)* | 101 (26.30) | 65 (16.93) | 26 (6.77) | **384 (100)** |

*Source: Primary Data*

*SA-Strongly Agree A-Agree NA or DA-Neither Agree or Disagree SDA-Strongly Disagree*

The above Table 5 that, out of 384 respondents majority of them opinioned towards customer information system that, 113 respondents are agreed about bank's information system allows to perform banking needs and another 113 respondents are neither agreed nor disagreed about bank's information system allows to perform banking needs, 137 respondents are agreed that the bank had to implemented modern equipments and technologies, 118 respondents are agreed that the bank provides tele-banking and other internet banking facilities to their customers, 131 respondents agreed that the ATM machines are available at convenient places, 122 respondents are agreed that the bank transactions are computerization, 145 respondents are agreed that the bank adapted new technologies to improve communication with their customers, 143 respondents agreed that they are ensuring simplified business dealing with the bank, 111 respondents are agreed that the banks are conversant with automated technology in the sphere of marketing, sales and service functions, 109 respondents are agreed that the banks have to ensure proper security system to protect customer's transaction and 119 respondents are agreed that the bank has to implemented the core banking solutions to their customers.

### 6.1.5. Customer Value Evaluation

Customer value can be examined at two levels such as low level and high level. The low level of customer value encompasses perceived value from the product. On the other hand, high level of customer value enhances emotional value of the customer regarding when using the product or service. In order to evaluate the customer value in banking sector, Table 6 shows the result.

**Table 6. Customer Value Evaluation**

| S.No. | Customer Value Evaluation | SA | A | NA-DA | DA | SDA | Total |
|---|---|---|---|---|---|---|---|
| 1. | Bank always delivers superior services. | 74 (19.27) | *113* (*29.43*) | 93 (24.22) | 79 (20.57) | 25 (6.51) | **384** (**100**) |
| 2. | Bank offers high quality services. | 67 (17.45) | *164* (*42.71*) | 73 (19.01) | 52 (13.54) | 28 (7.29) | **384** (**100**) |
| 3. | Bank offers good infrastructural facilities | 77 (20.52) | *127* (*33.07*) | 93 (24.22) | 70 (18.23) | 17 (4.43) | **384** (**100**) |
| 4. | Customer enjoys bank services. | 87 (22.66) | *152* (*39.58*) | 82 (21.35) | 45 (11.72) | 18 (4.69) | **384** (**100**) |
| 5. | Services rendered by bank attract customers. | 74 (19.27) | *150* (*39.06*) | 86 (22.40) | 51 (13.28) | 23 (5.99) | **384** (**100**) |

| | | SA | A | NA or DA | | SDA | |
|---|---|---|---|---|---|---|---|
| 6. | Customer feel relaxed using banking services. | 81 | *134* | 97 | 45 | 27 | **384** |
| | | (21.09) | *(34.90)* | (25.26) | (11.72) | (7.03) | **(100)** |
| 7. | Services offered by bank develop good impression. | *169* | 127 | 51 | 22 | 15 | **384** |
| | | *(44.01)* | (33.07) | (13.28) | (5.73) | (3.91) | **(100)** |
| 8. | Full confident with the security level on bank. | 86 | *179* | 64 | 32 | 23 | **384** |
| | | (22.40) | *(46.61)* | (16.67) | (8.33) | (5.99) | **(100)** |

*Source: Primary Data*

*SA-Strongly Agree A-Agree NA or DA-Neither Agree or Disagree SDA-Strongly Disagree*

It is gratifying to note from the above Table 6 that, out of 384 respondents majority of them opinioned towards customer value evaluation that, 113 respondents are agreed that the bank would always deliver superior services to its customers, 164 respondents are agreed that the bank offers high quality services to their customers, 127 respondents are agreed that the bank offers good infrastructural facilities to their customers, 152 respondents are agreed that they enjoy banking services, 150 respondents are agreed that they attract banking services, 134 respondents agreed that they are feeling relaxed while using banking services, 169 respondents are strongly agreed that the services offered by bank would develop good impression among the customers and 179 respondents are agreed that they have a full confident of security on bank.

### 6.2. Analysis and Development of Hypothetical Measurement Models

The confirmatory factor analysis approach was presented in the present data analysis is to meet the objective to construct and validate the five factor dimension of factor analysis. So the scale was adopted from the past studies and literature, redefined and suited to present studies. To extract the pattern relationship the researcher first applies the Explorative Factor Analysis (EFA). The results of EFA, extracted factor components are highly loaded with its own dimension. The extracted valid factors are used to validate through Confirmatory Factor Analysis. Efficiently to do this, any item that does not fit the measurement model due to low factor loading should be removed from the model. The fitness of a measurement model is indicated through certain Fitness Indexes. However the items deletion should not exceed 20% of total items in a model. Otherwise the particular construct itself is deemed to be invalid since it failed the "confirmatory" itself. The researchers run the CFA for every measurement model separately or run the pooled measurement models at once. However, the CFA for pooled measurement models is more efficient and highly suggested (Awang, 2012). So the researcher applies the pooled confirmatory factor analysis for the present study.

**6.2.1. Validity and Reliability of the Model**

The researcher defined model valid is evaluated through some statistical criteria. Therefore determination criteria indicate acceptable fit while others are close to meet the acceptable fit value. Before that the measurement model should establish the acceptable levels of goodness-of-fit. Therefore the measurement model is determining the specific evidence of construct validity. Validity refers to in what extent the data instrument accurately measure what the researcher indented to measure. In order to establish the validity issue, the following validity aspect fulfilled and carried out by the researcher.

**(a) Content Validity**
Content validity occurs when the experiment provides adequate coverage of the subject being studied. It also measuring the right things as well as having an adequate sample. The content validity of the present study checked out by the panel members at the time of scale development.

**(b) Convergent Validity**
The convergent validity is originally measure of construct that are expected to correlate do so. To get adequate coverage the measurement model correlate strongly with its theoretical construct model. In order to measure the convergent validity the inter correlation among the factor in each construct should be high. Otherwise the indicators of a construct should converge a high proportion of variance in common. The indicator of reflective dimension each factor standardized factor loading more than 0.60 is considered to be an acceptable level (Barclay et.al, 1995). In CFA the convergent validity measured through standardized factor loading and Average Variance Extracted should be greater than 0.5 (Fornell & Larcker, 1981). The calculated AVE values are presented in Table 7. It is easy way to calculate the AVE (Average Variance Extracted) manually by using this formula:

$$ AVE = \frac{\text{Sum of each squared factor loading}}{\text{No. of Indicators}} $$

**Table 7. Average Factor Extracted**

| Dimension | Sum of squared factor loading/No of indicators | AVE |
|---|---|---|
| Customer Acquisition | 3.984/6 | .664 |
| Customer Response | 3.607/6 | .601 |
| Customer Knowledge | 3.295/5 | .659 |
| Customer Information System | 4.162/7 | .595 |
| Customer Value Evaluation | 4.439/7 | .634 |

*Source: Computed Data*

From Table 7 all the Average Factor extracted value are greater than 0.5. So the researcher constructed five factor dimension model CRM practices fulfill the convergent validity.

The following Table 8 shows the standardized factor loading of the measurement model. The standardized factor coefficient value is consider for computing the AVE and also the $R^2$ value is consider for computing the composite reliability.

**Table 8. Factor loading of Five Factors Dimension of CRM Practices Construct**

| Dimension | Factor | Factor loading | Error value | AVE |
|---|---|---|---|---|
| **Customer Acquisition** | CA1 | .83* | .54 | .664 |
| | CA2 | .81* | .53 | |
| | CA3 | .73* | .61 | |
| | CA4 | .78* | .58 | |
| | CA5 | .89* | .56 | |
| | CA6 | .84* | .52 | |
| **Customer Response** | CR1 | .72* | .77 | .601 |
| | CR3 | .82** | .66 | |
| | CR4 | .81** | .69 | |
| | CR5 | .83** | .61 | |
| | CR6 | .78* | .63 | |
| | CR8 | .68* | .55 | |
| **Customer Knowledge** | CK1 | .73** | .60 | .659 |
| | CK2 | .80* | .63 | |
| | CK3 | .89* | .51 | |
| | CK4 | .79* | .53 | |
| | CK9 | .84* | .55 | |
| **Customer Information System** | CIS1 | .82* | .58 | .595 |
| | CIS2 | .83* | .64 | |
| | CIS3 | .81* | .74 | |
| | CIS4 | .75* | .62 | |
| | CIS5 | .85* | .75 | |
| | CIS6 | .68** | .65 | |
| | CIS9 | .63* | .63 | |
| **Customer Value Evaluation** | CVE1 | .69* | .69 | .634 |
| | CVE2 | .81* | .81 | |
| | CVE3 | .78* | .78 | |
| | CVE4 | .79* | .79 | |
| | CVE5 | .76* | .76 | |
| | CVE6 | .87* | .87 | |
| | CVE8 | .86** | .86 | |

*Source: AMOS Output *0.01 and ** 0.05 Significance Level*

**(c) Composite Reliability**

Composite reliability is the measure of reliability of the construct. It measure the overall reliability of the items loaded on a latent construct. The composite value ranges from zero to one. Values greater than 0.70 reflect the data is more reliable to the construct. The formula for calculating composite reliability as follows and results depicted in Table 9.

$$CR = \frac{\text{Square of sum of Standardized factor loading}}{\text{Square of sum of loading + indicator measurement error}}$$

**Table 9. Result of Composite Reliability**

| Dimension | AVE | CR |
|---|---|---|
| Customer Acquisition | .664 | .880 |
| Customer Response | .601 | .846 |
| Customer Knowledge | .659 | .53 |
| Customer Information System | .595 | .861 |
| Customer Value Evaluation | .634 | .867 |

*Source: Computed Data*

The composite reliability of the entire latent construct composite reliability is more than 0.70 indicates adequate internal consistency in the measurement model.

**(d) Discriminant Validity or Divergent Validity**

Discriminant validity is the degree in which a latent construct distinct from other latent constructs. The successful evaluation of discriminant validity shows that a construct of the model is not highly correlated with other construct in the same model. There is no standard value for discriminant validity. If the correlation between exogenous constructs is should not exceed 0.85. The correlation value exceeding 0.85 indicates the two exogenous constructs are redundant or having serious multicollinearity problem. Therefore it is essential to compute the discriminate validity of five factor dimension of CRM practices model. The Discriminant Validity Index Summary presented in Table 10.

**Table 10. Discriminant Validity Index Summary**

| Dimension | CA | CR | CK | CIS | CVE |
|---|---|---|---|---|---|
| **CA** | **.81** | | | | |
| **CR** | .45 | **.78** | | | |
| **CK** | .17 | .12 | **.81** | | |
| **CIS** | .09 | .01 | .07 | **.77** | |
| **CVE** | .13 | .11 | .41 | .32 | **.79** |

*Source: AMOS output*

In table 10, the bolded values are square root of **Average Variance Extracted (AVE)** of each dimension. Other values are inter-correlation among the latent factor dimension. it is clear that no one latent factor correlation is more than 0.85, therefore the researcher may confirm the present five factor model doesn't affected by multicoolinarity index.

### 6.3. Evaluating the Fitness of the Model

After considering the validity aspects, the data fulfilled the validity and reliability indexes and next the researcher should consider several fitness indexes that reflect how well the data fits the model. The fitness index is supported by strong literature being referred. The acceptable model fit and the level of acceptance presented in the following Table 11.

**Table 11. Acceptable model fit index**

| Name of Category | Name of Index | Level of Acceptance |
|---|---|---|
| **Absolute Fit** | Chi-Square | P value >0.05 |
| | RMSEA | RMSEA <0.08 |
| | GFI | GFI >0.90 |
| **Incremental Fit** | AGFI | AGFI >0.90 |
| | CFI | CFI >0.90 |
| | TLI | TLI >0.90 |
| | NFI | NFI >0.90 |
| **Parsimonious Fit** | Chisq/df | Chi-Square/df <3.0 |

*Source: Zainudin Awang, A hand book on SEM 2$^{nd}$ edition*

First the model fulfill the criteria begins with the Chi-square statistic. Chi-square test describes differences of the observed and expected metrics. Acceptable model fit is, indicated by a chi-square probability value is high than 0.05. RMSEA indicate the amount of unexplained variance or residuals. CFI, NNI and NFI values meet the criteria (0.90 or large) for acceptable model fit.

Figure 2 shows the latent construct of pooled CFA for five factor dimensions of CRM practices and figure 3 shows the standardized solution computed through AMOS-output.
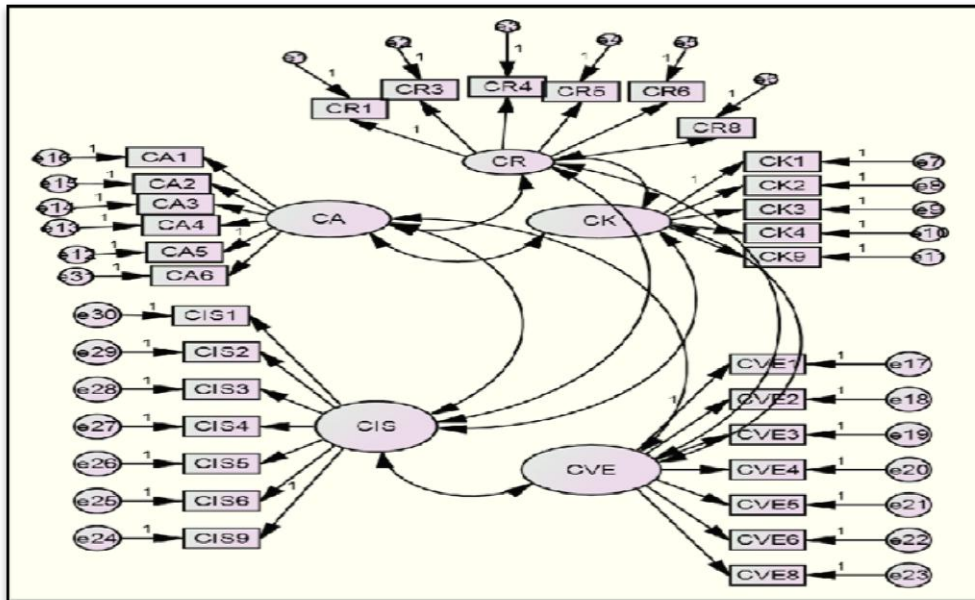
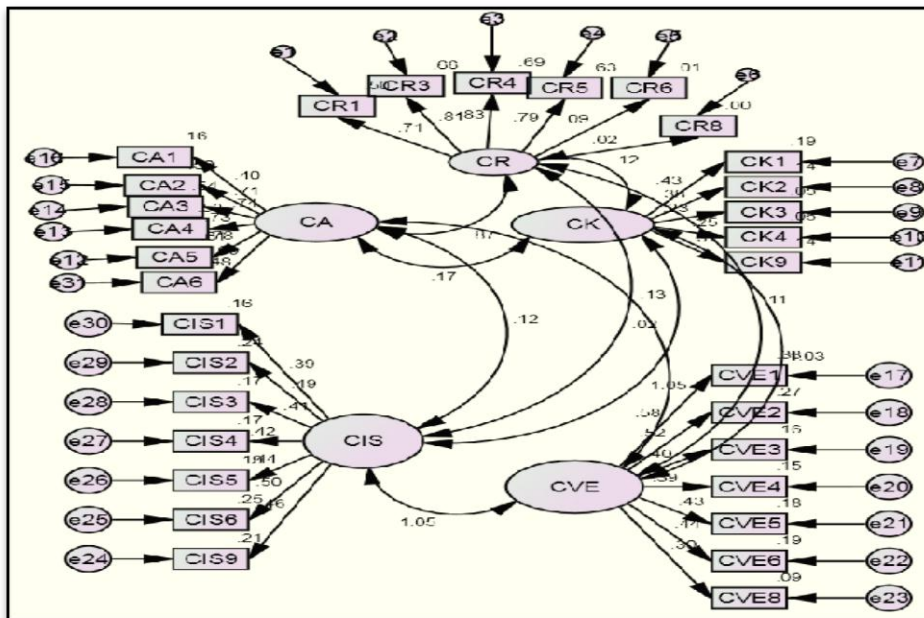**Figure 2. The Latent Construct of Pooled CFA**



**Figure 3. Standardized Solutions Computed Through Amos-Output (Before M.I)**

The measurement model shown in figure 2 comprises of five latent factors with thirty two observed variables. For each latent factor is measured by more than five observed variables. The random measurement error is indicated by associated error term. The inter correlation is indicated by two headed arrows, it connects the latent variables in the measurement. In figure 3 standardized solution and measurement $R^2$ values are obtained before the Modification indices. After making the modification the proposed five factor dimension of CRM practices model is accepted by the researcher. The pooled CFA results are presented in the following Table 12.

**Table 12. Pooled CFA Results**

| Name of Category | Name of Index | Index value | Critical value | Comments |
|---|---|---|---|---|
| **Absolute Fit** | RMSEA | 0.021 | <.08 | The Required level is achieved |
|  | GFI | .936 | >0.90 |  |
| **Incremental Fit** | CFI | .921 | >0.90 | The Required level is achieved |
| **Parsimony Fit** | Chi.Sq/df (CMIN) | 2.297 | <3.0 | The Required level is achieved |

*Source: AMOS output*

**Goodness of Fit Index (GFI)**

GFI is one of the most commonly reported measures of model fit. The GFI value ranges from 0 to 1. If the values close to one the researcher consider the data fit to the measurement model. The present measurement GFI value is .936, which is high than the threshold value of 0.9.

**Comparative Fit Index (CFI)**

CFI is another one measure of fitness of the measurement model. The CFI index uses a chi-square distribution. Just like GFI, CFI value also ranges between 0 and 1. The value of CFI is 0.90 or above is considered to indicate a good fit. The five factor model of CRM practices CFI value is 0.921 so the data best fit to the model.

**Root Mean Square Error of Approximation (RMSEA)**

RMSEA is a supplementary fit of CFA model. It used widely to provide a mechanism for adjusting sample size where chi-square statistics are used. If RMSEA value is less than or equal to 0.05 is good fit for the measurement model. The RMSEA value for the present model is obtained 0.021 which is less than the critical value of RMSEA 0.05.

**CMIN**

The value of CMIN is smaller it indicate better fit of the model. The chi-square would be non-significant indicating no significant discrepancy between model and dat. The value of CMIN in the present measurement model is less than 5 which shows better fit of five factor dimension of CRM practices model.

The pooled Confirmatory Factor Analysis (CFA) proved the underlying components are mutually exclusive, which means the five dimensions are discriminated each other. The entire factor indexes have achieved the required level which indicates the validity of the construct forming the five factor dimension of CRM practices.

The second order confirmatory factor analysis model to carry out by using the same latent construct in CRM dimension proposed by the researcher. The purpose of second order CFA is re-examine and re-confirm the measurement model with it path co-efficient. The following AMOS figure 4 shows five factor dimension of CRM practices construct on every sub construct.
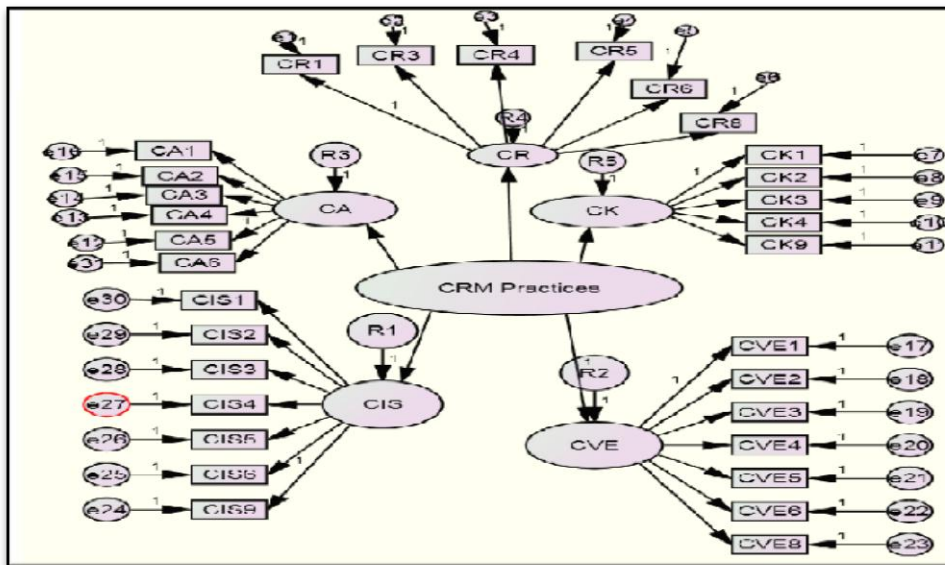


**Figure 4. Five Factor Dimensions of CRM Practices Construct on Every Sub Construct**

## 6.4. Validity and Reliability Index of the Measurement

The following Table 13 shows the average variance extracted and Composite reliability of the Second order CFA.

**Table 13. Validity and Reliability index of the measurement**

| Dimension | Factor loading | CR | AVE |
|---|---|---|---|
| Customer Acquisition | .83 | | .53 |
| Customer Response | .71 | | |
| Customer Knowledge | .69 | .723 | |
| Customer Information System | .72 | | |
| Customer Value Evaluation | .68 | | |

*Source: AMOS output*

From Table 13, it should be note that, the standardized loading of customer acquisition is (.83) more than the other dimension in the CRM practices construct. The least value of loading is .68 occupied by the Customer value dimension. Hence, the measurement model achieved the reliability and validity criteria.

Further the researcher must evaluate the model fit indexes. The acceptable model fit and the critical value of acceptance presented in the Table 14.

**Table 14. Fit Index of Second Order CFA**

| Category | Name of Index | Index value | Critical value | Comments |
|---|---|---|---|---|
| Absolute Fit | RMSEA | 0.023 | <.08 | The Required level is achieved |
| | GFI | .976 | >0.90 | |
| Incremental Fit | CFI | .923 | >0.90 | The Required level is achieved |
| Parsimony Fit | Chi.Sq/df (CMIN) | 2.182 | <3.0 | The Required level is achieved |

*Source: AMOS output*

Goodness- of –fit-index (GFI) is a measure of the relative amount of variance and covariance in sample data that is jointly explained by the hypothesized data. The GFI can be classified as absolute indices of fit because that basically compares the hypothesized model. Both criteria indicate the indices range from zero to one, close to 1.00 being a good fit. The present model works out data fitted to the model because value close to 1.

RMSEA (Root Mean Square Error of Approximation) this measure indicate the complexity of the model. Values high than 0.8, it returns reasonable error of approximation in the population. The measurement model RMSEA value is 0.023, it indicate a reasonable fit of the structural model with the sample data. In short the researcher defined model confirms the five –factor (Dimensions) structure of Customer Relationship Management practices.

## 6.5. Structural Relationship among Five Factor Dimension of CRM Practices

Based on the fit indexes of the measurement exhibited the data fit with the model. Each observed variable in the latent construct path co-efficient are significant at p value of 0.01 and 0.05. The standardized regression weights of second order CFA for five factor dimension presented in Table 15. In order to prove the relationship the following null hypothesis has been framed by the researcher.

H0: Customer Acquisition dimension doesn't influence CRM practices

H0: Customer Response dimension doesn't influence CRM practices

H0: Customer Knowledge dimension doesn't influence CRM practices

H0: Customer Information System dimension doesn't influence CRM practices

H0: Customer Value Evaluation dimension doesn't influence CRM practices

**Table 15. Path regression weights of five factor model of CRM Practices**

| Dimension | Construct | Estimation | S.E | C.R | P value |
|---|---|---|---|---|---|
| Customer Acquisition | CRM | .826 | 0.04 | 20.65 | 0.015 |
| Customer Response | CRM | .790 | .058 | 13.62 | 0.023 |
| Customer Knowledge | CRM | .713 | .127 | 5.61 | 0.000 |
| Customer Information System | CRM | .741 | .315 | 2.352 | 0.017 |
| Customer Value Evaluation | CRM | Reference point Regression weight assign as 1 | | | |

*Source: AMOS Output*

From the Table 15, it is clear that the co-efficient value of Customer Acquisition dimension is 0.826 which is high than the other dimension in the same model. All the construct p value is significant at 0.01 and 0.05 per cent level. Therefore the present model is valid and fit with the collected data.

## 7. Summary of Findings of the Study

In this article, the researcher proposed CRM practices model under five dimensions is valid out through Confirmatory factor analysis with hold out sample of 192 respondents. One of the objectives of the present study is to examine the influence of five factor model on CRM practices is fulfilled. The results revealed that Customer Acquisition dimension is highly influencing dimension from other dimension in the same latent construct. Nevertheless all the implied latent factors are highly influencing and statistical significant. The CRM measurement five factors construct with 31 scale items are valid model with critical fit.

## 8. Conclusion

This paper was aimed at validating and constructing scale for CRM practices with customer perspective. The scale item accessed from the works of Lu and Shang (2007) followed by Izah Mohd Tahir (2011), sanjay Kanti Das (2012) and Sheik Abdullah et al (2016). The theoretical dimensions consists five factors of CRM practices. The study conducted with 42 statements under five latent constructs. After applying EFA the 11 factors are removed from the analysis due to cross and low loading. The researcher validate the 42 out of 31 statements are validated with CFA. The bank manager, concern department of CRM officer might use this validated scale statements to measure the CRM practices of their banks for better improvement. Further the researcher will use this validated scale instrument to build the new model which is applicable to Indian banking context in future study. With some limitations the research was carried out by the researcher. The validated scales are accessed from other research works and validated with small sample size. Finally the validated scales are only applicable to banking environment in India.

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# The Role of Internal Audit in Risk Management– Evidence from Private Sector of Kosovo

**Hysen Ismajli[1], Mimoza Guda Ferati[2], Agon Ferati[3]**

**Abstract:** The aim of this study is to examine the role of internal audit function in risk management and challenges that influence its function in private companies in Kosovo. The method chosen for the research is based on structured questionnaire survey sent to all head of internal audit of top 21 largest private companies in Kosovo and conducted several interviews with them. Based on responses received, the role of internal auditor in the risk management is perceived to be very important, but first there are many activities within the company which must be improved to have fully functional audit department. Further, results show that internal auditors understand the concept of risk management but restricted access from business owners to core and confidential information, inexperienced internal audit staff, insufficient funds allocated to develop internal audit department, and lack of management interest are barriers that leads to improper performance of internal audit in risk management and non-functional internal audit. As the role of internal audit in the private sector in Kosovo has been very rarely empirically examined, this study attempts to contribute to future studies that relate to a very important issue such as risk management.

**Keywords:** Internal auditing; private companies; risk management

**JEL Classification:** M40; M42

## 1. Introduction

A properly organized internal audit function can play a very important role in the company, by assessing the system of internal controls, effectiveness of key controls, governance and risk management processes. In today's world as processes and operations have become more complex and new risks emerged, companies are now paying more attention to risk management. Developing an effective risk

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management program is timely and costly for the private sector considering that Kosovo is a developing country.

The internal audit function requires the organizational independence, unlimited access to information, sufficient funds, skilled personnel, management support and implementation of professional auditing standards. Therefore, the aim of this study is to examine empirically the role and challenges of the internal audit function in risk management in private sector in Kosovo and the factors that affect its function. The paper is composed of four parts:

The first part, summarises the theory behind the overall development of internal audit in the private sector.

The second part, describes the process of data collection and research methods used in the investigation.

The third part, offers empirical analysis and discussion of the results of the questionnaire, and

The fourth part, provides recommendations and conclusions.

## 2. Theory Behind the Internal Audit in Private Sector

Since the 2008 world financial crisis, regulatory and economic pressures are forcing organizations to do a more thorough job when conducting enterprise wide risk assessments, and increase effectiveness of risk mitigation efforts, and focus on a more comprehensive approach to risk management (The IIARF White Paper, 2011).

In today's fast pacing world, processes and operations are more complex and challenging as new risks are evolving. Companies are trying to give more consideration to risk management, but implementation of an effective risk management approach takes time and is costly. In companies without an effective risk management function, internal audit department has been required to undertake their own risk assessments, and in many cases they have done their own assessments as a check on risk management or to ensure their independence. Moreover, according to the IIA Professional Practices Standards (Broadleaf, 2014), audit unit should also audit the risk management framework, to provide assurance to owners regarding the suitability and effectiveness. Furthermore, the IIA's International Standards define a risk as 'the possibility of an event occurring that will have an impact on the achievement of objectives'.

The role of internal audit involves three main elements: assessing and improving risk management, assessing the system of internal controls and governance processes in the company. These elements include policies and procedures to

ensure proper risk assessment and compliance with applicable laws and regulations.

The main role of internal audit in risk management is assessing and monitoring risks that company faces, and providing recommendations for appropriate risk mitigation controls.

## 3. Data Collection and Research Methods Used

The below survey data provides a real picture of internal auditing role in risk management. Real value comes from data analysis and perspectives on how this should affect the internal audit function.

### 3.1. Research Objectives

The key objective of the research was to gather information on current practices in risk management in private sector in Kosovo, to provide a basis for Kosovo entities and to identify opportunities for improvement. This research is also intended to help the companies to address some of the main problems on implementing a risk management process.

### 3.2. Survey Participants

A major portion of the data for this research report came from a printed survey sent to 23 companies. This survey was completed by 21 participants from various companies who were either heads of audit department or senior executives in the internal audit function.

### 3.3. Methodology

The survey was sent to largest companies in the private sector in Kosovo. After receiving the survey responses, we analyzed the results and held face to face interviews with selected heads of internal audit to obtain a practical perspective on various topics covered in the survey.

The analysis and results are presented under the following sections in the third section.

## 4. Empirical Analysis and Discussion of the Results of the Questionnaire

The below survey data provides a real picture of internal auditing role in risk management. Real value comes from data analysis and perspectives on how this should affect the activities of internal audit department within a company.
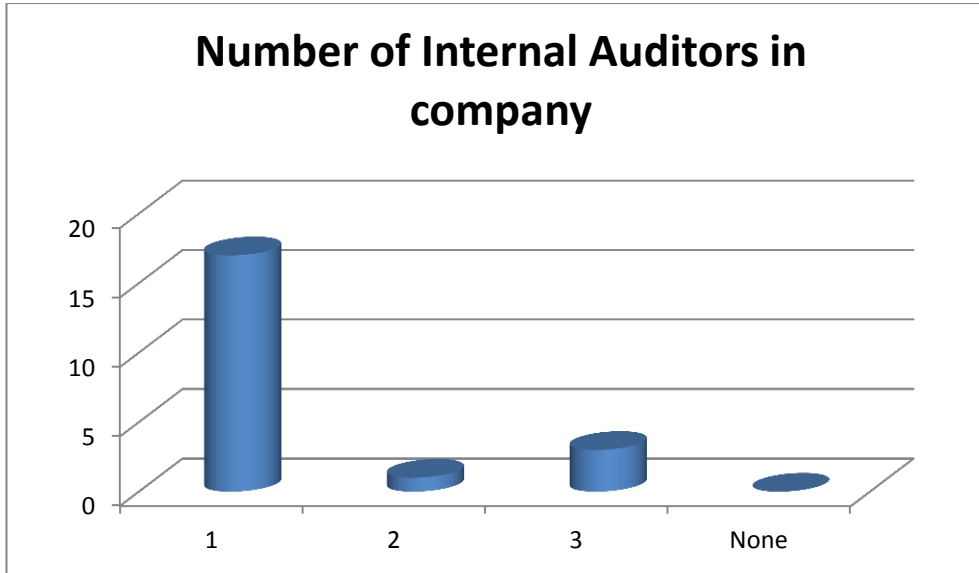
## Number of Internal Auditors in company



**Figure 1. Number of Internal Auditors in company**

*Source: Contribution made by the author*

In each company, internal audit work was carried out by 1-2 auditors. The lack of personnel in the field of internal audit is due to lack of knowledge about the importance of the internal audit as well as the fact that most businesses in our country are family businesses where management is not separate from ownership.
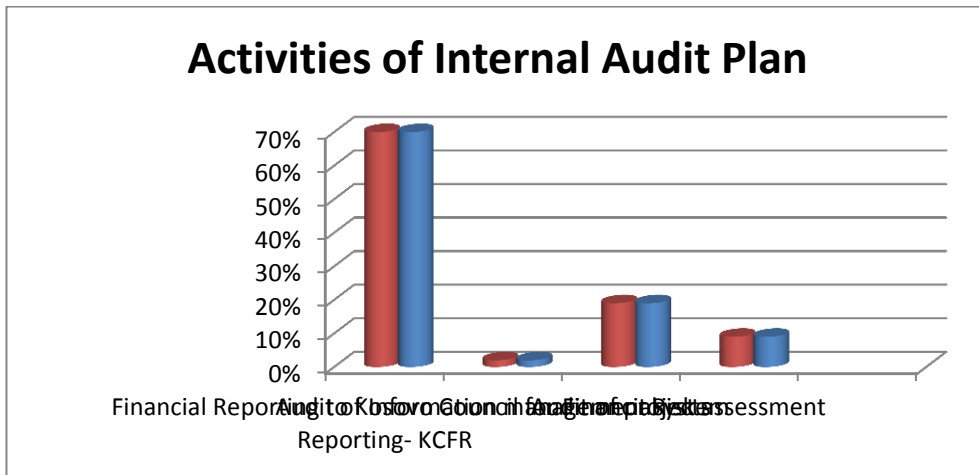
## Activities of Internal Audit Plan



**Figure 2. Activities of Internal Audit Plan**

*Source: Contribution made by the author*

To understand "What are internal auditors asked to do?", first it is important to understand the direction that is being provided by the owners of the company or management. From the perspective of the internal audit department, from all respondents of total companies surveyed, 70% declared that Financial Reporting to KCFR is the main activity, following with audit of projects as a second activity with 19%. As third important activity was declared risk assessment with 9% and the last activity, almost not important was audit of IMS with only 2%. From responses received, we can conclude that risk assessment is less important as per management thoughts.

**PART A. Control models**

Respondents were asked, "How much do you agree or disagree regarding control models into the company's risk management processes?" The answers were quite surprising:

**Table 1. Control models (5-Strongly agree ;4-Agree; 3-Netrual ; 2- Disagree ; 1-Strongly disagree )**

|  | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|
| Control models of the audit provide a basis for designing effective internal control system | 21.3% | 70.6% | 8.1% | 0% | 0% |
| Control models provide effective support to the reporting of audit findings | 92.3% | 7.7% | 0% | 0% | 0% |
| Control models are widely used in my company | 3% | 29% | 0% | 2% | 66% |
| Management of the company is strongly interested in the control environment | 56.5% | 38.5% | 2% | 2% | 1% |
| Auditors of the company address qualitative matters in their work (i.e. communication, information management, ethical issues) | 57.3% | 12.3% | 27.4% | 0% | 3% |

*Source: Contribution made by the author*

**PART B. Practices for risk assessment and risk based audit**
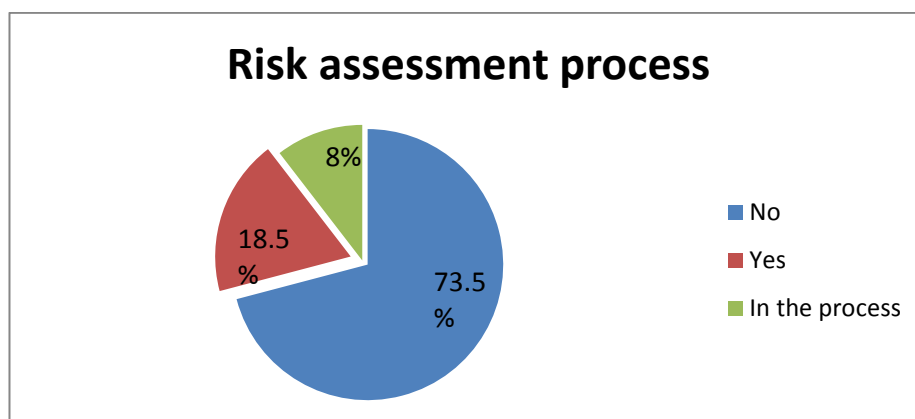
## Risk assessment process



**Figure 3. Risk assessment process in the company**

*Source: Contribution made by the author*

Over 73% of the analysed companies responded that their companies do not perform activities specific to the risk management process, 18.5% responded that their companies already have started; and the remaining 8% responded that they are in the process of implementing such practices. Considering the above responses, we can conclude that companies in Kosovo have not yet understood the importance of risk management. Further, we were interested to know by whom was the risk assessment performed in the companies surveyed and the answers to this question were as follow:

**Table 2.Risk assessment is the company**

| 1 | Internal Auditors in collaboration with management | 2% |
|---|---|---|
| 2 | External consultants in collaboration with the internal auditors and management | 75% |
| 3 | Internal Auditors | 23% |
| 4 | internal auditors in collaboration with external consultants | 0% |
| 5 | Others (not internal Auditors) | 0% |

*Source: Contribution made by the author*

As we can see from the responses received, in more than 70% of the companies surveyed, the risk assessment is carried by external consultants in collaboration with internal auditors and management while in only 23% of the companies surveyed this process is carried out by internal auditors. In conclusion, this makes us believe that not enough trust and competence is given to internal auditors in risk assessment.
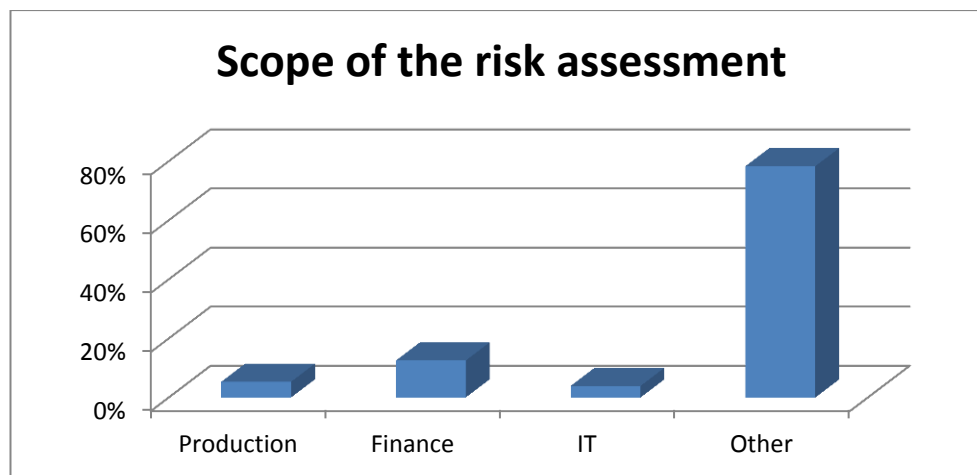
**Figure 4. Areas of implementation of risk assessment activities**

*Source: Contribution made by the author*

Regarding the scope of the risk assessment, over 80% of activities taken by internal audit in all companies surveyed are related to other than finance, production and IT.

**Table 3. Preparation of internal audit plan**

| | |
|---|---|
| Management requirements | 78% |
| Risk-based approach | 22% |
| Other | 0% |

*Source: Contribution made by the author*

Based on the results obtained, in 78% of the companies surveyed management has a huge impact in preparing the audit plan based on their recommendations and views of what is important and what internal auditors should cover, while only 22% of the audit plan is based on risk-based approach.

**Table 4. Risk factors to consider during audit planning based on risk**

| | |
|---|---|
| Professional competences of human resources | 15% |
| Changes in organizational structure | 48% |
| Complexity of operations | 4% |
| Appropriateness of internal controls | 33% |

*Source: Contribution made by the author*

Even though a small part of the companies embark on a risk-based internal audit plan, even those companies do not consider the most important risk factors at the appropriate level.

## 5. Conclusion

We have observed the role of internal auditing in risk management in the Kosovo's private companies and have noticed that private sector activities are becoming more complex due to the emerging risks they are faced with in daily basis. Companies that provide risk management have increased their attention, but implementing effective risk management requires knowledge, effort, and time.

Risk is inherent doing business, and businesses grow and thrive by fully understanding their risks and assuming acceptable levels of those risks. But it is the effective identification, assessment, management, monitoring, and reporting of such risks that allow businesses to know that their response should be to a given risk. Organizations are incorporating lessons learned in recent years into formal risk governance processes. By sizing and resourcing the internal audit function to fit its needs, and focusing its resources as part of an overall approach to enhanced risk governance, a company can maximize its ability to leverage risks that will create value and effectively manage risks that can decrease value (Clifton, 2013).

As almost all large private companies in Kosovo are family businesses and their impact on the activities and decision making of the company is very large, it is difficult for an internal audit department to operate in the right manner giving it great importance to risk management.

Having analyzed all responses received from the head of internal audit of largest Kosovo private companies, makes us understand that trust in internal audit is not yet in the right level.

To implement an effective risk management, owners of all private companies should fulfill the below recommendations:

- Increase leader's awareness about the role of the internal auditor and the importance of its recommendations;
- Review the internal controls and procedures, as this process is unavoidable in all companies to ensure that risk management is effective; and
- Prepare and implement policies and procedures for all company processes.

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# Unemployment and Economic Growth in Nigeria in the 21st Century: VAR Approach

## Olawunmi Omitogun[1], Adedayo Emmanuel Longe[2]

**Abstract:** This study investigates the impact of unemployment on economic growth in Nigeria in the 21st century using a Vector Autoregressive (VAR) approach using a secondary data spanning from 1986 to 2015. It aims at examining the dynamic effect of unemployment on growth in the context of Nigeria using the VAR approach to analyse the variations. Different methods such as the Augmented Dickey Fuller (ADF) test, johansen cointegration test, VAR model, impulse response test and variance decomposition test were employed to analyse the data. It was observed that the impact of unemployment vary over time as effort towards eradicating it are been made by the government in the country. The implication of the study is to inform researchers on the VAR model as an appropriate approach for dynamic analysis, to urge academicians to be more informative on the dynamic effects of unemployment in the economy, and to provide guidance to the government on the appropriate policy to adopt to tackle the issue of unemployment and inflation in the country. This study recommends increase in government expenditure towards the enhancement of individual skills in order to reduce unemployment and inflation.

**Keywords**: unemployment; inflation; economic growth

**JEL Classification:** E24

## 1. Introduction

Unemployment and rising inflation are some of the major problems currently being faced in the 21st century and the Nigerian government is not an exemption. Unemployment is a situation whereby people who are physically fit, capable, qualified and ready to work at any time are without jobs. The issue of unemployment is one of the macro economic problems of a nation. Currently, in developing countries, the problem of unemployment has been increasing as a result of different economic problems facing most countries. The issue of unemployment in Nigeria is highly different compared to other nations. This is due to high level of corruption, mismanagement of public funds, among others over the years. Feridun

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and Akindele (2006) identified unemployment as one of the major challenges confronting the Nigerian economy. The social impacts of unemployment are less prevalent in economies that are able to support unemployed class with subsidies and social security allowances. Udabah (1999) noted that the main reason for low standard of living in underdeveloped countries is the relative inadequate and inefficient utilization of labour compared with advanced nations. Fadayomi (1992), Osinubi (2006), argued that unemployment is as a result of the inability to develop and utilize the nations manpower resources effectively especially in the rural sector.

Interestingly, every government regime comes with its own economic growth increase strategy, but none has been able to achieve the desired goal. Since the continuous increase in population begun, developing nations have been characterized by unemployment. The issue of unemployment brought about some social and economic consequences such as; increase in crime rate, loss of respect and identity, reduction in purchasing power, psychological injuries, corruption among others. Muhammad, Inuwa, and Oye (2011) submitted that unemployment constitutes a series of serious development problems and is increasingly more serious all over Nigeria. Alanana (2003) argued that unemployment is potentially dangerous as it sends disturbing signals to all segment of the economy.

Since the change in governance from military to democratic rule of government in 1999, the major policy of the government and international agencies is targeted at reducing the rate of unemployment in the 21st century, in other to devoid the country of more dangerous acts than existing ones. Various programmes such as the Youth Empowerment Programme (YEP) and National Economic Empowerment Programmes (NEED) were established to reduce rate of unemployment in the country, but the issue of unemployment still remains unchanged as observed in studies such as Ejiekeme (2014) in the 21st century. This study therefore investigates the extent at which unemployment has impacted on economic growth in Nigeria in the 21st century.

The rest of this paper is divided into four sections. Section two contains the literature review. The source of data and methodology is presented in section three. Section four holds the results, while section five is devoted to conclusion and recommendations.

## 2. Literature Review

The Marxist theory noted that unemployment is as a result of unstable capitalist system via which unemployment rate perpetuates causing labourers to settle for fair wages. They argued that to eliminate unemployment completely, capitalism must be abolished completely, replacing it with socialism. The Keynesian economist

holds that increased unemployment is as a result of fall in the aggregate demand in an economy. Phillips (1958) in his study on unemployment and rate of money wage in the British economy noted that increase in unemployment in the economy causes inflation to drop which he referred to as a trade-off between the variables. He concluded that as employment level increases, inflation rises, but as unemployment increases, inflation falls as the purchasing power of the economy becomes weaker. Okun (1962) propounded that as unemployment falls by 1%, gross domestic product increase by 3%, but this was criticized because it holds for the United States only. Terry (1998) noted in his theory "Search Theory of Unemployment" that as an individual is searching for job, firms are also searching to fill a vacant space. He concluded that wages therefore decides for both the individual and the firm.

Bhattarai (2016) examined the relationship between inflation and unemployment in 35OECD countries using a panel VAR model to analyse the quarterly data used from 1990:1 to 2014:4. He submitted that the Phillip's curve is still significant in 28 out 35 OECD countries and the coefficients of Okun curve for growth on unemployment were significant only in 13 of these countries. He concluded that as the natural rate of unemployment results from the balance between job creation and destruction processes, reductions in unemployment rates require complementing macro stimulations by microeconomic structural and institutional reforms.

Sadiku, Ibraimi & Sadiku (2015) empirically examined unemployment relation with growth in FYR Macedonia using VAR approach with a quarterly based data from 2000-2012. It was observed that no negative relationship between unemployment and economic growth as propounded by Okun's Law and also no direction of causality between unemployment and economic growth.

Abdul-Khaliq, Soufan, & Shihab (2014) investigated the relationship between economic growth and unemployment rate in Arab countries between 1994 and 2010 adopting the Pooled EGLS (Cross-section SUR). It was found that economic growth had a negative and significant impact on unemployment rate, which implies that 1% increase in economic Growth will decrease the unemployment rate by 0.16%.

Amassoma and Nwosu (2013) examined the impact of unemployment on productivity growth in Nigeria using an error correction modeling approach and co-integration technique to analyse the data used from 1986 to 2010. The regression estimate based on the short run and long run models showed that unemployment rate had an insignificant influence on productivity growth in Nigeria over the study period.

Ozei, Sezgin, and Topkaya (2013) investigated the relationship between economic growth and unemployment relationship in seven industrialized countries (G7) countries. Panel regression analysis was used to analyse data from 2000-2011. The

results of the study revealed that while the productivity and economic growth variables have significant and strong effects on the reduction of unemployment in three-crisis period, this effect of productivity becomes insignificant and small after the crisis whereas the effect of economic growth as a decreasing effect over unemployment continues and its impact level rises.

Muhammad, Inuwa, and Oye (2011) examined the implication of unemployment on gross domestic product in Nigeria over the period of nine years (2000-2008) using a regression analysis. Findings showed that unemployment has an enormous effect (over 65%) on the making of the Nigerian GDP and there exist an inverse relationship between unemployment and gross domestic product, which implies that as unemployment increases, gross domestic product falls.

Ejikeme (2014) assessed the link unemployment and poverty has on security in Nigeria. His study underscores that unemployment and poverty are universal phenomena, and not necessarily a peculiar characteristic of any particular segment of the society. The research revealed that unemployment and poverty have direct links to security challenges in Nigeria.

Holden and Sparman (2013) examined the effect of government purchases on unemployment in 20 OECD countries for the period 1980 to 2007. They observed that a one percent increase in government purchases of GDP reduced unemployment by about 0.3 percent in the same year. The effect was observed to be greater in downturns than in booms, and also under a fixed exchange rate regime than a floating regime.

Akeju and Olanipekun (2014) validated the Okun's law in Nigeria using the Error Correction Method and Johansen cointegration technique. The findings showed that there is both a short and long run relationship between unemployment rate and output growth in Nigeria. Hence, there is need to incorporate fiscal measures and increase the attraction of foreign direct investment (FDI) to reduce the high rate of unemployment in the country.

Onwanchukwu (2015) examined the impact of unemployment on the economic growth in Nigeria from 1985 to 2010, using ordinary least squares regression technique. His findings revealed that unemployment does not have a significant impact on the economic growth of Nigeria. Inflation, however, was found to significantly impact on the economic growth of Nigeria.

Muhammad (2014) studied the effect of inflation and unemployment on the growth of Pakistan from 1980 to 2010 using the Auto regressive distributed lag. He firstly noted that inflation effect varies from economy to economy, but most of the studies indicate that there is a positive relationship between inflation and economic growth or GDP. The result showed that there is a long run relationship between the variables. Furthermore, the results of White's Heteroskedasticity, Ramsey reset and

Breusch-Godfrey Serial Correlation LM test shows that there is no problem of heteroskedasticity, misspecification of model and serial correlation respectively. It was recommended that self-employment/entrepreneurship should be encouraged to overcome the unemployment.

Madito and Khumalo (2014) examined unemployment nexus in South-Africa form 1971Q1 to 2013Q4 using the Error correction mechanism as a result of the dynamic inter-relationship between the variables used to check the speed of adjustment of economic growth to unemployment crisis. It was observed that about 62 percent of economic growth is corrected each quarter. The overall results showed that there is a negative relationship between economic growth and unemployment in South Africa.

Taylan (2012) investigated the relationship between macroeconomic variables and economic growth in Turkey from 2000Q1 to 2010Q2 using Vector Auto-Regressive Model (VAR). From his findings, it was revealed that positive shocks to growth, growth in export and inflation reduced unemployment. Also, shocks to exchange rate, interbank interest rate and money supply increased unemployment. The conformity of the results is found to go in line with Phillips curve and Okun's Law suggestion. Namely, negative relationship between output and unemployment and positive relationship between unemployment and inflation.

Babalola, Saka and Adenuga (2013) validates Okun's law in Nigeria using a different approach of the VAR Cointegration to compare the two models (Short-run and Long-run) from 1980-2012. It was observed that unemployment rate as an independent variable was positive and also positive for real GDP growth as an independent variable. These findings are contrary to Okun's law of unemployment–output relationship.

Ekrame, Dramane, and Christophe (2012) investigated the relationship between Immigration, Growth and Unemployment in 22 OECD countries using panel VAR technique to analyse data spanning from 1987 to 2009. Their result provided evidence that migration contributed to host economic prosperity (positive impact on GDP per capita and negative impact on aggregate unemployment, native and foreign-born unemployment rates). It was also found out that migration is influenced by host economic conditions (migration responds positively to host GDP per capita and negatively to host total unemployment rate).

Imran and Iba (2014) examine the relationship between macroeconomic variables and unemployment in Pakistan from 1980-2010 using the VAR Approach. From their findings, it was revealed that the variables have more variance contribution to themselves when compared to other variables in the system. Inflation rate contributed to unemployment variance more as compared to economic growth, unemployment contributes more to economic growth as compared to inflation and unemployment rate has also more variance contribution to inflation as compare to

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economic growth. In other words, unemployment rate has more variance contribution in both inflation and economic growth rate.

## 3. Data Source and Methodology

Data is sourced from the World Development Indicators (2015) edition. The data includes gross domestic product (GDP), Unemployment rate (UNEMP), Inflation rate (INFLR), Exchange rate (EXR), and Government expenditure (GEXP). The VAR model is employed to analyse the data used in this study. The VAR model is a dynamic multivariate model which allows variables to be treated equally, and allows one to model macroeconomic data informatively without imposing very strong restrictions on the model. Papapetrou (2001), Li & Liu (2012) and Imran & Iba (2014) used VAR model to establish the short-run dynamic disequilibrium among these variables (Unemployment, Inflation and Economic growth). Also, developing a long-run relationship, the cointegrating vectors were assessed using Johansen's cointegration technique and long-run relationship by using VEC model as was used by Beyer and Fermer (2002), Ekrame, Dramane, and Christophe (2012) and Babalola, Saka & Adenuga (2013) to compare two models (short-run and long-run model of their study). In line with these studies, the model for this study is adapted and presented below;

$$X_t = \Gamma_o + \Gamma(L)Y_t + Z_t + \epsilon_t; \text{ where } X_t = \begin{pmatrix} GDP \\ UNEMP \\ INFLR \\ EXR \\ GEXP \end{pmatrix}$$

$X_{it}$ is a 5x1 vector matrix of the endogenous variables (GDP, UNEMP, INFLR, EXR, and GEXP). *GDP* represent gross domestic product annual growth rate, UNEMP represents unemployment rate, *INFLR* represents inflation rate, *EXR* denotes exchange rate, and GEXP denotes government expenditure. $\Gamma(L)Y_t$ is a matrix polynomial in the lag operator with $\Gamma(L) = \Gamma_1 L^1 + \Gamma_2 L^2 + \ldots + \Gamma_p L^p$, $Z_t$ is a vector of country specific effects and $\epsilon_t$ is a vector of idiosyncratic errors. The study adopts the impulse response to capture the reactions of one variable in the system to another. The model specification holds that unemployment, inflation rate, exchange rate, and government which are some of the major macroeconomic variables are a strong determinant of the country's growth. The study at first subjected all the variables to a unit root test to avoid a spurious result. The unit root test tests whether a time series variable is non-stationary and possesses a unit root. The null hypothesis is generally defined as the presence of a unit root and the alternative hypothesis is either stationary, trend stationary or explosive root depending on the test used. After words, we went forward to test for the long-run co-movement using the Johansen Cointegration technique. Cointegration means

that, while many developments can cause permanent changes in the individual variable, there is some long-run equilibrium relation tying the individual variables together, represented by some linear combination of them.

## 4. Results

### 4.1. Unit Root Test

The result of the unit root showed that all the variables are stationary at first difference at none and trend and intercept at 1%, 5% and 10% respectively. This implies that there exists a unit root among the variables. The johansen cointegration test is therefore carried out to test if a long-run co-movement relationship exists among the variables. The unit root result is presented below in table 1.

**Table 1**

| | | AT LEVELS | | | 1st Difference | |
|---|---|---|---|---|---|---|
| GDP | | None | Trend & Intercept | | None | Trend & Intercept |
| T.Stat | | 6.369533 | -1.979498 | | -2.75537 | -5.603133 |
| C.V | 1% | -2.64712 | -4.309824 | | -2.65015 | -4.323979 |
| | 5% | -1.95291 | -3.574244 | | -1.95338 | -3.580623 |
| | 10% | -1.61001 | -3.221728 | | -1.6098 | -3.225334 |
| Prob.V | | 1.0000 | 0.5877 | | 0.0077 | 0.0005 |
| UNEMP | | None | Trend & Intercept | | None | Trend & Intercept |
| T.Stat | | -1.04459 | -2.26995 | | -5.50881 | -5.315738 |
| C.V | 1% | -2.64712 | -4.309824 | | -2.65015 | -4.323979 |
| | 5% | -1.95291 | -3.574244 | | -1.95338 | -3.580623 |
| | 10% | -1.61001 | -3.221728 | | -1.6098 | -3.225334 |
| Prob.V | | 0.2601 | 0.4360 | | 0.0000 | 0.0010 |
| INFLR | | None | Trend & Intercept | | None | Trend & Intercept |
| T.Stat | | -1.60994 | -3.335878 | | -4.79813 | -4.643165 |
| C.V | 1% | -2.64712 | -4.309824 | | -2.65015 | -4.323979 |
| | 5% | -1.95291 | -3.574244 | | -1.95338 | -3.580623 |
| | 10% | -1.61001 | -3.221728 | | -1.6098 | -3.225334 |
| Prob.V | | 0.1 | 0.0804 | | 0.0000 | 0.0048 |
| EXR | | None | Trend & Intercept | | None | Trend & Intercept |
| T.Stat | | 1.748877 | -2.250128 | | -4.14472 | -4.844135 |
| C.V | 1% | -2.64712 | -4.309824 | | -2.65015 | -4.323979 |
| | 5% | -1.95291 | -3.574244 | | -1.95338 | -3.580623 |
| | 10% | -1.61001 | -3.221728 | | -1.6098 | -3.225334 |

| Prob.V | | 0.9778 | 0.4461 | | 0.0002 | 0.0030 |
|--------|--|--------|--------|--|--------|--------|
| GEXP | | None | Trend & Intercept | | None | Trend & Intercept |
| T.Stat | | 6.92391 | -1.675634 | | -2.33055 | -4.774027 |
| C.V | 1% | -2.64712 | -4.309824 | | -2.65015 | -4.323979 |
| | 5% | -1.95291 | -3.574244 | | -1.95338 | -3.580623 |
| | 10% | -1.61001 | -3.221728 | | -1.6098 | -3.225334 |
| Prob.V | | 1.0000 | 0.7362 | | 0.0216 | 0.0035 |
| C.V- Critical Values | | | | | | |
| T.Stat- T-Statistics | | | | | | |
| Prob.V- Probaility Value | | | | | | |

*Source: Authors (2017)*

### 4.2. Johansen Co-integration Test

### 4.2.1. Co-integration Result

The johansen co-integration test result revealed that the trace and maxi-eigen value has one co-integrating factor, which necessitates the conclusion that a long-run co-movement relationship exists among the variables employed in this study. That is, there is a long-run relationship between GDP and unemployment, inflation rate, exchange rate, and government expenditure. These variables affect the GDP of the country through the macroeconomic systems. The result is presented below in table 2.

**Table 2**

| Unrestricted Cointegration Rank Test (Trace) | | | | |
|----------------------------------------------|--|--|--|--|
| Hypothesized | | Trace | 0.05 | |
| No. of CE(s) | Eigenvalue | Statistic | Critical Value | Prob.** |
| None * | 0.748899 | 76.96459 | 69.81889 | 0.012 |
| At most 1 | 0.493126 | 38.27143 | 47.85613 | 0.2903 |
| At most 2 | 0.339826 | 19.24562 | 29.79707 | 0.4754 |
| At most 3 | 0.202573 | 7.618562 | 15.49471 | 0.507 |
| At most 4 | 0.044696 | 1.280333 | 3.841466 | 0.2578 |
| 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 | | | | |
| Unrestricted Cointegration Rank Test (Maximum Eigenvalue) | | | | |
| Hypothesized | | Max-Eigen | 0.05 | |
| No. of CE(s) | Eigenvalue | Statistic | Critical Value | Prob.** |
| None * | 0.748899 | 38.69315 | 33.87687 | 0.0123 |
| At most 1 | 0.493126 | 19.02582 | 27.58434 | 0.4125 |
| At most 2 | 0.339826 | 11.62706 | 21.13162 | 0.5847 |
| At most 3 | 0.202573 | 6.338229 | 14.2646 | 0.5702 |

| At most 4 | 0.044696 | 1.280333 | 3.841466 | 0.2578 |
|-----------|----------|----------|----------|--------|
| Max-eigenvalue 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 | | | | |

*Source: Authors (2017)*

## 4.3. Selection of Optimal Lag

In order to carry out vector autoregression estimation, the choice of lag length is vital. There is various lag length criteria, among them are; Sequential modified LR test statistic with each test at 5%, the Final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SC) and the Hannan-Quinn information criterion (HQ). However each of these has different penalty factors. For the purpose of this study, we therefore limit the selection to Akaike information criterion (AIC) and Schwarz information criterion (SC). The Akaike Information Criterion (AIC) and Scharwz Information Criterion are employed because according to Yahaya, Salisu and Umar (2015) they are the most popular used selection criteria for models. From the result, the two criteria revealed 4 optimal number of lag to be used for the VAR analysis. The result is presented below in table 3.

**Table 3. Lag Length Selection**

| Lag | LogL | LR | FPE | AIC | SC | HQ |
|-----|------|-----|-----|-----|-----|-----|
| 0 | -324.8812 | NA | 72134.08 | 25.37548 | 25.61742 | 25.44515 |
| 1 | -231.0404 | 144.3705 | 377.2732 | 20.08003 | 21.53168 | 20.49805 |
| 2 | -209.5836 | 24.75778 | 630.6626 | 20.35259 | 23.01395 | 21.11896 |
| 3 | -172.0362 | 28.88263 | 502.498 | 19.3874 | 23.25847 | 20.50213 |
| 4 | -21.04396 | 58.07394* | 0.254852* | 9.695689* | 14.77646* | 11.15877* |
| * indicates lag order selected by the criterion | | | | | | |
| LR: sequential modified LR test statistic (each test at 5% level) | | | | | | |
| FPE: Final prediction error | | | | | | |
| AIC: Akaike information criterion | | | | | | |
| SC: Schwarz information criterion | | | | | | |
| HQ: Hannan-Quinn information criterion | | | | | | |

*Source: Authors (2017)*

## 4.4. VAR Test Estimates

From the result below in table 4, it was revealed that unemployment in the 1st, 3rd and 4th period has a positive impact on the growth on the economy, but negative in the 3rd period. Inflation rate throughout the periods has a positive and significant impact on the growth of the economy. Exchange rate has a positive impact in the 1st and 4th period and negative in the 2nd and 3rd period. Government expenditure has a similar impact related to that of exchange rate on the growth of the economy

as it positively relates to growth in the 1st and 4th period and negatively in the 2nd and 3th period.

**Table 4. VAR Result**

|  | LGDP |  | LGDP |  | LGDP |  | LGDP |
|---|---|---|---|---|---|---|---|
| UNEMP(-1) | 0.025215 | INFLR(-1) | 0.013505 | EXR(-1) | 0.010496 | L(GEXP(-1) | 0.924556 |
|  | (-0.01737) |  | (-0.00599) |  | (-0.00558) |  | (-0.8627) |
|  | [ 1.45139] |  | [2.25293] |  | [1.88258] |  | [1.07167] |
|  |  |  |  |  |  |  |  |
| UNEMP(-2) | -0.000813 | INFLR(-2) | 0.001514 | EXR(-2) | -0.00292 | L(GEXP(-2) | -0.17877 |
|  | (-0.01652) |  | (-0.00728) |  | (-0.00591) |  | (-0.6960) |
|  | [-0.04922] |  | [0.20801] |  | [-0.49369] |  | [-0.2569] |
|  |  |  |  |  |  |  |  |
| UNEMP(-3) | 0.001517 | INFLR(-3) | 0.008431 | EXR(-3) | -0.0025 | L(GEXP(-3) | -0.25832 |
|  | (-0.01802) |  | (-0.00505) |  | (-0.00781) |  | (-0.7630) |
|  | [ 0.08417] |  | [1.67004] |  | [-0.32013] |  | [-0.3386] |
|  |  |  |  |  |  |  |  |
| UNEMP(-4) | 0.003798 | INFLR(-4) | 0.003534 | EXR(-4) | 0.00324 | L(GEXP(-4) | 0.451186 |
|  | (-0.01987) |  | (-0.00595) |  | (-0.00571) |  | (-0.88975) |
|  | [ 0.19114] |  | [0.59444] |  | [0.56732] |  | [0.50710] |
| R-squared | 0.975272 |  | 0.815322 |  | 0.997651 |  | 0.997455 |
| Adj. R-squared | 0.876359 |  | 0.076611 |  | 0.988256 |  | 0.987275 |
| F-statistic | 9.859897 |  | 1.10371 |  | 106.1911 |  | 97.97939 |

*Source: Author (2017)*

*Note: Standard Error in ( ), T-statistics in [ ]*

### 4.5. Impulse Response Test

The impulse test revealed that the GDP of the economy respond positively to itself throughout the periods. Between the 1st and 3rd period, GDP response to unemployment was positive, from the 4th to 7th period, there was a negative response to unemployment, and from the 8th to 10th period, there was a positive response. GDP response to inflation rate was positive till the 7th period before it responds negatively from the 8th to 10th period. Between 1st and 4th, 8th and 10th, GDP positively respond to Exchange rate but negatively relate in the 6th and 7th period. However, there is a dichotomy response of GDP to government pattern of expenditure as the positive and negative respond has a flattened shape. The result is presented below in Figure 1.

**Figure 1. Impulse Response Result**

Response to Cholesky One S.D. Innovations
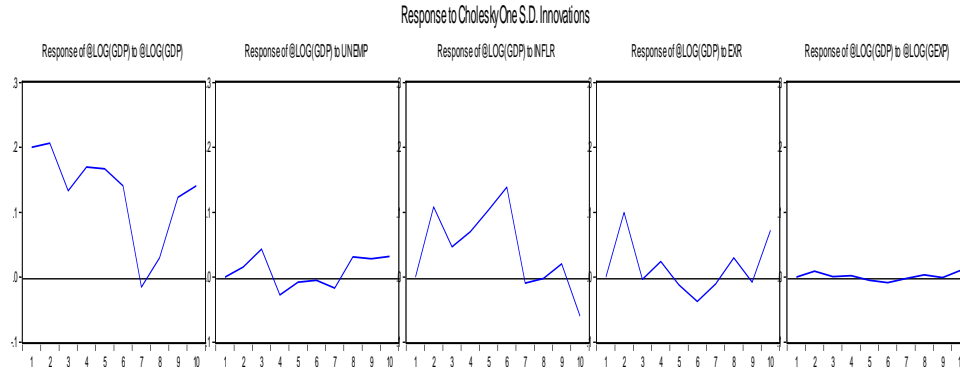


**4.6. Variance Decomposition Test**

It was revealed that the variations in the GDP to itself is 100% in the 1$^{st}$ quarter, but reduces in the 5$^{th}$ and 10$^{th}$ period to 78% and 73% respectively (See table 5). Unemployment rate in the 1$^{st}$ period captures about 54% changes in economic growth; 47% in the 5$^{th}$ period and 58% in the 10$^{th}$ period (See table 6). Inflation rate in the 1$^{st}$ period accounts for 27% changes in the growth of the country, in the 5$^{th}$ and 10$^{th}$ period, an increase in variations captured by the variable is 35% and 44% respectively (See table 7). In the 1$^{st}$ period of the variations in the GDP through exchange rate, 27% was accounted for, while in the 5$^{th}$ and 10$^{th}$ period the percentage of variations falls heavily to 4% and 6% respectively (See table 8). The contribution of the expenditure pattern in the country was observed to be very low. In the 1$^{st}$ period, 0.24% of the variations in the GDP was captured, while in the 5$^{th}$ and 10$^{th}$ period, 0.06% and 0.11% was captured (See table 9).

**Table 5**

| Variance Decomposition of @LOG(GDP): | | | | | |
|---|---|---|---|---|---|
| Period | S.E. | LOG(GDP) | UNEMP | INFLR | EXR | LOG(GEXP) |
| 1 | 0.200135 | 100 | 0.00000 | 0.00000 | 0.00000 | 0.00000 |
| 5 | 0.447144 | 78.47196 | 1.461424 | 14.69103 | 5.317945 | 0.057644 |
| 10 | 0.538438 | 73.33642 | 2.079768 | 18.16401 | 6.310994 | 0.108812 |

*Source: Authors (2017)*

**Table 6**

| Variance Decomposition of UNEMP: | | | | | |
|---|---|---|---|---|---|
| Period | S.E. | LOG(GDP) | UNEMP | INFLR | EXR | LOG(GEXP) |
| 1 | 2.576378 | 53.85114 | 46.14886 | 0.00000 | 0.00000 | 0.00000 |
| 5 | 8.232458 | 46.65184 | 13.03998 | 35.24426 | 4.896733 | 0.167183 |
| 10 | 12.79092 | 57.61496 | 13.37639 | 25.75029 | 3.178561 | 0.079795 |

*Source: Authors (2017)*

**Table 7**

| Variance Decomposition of INFLR: | | | | | |
|---|---|---|---|---|---|
| Period | S.E. | LOG(GDP) | UNEMP | INFLR | EXR | LOG(GEXP) |
| 1 | 17.38639 | 72.31828 | 0.305853 | 27.37587 | 0.00000 | 0.00000 |
| 5 | 24.21599 | 55.60048 | 1.994306 | 35.43335 | 6.811634 | 0.160223 |
| 10 | 30.89558 | 39.74937 | 6.905192 | 44.38886 | 8.706415 | 0.250158 |

*Source: Authors (2017)*

**Table 8**

| Variance Decomposition of EXR | | | | | |
|---|---|---|---|---|---|
| Period | S.E. | LOG(GDP) | UNEMP | INFLR | EXR | LOG(GEXP) |
| 1 | 6.543369 | 17.66853 | 9.904697 | 43.31233 | 29.11444 | 0.00000 |
| 5 | 26.1633 | 64.22176 | 5.182243 | 26.96582 | 3.589859 | 0.040315 |
| 10 | 35.37424 | 50.70896 | 5.919466 | 37.42995 | 5.825116 | 0.116504 |

*Source: Authors (2017)*

**Table 9**

| Variance Decomposition of @LOG(GEXP): | | | | | |
|---|---|---|---|---|---|
| Period | S.E. | LOG(GDP) | UNEMP | INFLR | EXR | LOG(GEXP) |
| 1 | 0.204592 | 78.67653 | 0.110497 | 10.09586 | 10.8679 | 0.24921 |
| 5 | 0.515694 | 72.35433 | 0.667075 | 23.53266 | 3.385097 | 0.060846 |
| 10 | 0.583479 | 68.93911 | 2.023313 | 23.9996 | 4.926912 | 0.111068 |

*Source: Authors (2017)*

## 5. Conclusion and Recommendations

The study investigates the impact of unemployment on economic growth in Nigeria in the 21st century using the VAR model. From the findings, it was revealed that the impact of unemployment, inflation rate, exchange rate and government expenditure varies over the periods. Unemployment and inflation, among other variables were found to have contributed mostly to the variations in the growth of the economy over the period. This is because the price and sustainability means of the economy is a factor which needs full attention to avoid a downturn growth. In line with Babalola et al (2013) and Muhammad et al (2014), the study concludes that the existence of the Okun's law and Phillips curve is in reality not the case of Nigeria. This is because the effect of unemployment and inflation from the findings is dynamic in nature (varies over time). The following is therefore recommended.

The Nigerian government should employ a monitoring team to monitor and ensure that funds released by the government to all the sectors of the economy are well appropriated in the sectors program or budget. This will help checkmate corrupt

government officials and or politicians who embezzle and loot government funds for their personal welfare in the name of executing projects or facilities to aid growth in the country.

The government should also concentrate on cautioning the rising unemployment rate in Nigeria. This could be achieved by the establishment of programs that will encourage the unemployed populace in skill development which invariably leads to self-employment irrespective of their locations. If this is done, a reduction in waste of manpower will be observed and this will contribute the buoyancy of the nation's growth.

Furthermore, government spending should tend toward local production to caution inflationary condition in the economy.

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# Oil Price Shocks and Economic Performance in Africa's Oil Exporting Countries

**Mathew Ekundayo Rotimi[1], Harold Ngalawa[2]**

**Abstract:** This study applied recently developed Panel Structural Vector Autoregressives (P-SVAR) estimating technique to empirically assess the transmission processes of oil price shocks and how it impacts economic performance within the monetary framework of the Africa's net oil exporting economies. The study considered, among other variables; inflation, money supply, bank rate, exchange rate, gross domestic product, unemployment and oil price shocks which is treated as exogenous while other variables as endogenous variables. The period of the study covered 1980-2015. The analysis of the data revealed that there were significant responses to oil price shocks during this period. The result of the study showed that oil price shocks have large impact on the economic performance of Africa's oil exporting countries and also that transmission of oil price ensues monetary medium. Hence, the study suggests that strong monetary control measure should be put in place whenever positive shocks in oil is experienced.

**Keywords:** Oil Price Shocks; Economic Performance; Panel SVAR, Oil Exporting.

**JEL Classification:** O13

## 1. Introduction

Since the oil price shocks in 1973 and following the stagnation especially in the developed countries, studies on the relationship between oil price shocks and economic activities have increased (Kose & Baimaganbetov, 2015). These studies employed different econometric techniques, consequently coming up with different results (Hamilton, 1983; Akpan, 2009). A critical evaluation of these studies reveals a bias in focus on developed oil importing countries, leaving out the developing countries. A further review of these studies shows that while some of the scholars believe that oil price shocks is a blessing, others are of the opinion that it is a curse[3]. In another observation, Hooker (1996) asserts that, there was no

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[3] see (Akpan, 2009; Olomola, 2010; Ushie, Adeniyi & Akinwale, 2012).

relationship between oil prices shocks and macroeconomic variables. However, the question of whether oil price shocks play any significant role in explaining variations in economic performance in the Africa environment remains contentious. While this debate remains, the oil price shocks transmission channels process is still not equivocally established in the oil exporting developing economies (Akpan, 2009; Olomola, 2010), more importantly that (Hamilton, 1983) claims that a rise in oil prices has been acknowledged as one of the primary causes of economic recession. Therefore, this problem leaves us with the following objectives: to determine whether oil price shocks play any significant role on the economy of Africa's oil exporting countries and to also identify the transmission channel of oil price into the economy? Consequently, a few studies that have attempted to look at issues surrounding oil price and economic activities in Africa with specific focus on the significance of oil price shocks on the economic performance remains inconclusive and more importantly when a group of countries is considered for study[1]. More so that limited studies on the Africa's oil exporting countries have not adequately addressed economic performance in relation to oil price shocks, leaves the doubt as to whether oil price shocks really play any significant role on economic performance or not[2]. However, the impact of oil price shocks on economic performance is expected to vary from the oil exporting countries and oil importing countries. For instance, positive (negative) oil price shocks should be considered a good (bad) news for the oil exporting (importing) countries.

This study reviews findings of empirical research works with varying methodological approaches and discussion of different findings. It differs from those in the existing literature by shifting focus from the developed oil importing countries to developing African oil exporting countries to examine the relationship between oil price shocks and economic performance within the framework of the monetary policy transmission process. The study also provides another view point in oil price shocks-economic performance relationship through the methodology employed in the study which to the best of our knowledge it has not been employed in any study relating to oil price shocks. In addition, our study deviates from the study of Kutu and Ngalawa (2016) by differencing its variables. In view of this, the study aims to contribute to energy literature in such a way as to emphasize the relationship between oil price shocks and economic performance within the context of the oil exporting developing economies in Africa.

The rest of this paper is organized as follows: section two reviews literature and theoretical issues, section three presents overview of Africa's oil exporting countries and scope of the study, while section four presents data, data sources and

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[1] see (Akpan, 2009; Olomola, 2010).
[2] see (Berument, Ceylan & Dogan, 2010; Mehrara & Mohaghegh (2011); Ushie, Adeniyi & Akinwale, 2012).

measurement of variables. While estimation and results were presented in section five, section six summarizes and concludes the study.

## 2. Literature Review and Theoretical Issues

Relationship between oil price shocks and macroeconomic variables have been viewed in different ways. Study like Bjornland (2008) indicates that the relationship of oil price movements and economic output vary depending on the source and direction of the movement of the price of crude oil. In terms of interest rate structure, Ushie, Adeniyi and Akinwale (2012) assert that, the transmission mechanism comes through the systematic response to monetary policy. These varied view of choices have made it difficult to draw sound policy recommendations regardless of the disparities in variables and level of development. Contrary to this and supporting the submission of various economists, Olomola (2010) asserts that oil has fallen its potentials, that the growth rates of oil economy underperform. Though, this claim has almost become a presumption. As regards inflation, studies like Hamilton (1983) and Hathaway (2009) associate high inflation rate in the United States (US) and other oil importing countries to positive oil prices shocks. Other studies reveal that oil price shocks play significant role in determining variations in output which consequently stimulates economic activity. For example, Lescaroux and Mignon (2008) posit that oil is a potential driver of currencies. Some studies also show that oil has significant influence on the real exchange rates and also enhances higher economic activity among the oil exporting countries.[1] Kamin and Rogers (2000) established that oil production frequently accounts for a large share of the GDP of the oil-exporting countries and oil price increase directly increases the value of country's currency. Empirical findings of the pioneering researchers on oil price shocks and economic performance in the US report a clear negative correlation between oil prices and real output.[2] In a similar view, using Vector Autoregressive (VAR) estimating technique to examine the relationship of oil price and economy, the study of Papapetrou (2001) shows a negative effect of real oil price changes on industrial production and employment. Bjornland (2008), Jimenez-Rodriguez and Sanchez (2005) find that Norway has benefited from increased oil prices, displaying temporary higher growth and reduced unemployment rates. Similarly, Hooker (2002) shows a long-run cointegrating relationship between oil prices, unemployment and interest rate. In a study carried out on the economy of Spain by Miguel, Manzano, and Martin- Moreno (2003), their result reveal that there is negative effect of oil prices on the country's welfare. Some studies like Cunado and

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[1] see (Majid, 2006; Lescaroux & Mignon, 2008).
[2] see (Darby, 1982; Hamilton, 1983; Bjornland, 2008; Jimenez-Rodriguez & Sanchez, 2012; Kilian, 2010).

De Gracia (2003), Jimenez-Rodriguez and Sanchez (2005) examine the effects of oil prices shocks on oil exporting countries such as Denmark, Canada, the United Kingdom and Norway. Their analysis reveal that even if the correlation coefficient between output growth and oil price changes is positive for Denmark, and it is negative for the UK, the impulse response of the study suggests that oil price shocks negatively affect Danish industrial production but positively affect that of United Kingdom. Also, Raguindin and Reyes (2005) carried out a study on the economy of Philippine to examine the effects of oil price shocks on the economy from 1981 to 2003. Their result from impulse response functions for the symmetric transformation of oil prices shows that oil price shocks lead to prolonged reduction in the real GDP of the Philippines. A few studies believe that oil price shocks positively impact economic performance.[1] In a different study, Aleisa and Dibooglu (2002) note that Saudi Arabia oil policy influences world inflation and also that oil production shocks in the Saudi Arabian economy have a sizable effect on output through real exchange rate movements. Akpan (2009) employs VAR estimating technique to analyze the dynamic relationship between oil price shocks and major macroeconomic variables in Nigeria. finding shows that both positive and negative oil price shocks significantly increase inflation and directly increase real national income through higher export earnings. The result also established a strong positive relationship between positive oil price changes and real government expenditures and GDP.

There are also a few other studies carried out on the relationship between oil price shocks and economy growth in Africa[2] Different empirical studies have been carried out to examine the role of oil price on the macroeconomic variables in oil exporting countries. Among other studies are Olomola and Adejumo (2006) who examine the effects of oil price shocks on real exchange rate, output, money supply and inflation in Nigeria. They conclude that oil price shocks significantly affect real exchange rate in the short run and money supply in the long run. Similar to this are the results of Boye (2001) on Ecuador economy, Ward and Siregar (2001) on the Indonesian economy, Farzanegan and Markwadt (2009) on the Iranian economy. The study of Berument et al (2010) also examine the effects of oil price shocks on output growth for North Africa and middle Eastern countries which are either oil importers and exporters. The result of their study reveals that the effects of international oil price on GDP are positively significant on most oil exporting countries like Iraq, Iran, Algeria, Kuwait Jordan, Syria, Qatar, UAE, Omar and one oil importing country- Tunisia while there are exceptions in Yemen, Morocco, Bahrain, Lebanon and Egypt.

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[1] see (Salai-I-Martins & Subramanian, 2003; Kaldor & Said, 2007).
[2] see (Olomola & Adejumo, 2006; Akpan, 2009; Iwayemi & Fowowe, 2010).

Enormous literature exists on the theoretical and empirical linkages between energy and economic growth for review. The study of (Dasgupta et al., 2002) shows a strong correlation between oil prices and the economic growth in the exporting countries. Energy, especially oil prices have always played a crucial role in determining the cycles of the world economy, inclusive of both oil producing and oil importing countries. Therefore, higher oil prices lead to inflation, increased input costs, lower investment and reduced non-oil demand. Revenue from tax declines and the budget deficit rises. This is due to government expenditure rigidities, which moves interest rates up. As a result of resistance to real fall in wages, rise in oil price may typically lead to upward pressure on nominal wage levels. Pressures in wages together with reduced demand lead to higher level of unemployment, at least in the short term. Majid (2006) notes that these effects are greater, more sudden and more pronounced when the prices rise and are magnified by the impact of higher prices on business and consumer confidence. Nonetheless, this degree of the direct effect of a given price increase depends on the share of the cost of oil in national income, the magnitude of dependence on imported oil and the ability of end-users to reduce their consumption and switch away from oil. In addition, Majid (2006) notes that this also depends on the extent of increase in oil prices, the oil intensity of the economy and the impact of higher prices on other forms of energy that compete with oil.

On the impacts of oil price shocks on the economy, Brown and Yucel (2002) note that when oil prices increase, the effect on the economy can be measured in two ways: through positive income and wealth effects and through negative trade effects. With regards to the first channel, increase oil prices represent an immediate transfer of wealth from oil importers to oil exporters. In the case of the second channel- the negative trade effect, advocates that as the oil importing trading partners suffer oil induced recession, they demand less export of traditional goods and services from the oil exporting countries. This goes to the extent that export sector of the oil exporting country will grow large and this channel may provide a negative stimulus to the oil exporting countries. Therefore, a rise in oil prices does not only affect the output and the prices in an economy, but it also affects the currency exchange rate of a country.[1] On the exchange rate, the theory of exchange rate determination suggests that an increase in the oil price causes the currency of an oil exporting country to appreciate as the demand for its currency increases in the foreign exchange market. Conversely, an increase in oil price depreciates the currency of an oil importing country because the supply of its domestic currency in the foreign exchange market increases.

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[1] see (Hamilton, 1996; Amano & Norden, 1998; 2000; Issa et al., 2008).

## 3. Overview of the Africa's Oil Exporting Countries and Scope of the Study

### 3.1. Overview of the Africa's Oil Exporting Countries

Africa remains a major player in oil production among the oil exporting regions of the world. Only a few are net exporters out of the 54 countries in Africa (US EIA, 2016). US EIA data also reveals that, proven oil reserves in Africa have significantly grown by nearly 243.5% from 1980 to 2013. It is estimated that at the off shore of Africa, there is about 100 billion barrels awaiting discovery. Therefore, the Africa's prospects and potentials for further oil search discoveries remain remarkably positive. The overall Africa's oil reserves, production and export will be expected to increase overtime with production of oil likely to remain and be concentrated in Algeria, Nigeria, Angola, Equatorial Guinea and other Gulf of Guinea nations (EIA, 2015).

### 3.2. Scope of the Study and Justification

This study considers Africa region and specifically focusing Nigeria, Algeria, Egypt, Libya and Gabon. The choice for this pool of countries is informed by the OPEC (2015) data classification benchmark. OPEC classified the oil exporting countries into three segments on the basis of their production and output capacity. The total output of these countries constitute about 90% and 70% of Africa's proven oil reserve and oil production respectively. This is considered significant enough as good representative of Africa's oil exporting countries.

## 4. Data, Data Sources and Measurement of Variables

### 4.1. Data and Sources of Data

This study relies on quarterly data for the period spanning 1980:1 to 2015:4 following the idea of Bernanke, Gertler and Watson (2004). The choice of starting date is influenced by the period that has some of the needed data for this study. Following Iwayemi and Fowowe (2010) and Chaudourne, Feve and Guay (2014), the cut-off date is considered long enough to capture some of the latest shocks in the global oil price. Data have been sourced from Organization for Economic Cooperation and Development (OECD), OPEC, World Bank (WB), International Monetary Fund (IMF), the United State Energy Information Administration (US EIA), International Labour Organization (ILO) and the World Development Indicator (WDI).

In order to capture the dynamics of world oil price shocks on the economies of these countries, we have used variables composed of oil price (OP) as an exogenous variable, inflation (INF), real exchange rate (EXR), and real GDP similar to the studies of Kamin and Rogers (2000), and Berument and Pasaogullari

(2003). Variables including Interest Rates (INR), Money Supply (MS) and Unemployment (UNE) have been added in this study as a way of expanding the study to generate a more robust and Reliable Outcome.

## 4.2. Variables and Definitions of Variables

### 4.2.1. Crude Oil Prices (OP)

Oil price is the amount of crude oil per barrel sold in the international market. It is expressed in dollar. For the purpose of this study, the Brent Blend (also referred to as Brent Crude) is used as the oil price measure because it is the largest in Africa among many major classifications of oil.

### 4.2.2. Real Gross Domestic Product (GDP)

Real GDP is an inflation-adjusted measure of all goods and services produced at constant national prices for each country annually at a given base year for all the selected countries. Following Berkelmans (2005). The GDP is included to examine the impact of shocks evolving from exogenous variable on total output of the economy.

### 4.2.3. Exchange Rate (EXR)

Exchange rate (EX) measures the expression of the price of each country's currency in another country's currency. The US dollar exchange rate is selected as the benchmark in this study due to its wider acceptability and the fact that it is the most traded on the foreign exchange market.

### 4.2.4. Inflation (INF)

Inflation which is proxied with consumer price index (CPI) measures all items national composite price with 2000 as the base year. It is a key monetary policy responding to oil price shocks. It also serves as a control variable that has a link with monetary policy decisions, more especially with the interest rates through which economic stability is attained.

### 4.2.5. Money Supply (MS)

M2 comprises M1 plus short-range time deposits in banks and twenty-hour money market funds (see Ihsan and Anjum, 2013). It serves as an intermediate target of monetary policy in response to oil price shocks.

### 4.2.6. Bank Interest Rates (INT)

The interest rate is the average monthly real REPO rate. It serves as a basis through which the central or Reserve bank of each individual country sets interest rates as a monetary policy indicator (see Iturriaga, 2000; Disyatat and Vongsinsirikul, 2003). The interest rate is introduced to allow us to determine the extent of inflation caused by shocks evolving from oil prices.

### 4.2.7. Unemployment Rate (UNE)

International Labour Organization, "unemployed workers" are those who are currently not working but are willing and able to work for pay, currently available to work, and have actively searched for work. It measures the prevalence of unemployment in an economy.

### 4.3. Data Measurement

OP, GDP, MS and EXE rate have been expressed in logarithm form. To ensure consistency, various approaches including Levin, Lin and Chu (LLC); Im, Pesaran and Shin (IPS); Augmented Dickey-Fuller Test (ADF) and Phillip Peron Test (PP) have been used to test for stationarity of the variables. However, the results show that oil price, inflation and money supply are stationary at level ($I_0$) while GDP, INT, UNE and EXE rates are found to be in order of difference one ($I_1$). However, the study proceeds to estimate P-SVAR, a procedure which is arguably consistent with literature (See Sim, Stock and Watson, 1990).

### 4.4. Research Methodology

### 4.4.1. Model Specification

Following Kutu and Ngalawa (2016), the study employs the $P - SVAR$ model to capture the dynamics of the world oil price shocks on the selected domestic oil exporting economies. Similar

to Kamin and Rogers (2000) and Berument and Pasaogullari (2003) for SVAR, the model is a seven-variable model comprising oil prices, real exchange rate, inflation, money supply, interest rate, unemployment and GDP. The P $-$ SVAR has the same structure as $P - VAR$ models, in the sense that all variables are assumed to be endogenous and inter-reliant, except for those identified as exogenous. This model is based on the assumption that the six domestic performance variables of each country cannot affect the world oil prices. The $P - SVAR$ is built with the same logic applied in the standard $P - VAR$ except for the structural restrictions, which are imposed on the former, making it a different and much stronger tool for addressing macroeconomic policy. The $P - SVAR$ methodology suggests the imposition of restrictions on the contemporaneous structural parameters only for reasonable economic structures to be derived. The traditional restrictions are denoted by "$f_{21} - f_{76}$" and "0" for the contemporaneous and sluggish lagged relationships, respectively.

In view of this understanding, supposing that oil exporting countries is represented by the following structural panel equation:

$$\lambda \Phi_{it} = \Omega_{io} + \Psi_1 \Phi_{it-1} + \Psi_2 \Phi_{it-2} + \ldots + \Psi_p \Phi_{it-p} + M\theta_t + \Delta\varepsilon_{it}$$

where $\lambda$ represents an invertible $(v \times v)$ matrix that describes the contemporaneous relationship among the variables employed; $\Psi_{it}$ symbolises $(v \times 1)$ vector of endogenous variables such that $\Phi_{it} = \Phi_{1t,} \Phi_{2t,} \dots \Phi_{nt}$. $\Omega_{io}$ is a $(v \times 1)$ vector of constants representing country-specific intercept terms; $\Psi_i$ is a $(v \times v)$ matrix of coefficients of lagged endogenous variables (for every $i = 1 \dots p$); M and $\theta_t$ are vectors of coefficients and the exogenous variable, respectively. This captures external shocks; $\Delta$ is a $(v \times v)$ matrix whose non-zero diagonal elements allow for direct effects of some shocks on more than one endogenous variables in the system; and $\varepsilon_{it}$ is a vector of uncorrelated error terms (white-noise structural disturbances).

Equation (1) presents the $P - SVAR$ model. According Enders (2004), this model cannot be estimated directly due to the feedback that is inherent in the SVAR process. The structure of the system incorporates feedback, which makes it difficult to estimate because the endogenous variables are allowed to affect each other in the current and past realisation time path of $\lambda\Phi_{it}$. Nevertheless, the information in the system can be estimated and recovered by estimating a reduced-form $SVAR$ implicit in the equations (see Ngalawa and Viegi, 2011). Pre-multiplying equation (1) by $\lambda^{-1}$ gives:

$$\Phi_{it} = \lambda^{-1}\Omega_{io} + \lambda^{-1}\Psi_1\Phi_{it-1} + \lambda^{-1}\Psi_2\Phi_{it-2} + \dots + \lambda^{-1}\Psi_p\Phi_{it-p} + \lambda^{-1}M\theta_t + \lambda^{-1}\Delta\varepsilon_{it} \qquad (3)$$

This can be represented as,

$$\lambda^{-1}\Omega_{io} = C_i, \lambda^{-1}\Psi_1 \dots \lambda^{-1}\Psi_p = D_i \dots D_p, \lambda^{-1}M = \alpha \text{ and } \lambda^{-1}\Delta\varepsilon_{it} = \mu_{it} \qquad (4)$$

We therefore transform equation 3 to derive equation 4:

$$\Phi_{it} = C_i + D_1\Phi_{it-1} + D_2\Phi_{it-2} + \dots \dots + D_p\Phi_{it-p} + \alpha\theta_t + \mu_{it} \qquad (5)$$

However, the difference between equations (1) and (4) is that the first is called a $P - SVAR$ or primitive system where all variables have contemporaneous effects on each other while the second is called a reduced form $P - SVAR$ or a $P - SVAR$ expressed in standard form in which all the variables that are contained in the right-hand side are predetermined at time $t$ and no variable has a direct contemporaneous (immediate) effect on another in the model. Furthermore, Enders (2004) concluded that the error term $(\mu_{it})$ is a composite of shocks in $Y_{it}$.

For simplicity sake, equation (5) can be expressed in a short form shown in (6):

$$\Phi_{it} = C_i + \lambda(L)\Phi_{it} + G(L)\theta_t + \mu_{it} \qquad (6)$$

where $\Phi_{it}$ and $\theta_t$ are $(n \times 1)$ vectors of variables given by

$$\Phi_{it} = (gdp, une, exr, inf, ms, int) \tag{6.1}$$

$$\theta_t = (op) \tag{6.2}$$

Equation (6.1) embodies the vector of the oil exporting countries that are treated endogenous variables as used in the study. Equation 6.2 represents the vector of the exogenous variable that controls for external shocks. $C_i$ is vector of constants which represents the country intercept terms. $\lambda(L)$ and $\Delta(L)$ symbolise the matrices of polynomial lags that capture the relationship between the endogenous variables and their lag lengths. $\mu_{it} = \lambda^{-1}\Delta\varepsilon_{it}$ denotes a vector of random disturbances, which can also be expressed as $\lambda\mu_{it} = \Delta\varepsilon_{it}$.

The features of equations (7) and (8) are similar because both are reduced form $P - SVARs$ derived from the primitive P-SVAR system of equations (2) where all variables are assumed to have simultaneous effects on each other and are also assumed to describe the performance of the Africa's oil exporting economies. For the information in the structural equation to be recovered, it is necessary and to impose restrictions in matrices $\lambda$ and $\Delta$ in the system of equations (7) and (8).

$$\lambda = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 & 0 & 0 \\ c_{21} & 1 & 0 & c_{24} & 0 & 0 & 0 \\ 0 & c_{32} & 1 & 0 & 0 & 0 & 0 \\ c_{41} & 0 & c_{43} & 1 & 0 & 0 & 0 \\ c_{51} & c_{52} & c_{53} & c_{54} & 1 & c_{56} & 0 \\ 0 & c_{62} & c_{63} & c_{64} & c_{65} & 1 & c_{67} \\ c_{71} & c_{72} & c_{73} & c_{74} & c_{75} & 0 & 1 \end{bmatrix} \begin{bmatrix} \mu_t^{OP} \\ \mu_{it}^{GDP} \\ \mu_{it}^{MS} \\ \mu_{it}^{EXR} \\ \mu_{it}^{INF} \\ \mu_{it}^{INT} \\ \mu_{it}^{UNE} \end{bmatrix} = \tag{7}$$

$$\Delta = \begin{bmatrix} b_1 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & b_2 & 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & b_3 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & b_4 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & b_5 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 & b_6 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & b_7 \end{bmatrix} \begin{bmatrix} \varepsilon_t^{OP} \\ \varepsilon_{it}^{GDP} \\ \varepsilon_{it}^{MS} \\ \varepsilon_{it}^{EXR} \\ \varepsilon_{it}^{INF} \\ \varepsilon_{it}^{INT} \\ \varepsilon_{it}^{UNE} \end{bmatrix} \tag{8}$$

Equations (7) and (8) presents the restricted matrixes. While the first matrix in equation (7), represents the $\lambda$-matrix which pertains to the non-recursive restrictions in the model, the second matrix in equation (8), represents the $\Delta$-matrix known as a diagonal matrix. The terms $\mu_t^{OP}, \mu_{it}^{GDP}, \mu_{it}^{MS}, \mu_{it}^{EXR}, \mu_{it}^{INF}, \mu_{it}^{INT}$ and $\mu_{it}^{UNE}$ are residuals in reduced-form disturbances to both the endogenous (domestic) and the exogenous (Foreign) variables which further symbolises the unexpected movements (Shocks, given information in the system) of each variable. The

associated structural shocks with the corresponding equations are denoted with the following residuals: $\varepsilon_t^{OP}, \varepsilon_{it}^{GDP}, \varepsilon_{it}^{MS}, \varepsilon_{it}^{EXR}, \varepsilon_{it}^{INF}, \varepsilon_{it}^{INT}$ and $\varepsilon_{it}^{UNE}$.

In the short run SVAR, we develop identification by placing restrictions on λ and Δ matrices, which are assumed to be non-singular ensuring exact identification of the scheme. Nevertheless, since there are $p(p+1)/2$ free parametres in the $\sum_\varepsilon$, given its symmetric nature, several parametres may be estimated in matrixes λ and Δ. As there are $2p^2$ parametres in matrices λ and Δ, the order condition for identification requires that $2p^2 - 0.5p(p+1)$ or *0.5p(3p-1)* additional restriction be placed on the elements of the matrices. For justification and procedural purposes however, our study follows Amisano and Giannini (1997) in which $P - SVAR$ needs $2p^2 - 0.5p(p+1)$ or 70 restrictions be placed wholly on λ and Δ matrices (*p* is the number of the variables in the study). Therefore, for the scheme to be precisely identified, since matrix λ is assumed a non-singular diagonal matrix, there will be 42 exclusion restrictions imposed on it while 28 exclusion restrictions are expected to be imposed on matrix λ. But since our non-recursive P-SVAR has imposed 22 zero restrictions on matrix λ, the system is therefore characterised over identified and 8 free parametres in matrices λ and 7 in matrix Δ. As presented in the system components of equation 6, this has to be estimated.

In consideration of the order to identify the parametres and the shocks of the structural model, the identifying restrictions used in this study assumed the following economic intuitions- variables influencing one another on the basis of economic theory and depending on their position in the identification scheme; domestic shocks from other variables do not affect oil prices being an international variable. Rather, the transmission of international shocks to the domestic economy can be very rapid. In that sense, oil price is defined as an exogenous variable and as such, given the fact that the selected countries under study are oil producing economies, such assumption is plausible[1]; while real exchange rate affects inflation, it is not affected by its shocks. Given the fact that, the non-zero coefficients ($c_{kj}$) in the non-singular matrices is used to show that variable *j* instantaneously affects variable *k*. For instance, the oil price is captured in the first row and it is used to measure the external pressure on the domestic economies. It is denominated in the US\$ per barrel and determined by market activities at the international level which is independent of the forces from the regional market.

Oil prices shock is captured in row 1, while rows 2 and 3 are equations respectively representing gross domestic products (GDP) and MS. Rows 4 and 5 respectively denote equations for EXR and INF. While in rows 6 and 7, we have the INT and UNE respectively. Based on the λ matrix in equation 6, oil prices in row 1 does not respond contemporaneously to other variables used in this study. It is independent

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[1] see (Berkelmans, 2005; Kutu & Ngalawa, 2016).

of other variables as it places an external pressure on the local economies of the selected countries. Rather, other variables may contemporaneously respond to it. Row 2 presents the GDP equation, GDP responds contemporaneously to oil prices shocks, exchange rates and unemployment which their restrictions have been denoted with $c_{21}$, $c_{24}$, $c_{27}$. This implies that GDP responds to positive shocks from oil prices. This transmission confirms the assertion of Kamin and Rogers (2000) that oil production accounts for a large share of the GDP of the oil-exporting countries and oil price increase directly increases the value of country's currency. Similar phenomenon is expected in unemployment for the oil exporting countries. It declines when more job opportunities are created from oil proceeds. This in turn creates and increases the income level of both the individuals and the economy. Money supply responds contemporaneously to only GDP as represented as $c_{32}$, captured in the MS equation in row 3. Rows 4 and 5 respectively present the exchange rate and inflation rate equations. As shown, $c_{41}$ and $c_{43}$ confirm that the exchange rate contemporaneously responds to oil price shocks and money supply only, while inflation rate contemporaneously responds to oil prices shocks, GDP, money supply, exchange rate and interest rate as their imposed restrictions respectively expressed as $c_{51}$, $c_{52}$, $c_{53}$, $c_{54}$ and $c_{56}$. Similarly, rows 6 and 7 contain the INT and unemployment rates equations. In equation six, INT contemporaneously responds to GDP, money supply, exchange rate, inflation and unemployment, depicted as $c_{62}$, $c_{63}$, $c_{64}$, $c_{65}$ and $c_{67}$. This result is similar to Elbourne (2007). Also similar to equation 6 is equation 7 captured in row seven which showcases the unemployment rate and also confirms that unemployment contemporaneously responds to oil price shocks, GDP, money supply, exchange rate and inflation expressed in $c_{71}$, $c_{72}$, $c_{73}$, $c_{74}$ and $c_{75}$.

## 5. Estimation and Results

### 5.1. Lag Length Test

We selected our optimal lag for this study guided by the established criteria, an approach that has been applied consequent to several models[1]. All lag order selection criteria suggest lag 7 as most suitable for the model. There are also similar studies that guide this study.[2] The result of the test for roots of characteristic polynomial reveals that all the seven inverse roots of the characteristic Auto Regressives (AR) polynomial have modulus which is less than one and also lie inside the unit circle. This indicates that the estimated VAR procedure is stationary.

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[1] see (Ngalawa, 2011).
[2] see (Elbourne, 2007; Sharifi-Renani, 2010; Kose & Baimaganbetov, 2015; Kutu & Ngalawa, 2016).

Similar to Ngalawa (2009), this study carried out a VAR lag exclusion Wald test to check for joint significance of variables. The result shows that all endogenous variables in the model are jointly significant at each lag length for all equations. Disjointedly, all equations are also significant at first lag length order. Similar to the result obtained at the lag length order 1, all the endogenous variables are also significant at the lag length of order 7.

**5.2. Analyses of the Impulse Response Functions:**

Figures 1.1(a-f) present the result of impulse response functions of GDP, INF, INT, MS, EXR and UNE to oil price shocks. All variables have statistically significant response to oil price shocks with either negative or positive response. This result supports the study of Eltony and Al-Awadi (2001) on Kuwait economy. It asserts that oil price shocks are significant in explaining fluctuations in macroeconomic variables within an oil exporting economy.

**5.2.1. Impulse Response Function of GDP to Oil Price Shocks**

The GDP shows positively significant response to structural one standard deviation innovation in oil prices. GDP continuously increases in period 1 up to period 12. This validates the result of Kamin and Rogers (2000) that oil directly transmits to GDP. Salai-I-Martins and Subramanian (2003), Kaldor and Said (2007) that oil price shocks positively impact economic growth.

**5.2.2. Impulse Response Function of Inflation To Oil Price Shocks**

The impulse response of inflation to oil price shocks shows that inflation significantly responds to oil prices shocks throughout the period. Though, the result shows a negative response within the first three periods and later became positive from the $4^{th}$ to $12^{th}$ periods. This submission validates the result of Haldane (1997) that response to structural one standard deviation innovation may put upward pressures on inflation which often appreciates in oil exporting countries.

**5.2.3. Impulse Response Function of Interest Rate to Oil Price Shocks**

Interest rate negatively responds to positive oil shocks. Response of interest rate to structural one standard deviation innovation is negative. It started rising in period 1 and peaked in period 2 and began to decline continuously up till period 12. This supports Hooker (2002) who posits that long-run cointegrating relationship exists between oil prices and interest rate. The decline of the rate associates with the argument that positive oil prices cause increase in the volume of money supply putting a downward pressure on the interest rate. This may also cause further drop in the rate at which bank lends out.

### 5.2.4. Impulse Response Function of Money Supply to Oil Price Shocks

Similar to the response of GDP to oil price shocks, the MS positively and significantly responds to price shocks as depicted in figure 1(d). Although, MS drops in the first three periods bottoming in period 3 and begins to rise as it proceeds to period 4. The increase is consistent up till period 12. This suggests that positive shocks in oil prices positively causes a rise in the volume of money in the oil exporting economy. The result validates the assertion of the study of Olomola and Adejumo (2006) that oil price shocks significantly affect the economy in the short run and long run. This submission is budded to the fact that as oil price shocks persists, the volume of proceeds from oil increases which transmits to increase in the volume of money in circulation.
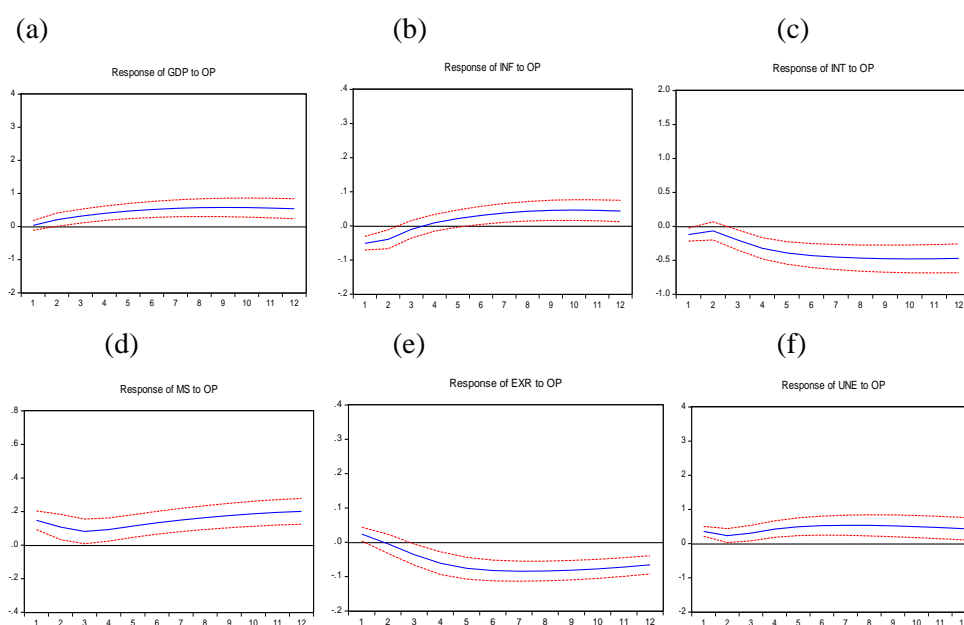


**Figure 1**

### 5.2.5. Impulse Response Function of Exchange Rate to Oil Price Shocks

Exchange rate significantly and negatively responds to oil price shocks. Exchange rate consistently decrease from period 1up to period 6 and remains stable till period 9 and begins to rise again as it moves towards period 12. This opines that local currency of the oil producing economies appreciates in value because more demand for local currency in exchange for stronger currencies especially dollars will rise. This aligns with the theoretical argument of Corden (1984) and Zhou (1995) that oil exporting countries may experience exchange rate appreciation (depreciation) when oil price rise (fall).

### 5.2.6. Impulse Response Function of Unemployment Rate to Oil Price Shocks

Unemployment responds significantly to structural one standard deviation innovation in oil price shocks. The unemployment rate declines within the first two periods bottoming at period 2 and slightly rose and remains constant as it moves through to period 10. The response declines again in period 11 and this continues as it proceeds to period 12. This implies that unemployment declines when more job opportunities are created from oil proceeds.

In the foregoing, the overall responses of the variables to structural one standard innovation in oil price reveal that variables are significant and stable. This further validates the submission that oil price shocks transmission occurs through the GDP, EXR, MS and other selected variables.

### 5.3. Results of Forecast Error Variance Decomposition for the Model

**Table 1. Variance Decomposition of GDP**

| Period | Shock OP | Shock GDP | Shock MS | Shock EXR | Shock INF | Shock INT | Shock UNE |
|--------|----------|-----------|----------|-----------|-----------|-----------|-----------|
| 3 | 2.690350 | 93.41573 | 2.797994 | 0.990813 | 0.000458 | 0.093534 | 0.011117 |
| 6 | 2.177872 | 85.47482 | 9.003760 | 3.142448 | 0.000315 | 0.168304 | 0.032481 |
| 9 | 4.800447 | 77.47640 | 13.01898 | 4.467265 | 0.000318 | 0.191766 | 0.044820 |
| 12 | 7.179574 | 71.89279 | 15.63266 | 5.058588 | 0.000332 | 0.191086 | 0.044972 |

Table 5.3.1. shows that shocks to inflation, bank rates and unemployment, each accounts for less than 0.05% fluctuation in GDP in period three. As evidenced from the table, the result shows that 2.7%, 2.8% and 1% fluctuation in GDP is respectively accounted for by oil price, money supply and exchange rate during the third period. During this period, OP and MR are markedly noticed to affect GDP performance. For the ninth and twelfth periods, the contribution of shocks to oil price, money supply and exchange rate increased evidently. Oil price, money supply and exchange rate respectively contribute 4.8%, 13% and 4.4% in period nine to the fluctuation in the performance of the GDP. Similarly, variance in the performance of GDP is accounted for by 7.1% shocks to oil price, 15.6% shocks to money supply and 5.1% shocks to exchange rates. From the foregoing, the result shows that oil price is a major source of a change to GDP performance. Aside money supply and GDP itself, other variables summed together are less than the contribution of oil to variance of the GDP performance. This also translates that the contribution of oil to GDP is more significant than other variables for all periods covered under our study.

**Table 2. Variance Decomposition of MS**

| Period | Shock OP | Shock GDP | Shock MS | Shock EXR | Shock INF | Shock INT | Shock UNE |
|---|---|---|---|---|---|---|---|
| 3 | 33.16422 | 11.24427 | 54.11443 | 1.437199 | 0.000335 | 0.019545 | 0.019996 |
| 6 | 33.15846 | 14.81366 | 49.69755 | 2.252784 | 0.001549 | 0.016123 | 0.059883 |
| 9 | 25.40719 | 32.63683 | 36.75176 | 5.074861 | 0.002772 | 0.019114 | 0.107468 |
| 12 | 20.89574 | 44.23862 | 28.65184 | 6.056401 | 0.002440 | 0.032840 | 0.122117 |

The result for variance decomposition for money supply is presented in table 5.3.2 showing that oil price accounts for about 33% forecast error variance of MS during the 3-step period and GDP is associated with 11%. This result evidences finding in the literature that oil price affects the performance of MS. Although this declines over time. For instance, OP continuously drops from about 33% in period 6 to about 25% in period 9 and about 21% in period 12. This occurrence may be associated or influenced by the period of continuous fall in the price of oil. Invariably while the forecast error variance in MS associated with OP is falling, the GDP is otherwise. GDP continuously rose from about 14% in period 3 to about 33% in period 6 and about 44% in period 12.

**Table 3. Variance Decomposition of EXR**

| Period | Shock OP | Shock GDP | Shock MS | Shock EXR | Shock INF | Shock INT | Shock UNE |
|---|---|---|---|---|---|---|---|
| 3 | 15.80417 | 29.43187 | 7.616951 | 46.45244 | 0.005123 | 0.635663 | 0.053788 |
| 6 | 12.39385 | 22.90127 | 7.339512 | 56.00081 | 0.012909 | 1.062714 | 0.288936 |
| 9 | 11.85323 | 27.07235 | 13.56934 | 45.92072 | 0.013966 | 1.097937 | 0.472454 |
| 12 | 13.17512 | 34.21903 | 18.57007 | 32.57297 | 0.010919 | 0.969384 | 0.482506 |

The result shown in table 5.3.3. shows that both inflation and unemployment rate have marginal effect on exchange rate in periods three through six to twelve. At each period, their individual shock accounts for less than 0.05% of the fluctuation that occurs in the exchange rate. Similarly, shocks to bank rate also accounts for low fluctuation in the exchange rate. Inversely, shocks to OP, GDP and MS are markedly displayed to account for large fluctuation to exchange rate for periods three, six, nine and twelve. For instance, OP accounts for 15.8% fluctuation in exchange rate in period three, 12.4% in period six but declines to 11.8% in period nine and later appreciates to 13.2% in period twelve. GDP and MS follow a similar pattern. Shock to both GDP and MS are noticeably noted to account for fluctuation in exchange rate.

**Table 4. Variance Decomposition of INF**

| Period | Shock OP | Shock GDP | Shock MS | Shock EXR | Shock INF | Shock INT | Shock UNE |
|--------|----------|-----------|----------|-----------|-----------|-----------|-----------|
| 3 | 9.568176 | 53.85589 | 26.82009 | 7.354384 | 2.193164 | 0.194247 | 0.014046 |
| 6 | 6.340614 | 63.33756 | 24.31811 | 4.307105 | 1.260035 | 0.424704 | 0.011873 |
| 9 | 5.331734 | 64.60773 | 24.21865 | 4.305951 | 1.040911 | 0.365191 | 0.129830 |
| 12 | 5.037791 | 62.96081 | 24.62951 | 5.625247 | 0.958362 | 0.377867 | 0.410408 |

Table 5.3.4 presents the variance decomposition of inflation. It reveals that bank interest and unemployment explain a very small variance in inflation. While oil price remarkably explains variation by 9.5%, 6.3%, 5.8% and 5% in periods three, six, nine and twelve respectively, the variation in inflation is also associated with MS by 26.8% in period three, 24.31% in the period six and 63% in the period twelve. Also, the decrease in the variance decomposition of inflation to oil price may be associated with continuous fall in oil price over time. Similarly, money supply and exchange rate follow a downward trend. During the third period, the variance decomposition of inflation is associated to 26.8% of money supply and 7.3% of exchange rate and drop to 24.3% and 4.3% respectively in period six but appreciate in period twelve to 24.6% for money supply and 5.6% for exchange rate.

**Table 5. Variance Decomposition of UNE**

| Period | Shock OP | Shock GDP | Shock MS | Shock EXR | Shock INF | Shock INT | Shock UNE |
|--------|----------|-----------|----------|-----------|-----------|-----------|-----------|
| 3 | 5.783332 | 1.700247 | 7.328742 | 35.07679 | 0.442176 | 2.630676 | 47.03804 |
| 6 | 3.476390 | 5.719980 | 9.274700 | 49.95029 | 0.287680 | 4.419484 | 26.87147 |
| 9 | 5.209593 | 5.651556 | 10.54329 | 53.83777 | 0.203828 | 5.130323 | 19.42365 |
| 12 | 6.864607 | 4.117125 | 12.72452 | 55.18056 | 0.156772 | 5.475494 | 15.48092 |

As regards the variance decomposition of unemployment rate shown in table 5.3.5., the result reveals that apart from inflation rates which accounts for less than one percentage of the fluctuation in unemployment, shocks to other variables account for the fluctuation in unemployment. During the third period, sixth, ninth and twelfth periods, OP respectively accounts for 5.8%, 3.5%, 5.2% and 6.8% fluctuation in unemployment rate. Although, shocks to MS and EXR are reportedly more accountable to the fluctuation in unemployment.

## 6. Summary and Conclusion

This study estimates a seven variable P-SVAR model to investigate the transmission process through which oil price shocks affect the economic performance of the Africa's oil exporting economies spanning 1980-2015. The paper also determines the significant response of the selected variables to oil price shocks. In contrast to the oil importing developed countries, the result shows

significant response of the variables to oil price shocks. It also reveals that there is significantly positive connection between oil price shocks and GDP in the Africa's Oil exporting countries. This validates the assertion that oil price shocks play significant role in determining variations in economic output which consequently stimulates economic activity. This response reports a clear positive correlation between oil prices and GDP, showing higher growth and reduction in unemployment rates. Although significant but sluggishly correlated as reported by our finding. Therefore, this may not assure automatic and continuous reduction in unemployment as they proceed into the future. Also, the result finds that oil price shocks significantly influences the real exchange rates evolving via currency appreciation. Positive oil price shocks enhance higher economic activity among the oil exporting countries. The study also reveals that oil prices shocks significantly increases MS, signaling inflation in the economy. This suggests a strong monetary control measure being put in place to guide against possible shocks that may arise in oil price.

The result of the variance decomposition reveals that shocks to oil prices largely accounts for fluctuation in the variables considered in the study evidencing the medium of transmission of oil. This validates the claim that oil price shocks significantly transmit through the selected variables to impact economic performance.

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# Determinants of Part-Time Working at Home: Evidence from Turkey

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**Abstract:** This study examines the probabilities and determinants of part-time working at home for the case of Turkey. Data used in the study are based on Turkish Household Labor Force Survey of 2015. In the context of logistic regression model, a number of demographic, social, cultural, and economic characteristics of employees are used to be main determinants of part-time working at home or out-of- home. According to the results, there is an inverted U-curve relationship between age and part-time working at home decision. For the males and females, the industries related with professional jobs are more attractive for part-time working at home. In addition, as education level of employee rises, the probability of part-time working at home also increases.

**Keywords:** Part-time working at home; Inverted U-curve; Logistic regression

**JEL Classification**: J21; J10

## 1. Introduction

In recent years, one of the dramatic changes in the structure of Turkish labor market has been the increasing proportion of the work force at home and unexpected changes in the composition of labor force. According to Turkish Labor Force Statistics of 2015, there are more than 757 thousand persons working at home usually or sometimes. 164 thousand employees are male, the rest are female. These significant changes in the nature of work place and in the composition of the labor force have attracted some attention in both public policy and research literature.

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In this subject, most of previous studies focused on practicing managers and organizational scientist and argued that advances in the technology of telecommunications and in the availability of personal computers have stimulated questions about the desirability of employees working at home rather than at conventional locations (Huws, 1984; Bisset & Huws, 1984; Olson & Primps, 1984; Ruiz & Walling, 2005; Beauregard, Basile & Canonico, 2013). Although importance of technological changes on working at home is evident, in this study the effect of technological progress on working at home will not be analyzed and discussed because it is not possible to determine how many persons are working at home using a computer in their works, or how many employees are telecommuting to their jobs at their homes in Turkish Household Labor Force Survey of 2015.

In the labor economics literature, there is no large existing body of studies on determinants of working preferences at home, using household labor force survey. Only a few studies focuses the role of demographic, social, cultural and economics characteristics on the working preferences at home (Horvath, 1986; Hakim, 1987a; Hakim, 1987b; Kraut & Grambsch, 1987; Ours, 1991; Felstead, Jewson, Phizacklea & Walters, 2000). Among them, the study of Kraut and Grambsch (1987) examines the impact of household and demographic characteristics on the probability of working at, using logistic regression in a multivariate framework and utilizing data from 1980 U.S. Decennial Census. Ours (1991) investigates the determinants of working at home for Dutch household under three services: small home repairs, car repairs and maintenance, and ladies' hairdressing by using logit model and 1985 Dutch Household Survey. However, within our knowledge, little attention has been paid to home-based work in Turkey (Esim & Sims, 2000; Özgüler, 2012). A majority of studies on this subject carries out for part-time employment rather than employment at home (Baslevent, 2002; Palaz, 2003; Kusaksiz, 2006; Kumas & Caglar; 2011; Palaz, Tasci & Darici; 2013; Oncel & Dereli, 2015).

In order to fill the gap in the literature, this study aims to examine the factors that affect the probability of working at home in the Turkish labor market. For the purpose of the study, all necessary dependent and independent variables are extracted from the Turkish Household Labor Force Survey of 2015. In this study, the logistic regression model is separately employed for the males, females and whole working group. The plan of this paper is as follows. Part 2 describes data and econometric approach used in this study. In Part 3, the logistic regression results are presented. Part 3 concludes the study.

## 2. Data and Methodology

In 2015, Turkish Statistical Institute made attempt to determine the size of home based work force in Turkey. The respondents were asked whether they were working at home usually and sometimes.

In order to examine the probabilities of the determinants on home-based work, we used the Turkish Household Labor Force Survey of 2015 data set conducted by the Turkish Statistical Institute (TURKSTAT). Since the purpose of this study is to investigate part-time working at home and its determinant, we only extracted data for employed individuals from the survey. Part-time homeworker was defined as a person who is regularly doing his or her same job at home and working 30 hours or less in the reference week. After determining part time homeworkers, we divided sample population into two groups: one group of females and one group of males.

The probability of part-time working at home is assumed to be function of number of demographic, social, cultural, and economic characteristics of employee. In this study, we will use logistic regression model. Our dependent variable is naturally binary. Its value is one or zero depending on whether employee works at home. Because of binary dependent variable, determination of the factors which may affect the probability of part-time working at home requires a logistic regression model. Logistic regression models employ standard logistic probability distribution function. To be more precise, logistic regressions utilize maximum likelihood estimation to evaluate the probability of categorical membership.

Table 1 gives descriptions of dependent and independent variables. Dependent variable HW is equal to 1 if person works at home usually and sometimes and equal is 0 if person does not work at home. As seen in Table 1, there are a number of independent variables to explain the probabilities of part-time working at home.

**Table 1. Descriptions of Variables**

| NAME | DESCRIPTION |
|---|---|
| **Dependent Variable** | |
| HW | =1, If person is working at home usually and sometimes; =0 otherwise |
| **Independent Variables** | |
| FEMALE | =1, If person is female; =0 if person is male, |
| MALE | =1, If person is male; =0 if person is female, |
| AGE | Person's age |
| AGE-SQUARED | AGE*AGE |
| NUTS1 | =1, If person lives in Istanbul; =0 otherwise |
| NUTS2 | =1, If person lives in West Marmara region; =0 otherwise |
| NUTS3 | =1, If person lives in Aegean region; =0 otherwise |
| NUTS4 | =1, If person lives in East Marmara region; =0 otherwise |

| NUTS5 | =1, If person lives in West Anatolia region; =0 otherwise |
| NUTS6 | =1, If person lives in Mediterranean region; =0 otherwise |
| NUTS7 | =1, If person lives in Central Anatolia region; =0 otherwise |
| NUTS8 | =1, If person lives in West Black Sea region; =0 otherwise |
| NUTS9 | =1, If person lives in East Black Sea region; =0 otherwise |
| NUTSA | =1, If person lives in Northeast Anatolia region; =0 otherwise |
| NUTSB | =1, If person lives in Central East Anatolia region; =0 otherwise |
| NUTSC | =1, If person lives in Southeast Anatolia region; =0 otherwise |
| HSIZE | Total number of members in household |
| ILLITERATE | =1, If person literate but not completed any educational institution; =0 otherwise |
| PRIMARY | =1, If person graduated from primary school; =0 otherwise |
| LSECONDARY | =1, If person graduated from lower secondary, vocational and technical secondary school or primary education; = 0 otherwise |
| USECONDARY | =1, If person graduated from upper secondary school (high school); =0 otherwise |
| TECHNICAL | =1, If person graduated from vocational and technical high school; =0 otherwise |
| UNIVERSITY | =1, If person graduated from 2 or 3 year higher education or faculty or 4 years higher education or faculty; =0 otherwise |
| MASTER | =1, If person graduated from master degree or doctorate; =0 otherwise |
| SINGLE | =1, If person is single; =0 otherwise |
| MARRIED | =1, If person is married; =0 otherwise |
| DIVORCED | =1, If person is divorced; =0 otherwise |
| WIDOWED | =1, If person is widowed; =0 otherwise |
| PROFESSIONALS | =1, If person's business code is managers, professionals and associate professionals ; =0 otherwise |
| TECHNICIAN | =1, If person's business code is technicians, clerical support workers, service and sales workers, skilled agricultural, forestry and fishery workers, craft and related trades workers and plant and machine operators, and assemblers; =0 otherwise |
| ELEMENTARY | =1, If person's business code is elementary occupations ; |

| | =0 otherwise |
|---|---|
| AGRICULTURE | =1, If person is working in agricultural sector ; =0 otherwise |
| INDUSTRY | =1, If person is working in industry sector ; =0 otherwise |
| SERVICE | =1, If person is working in service sector ; =0 otherwise |
| PRIVATE | =1, If person's workplace status is private ; =0 otherwise |
| PUBLIC | =1, If person's workplace status is public ; =0 otherwise |
| OTHER | =1, If person's workplace status is foundations, associations, cooperatives, political parties, non-governmental organizations, international organizations, embassies, etc.; =0 otherwise |
| SSI | =1, If person is registered in the Social Security Institution; =0 otherwise |

In analyzing the relationships between the probability of working at home and explanatory variables listed in Table 1, our expectations in the possible relationships must be given in advance.

## 2.1. Region

Region can be an important determinant of part-time working at home in Turkey. Traditionally, service sectors which are recently being called knowledge economy such as communication, banking, insurance and information technology services are proner to part-time working at home. Since these sectors have largely concentrated in the west of Turkey, it is expected that the probability for working at home in this region is higher than the rest of Turkey.

## 2.2. Education

According to findings of the empirical studies in the related literature, there is a strong and positive association between education level and part-time working at home. As education level of an employee increases, the probability of working at home for the employee increases. For the USA, the study of Metzger and Glinow (1988) reports that higher percentage of home workers has some degree of collage experience. Similarly, Hakim (1987) argues that home-based workers in the USA are well-educated with regard to national standards. However, some service sectors such as repairing sector in the economy do not require qualified labor. Therefore, unqualified or uneducated employees may work at home, too. If so, it must be expected that the relationship between education and working at home is negative. The sign of association between education and part-time working at home is not clear and will depend on what kind of job is done.

**2.3. Age**

Age may also influence part time working at home decision of the individuals. According to Metzger and Glinow (1988), the homeworkers in the USA range in age from 19 to 67 years with an average age of 40. In addition, the study of Kraut and Grambsch (1987) demonstrates that the probability of working at home increases at all ages, but the rate of increase steepens appreciably around the retirement age. Older people are more established and may have gathered enough experience, clients, or capital for home-based work. Therefore it is expected that as person's age increases, the probability of part-time working at home also increases. The squared value of age variable is included in the regression equations as a separate explanatory variable in order to control the probable non-linear relationship between age and the probability of part-time working at home (inverted U-curve form).

**2.4. Marital Status**

The marital status of the person can be an important factor in affecting the probability of working at home decision. Since married person has more responsibility in terms of family income, and need more flexible time to stay at home for childcare, the probability of working at home decision for married person is expected higher than that for single person.

**2.5. Household Size**

The larger family size, the smaller family income per person. Larger households may need to compensate for lowness of income per person by continuing part-time work at home. Thus, it is expected that there exists a positive and statistically significant association between household size and probability of working at home.

**2.6. Sector**

Whether a person can work at home depends for many services on the possession of suitable tools. This can be a constraint on working at home decision for business and repair industries. On the other hand, for professionals, this kind of constraint may not exist. Professionals can work at their homes without using tools. Also, they can decide to work at home to avoid the office politics and to reduce stress. We therefore expect the higher probability of part-time working at home for professionals than that for workers in the technical and unqualified jobs.

In order to see sector differences on the probability of working at home decision, we use three sectors: agriculture, service and industry. As mentioned above, in addition to sectoral differences, occupational differences of employees can affect the probability of working at home. To measure occupational differences on part time working at home, three dummy variables are constructed and used in the regression equations. One of them is related with managers, professionals, and

associate professionals. The second one is related with technicians, clerical support workers, service and sales workers, skilled agricultural, forestry and fishery workers, craft and related trades workers and plant and machine operators, and assemblers. Finally, the third one is related with elementary occupations.

## 2.7. Social Security Status

An important socio-economic characteristics of working at home is whether employee has been in the Social Security System of Turkey. Actually, for employees except manager and professionals there is no tendency for part-time working at home. Since social security is their priorities, they will not prefer working at home. Thus, there must be a negative association between existence of social security and part-time working at home.

## 2.8. Type of Employer

One of the determinants of working at home is whether employee is public, private or self employee. Naturally, private and self employees do not face any legal constraint in working at home if their jobs are convenient. Working at home is not possible to public sector employees. If a person who is public employee is part-time working at home, it means that he or she is certainly working more than one job. Thus, whether there exists an association between working at home and type of employer is not previously clear.

## 3. Empirical Results

The logistic regression results for female employees, male employees and whole data are separately reported in Table 2. As seen from Table 2, the coefficients of most dummy variables for region are statistically significant in all three regressions. The coefficients of NUTS1, NUTS2, NUTS6, NUTS8 and NUTSA regions are positive and statistically significant in the regression on whole data. It is both negative and statistically significant for NUTS3, NUTS5, NUTS9 in the same regression. The findings in the regressions on male and female data are almost the same. According to all three regression equations, the highest probability of part-time working at home is estimated to be the Northeast Anatolia for female employees and whole data, but the Mediterranean Region for male employees. The results on the males and whole data are not actually expected since the economy in northeast region of Turkey consists of agriculture and livestock breeding. Male employees in the Mediterranean have higher probability of working at home than those in other regions of Turkey. However, the lowest probability of working at home appears in the East Black Sea Region. It is valid for the males, the females and whole data.

The coefficient of the household size variable is found to be statistically significant only for whole data. But, it is negative as unexpected. It means that the probability of working at home will decrease as the household size increases. In all cases, the estimated coefficient of age variable is positive while the coefficient of squared age variable is negative. This finding indicates that there is an inverted U-curve relationship between age and probability of working at home. For the females, age variable has a positive impact on the probability of part-time working at home until 52.5 years old. After that age, the probability of working at home is starting to decrease. It is 56 years old for the males.

**Table 2. Estimation Results of Logistic Regressions**

|  | Full Data | | Female | | Male | |
|---|---|---|---|---|---|---|
|  | **Coefficient** | **Odds Ratio** | **Coefficient** | **Odds Ratio** | **Coefficient** | **Odds Ratio** |
| FEMALE | 1.9303[a] (0.0502) | 6.8915 |  |  |  |  |
| AGE | 0.0814[a] (0.0113) | 1.0848 | 0.0630[a] (0.0130) | 1.0650 | 0.0779[a] (0.0251) | 1.0810 |
| AGE-SQUARED | -0.0008[a] (0.0001) | 0.9992 | -0.0006[a] (0.0001) | 0.9994 | -0.0007[b] (0.0002) | 0.9993 |
| NUTS1 | 0.2547[b] (0.1033) | 1.2900 | -0.0439 (0.1387) | 0.9570 | 0.4827[a] (0.1779) | 1.6204 |
| NUTS2 | 0.9484[a] (0.1034) | 2.5815 | 0.6324[a] (0.1374) | 1.8821 | 1.2354[a] (0.1802) | 3.4397 |
| NUTS3 | -0.2784[a] (0.1046) | 0.7569 | -0.3775[a] (0.1352) | 0.6855 | -0.5668[a] (0.2107) | 0.5673 |
| NUTS4 | -0.0978 (0.1140) | 0.9068 | -0.2209 (0.1459) | 0.8017 | -0.3327 (0.2334) | 0.7169 |
| NUTS5 | -0.2800[a] (0.1028) | 0.7557 | -0.2425[c] (0.1299) | 0.7846 | -1.1682[a] (0.2524) | 0.3109 |
| NUTS6 | 0.9498[a] (0.1006) | 2.5851 | 0.4701[a] (0.1384) | 1.6001 | 1.4531[a] (0.1675) | 4.2763 |
| NUTS7 | 0.0649 (0.1125) | 1.0670 | 0.0802 (0.1430) | 1.0835 | -0.6655[b] (0.2799) | 0.5140 |
| NUTS8 | 0.6681[a] (0.1058) | 1.9505 | 0.3879[a] (0.1429) | 1.4738 | 1.1060[a] (0.1785) | 3.0222 |
| NUTS9 | -0.6822[a] (0.1278) | 0.5055 | -0.5536[a] (0.1568) | 0.5748 | -1.5203[a] (0.4065) | 0.2186 |
| NUTSA | 2.7945[a] (0.0966) | 16.3544 | 3.4264[a] (0.1349) | 30.7656 | 1.1704[a] (0.1918) | 3.2232 |
| NUTSB | -0.1175 (0.1131) | 0.8891 | 0.0132 (0.1431) | 1.0132 | -0.7124[b] (0.2964) | 0.4904 |
| HSIZE | -0.0290[b] (0.0118) | 0.9714 | -0.0138 (0.0138) | 0.9862 | -0.0240 (0.0314) | 0.9762 |
| ILLITERATE | -0.9815[a] (0.1363) | 0.3747 | -0.9201[a] (0.1908) | 0.3984 | -0.8862[a] (0.2502) | 0.4122 |

| | | | | | |
|---|---|---|---|---|---|
| PRIMARY | -1.2085ᵃ (0.1251) | 0.2986 | -0.8486ᵃ (0.1812) | 0.4280 | -1.8119ᵃ (0.1794) | 0.1633 |
| LSECONDARY | -1.3339ᵃ (0.1309) | 0.2634 | -0.9849ᵃ (0.1861) | 0.3734 | -1.6903ᵃ (0.2046) | 0.1844 |
| USECONDARY | -1.3891ᵃ (0.1423) | 0.2492 | -1.0540ᵃ (0.1929) | 0.3485 | -1.7181ᵃ (0.2312) | 0.1794 |
| TECHNICAL | -1.5543ᵃ (0.1476) | 0.2113 | -1.3980ᵃ (0.1958) | 0.2470 | -1.5471ᵃ (0.2315) | 0.2128 |
| UNIVERSITY | -0.4981ᵃ (0.1062) | 0.6076 | -0.5924ᵃ (0.1550) | 0.5529 | -0.3025ᵇ (0.1366) | 0.7389 |
| SINGLE | -0.5819ᵃ (0.1295) | 0.5588 | -0.6382ᵃ (0.1511) | 0.5282 | -0.4392 (0.3549) | 0.6445 |
| MARRIED | -0.2040ᶜ (0.1067) | 0.8154 | -0.0554 (0.1166) | 0.9461 | -0.6979ᵇ (0.3416) | 0.4976 |
| DIVORCED | -0.1617 (0.1472) | 0.8506 | -0.3079ᶜ (0.1616) | 0.7349 | 0.0410 (0.3884) | 1.0418 |
| PROFES. | 2.1976ᵃ (0.1148) | 9.0033 | 1.9906ᵃ (0.1428) | 7.3199 | 3.2963ᵃ (0.3693) | 27.0125 |
| TECHNICIAN | 1.1726ᵃ (0.1001) | 3.2303 | 1.0870ᵃ (0.1072) | 2.9653 | 1.7999ᵃ (0.3681) | 6.0490 |
| INDUSTRY | 2.6797ᵃ (0.0750) | 14.5807 | 3.5757ᵃ (0.0905) | 35.7196 | 0.1621 (0.2468) | 1.1759 |
| SERVICE | 1.4870ᵃ (0.0636) | 4.4238 | 2.0782ᵃ (0.0860) | 7.9900 | 0.7720ᵃ (0.1705) | 2.1640 |
| PRIVATE | -3.6623ᵃ (0.0816) | 0.0256 | -3.5032ᵃ (0.0993) | 0.0301 | -3.5730ᵃ (0.1842) | 0.0280 |
| PUBLIC | -2.8261ᵃ (0.0962) | 0.0592 | -2.5642ᵃ (0.1283) | 0.0769 | -2.9811ᵃ (0.1854) | 0.0507 |
| SSI | -2.6394ᵃ (0.0679) | 0.0714 | -2.9709ᵃ (0.0920) | 0.0512 | -1.5514ᵃ (0.1202) | 0.2119 |
| Constant | -3.5040 (0.3403) | 0.0300 | -2.9323ᵃ (0.4210) | 0.0532 | -3.8037ᵃ (0.7500) | 0.0222 |
| Observations | 174452 | | 55486 | | 118966 | |
| Wald Chi² | 7700.15ᵃ | | 5311.67ᵃ | | 1844.24ᵃ | |
| Pseudo R² | 0.3930 | | 0.4069 | | 0.2600 | |
| Log-Likelihood | -2090.2240 | | -1257.1089 | | -694.5509 | |

**Note:** Robust standard errors in parentheses. a, b and c represent statistical significance at 1% , 5% and 10% levels, respectively.

As seen in Table 2, the education variable appears to be an important variable in influencing the probability of part-time working at home. The coefficients of all dummy variables constructed for education are statistically significant and negative. The findings related to the sign of the relationship between education and working at home are mixed. Although it is very difficult to make generalization, it can be inferenced that female employees graduated from vocational and technical

high school have the lowest probability of working at home among various education groups. For the males, they are ones graduated from the primary school. However, male and females graduated from master or doctorate program have the highest probability for working at home among all education groups.

In order to see the sectoral differences on the probability of working at home, three dummy variables are produced and two of them (industry and service) are included into regression equations. For the females, both dummies are positive and statistically significant. But, since the estimated coefficient of the industry dummy variable is greater than that of service dummy variable, female employees in industry sector have higher probability of working at home than female employees in agriculture and service sectors. The findings for the male employees are different. Only the coefficient of service dummy variable is found to be statistically significant and positive. This means that male employees in service sector have higher probability of working at home than employees in industry and agriculture services.

Additionally, coefficients of the dummy variables created to measure the effect of occupational differences on the probability of working at home decision are positive and statistically significant for both males and females. The estimated coefficient of the dummy variable for professionals is greater than those for technicians and elementary occupations. This means that professionals have higher probability of part-time working at home than technicians and elementary occupations. As seen from the table, odds ratio for the professional is almost twice that for the technicians in all cases.

Marital status of males and females appears also to be an important variable in affecting the probability of part-time homeworking. According to the results, single female and married male employees have the lowest probability of working at home. Married and widowed female employees and single divorced and widowed male employees have higher probability.

The coefficients of the dummy variable for workplace status are also found to be statistically significant both for males and females. Both female and male self-employees have higher probability than private and public employees. Finally, male and female employees who are not in social security system have higher probability of working at home than those in social security system.

## 4. Conclusion

The frequency of working at home has been dramatically increasing. According to the Turkish Labor Force Statistics of 2015, there are more than 757 thousand persons working at home usually or sometimes. These dramatic changes in the nature of work place and in the structure of the labor force have attracted some

attention in both public policy and research literature. Therefore, in this study, probabilities and determinants of part-time working at home are empirically investigated for the case of Turkey. Data used in the study are based on Household Labor Force Survey of 2015. In the context of logistic regression model, a number of demographic, social, cultural, and economic characteristics of workers are used to be main determinants of part-time working at home or out-of- home.

According to the findings from estimated logistic regressions, region is an important determinant for the probability part-time working at home. The highest probability of part-time working at home is found in Northeast Anatolia for female employees, but Mediterranean region for male employees. It is also determined that there is a strong negative relationship between household size and working at home. One of the most important findings of this study is that there is an inverted U-curve relationship between age and working at home. Employee's education level also appears to be an important variable in influencing the probability of part-time working at home. As expected, males and females graduated from master or doctorate program have the highest probability for working at home among all education groups. Another finding of the study is that female employees in industry sector have higher probability of working at home than female employees in agriculture and service sectors. On the contrary, male employees in service sector have higher probability of working at home than employees in industry and agriculture services. Finally, professionals have higher probability of part-time working at home than technicians and elementary occupations in Turkey.

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