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- Automation of Credit Worthiness Appraisal for Small Businesses
- Mobile Money: A Panacea for Financial Exclusion in Emerging Markets
- Appointment of Directors and Performance of Deposit Money Banks in Sub Saharan Africa
- Effects of Monetary Policies on Stock Market Performance in Nigeria

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EDITORIAL

The Journal of Banking is a research and policy-based publication of The Chartered Institute of Bankers of Nigeria (CIBN) which typically focuses on topical issues in the core areas of banking and finance as well as other related disciplines with an emphasis on implications for banking policy.

For this edition, articles were selected across various subject matters-ranging from creditworthiness appraisal, mobile money, directors' appointment and performance to monetary policy. Though the content of this edition is diverse, it is clear that most authors attempted to either establish models and relationships between predetermined variables or focus on the efficiency of existing models.

Vincent Nwani, Ph.D. conducted a study on *Automation of Credit Worthiness Appraisal for Small Businesses* using two analytical approaches namely; the decision matrix credit grading model and the rule-based evidence tree nodal analytical model to develop an Expert System (ES) framework. The ES framework for appraising customer credit risks helps to address the rising customer use of digital-banking services. The study showed that with the ES framework, the ultimate funding issues of small businesses are moderated with minimal chance of credit default.

Professor Olayinka David-West, Timothy Aluko, & Olubanjo Adetunji, on the other hand, conducted a research on *Mobile Money: A Panacea for Financial Exclusion in Emerging Markets.* The paper which applied the NVIVO 10 Qualitative Data Analysis tool found that the portability and ease of use of mobile devices present a unique opportunity to drive usage of financial services among the poor and rural dwellers. The study also showed that with the right business model and regulatory policies,

mobile money can stimulate increased savings by the poor, support access to other financial services and conduct other financial transactions which will increase participation in economic activities and ultimately enhance economic development.

Anthony Nwaubani, Ph.D., FCA, ACIB examined the *Appointment of Directors and Performance of Deposit Money Banks in Sub Saharan Africa (SSA).* A panel data regression approach was employed to analyse secondary data collected from twelve banks in six SSA countries for the period between 2004 and 2016. The study concluded that the appointment of more non-executives on the Board of directors of deposit money banks in SSA appears more beneficial to banks than the appointment of more executive directors. The study further recommended that while more non-executive directors may be appointed to the Board of Directors of DMBs in SSA, each bank must ensure that it puts in place a robust and effective internal control system that would internalize the culture of prudence and professionalism in management.

Finally, Okuwa Oluwakemi & Arawomo Damilola tested the *Effects of Monetary Policies on Stock Market Performance in Nigeria.* The paper utilised the Generalised Moment Method (GMM) capable of solving the problem of endogeneity inherent in analysing the effects of monetary policies on stock markets. The result of the study showed that monetary policies are important in driving the performance of stock market in Nigeria. While an increase in interest rate causes stock market performance to decline, inflation and exchange rate devaluation enhances it. Furthermore, the control variables (oil price, tax and growth rate of GDP) were not found important in driving the performance of stock market.

It is our belief that studies in this edition would fill gaps present and add value to the financial services ecosystem as well as the economy at

large. This edition would also form the basis for further studies and discussion. Potential contributors are therefore encouraged to send intellectual articles and innovative thought pieces on topical issues in the Banking and Finance industry as well as the Economy.

'Seye Awojobi, FCIB
Registrar/ Chief Executive

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AUTOMATION OF CREDIT WORTHINESS APPRAISAL FOR SMALL BUSINESSES

By

Vincent Nwani, Ph.D.[1]

Abstract

Using two analytical approaches, the decision matrix credit grading model and the rule-based evidence tree nodal analytical model this paper developed an Expert System (ES) framework for the automation of credit worthiness appraisal for small businesses. The framework provides an interface for inputting data which is pre-analyzed and entered into a three level grading rule based expert system. The result is exported back into the Management Information System (MIS) and forms are drawn up as and when needed based on a combined system recommendation. The ES is not a substitute to the traditional Know Your Borrower (KYB) analysis but serve as an additional aid to credit processing officers in financial institutions for risk assessment and loan package completion processes. More than other frameworks for appraising customer credit risks, the ES helps to address the rising customer use of digital-banking services. One important benefit is that banks are able to integrate new data sources and make them available for risk modeling and enhance the visibility of changing

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risk profiles. With ES, the ultimate funding issues of small businesses are moderated with minimal chance of credit default.

Keywords: Expert System, Credit Worthiness, Risk Assessment, Information System, Automation.

1.0 Introduction

Generally, commercial credit lending is an essential service in the financial sector; one that is to be managed and not avoided since credit lending is as much a pivotal banking management activity as is deposit mobilization. The worry though is whether a prospective borrower or a borrower will default or pay back, hence the reason why credit risk management is considered by many to be an actuarial science.

The process of commercial credit evaluation is one that requires a great deal of expertise. (Fletcher et al, 2000) shortlists at least nine steps, primarily manually driven as an existing approach to the credit process. These are traditionally undertaken by a credit officer who is adequately trained. A number of analytical financial techniques are employed in line with a coordinated system in the credit appraisal process with a view to assessing the borrower's business and financial position during and after the application period and as such credit score and rates are given to determine whether to grant credit to a consumer (Koh, 2015), or not for the purpose of security of transactions (Gupta, Mittal, & Bhalla, 2010). In addition to decisions on personal loan applications, financial institutions now make use of credit scores to help set credit limits,

manage existing accounts, and forecast the profitability of consumers and customers (Lucas, 2000).

Anderson (1984) posits and rightly so that this is a classification problem as the main goal is to assign credit to applicants classifiable as either risky or otherwise. Thus, a credit officer is largely a risk manager whose evaluation can dictate loan sanctioning motions or outright loan refusal to a lender. Recent times has witnessed rising non-performance of credit portfolios which is in part responsible for the financial distress the banking sector is facing currently, thus ascertaining of credit risks viz a viz credit risks identification, grading and management is a primal factor for which a system must be established.

Even with highly trained personnel and under prescribed guidelines, inconsistencies may result from the very subjective nature of the process, and no matter how clear the guidelines, the decision-making process involves an extremely wide range of possible decisions often requiring a great deal of experience. Such decisions as may also be made by an officer could therefore be conservative resulting in loss of business. Conversely poor decisions are sometimes made which result in loan loss. Therefore, this paper creates an alternative automated system for apprising Credit Worthiness of Small Businesses. The system incorporates these decisions that seldom prove impossible especially when a credit applicant falls within what is called the marginal or watchlist range.

A useful method for easing this process, reducing demand on staff, while also taking care of the myriad of decisions that may crop up is an Intelligent Automation System. It is a system that can assimilate data, apply reasoning mechanisms and emulate the thought processes of a credit officer for commercial credit analyses and assessment. Therefore, this paper is not a substitute to the traditional Know Your Borrower (KYB) analysis but serves as an additional aid to a credit officer in the risk assessment and loan package completion process.

2.0 Theoretical Explanation

In order to supply cheaper credit, many commercial banks had attempted to offer financial services to the poor in rural areas by implementing large-scale subsidized credit programs between the 1950s and 1970s. Their objective was to provide subsidized credit at below-market interest rate to small agricultural producers, enabling them promote investment in agricultural, and thereby increasing food production and, subsequently, stimulating overall economic growth (Yaron and Benjamin, 2002). However, usually these attempts failed, giving rise to abuses and corruption, and inevitably leading to a collapse of many financial institutions. Morduch (1999) cites the work by Adams, et al (1984) who claims that subsidized credit was a keystone for many developing countries in the 1950's as a poverty reduction effort but all these attempts were disappointments with repayment rates less than 50 percent.

Different barriers prevent traditional banking system from serving poor rural household. The theoretical framework that attempt to

explain why this is the case can be found in the collateralized debt theory. When Yunus (1994) asked traditional bank about the causes of financial exclusion of poor people, the bank explained that: 'Banks need collateral. The poor cannot offer collateral. Moreover, the poor are not to be trusted. They are not credit worthy. Banking is a business. It cannot indulge in charity for the poor' (Yunus, 1994, p.5). Collateral is commonly used as a mechanism of reducing both the screening and credit default tendencies. The existence of screening function of collateral is supported by empirical study by Machauer and Weber (1998) and by empirical evidence and experiments reported by Capra et al. (2001).

Collateral debt can be viewed as a mechanism to reveal the information concealed ex ante from the lender. It can be used also as a credit enhancement or credit risk transfer mechanism from the lender to the borrower. If the borrower cannot (involuntary default) or would not (strategic default) pay back the loan, collateral would be the compensation. However, poor and self-employed people have little or no physical and livelihood assets or stable source of income that can be secured by a bank as collateral.

Added to the above, the high transaction costs associated with the small loans is also a barrier preventing traditional banking system from serving poor rural households. Actually, the process of lending a loan entails many bureaucratic procedures, which lead to extra transaction costs. This transaction costs have a large fixed-cost component regardless of the size of the loan. Thus, the

costs for the bank to lend small amount of money to a multitude of borrowers are much higher compared to lower transaction costs for offering larger loans to fewer borrowers. Generally, poor borrowers are more likely to apply for loans of small sizes, and thus the lender's transaction costs increase. Giné et al. (2010) mentioned that moral hazard and adverse selection, coupled with small transaction sizes, together restrict the possibilities for banks to lend profitably to poor customers.

This failure of traditional commercial banking and the exclusion of poor borrowers raise the question on how poor people can improve their situation. According to Hulme and Mosley (1996), credit activities have faced severe difficulties where three of them must be overcome: (i) how to ensure that large numbers of poor borrowers can access loans; (ii) how to provide a mechanism for screening out bad borrowers, both in terms of character and in terms of projects in the absence of written records and business plans; and (iii) how to give borrowers who cannot offer collateral an incentive to repay or, failing this, compel them to repay in time.

3.0 Literature Review

Marrison (2002) has it that the main activity of bank management is not deposit mobilization but credit lending and Lahsasna, et al (2008) reiterated that credit risk decisions are key determinants for success of financial institutions as poor evaluation of credit risk can cause money loss (Gouveau & Goncalves, 2007). Furthermore Angelini, et al (2008) emphasize that risks continue to provide a major threat to successful lending despite advancements in credit evaluation techniques and portfolio

diversification. It must therefore be clearly established at this point that a conservative credit officer can lose business faster than any gutsy deposit mobilizing officer (closer) can get business, while on the converse a speedy but not necessarily poor evaluation can cause the weight of the business loss to lie on the credit officer. This is thus a necessary dilemma to which a positive leaning would give an edge to the financial institution at hand.

The lending process which has thus far been painted as an all-important but risky process has also been suggested by Treacy & Carey (2000) to involve a wide range of possible decisions which can often require a great deal of experience. Cost, efficiency of information gathering, consistency of ratings produced, nature of banks' business, staff incentives and uses to be made of internal ratings are factors to consider. The thalamus of such rigorous processes is none other than the credit worthiness appraisal process itself.

Agu (1998) has described credit worthiness as a function of both ability and willingness to repay loans. For the purpose of security of transactions, agencies usually give credit rating/grade the main goal of which is to assign credit to applicants (Gupta, Mittal, & Bhalla, 2010). (Koh, Tan, & Goh, 2006) Defined credit scoring quite simply as a method used by credit providers to determine whether to grant credit to consumers. This is a process often analytical and evaluative in nature undertaken for the purpose of estimating the credit worthiness of an individual, corporation or even a country. The obligor's overall credit history if any must also be taken into consideration.

The main issue faced by any lender is to ascertain if a prospective borrower is likely to repay the loan or not. It's important for a lender to assess the probability that a borrower will fail to pay back, that is, assess the risk of default. In the United States, lenders use rating as an index of the risk of default (Martin, 2006). When credit rating is poor upon evaluation, it indicates a high risk of defaulting on a loan, and thus may lead to high interest rates or an outright refusal of loan by the creditor or lender. Njoku & Odii (1991) used regression analysis to identify factors that significantly influence repayment. The result revealed that amount borrowed, loan period, business size, business output, value of asset and interest on loan largely influence repayments. Ezeh (2003) also shows that the nearer a borrower's home or business to a credit lending institution the greater the probability that the obligor will be classified as credit worthy. Amongst the nine steps proffered by (Fletcher et al, 2000) as the then existing framework for commercial credit evaluation, management information systems were found to be crucial.

The importance of information in the issue of Credit Rating in Banking Institutions cannot be over emphasized. Analide (2011), postulated that the decision mechanism from client history information can help evaluate client credit risk. Information was viewed as an asset relying less on technology but in truth, one cannot but argue a case of synonymous misconstruction, an antithetical irony-if one could. It was soon affirmed that statistical analysis and deterministic systems are the most commonly used classification systems. The importance of technology in the issue of Credit Rating in Banking Institutions cannot be over

emphasized. The scoring model captures the relationship between the historical information and future credit performance. This can be represented as follows:

$$f(x_1,x_2,x_3,x_m)=y_n$$

Where *f* is the credit scoring function that maps between the customer features (x_1,x_2,x_3,x_m) and his creditworthiness y_n. The *f* is a function which predicts the value of y_i, that is, the creditworthiness of customer i by knowing the x_1,x_2,x_3,x_m, which denote the customer features such as income and age (Lahsasna, Ainon, & Wah, 2008). Technology has in fact become a part of our everyday lives as almost all our daily activities has an aspect of technology playing active roles. As a result, so many sectors have adopted technology practices and the lending institutions, for example, the banks cannot be left behind.

The role of information systems even in the banking industries cannot be overlooked as information systems are vital for managing both company and customer activities so as to yield effective and efficient production. Therefore, because credit rating evaluation is one of the many important activities in the banking industry it is indeed in need of information system (Osamor et al, 2013). Information is important but without a processing system, it is useless. This processing system is what is referred to as an Expert System (ES) an application of Artificial Intelligence technique which has proven to be a useful method for assisting with the decision-making process such as that necessary for loan analysis.

A number of different approaches using expert systems have been taken in dealing with either the credit recommendation or the decision type of problem as applied to loan analysis. These approaches include decision trees and evidence trees. Other approaches deal with loan analysis on a case-specific 'frame base' process and others in a procedural rule-based analysis, such as a series of rules. An existing expert system for credit evaluation was built by (Castillo & Melin, 1993); a rule-based approach that utilizes a series of questions for which the user answers yes or no. There were some drawbacks mainly in the system's inflexibility. It also had no graphical interfaces with which to ease understanding of the loan application process.

Huang, et al (2004), had introduced an AI based learning technique called the support vector machine. The methodology was to review and compare back propagation network against the AI based support vector machine. Accuracy of prediction for both systems was found to be 80%. Ong, Huang, & Tzeng (2005) made use of genetic programming to build a credit scoring model, This procedure as compared to Artificial Neural Networks (ANN) a most commonly used soft computing credit scoring model yielded more flexible results and with better accuracy. Hybrid models have also been explored. Huang, Chen, & Wang (2007) identified and resolved credit scoring problems via Neural networks and Genetic Algorithm.

An attempt was made to resolve reasons for the negative classification of some rejected applicants based on ANN models and then further attempt was made to re-assign them to preferably

acceptable classes using the inverse classification technique prior. Tsai & Wu (2008), posits that Multi-Layer Perceptron trained by Back-Propagation Neural Networks is the most commonly used technique for financial decision making problems. They compared credit scoring performance of single classifiers against that of multiple classifiers. It was seen that in terms of prediction accuracy and with three datasets used, multiple classifiers only perform better in one dataset. By the result obtained, they concluded that it is better to consider the three-classifier architecture for an optimal financial decision.

4.0 Methodology

Using two analytical approaches, the Decision Matrix Credit Grading Model and the Rule-Based Evidence Tree Nodal Analytical Model this paper develops an Expert System (ES) framework for the automation of credit worthiness appraisal for small businesses. In this research, existing systems are compared with the proposed system. Processes of loan qualification based on rules consisting of loan payment history, available credit, account age, medical records, crime records, business structure, amount to be borrowed etc., are examined. An expert system is proposed to assist with the analysis and evaluation of loan applications. Furthermore, a system is provided for inputting data from the user end of a loan application, such data as is needed for support of the automation process.

This system will also automatically transmit the inputted data to an expert analysis system for the operation of a loan, analysis, evaluation and decision assessment model. Credit rating is done

by consideration of a combination of several factors to which weights are attached for different factors. A summary narrative of the key positive and negative weights involved in the assessment model is also provided automatically.

A loan decision recommendation is also generated automatically as well as alternative analyses for such a decision. Forms are printed as and when needed and the final validation process window will then be presented to the credit officer in charge for evaluation. In all, this system can be condensed into three major subsystems;

i. A database management subsystem that manages and collects data via electronic access
ii. A user data entry and reporting subsystem
iii. A support expert system that applies a rule base and employs an inference engine for use in credit requests analysis. The major concern for this paper will be the framework for the formation of the expert system.

For the user data collection window, A user friendly graphical interface is used, specific weights for the assessment factors, tags, flags, rules applied, explanatory boxes etc., are presented with ease of understanding. It is far much easier to grade a script than to write one. The system would be able to present to the credit officer, the specific factors involved in a credit decision, relative weights assigned and how the information provided by the applicant affects the process. The officer can thus identify specific weaknesses and strengths, and use the information for making the final decision.

This is kind of a double check system because the system itself simulates the thought process of a credit officer, much like a human, it considers the pros and cons based on answers to 'no' 'yes' questions and figures provided by the applicant which it then goes ahead to authenticate thanks to the MIS. This it does by entering and importing via links with databases data relating to a loan application into a data management system.

Two analytical approaches were considered for use in the expert system namely the Decision Matrix Credit Grading Model and the Rule-Based Evidence Tree Nodal Analytical Model. The latter was subsequently adopted. The chart below outlines the major steps for the expert system analysis and assessment model.

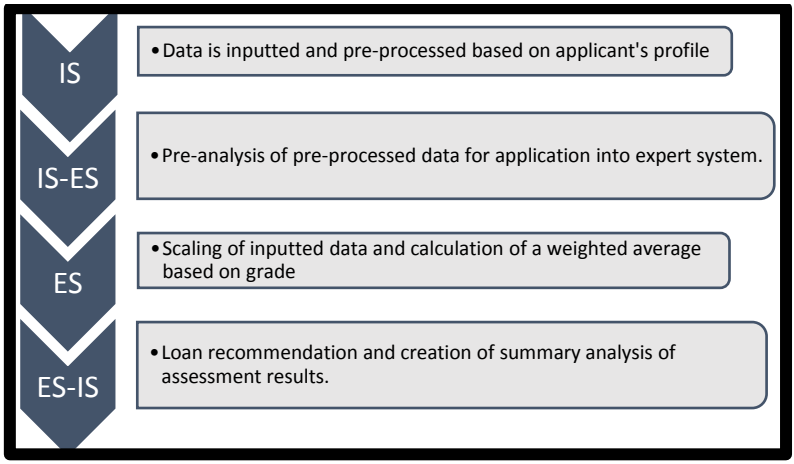

Figure 4. 1: Expert system process chart

***Source**: Author's Compilation*

The expert system cannot function independently. Normally the procedure can be different for bank customers and unknown persons. A lot of data has to be gathered from unknown persons since with a customer, transaction history can help a lot with loan decisions. This is why we have weighted averages for which specific factors are scaled and then weighted before post analysis of the loan application begins.

For the credit rating, the following weights are attached to the borrowers profile: Business Structure/Size (7%), Payment history (9%), Credit owed (7%), Available credit (4%), Age of account (3%), Proximity to Obligor's place of business (3%), Medical Records (7%), Amount requested as credit (4%), Collaterals provision (22%), Purpose for Loan (3%), Loan –asset ratio(4%), Expenditure-income (2%), Education (4%), Other factors (21%). The assigned weights are consistent with the collateralized debt theory as highlighted by Yunus (1994).

From the information in the credit assessment report, the lender is then tasked with decision based on credit rating produced by the expert system. Of course, the expert system would make a recommendation for three major stages stemming from the grading stage. There is a pre-acceptance stage whereby the application is deemed acceptable, unacceptable or conditionally acceptable and if the condition is met for acceptance or the loan was accepted, the expert system would continue interacting with the MIS for grading the loan as performing, non-performing, or as marginally performing during each post assessment period as scheduled by the credit officer.

Despite this credit worthy approval process, loans may still become troubled. Therefore, it is recommended that the system should be equipped with analysis of markers or tracers of deteriorating credit performance to ensure quick action to protect the interest of the financial institution. There are many symptoms of marginally performing loans and thus if the concerns exist such as breach of loan terms or adverse market news that will warrant more caution, a risk grading process will be activated and adapted into the expert system as represented in the figure below;

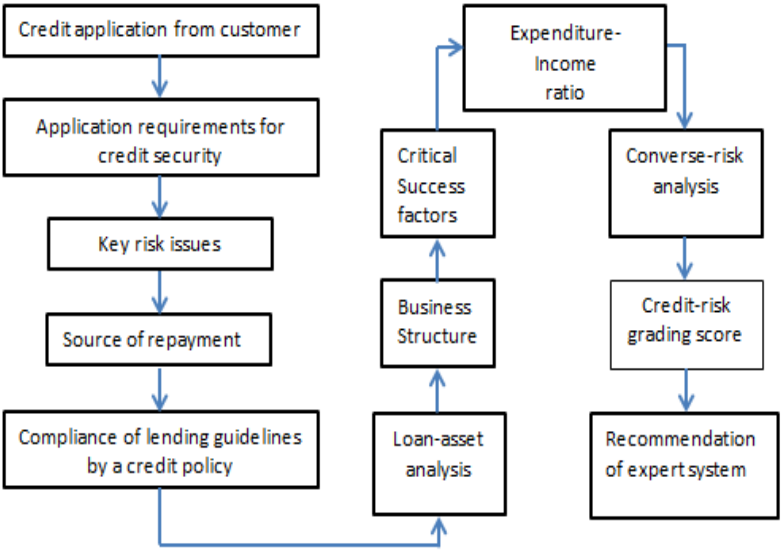

Figure 4.2: Adapted credit grading process showing key assessment criteria

***Source**: Author's Compilation*

In hedging the system from unanticipated market risks or borrowers' moral hazards, the system is programmed to generate a slip containing the list of non-performing loans from the central database for all loan applications on routine basis. Commercially available software are potentially used to develop some aspects of the system including a user interface consisting of windows based format as highlighted below.

i) The Hypertext Mark-up Language (HTML) for coding in use for production of the credit form, user interface and costumer application form.
ii) Sybase SQL server from Sybase which is used as Data Base Management System (DBMS) for storage and manipulation.
iii) Hypertext Pre-Processor (PHP) for interaction as a middleware between the DBMS and the font end/reporting application. There could be others like Brightware Inc's ART Enterprise for building the assessment model, performing loan analysis and display via a graphical interface of assessment result. The rule base for the assessment is contained in this third compartment.

The merits of the Expert System notwithstanding, some of the downsides include inherent rigidity that is averse to making spontaneous common sense" decisions making and the inability to explain the logic and reasoning behind a decision.

5.0 Results and Discussion

So far, an automated and integrated lending process has been considered. A browser based delivery process for the purpose of full automation and integration of processes involved in the

conduct of a lending business through real-time collection of user information, workflow automation, processing and portfolio management was considered. This is to meet small business lending requirements based on an efficient rating system which according to Loffler (2004), should be more timely so as to result in a better discrimination between high-risk and low-risk issues, also more stable as to result in fewer governance rule-triggered transactions leading to lower transaction costs. This work provides a framework for such a system part of which is adapted from some basic principles from the adhoc system for loan evaluation the requirements of which have been stated. The algorithm developed for the lending process workflow for the proposed system is shown in figures 4.1 and 4.2.

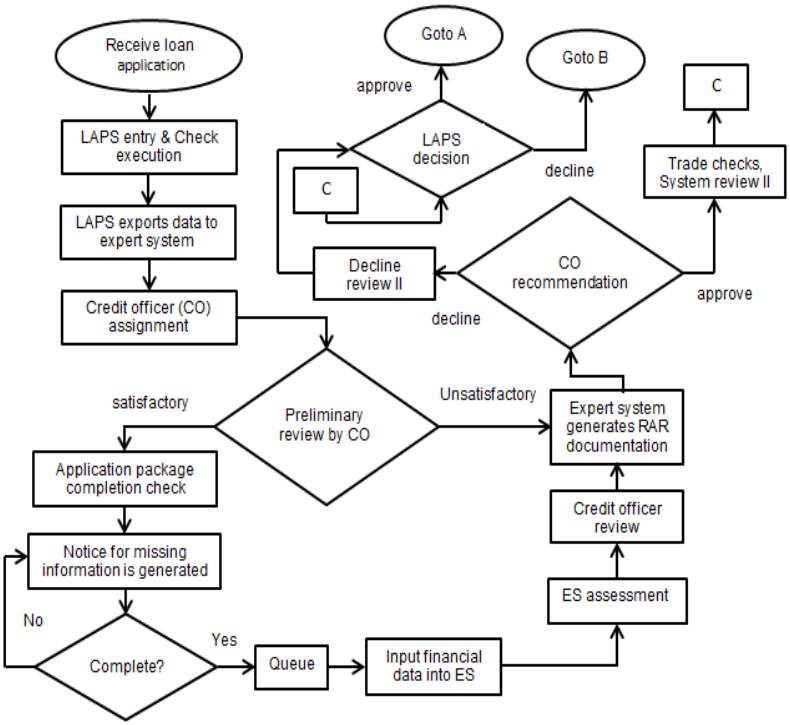

Figure 5. 1: ES workflow algorithm;

Source: *Author*

There are basically three (3) main components

i) An Applications Origination components (AOC) - For processing an application comprising: entering applicant data into a processing system; organizing the applicant data into formatted data by the processing system generating preliminary results by the processing system; forwarding the preliminary results to an expert analysis system comprised of an evidence tree;

ii) A Loan Accounting and Processing System component (LAPS); accessing a central database based on several databases to obtain additional data; generating second results by the expert system based upon the formatted data, preliminary results and the additional data using the evidence tree containing a plurality of nodes and factors and at least one of the following techniques: propagating a value from a first node or a first factor to a second node; propagating a weighted value from a third node

iii) A Portfolio Management / Network Management (PMNM) component ;exporting the results from the processing system; and producing documents necessary for a financial transaction portfolio by the processing system wherein some of the results from the expert analysis system are contained in the documents.

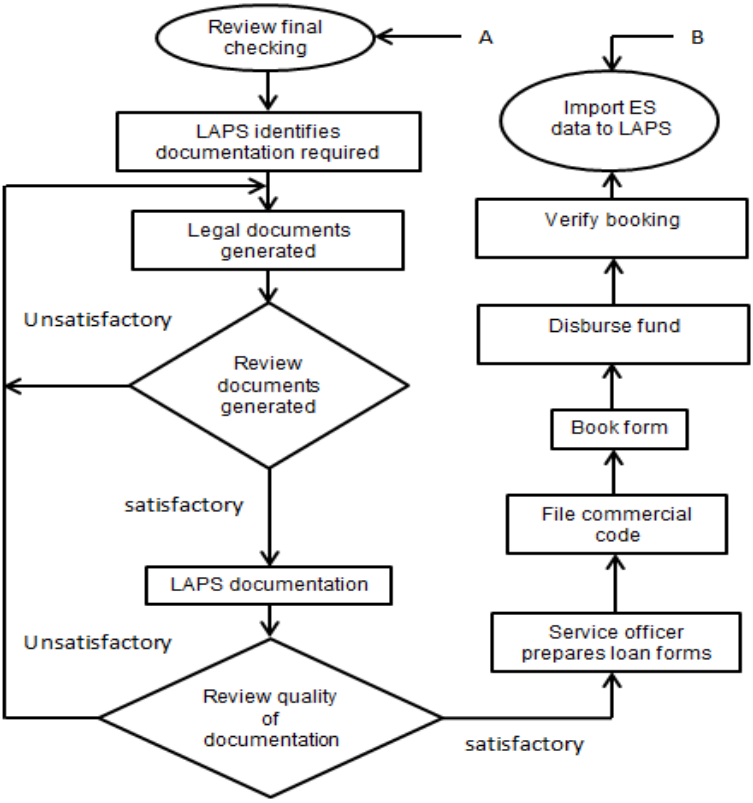

Figure 5. 2: ES workflow algorithm

Source: *Author's Compilation*

The user is also allowed to determine basis of decision at time of that decision; enter new data without distorting the old for certain kinds of information at all times.

A schematic overview is presented in figure 5.3 to further digest the system embodiments

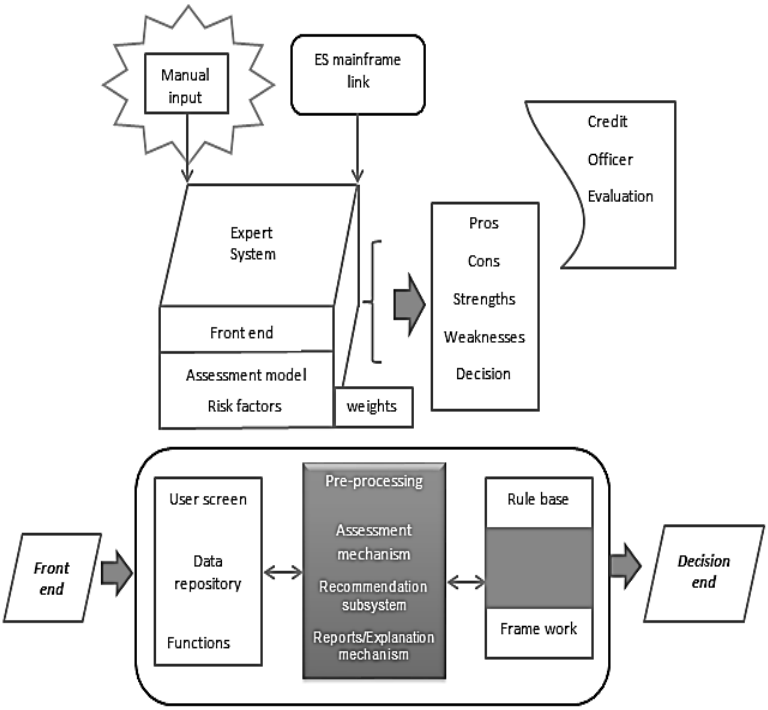

Figure 5. 3: ES framework embodiments

***Source**: Author's Compilation*

This proposed system will ensure efficient approval or disapproval of loan applications by small businesses. A portfolio management component is also included and coupled with issuance and compliance to constructed rules from combinations of factors earlier discussed for prediction of credit worthiness. The framework should provide a timelier, more stable, high risk management system for loan application and processing. It is expected that by adapting this system framework, which is

essentially a moderately portable framework for a rule-based evidence tree analytical network, with an explanation mechanism, and an input-output (I-O) facility, a secure robust but simple to navigate multi-faceted system will emerge for the purpose of providing an automated integrated loan/credit application processing system.

6. Conclusion

There is no doubt that there is a big need for an automated system for credit approval for all businesses small, medium or large. A lot of systems have also been proposed, designed, and implemented to that end. This present work put together a lot of evolving ideas from both the adhoc system for credit evaluation and some automated systems in different countries and a conclusion was derived. Implementation of such a system will be of immense benefit to the banking and finance industries as the focus will be to achieve an effective automated integrated system for credit application, evaluation and processing.

More than other frameworks for appraising customer credit risks, the ES helps to address the rising customer use of digital-banking services. One important benefit is that bank are able to integrate new data sources and make them available for risk modeling and enhance the visibility of changing risk profiles. With ES, the ultimate funding issues of small businesses are moderated with minimal chance of credit default.

References

Adams, Dale W., Douglas H. Graham, and J. D. von Pischke (1984). Undermining Rural Development with Cheap Credit. Boulder CO: Westview Press xviii, pp318.

Agu, C. C. (1998). Method of enhancing efficiency in loan processing, evaluation and disbursement. Reading in Agricultural Finance. In M. O. Ijere, & A. Okorie (Eds.). Lagos: Longman. 140-155.

Analide, F. S. (2011). Information asset analysis: credit scoring and credit suggestion. International Journal of Electronic Business, 9(3), 203-218.

Anderson, W. (1984). An Introduction to Multivariate Statistical Analysis. New York: Addison Wiley.

Angelini, E., Di Tollo, G., & Roli, A. (2008). A neural network approach for credit risk evaluation. The quarterly review of economics and finance, 48(4), 733-755.

Castillo, O., & Melin, P. (1993). An Expert System for Credit Evaluation. (IN Proceedings; The Second Annual International Conference on Artificial Applications on Wall Street: Tactical and Strategic Computing Technologies, Proceedings of AI Applications on Wall Street). Software Engineering Press.

Giné, X., Jakiela, P., Karlan, D., Morduch, J. (2010). Microfinance Games. American Economic Journal: Applied Economics, 2(3), 60-95

Ezeh, C. I. (2003). Credit worthiness and determinants of loan repayment of smallholder farmers in Abia State, Nigeria.

Journal of Sustainable Tropical Agricultural Research, 5, 10-13.

Fletcher, B. A., Freundlich, Y., Kolodziejski, R., Schoder, J., & Ronen, Y. (2000, August 29). Method and system for commercial credit analysis. Google Patents.

Gouveau, M. A., & Goncalves, E. B. (2007). Credit risk analysis applying logistic regression, neutral networks and genetic algorithms. POMS 18th Annual Conference.

Gupta, V., Mittal, R. K., & Bhalla, V. K. (2010). Role of the credit rating agencies in the financial market crisis. Journal of Development and Agricultural Economics, 2(7), 268-276.

Hulme, D. and Mosley, P. (1996) Finance against Poverty, 1 and 2. Routledge, London.

Huang, C.-L., Chen, M.-C., & Wang, C.-J. (2007). Credit scoring with a data mining approach based on support vector machines. Expert systems with applications. 33(4), 847-856.

Huang, Z., Chen, H., Hsu, C.-J., Chen, W.-H., & Wu, S. (2004). Credit rating analysis with support vector machines and neural networks: a market comparative study. Decision support systems. 37(4), 543-558.

Koh, H. C. (2015). A two-step method to construct credit scoring models with data mining techniques. International Journal of Business and Information, 1(1).

Koh, H. C., Tan, W. C., & Goh, C. P. (2006). A Two-step Method to construct Credit Scoring Models With Data Mining Techniques. International Journal of Business and Information, 1(1), 96-118.

Lahsasna, A., Ainon, R. N., & Wah, T. Y. (2008). Intelligent credit scoring model using soft computing approach. Computer and Communication Engineering, 2008. ICCCE 2008. International Conference on (pp. 396-402). IEEE.

Loffler, G. (2004). Ratings versus market-based measures of default risk in portfolio governance. Journal of Banking & Finance, 28(11), 2715-2746.

Luca P. (2000), Business and Profits, Journal of Business Ethics June 2000, Volume 25, Issue 4, pp 299–312

Marrison, C. (2002). Fundamentals of Risk Management. New York: Mcmilan Press.

Martin, V. (2006). Credit scoring methods. Retrieved March 11, 2016, from http://www.palgrave-journals.com/jors/journal/v62/n4/full/jors201015a.html#top

Machauer, A., Weber, M. (1998). Bank behavior based on internal credit ratings of borrowers. Journal of Banking and Finance, 22, 1355-1383.

Morduch, J. (1999). The promise of microfinance. Journal of economic literature, 37, 1569-1614.

Njoku, J. E., & Odii, M. A. (1991). Determinants of Loan Repayment under the Special Emergency Loan Scheme (SEALS) in Nigeria: A Case Study of Imo State. African Review of Money Finance and Banking, 39-52.

Ong, C.-S., Huang, J.-J., & Tzeng, G.-H. (2005). Building credit scoring models using genetic programming. Expert Systems with Applications. 29(1), 41-47.

Osamor, V. C., Wiwuga, K. S., Osamor, I. P., & Musa, G. A. (2013). Engineering a Ruled-Based Software Solution for Credit Rating and Worthiness Assessment in Financial Operations. Computer Engineering and Intelligent Systems, 4(1).

Petersen, M., & Rajan, R. G. (2002). Does distance still matter? The information revolution in small business lending. The Journal of Finance, 57(6), 2533-2570.

Saladin, et al., Expert Credit Recommendation Method and System, U.S. Pat. No. 5,262,941. (n.d.).

Treacy, W. F., & Carey, S. M. (2000). Credit risk rating system at large US banks. Journal of Banking, 24, 167-201.

Tsai, C.-F., & Wu, J.-W. (2008). Using neural network ensembles for bankruptcy prediction and credit scoring. Expert Systems with Applications, 34(4), 2639-2649.

Yaron, J., Benjamin, M. (2002). Recent Developments in Rural Finance Markets. In Zeller, M., and Meyer, R.L. (Eds.), The Triangle of Microfinance: Financial Sustainability, Outreach and Impact, London, Johns Hopkins University Press.

Yunus, M. (1994). Credit is a Human Right, Dhaka, Grameen Bank.

MOBILE MONEY: A PANACEA FOR FINANCIAL EXCLUSION IN EMERGING MARKETS

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Abstract

The paper highlights the importance of information and communication technologies (ICTs) in access to and delivery of financial services. It demonstrates the efficacy of mobile money in addressing financial exclusion and seeks to answer the question: which digital financial services are capable of enhancing financial inclusion and deepening the financial system? The study relied on secondary literature sources such as journal articles and industry reports sourced from management education electronic libraries, mainly JSTOR and EBSCO as well as Google Scholar and Google searches. The articles were analyzed using NVIVO 10 Qualitative

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Data Analysis Tool and categorized the articles into high-level themes. The results show that the portability and ease of use of mobile devices present a unique opportunity to drive usage of financial services among the poor and rural dwellers. In spite of the availability of other FinTech solutions the reach opportunities provided by mobile money are truly a panacea for financial exclusion. This review was not intended to be a comprehensive, cumulative review of evidence regarding mobile money and financial inclusion. It was designed, rather, to highlight the potential role of mobile money in bridging the financial inclusion gap in emerging markets. The review is also limited by the complete reliance on previously published research.

Keywords: Financial Exclusion, digital financial services, mobile money, NVIVO 10.

1.0 Introduction

Scholarly publications on financial inclusion in emerging economies have revealed diverse narratives from various schools of thought. There is also diverse literature on importance of access to finance within the purview of economic development, Sustainable Development Goals (SDGs) and poverty reduction. Financial inclusion has been shown to be positively related to economic growth (Akinlo & Egbetunde, 2010; Adenuga & Omotosho, 2013; Inoue & Hamori, 2016).

In a study of ten sub-Saharan African countries including Nigeria, Akinlo and Egbetunde (2010) show that financial development is

closely linked with economic growth in the selected countries. Adenuga and Omotosho (2013) equally show that increased financial depth propelled output growth in Nigeria during 1975 - 2012. Also, Inoue and Hamori (2016) used financial access and economic growth data from 37 sub-Saharan countries to show that financial access has a positive effect on economic growth. Enhancing Financial Innovation and Access (EFInA, 2018) shows that 36.8 percent of adult population in Nigeria or 36.6 million adults lack access to either formal or informal financial services as at 2018, a 15.7 percent decline from the 52.5 percent or 45.4 million adults recorded in 2008. However, 14.6 percent of the adult population has access to informal financial services only.

The inability of the poor and other disadvantaged groups in Africa and other emerging economies to save and conduct other forms of formal financial transactions limits their contribution to economic development. This inability of access to formal financial services makes the poor vulnerable to the dangers associated with informal financial services. The ability to partake in formal financial services like savings, credit and insurance improves the living conditions of low-income families and ultimately enhances economic growth. A critical look at the existing literature shows that we should use demand and supply lenses to explain financial inclusion challenges.

The demand-side obstacles are factors that weaken the interest of disadvantaged groups in participating in formal financial services while the supply-side barriers are factors that limit the efforts of

government and suppliers of financial services in extending these services to disadvantaged groups.
The term emerging markets is a concept synonymous with national development and used to describe countries categorised as "developing". The criteria for the categorisation of countries in the emerging cadre vary from growth expectations and levels of risk or market volatility to per capita income. In all, Drechsel and Tenreyro (2018) summarises the essential features of emerging markets by "their high degree of volatility and their transitional character, with transitions occurring in economic, political, social and demographic dimensions".

The diversity in characterisation has also led to a relatively varied list of emerging market economies. On the other hand, the World Bank does not have an emerging market classification of economies but classifies economies based on gross national income (GNI) per capita. This has resulted in the categories of low income, lower middle, upper-middle and high-income. The World Bank Global Financial Inclusion Index (Global Findex) measure assesses the utility of financial services using indicators such as account ownership/penetration, payments, savings, credit and many more (Dermiguc-Kunt et al, 2017).

The paper introduces financial inclusion - benefits and challenges and explores the various technological tools and channels deployed to extend access to and use of financial services - financial inclusion. The study utilises secondary data from extant literature and other sources including policy reports, chapters, industry reports and more. Research papers from various

databases are acquired using the Google Scholar search of keywords financial inclusion and mobile money.

Access to financial services remains a global problem that is more prevalent in developing economies (Demirguc-Kunt & Klapper, 2012b). However, the deployment of financial technologies such as mobile money has increased access, reducing the number of unbanked people of the world (Demirguc-Kunt, Klapper, Singer & Van Oudbeusden, 2015). The World Bank Global Financial Inclusion Index supports evidence of this where adult account penetration increased from 50 per cent in 2011 to 62 per cent in 2014 and 69 per cent in 2017 (Dermiguc-Kunt et al, 2017; Demirguc-Kunt et al., 2015; Demirguc-Kunt & Klapper, 2012b).

The article contains four sections. Following this introduction, we provide a brief description of the methods employed in acquiring the literature reviewed in the paper. In section three we introduce financial inclusion and all its elements - categories of inclusion, financial inclusion in emerging economies, the need for financial inclusion, constraints as well as measurement mechanisms. Section four presents digital financial services (DFS) that enhance financial inclusion, examining the role of information and communication technology (ICT) in deepening financial inclusion. Notwithstanding the ability of digital technologies in improving access and reach, the paper concludes with a call for mobile money as a panacea for financial exclusion.

2.0 Methods

For this study, we employed Google Scholar, Google as well as management education electronic libraries, data banks mainly in

Journal Storage (JSTOR) and EBSCO Information Services in search of literature sources related to financial inclusion in emerging markets. Using the search keywords - "financial inclusion" and "mobile money" as well as financial inclusion combined with "emerging markets" and "economic development", we identified various papers and industry reports. The searches resulted in the retrieval of about 98 relevant items comprising web pages (6), reports (12), journal articles (51), books (11), book sections (18) and others (1).

The items were subsequently downloaded and migrated into the Nvivo 10 qualitative data analysis (QDA) environment for further analysis. A content analysis of the papers was conducted to classify and identify themes and attributes of financial inclusion and exclusion. In the first level of analysis, each research article was categorised by high-level topic like geography (or context), financial products and services, financial inclusion (FI) challenges, approaches to FI, FI measures, FI enablers and drivers, FI impacts and benefits and other considerations. In subsequent analysis of each theme, we were able to identify additional sub-categories and sub-items.

3.0 Inclusion

The term inclusion describes the transformation of society to enable the participation of every individual in various activities including but not limited to participation in the economic, social, political and cultural life of communities (Abbott, 2007). The inability to ensure participation of all deems such societies as neither efficient nor desirable (UNESCO, 2005). Inclusion can be

dimensioned by the specific nature of the activity such as social/digital, economic and financial.

3.1 *Social-Digital*

Social inclusion does not have an accepted definition. In the various attempts to define the concept, Atkinson (1998) identifies three recurring elements - relativity, agency and dynamics. He argues that social inclusion is relative to place and time and is a function of how individuals are able to relate with social groups. He further emphasises that individuals are either excluded by choice or by the actions of other agents and that social inclusion is not just in the context of immediate circumstances but also of prospects. Burchadt, Le Grand and Piachaud (1999) opine that social exclusion is the inability of an individual to participate in the normal activities of the citizens in the society where he or she resides for reasons beyond his or her control.

Digital or technological inclusion is a form of social inclusion whereby the disadvantaged are given access to learning, employment, and social activities via digital technology (Seale, Druffan & Wald, 2010). Furthermore, Abbott (2007) defines digital inclusion as the use of digital technology to eliminate barriers as a result of gender, race, age, sexuality or class. Conversely, Seale (2009) argues that digital inclusion is a vague term that is difficult to define.

However, the concepts of equality, access, use, empowerment and participation are critical elements in establishing the term. Individuals labelled as socially excluded have a high likelihood of

being digitally excluded (Helsper, 2008). Warschauer (2004) asserts that the digital divide in emerging economies including African countries is not just a function of the absence of ICTs but also of social and political inclusion which largely determines access to technology.

3.2 Economic

Baker and Gadgil (2017) describe economic inclusion as the participation of disadvantaged groups including the poor and rural dwellers in commercial activities; whilst financial inclusion, a catalyst to inclusive economic development (Joseph & Varghese, 2014), addresses the delivery of affordable banking services (Leeladhar, 2006) through the creation of a platform for low-income earners to partake in formal financial services (Joseph & Varghese, 2014).

3.3 Financial

Thorat, (2006), Sarma and Pais (2008), Dasgupta (2009), Serrao et al. (2013) and Schmied and Marr (2017) define financial inclusion as the provision of accessible and affordable financial services to a disadvantaged group of people. Joseph and Varghese (2014) view the concept in the context of timeliness, adequacy and affordability of financial services including credit. Furthermore, Kahn (2012) identifies seven cornerstones of financial inclusion, namely accessibility, availability, affordability, awareness, acceptability, assurance, and appropriateness.

While variants of financial exclusion exist across world economies, it is more prevalent in emerging economies where fewer adults

have access to a basic transaction account. To address issues of lack of financial inclusion, the World Bank, International Finance Corporation (IFC) and other partners have launched the Universal Financial Access (UFA) 2020 initiative targeting an additional 1 billion people in the financial system globally. While low financial inclusion rates are a global dilemma, the extent varies from country to country.

4.0 Financial Inclusion in Emerging Economies

Literature describes the limited access to financial services or financial exclusion in emerging economies as the result of locational factors - rural dwelling, poor infrastructure and travel distance; economic factors such as income inequality, unemployment, account operating costs and fees; and social biases such as age, gender, literacy and language barriers (Sarma & Pais, 2008; Dermiguc-Kunt & Klapper, 2012; Chopra & Wright, 2011). Geographically, rural communities not only lack infrastructure, but are typically inhabited by low-income earners with limited employment opportunities and high levels of illiteracy. The low levels of economic activity account for the near absence of financial institutions in these communities.

The disadvantaged according to Sarma and Pais(2008) and Dermiguc-Kunt and Levine(2007) include the poor, women, youths, low-income earners, rural dwellers and individuals with low literacy level. Therefore, financial exclusion could be a problem of access, condition, prices, marketing or self-exclusion (Sarma, 2010). Moreover, financial inclusion is a part of the more significant issue of social inclusion since it entails the inability of

some groups in the society to access finance (Sarma, 2010; Carbo et al., 2005). Conversely, Joseph and Varghese (2014) argue that financial exclusion is what leads to social exclusion.

5.0 The Need for Financial Inclusion

Inclusive financial systems not only consolidate the formal and informal financial systems but also significantly improve the efficiency of financial systems and the economy in general (Sarma & Pais, 2008).

5.1 Economic Growth/Development

At the macro-level, inclusive financial systems have a positive impact on economic growth since it increases economic activities at the bottom of the pyramid (Demirguc-Kunt & Klapper, 2012a). Joseph and Varghese (2014); Sharma (2016) and Kim, Yu and Hassan (2018) agree that financial inclusion is a crucial driver of economic growth as it encourages savings among a broad spectrum of rural dwellers. Such systems enhance the contribution of the poor and other disadvantaged groups to economic development; protecting them from exploitative practices and sudden economic downturns (Aubé & Laidlow, 2010).

5.2 Poverty Reduction

Sarma and Pais, (2008) maintain that there is a strong positive correlation between financial inclusion and human development and providing financial services to the unbanked contributes to poverty reduction. Similarly, Beck, Dermiguc-Kunt and Levine (2007) suggest that financial inclusion reduces income gap in the

economy, it enhances the contribution of the poor to economic development and facilitates poverty reduction.

5.3 Development Goals

Furthermore, Thorat (2006) concludes that financial inclusion is a tool for achieving sustainable development goals (SDGs) and improving the livelihood of the disadvantaged. Thus, financial inclusion is a tool for tackling income inequality, enhancing women empowerment and making financial services such as insurance services available to the disadvantaged (Beck, Demigurc-Kunt and Levine, 2007). Moreover, Chopra and Wright (2011) and Mas (2010) maintain that access to finance is essential for the wellbeing of the family since it improves productivity, stabilises the daily lives of the poor and prepares them against economic shocks.

5.4 Business opportunity: meeting unmet demands

In spite of the economic benefits, financial inclusion also provides a significant business opportunity especially in African countries grappling underdeveloped financial systems where small and medium scale businesses lack access to formal financial services and finance (Demirguc-Kunt & Klapper, 2012a). As such, the major challenge revolves around the search for practical and ingenious ways of extending financial services like savings, remittance, loans and insurance to hitherto disadvantaged and excluded groups creates a considerable window of business opportunity (Donovan, 2012).

6.0 Financial Inclusion Constraints

The extent and nature of financial inclusion varies from country to country and is dependent on the category of financial services available to the underserved. Nonetheless, exclusion consequences include increased travel, higher crime, limited investment capital, restricted access to credit and at higher costs (including exploitative options) (Leeladhar, 2006). These constraints form social and economic constraints delimiting financial inclusion and are categorised as supply-side, demand-side or regulatory (Central Bank of Nigeria, 2012).

6.1 Demand-side Constraints

Factors such as demographics, literacy levels/proficiency, social dynamics, local enablers and inhibitors, availability of informal and alternate channels, ability to cope with change and savviness with technology, amongst others are relevant determinants of demand of formal financial services. Demand-side inhibitors are factors limiting participation in formal financial transactions despite having these services within reach. Sarma and Pais (2008) highlight income inequality, adult literacy, urbanisation and infrastructure such as road network, telephone and internet usage as essential determinants of financial inclusion.

Adetunji and David-West (2019) identify two leading demand-side constraints of financial inclusion in Nigeria as low-income levels and financial illiteracy and examine the relative importance of interventions in these two areas in driving financial inclusion. Determinants of financial inclusion proposed by Dev (2006) include education/financial literacy, sparse awareness and the vulnerability to the risk of the disadvantaged.

In sub-Saharan Africa (SSA), Demirguc-Kunt and Klapper (2012a) maintain that the challenges of formal account ownership include: insufficient documentation, distance from the banks, the high cost of opening and operating bank accounts, poor infrastructure and telecommunications and burdensome branch processes.

6.2 Supply-side Constraints

Supply-side inhibitors encountered by financial services providers (FSPs) include factors ranging from pricing/transaction costs and banking sector health described using variables like general sector health, ownership patterns and interest rates to attitudes towards rural enterprise, workforce and infrastructure (Dev, 2006; Sarma & Pais, 2008; Thorat, 2006).

6.3 Regulatory Constraints

Regulatory constraints exist when the policies for enhancing or deepening financial inclusion are absent or poorly defined and monitored. Onerous regulatory barriers stifle the development of mobile money, for instance, regulations in certain markets place restrictions that limit the profitability of mobile money businesses. These regulations create operational challenges by introducing barriers that restrict businesses from registering, identifying and activating clients (Di Castri, 2013).

Appropriate financial regulations including those targeted at digital financial services will have to be developed to suit realities in emerging markets (Prasad, 2010). These regulations are necessary because the financial sector has a high propensity to fail (Hannig & Jansen, 2010). The success of mobile money

hinges mostly on appropriate government regulations for both finance and telecoms. However, establishing partnerships between these major players and appropriate regulations becomes a challenge (Donovan, 2012). Mobile money regulations must not only promote synergy, but also minimise fraud and risk. Since mobile money is a sustainable means of reaching the unbanked, it is essential to put in place the appropriate regulatory mechanism.

6.4 IT Constraints

Where ICT platforms have been adopted to enhance access to financial services, constraints associated with such systems include technology reliability, access to human resources (support), infrastructure, IT security, and interoperability as a result of diverse (unstandardized) platforms (Khan, 2012) also impact providers.

7.0 Measuring Financial Inclusion

FI measures are evaluation tools that guide policymakers on financial system penetration. These measures include simple indicators such as financial deepening - the ratio of bank assets to gross domestic product (GDP) to more complex indices (Demirguc-Kunt & Klapper, 2012a; Mohan, 2006).

Global Findex is a World Bank database of financial inclusion indicators that evaluates countries based on the availability of banking services, banking penetration and usage of the banking system. Initiated in 2011, Global Findex indicators for 2012, 2014 and 2017 have been published (Dermiguc-Kunt et al, 2017;

Demirguc-Kunt et al., 2015; Demirguc-Kunt & Klapper, 2012b). The index of financial inclusion (Sarma, 2008) also uses similar indicators in the assessment of financial inclusion. An alternative measure promoted by the MasterCard Advisors employs two factors in the measurement of financial inclusion - adoption and usage (Jain, Zubenko, & Carotenuto, 2014). Based on these factors, the indicator also explains financial inclusion progression in four stages - early days, transitioning, payments ready and most advanced.

Unlike the Global Findex that covers a vast majority of countries, the MasterCard Advisors index only covers 22 countries. While the Global Findex database provides a global view of financial inclusion, this does not eliminate the existence of alternative measurements in local and regional contexts. Additionally, national access to finance (A2F) measures are conducted by financial sector deepening agencies such as EFInA in Nigeria.

8.0 Deepening Financial Inclusion

Kaur and Tanghi (2014) suggest that nations with low levels of financial inclusion also experience high rates of poverty and inequality; supporting the possibility of a direct relationship between financial inclusion and poverty and inequality. Thus, financial inclusion is a vital tool for inclusive growth and must be sustained. Financial inclusion sustainability can be achieved through various strategies including public sector development initiatives and regulatory policies that enhance rural and low-income financial access such as microfinance (Chibba, 2009), increasing the productivity of disadvantaged people (Dev, 2006)

and reducing transaction costs making financial services more affordable for vulnerable groups using low cost technologies for service delivery (Thorat, 2006).

9.0 Role of Technology in Financial Inclusion

A number of diverse approaches have been deployed to addressing financial exclusion. These include financial education/literacy schemes, financial services awareness, microfinance banking and so on. However, since the evolution of ICTs and their adoption in the provision of financial services, the notion of financial inclusion seems feasible.

McKinsey Global Institute (2016) shows that Digital Financial Services (DFS) or financial services delivered over digital infrastructure - including mobile and internet - with low use of cash and traditional bank branches could lower the cost of providing financial services by 80 to 90 percent. The authors show that USD3.7 trillion or 6 percent could be added to developing world GDP in 2025 from widespread digital financial services. Various scholars have discussed the role of technology in enhancing and deepening financial inclusion extensively. According to Khan (2012), Tchamyou, Erreygers and Cassimon (2018) and Kabakova and Plaksenkov (2018) technology can enhance efficient delivery of low value, high volume transaction to the poor and unbanked population.

The need to make financial services both affordable and accessible regardless of income, age and gender has necessitated the use of various ICTs accessible to the vast majority. These ICTs include data communications networks such

as the internet and global system for mobile (GSM) networks and software applications have resulted in new tools and channels known as digital financial services.

Device-based channels like automated teller machines (ATMs) and point of sale (POS) terminals are deployed to provide access to cash and card-based payments respectively, are accessible by pre-paid, debit and credit cards. While turnkey solutions like internet banking, mobile money and mobile banking are viable alternatives for extending financial services. Figure 1 summarises relevant technologies capable of addressing access to finance gaps.

9.1 Internet Banking

Internet banking encompasses the use of internet services and systems for banking transactions (Furst et al., 2000; Hosein, 2010; Ankit, 2011). Similarly, Pikkarainen, Karjaluoto andPahnila (2004) describe internet banking as an internet portal via which customers can access banking services. Banks are motivated to adopt internet banking as a means of reducing operating costs (online portals versus physical bank branches) (Giglio, 2002; Hosein, 2010).

On the consumer side, internet banking provides the luxury of 24-hour access to banking services including funds transfer and bill payments (Ramayah et al., 2003). Hosein (2010) further maintains that accessibility, self-efficacy, convenience and usability are the factors that determine the adoption of the internet as a banking channel. Considering the financially excluded are also presumed to be digitally excluded (Helsper, 2008), Hosein's (2010) challenge

of the efficacy and suitability of internet banking as a tool for enhancing financial inclusion is supported.

9.2 Prepaid Cards

Hitczenko and Tai (2014) define prepaid cards as any tool capable of storing money for future use. Prepaid cards or stored-value cards facilitate cash withdrawals from automated teller machines (ATMs), payments on POS terminals, bill payments and funds transfer (Prior & Santoma, 2010).

Prepaid cards could also serve as a tool for reaching the unbanked as they overcome identification and documentation requirements of opening formal bank accounts; while decentralising the purchase and reloading of cards (Bair, 2003; Barr, 2004). In the same vein, Orozco, Jacob and Tescher (2007) maintain that the convenience, accessibility and liquidity of prepaid cards make them a viable tool for extending financial services to disadvantaged groups, although age, gender, income and literacy level are essential determinants in their usage. However, despite the merits of prepaid cards, the maintenance cost associated with usage and the near absence of hardware to support transactions (Prior & Santoma, 2010) may be a disadvantage.

9.3 Debit/Credit Cards

A debit card is linked to a bank account and allows the account holder to make payments and cash out money via ATMs (Dermiguc-Kunt &Klapper, 2013) and other channels. Credit cards enable the cardholder to pay for transactions without deducting

the amount from the holders account immediately (Dermiguc-Kunt &Klapper, 2013). These payment instruments have been described as fast and inexpensive means of payment (Brits &Winder, 2005) and facilitate access to formal accounts (Dermiguc-Kunt &Klapper, 2013). A report by Ernst and Young reveals that ATM penetration in most emerging markets ranges between 10 and 70 machines per 100,000 adults, with most devices active in urban settlements (Ernst and Young, 2013). The low and biased penetration of ATMs and banks makes debit and credit cards unlikely to solve the problem of financial exclusion in emerging markets.

9.4 Mobile Money

The ubiquity of mobile phones if harnessed could serve the purpose of extending financial services even to disadvantaged groups including the poor and rural dwellers and remote regions where banks are absent. Mobile money is the use of mobile devices to conduct formal financial transactions without necessarily owning a formal bank account (Donovan, 2012; Shrier, Canale & Pentland, 2016).

Mobile money is a viable option for extending financial services to disadvantaged groups including the poor and rural dwellers. The simplicity of mobile phone channels makes it easily adaptable. Software applications, web browsers, unstructured supplementary service data (USSD) and short messaging service (SMS) are mobile phone channels via which financial transactions could be performed (Donovan, 2012). The ease of use and portability of mobile devices make them an excellent tool for financial

transactions. Mobile money could enhance financial inclusion by eliminating the difficulties associated with the opening of formal bank accounts.

Yakub, Bello and Adenuga (2013) observe that mobile money could strengthen commerce, offer security for users, allow for microfinance, create ease of remittance, increase the income of rural dwellers and create job and financial empowerment. Mobile money provides a range of services which include transfers, balance enquiries, withdrawals, making payments, deposits, receiving international remittances, making drafts and cell top up (Ernst and Young, 2009; Klein and Mayer, 2011; Shrier, Canale & Pentland, 2016).

A good reason for considering mobile money as a tool for enhancing financial inclusion especially in Africa is that there exists a gap between the number of formal accounts and active mobile phone subscribers (Yakub, Bello & Adenuga, 2013). This is supported by the 2018 EFInA report which reveals that 39.7 percent of Nigeria's adult population own formal bank accounts as against 68.9 percent who own mobile phones. While there is a limit to the geographical spread of banks, mobile services are ubiquitous. The ubiquity of mobile phone services means that mobile phones are more accessible when compared to formal banking services (Etim, 2014). The use of agents or merchants in opening mobile money accounts and for cash in cash out purposes (Donovan, 2012) makes mobile money a tool for job creation. On the other hand, Klein and Mayer (2011) opine that while mobile money enhances financial inclusion, it also raises concerns about regulation and competition. Similarly, Merritt

(2011) suggests that while mobile money creates a convergence between the banking and telecommunication industries, it also throws up the challenge of establishing proper regulation particularly for the telecom industry that lacks the requisite expertise in rendering financial services.

Table 1: Technologies for financial inclusion

Digital Financial Services (DFS)/Feature	Store of value	Payment Instruments	Payment/Service Channel
Debit/credit card	Bank account/Credit line	Electronic transfer Card payment	ATM Merchant POS Internet
Internet banking	Bank account	Electronic transfer	Internet PC
Mobile money	Stored value (e-wallet)	Electronic transfer	Mobile phone Agent
Pre-paid card	Stored value (e-wallet)	Electronic transfer Card payment	ATM Merchant POS Internet

Source: *Author's Compilation*

10.0 Conclusion

Financial inclusion is vital for economic development and poverty alleviation in emerging economies. However, despite overwhelming evidence showing that financial inclusion has significant benefits to the poor and low-income earners, there is still a considerable gap in access to formal financial services in emerging economies. Unlike developed economies where the poor have financial products suited to their needs, the poor in emerging economies have very narrow options (Karlan and Murdoch, 2009).

While it is difficult and prohibitively expensive to build bank branches in all rural locations in emerging economies, there are several innovative and less costly means with the potential to bridge the financial inclusion gap. They include internet banking, prepaid cards, debit/credit cards and mobile money. However, considering the real constraints (distance or inaccessibility to banks, literacy and lack of awareness, complexity and high cost of banking products, etc.) facing the poor and unbanked in their quest to access formal financial services, mobile money appears to be the most promising and sustainable means to further deepen access to formal financial services.

Mobile phones are ubiquitous and basic mobile phones can support mobile money services. Also, on the supply side, Mas and Kumar (2008) and Shrier, Canale and Pentland (2016) identified the following benefits of mobile money services: reduced cost of delivering financial services, increased penetration, and the ability to sell various services to the unbanked. With the right business model and regulatory policies, mobile money can stimulate increased savings by the poor, support access to other financial services such as credit and insurance, facilitate remittances (send and receive) with less risk, and conduct other financial transactions. All in all, mobile money will increase participation in economic activities and ultimately enhance economic development.

References

Abbott, C. (2007). E-inclusion: Learning difficulties & digital technologies (Report 15). Bristol, RU. Accessed at http:// archive.futurelab.org.uk/resources/publications-reports-articles/literature-reviews/Literature-Review314

Adenuga, A.O., & Omotosho, B.S. (2013). Financial Depth, Financial Access and Economic growth in Nigeria. *Journal of Monetary and Economic Integration*, 120-137

Akinlo, A.E., & Egbetunde, T. (2010). Financial Development and Economic Growth: The Experience of 10 sub-African countries revisited. *The Review of Finance and Banking*, 02(1), 017-028

Adetunji, O. M., & David-West, O. (2019). The Relative Impact of Income & Financial Literacy on Financial Inclusion in Nigeria. *Journal of International Development*, *31*(1), 8-13.

Atkinson, A.B. (1998) 'Social Exclusion, Poverty & Unemployment', in A.B. Atkinson & J. Hills (eds.), Exclusion, Employment & Opportunity, CASE paper 4, *Centre for the Analysis of Social Exclusion, London School of Economics*, 1–20.

Aubé, M., & Laidlow, B. (2010). Financial services models in Papua New Guinea: Increasing access to finance in rural areas. *Foundation for Development Cooperation*. Briefing Note 9.

Beck, T., Demirguc-Kunt, A., & Levine, R. (2007). Finance, Inequality & the Poor. *Journal of Economic Growth*, *12*(1), 27–49. http://doi.org/10.2307/40216113?ref=search-gateway:f869657aea6e0d61cad266c378ebe9a1

Brits, H. and C. Winder (2005), Payments are no free lunch, De Nederlandsche Bank Occasional Studies 3(2).

Central Bank of Nigeria. (2012). *National Financial Inclusion Strategy*. *afi-global.org*. Abuja

Chibba, M. (2009). Financial Inclusion, Poverty Reduction & the Millennium Development Goals. *European Journal of Development Research*, *21*(2), 213–230. http://doi.org/10.1057/ejdr.2008.17

Demirguc-Kunt, A., & Klapper, L. F. (2012a). *Financial Inclusion in Africa: An Overview* (No. 6088).

Demirguc-Kunt, A., & Klapper, L. F. (2012b). Measuring Financial Inclusion: The Global Findex Database.

Demirgüç-Kunt, A., & Klapper, L. (2013). Measuring financial inclusion: Explaining variation in use of financial services across & within countries.*Brookings Papers on Economic Activity*, *2013*(1), 279-340.

Demirguc-Kunt, A., Klapper, L. F., Singer, D., & Van Oudbeusden, P. (2015). *The Global Findex Database 2014: measuring financial inclusion around the world* (No. 7255).no

Demirguc-Kunt, Asli, Leora Klapper, and Dorothe Singer (2017), Financial Inclusion and Inclusive Growth – A Review of Recent Empirical Evidence, World Bank Policy Research Paper, No. 8040.

Dev, S. M. (2006). Financial Inclusion: Issues & Challenges. *Economic & Political Weekly*, *41*(41), 4310–4313.

Di Castri, S. (2013). Mobile Money: Enabling Regulatory Solutions. GSMA, London, United Kingdom.

Donovan, K. (2012). Mobile money for financial inclusion. *Information & Communications for Development*, *61*.

Drechsel, T., & Tenreyro, S. (2018). Commodity booms & busts in emerging economies. *Journal of International Economics*, *112*, 200-218.

Enhancing Financial Innovation & Access (EFInA). 2018. Key Findings: EFInA Access to FinancialServices in Nigeria 2018 Survey. *EFInA*: Lagos.

Ernst & Young. (2013). *Banking in emerging markets: seizing opportunities, overcoming challenges: Country reports* (EYG No. EK0145). Retrieved from https://www.ey.com/Publication/vwLUAssets/Banking-in-emerging-markets-seizing-oppurtunities-overcoming-challenges/%24File/Banking-in-emerging-markets-seizing-oppurtunities-overcoming-challenges.pdf

Etim, A. (2014). Mobile money and mobile banking adoption for financial inclusion. *Research in Business and Economics Journal*, *9*(1), 1-13.

Hannig, A. & Jansen, S. (2010), "Financial inclusion & financial stability: current policy issues", ADBI, Working Paper No 259.

Helsper, E. (2008). Digital inclusion: an analysis of social disadvantage & the information society. London.

Htun, M. (2003). Dimensions of Political Inclusion & Exclusion in Brazil: Gender & Race. *Technical Paper Series of the Sustainable Development Department Social Development Division*

Inoue T, Hamori S. 2016. Financial access & economic growth: evidence from sub-Saharan Africa.*Emerging Markets Finance & Trade* 52: 743–753.

Jain, A., Zubenko, O., & Carotenuto, G. (2014). *A Progressive Approach to Financial Inclusion*. MasterCard Advisers.

Joseph, J., & Varghese, T. (2014). Role of Financial Inclusion in the Development of Indian Economy. *Journal of Economics & Sustainable Development*, *5*(11), 6–11.

Kabakova, O., & Plaksenkov, E. (2018). Analysis of factors affecting financial inclusion: Ecosystem view. *Journal of Business Research*, *89*, 198-205.

Karlan, D. & J. Morduch. 2009. "Access to Finance." In D. Rodrik & M, Rosenzweig, eds.

H&book of Development Economics, Volume 5. Amsterdam: Elsevier. 4704-4784.

Khan, H. R. (2012). Issues & challenges in financial inclusion: Policies, partnerships, processes & products. *RBI Monthly Bulletin*, *66*(8), 1447-1457.

Leeladhar, V. (2006). Taking banking services to the common man-financial inclusion. *Reserve Bank of India Bulletin*.

LeVan, A. C., & Assenov, A. (2009). The Consequences of Political Inclusion in Africa, 1990–2008. Presented at the workshop on 'The Consequences of Political Inclusion in Africa', Washington, DC.

Mas, I., & Kumar, K. (2008). Banking on mobiles: why, how, for whom?.*CGAP Focus note*, (48).

McKinsey Global Institute. 2016. *Digital Finance for All: Powering Inclusive Growth in EmergingEconomies.* McKinsey & Company: San Francisco.

Merritt, C. (2011). Mobile money transfer services: the next phase in the evolution of person-to-person payments. *Journal of Payments Strategy & Systems*, *5*(2), 143-160.

Mohan, R. (2006). Economic growth, financial deepening, & financial inclusion. *Reserve Bank of India Bulletin*.

Prasad, E. S. (2010). *Financial sector regulation & reforms in emerging markets: An overview* (No. w16428). National Bureau of Economic Research.

Sarma, M. (2008). *Index of financial inclusion*. Indian Council for Research on International Economics Relations.

Sarma, M., & Pais, J. (2008). Financial inclusion & development: A cross country analysis. *Indian Council for Research on International Economic Relations*, 1–28.

Schmied, J., & Marr, A. (2017). Financial inclusion & poverty: The case of Peru. *Regional & Sectoral Economic Studies*, *16*(2), 1-26.

Seale, J. (2010). Digital Inclusion: A Research Briefing by the Technology-Enhanced Learning Phase of the Teaching & Learning Research Programme. *London Knowledge Lab, London, [online] Available at: http://www. tlrp. org/docs/DigitalInclusion. pdf*. Thorat, U. (2006). Financial inclusion & millennium development goals. *RBI Bulletin*, *50*(2), 239–243.

Sharma, D. (2016). Nexus between financial inclusion & economic growth: evidence from the emerging Indian economy. *Journal of Financial Economic Policy*, *8*(1), 13-36

Tchamyou, V. S., Erreygers, G., & Cassimon, D. (2019). Inequality, ICT & financial access in Africa. Technological Forecasting & Social Change, 139, 169-184.

Thorat, U. (2006). Financial inclusion & millennium development goals.*RBI Bulletin*, *50*(2), 239-43.

United Nations Educational, Scientific & Cultural Organization {UNESCO}. (2005). Guidelines for inclusion: Ensuring access to education for all. Paris: UNESCO.

Warschauer, M. (2004). *Technology & Social Inclusion*. MIT Press.

Yakub, J.O. Bello, H.T. & Adenuga, I.A. (2013). Mobile Money Services in Nigeria: An Inquiry of Existing Models, *International Journal of Economics & Management Sciences*, Vol. 2, No.9, pp. 94- 105.

Young IM (2000) Inclusion & democracy. Oxford University Press, Oxford

APPOINTMENT OF DIRECTORS AND PERFORMANCE OF DEPOSIT MONEY BANKS IN SUB SAHARAN AFRICA

By

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Abstract

The main purpose of this study is to examine the effect of corporate governance on performance of Deposit Money Banks (DMBs) in Sub Saharan Africa (SSA). The work determined the effect of appointment of more non- executive directors on return on assets (ROA) and net interest margin (NIM) of the DMBs in SSA. Also through innovation, the study conversely examined the effect of appointment of more executive directors on the ROA and NIM of the banks. The study used secondary data collected on six SSA countries and twelve banks from the six countries for the period 2004 to 2016. Panel data regression approach was employed to analyze the data. Fixed effects and Random effects models were adopted based on the results of Hausman tests. The study revealed among others that appointment of more non-executive directors (BNEDDUM) has positive but insignificant effect on ROA. It also indicated strong positive correlation with both ROA and NIM. A hypothetical board (BMEDDUM) with more executive directors showed positive and significant effect on NIM

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while indicating negative and insignificant effect on ROA. The positive effect of BNEDDUM on ROA coupled with its strong positive correlation with both ROA and NIM seem to strongly suggest that appointment of more non-executives on a Board of directors of DMBs in SSA is more beneficial to the banks than appointment of more executive directors. However, the global conflict in the findings associated with appointment of directors is not yet fully resolved and suggests that the desired corporate governance is likely to emerge from within rather than legislation. The study recommends that while more non-executive directors may be appointed to the Board of Directors of DMBs in SSA, each bank must ensure that it puts in place a robust and effective internal control systems which internalize culture of prudency and professionalism in management.

Keywords: Non-executive Directors, Professionalism, executive directors, bank performance, Return on Asset.

1.0 Introduction

The banking system is the engine of growth in any economy given its functions of financial intermediation, provision of an efficient payment system and facilitating the implementation of monetary policies (Nwaubani & Ezeudu, 2015). This fact is also acknowledged by Ogunbiyi and Ihejirika (2014) who describe banking as an economic activity which deals with the intermediation of funds between the surplus and deficit units of an economy and the channeling of such resources to profitable investments. Moyo et al (2014) see the banking industry from its

essential role of resource mobilization and allocation in an economy and, its position as the most important segment of the financial system in developing economies.

The genesis of banking in Sub Saharan Africa dates back to pre-colonial days. The banking experience has spanned mainly the era dominated by foreign-owned banks at the time of independence of African nations, the phase of government intervention/state-owned banks and the era of banking crises in the 1980s and 1990s. The banking crises era of the 1980s and 1990s is followed by the period of financial liberalization/reforms, increased private sector participation and entry of foreign banks (Beck et al, 2012; Otchere & Senbet 2017).

Globally, business entities do not operate in isolation. They are integral part of and influenced by the environment they operate in. The environment could be broadly categorized into internal and external. The internal environment at its simplest level refers to all the factors which are specific to a particular organization and influence the operations and performance of the organization. The internal environment of the banking industry in SSA over the recent decades has been very dynamic, increasingly complex and challenging, particularly with the influence of globalization. The phenomenon called globalization has put deposit money banks under increasing pressure to adjust their internal environment in order to survive and remain relevant in the industry.

One of the crucial factors of the internal environment is corporate governance which is defined as the structures and processes by

which companies are directed and controlled (International Finance Corporation - IFC, 2016).Virtually all countries in SSA have one form of corporate governance code or the other. For instance in 2018, Financial Reporting Council of Nigeria (FRC) issued latest version of Nigerian Corporate Governance Code-NCGC 2018 (FRC,2019). The new code has January 01, 2020 as effective implementation date (Kolawole, 2018).

The new code supersedes a rules-based harmonized and unified national code of corporate governance for private sector released in 2016 by FRC. The 2018 code which is principles-based and consists of 28 principles is aimed at institutionalizing high corporate governance standards and promoting public awareness of essential corporate values and ethical practices that will rebuild local and international confidence in the Nigerian economy including the deposit money banks (FRC, 2019).

The issue of corporate governance has in recent years become a topical one among policy makers and other various stakeholders particularly in emerging and developing markets. Poor corporate governance has been blamed for some notable corporate failures and financial scandals in the recent past such as the collapse of Carillion – the second largest construction giant in Britain in 2018, Tyco and Xerox in the United States of America (in 2002 and 2001), and most bank distress and failures in Nigeria and elsewhere in the World (Adeoye 2013, Ailemen & Oyero 2013, Akingunola, Olusegun & Oluseyi 2013, Gyamerah & Agyie 2016, ACCA, 2018). Also the spate of collapsed airlines witnessed in

Nigeria in the past decade is not unconnected with poor corporate governance in the aviation sector (Nweze, 2018).

A number of empirical studies on corporate governance and performance of banks have been carried out. However, only Flamini; McDonald and Schumacher (2009) and few other studies considered corporate governance as one of the internal factors influencing profitability of deposit money banks in the SSA. Also only a few captured appointment of directors as one of the explanatory variables in their models. Finally, most extant empirical studies on director appointment, focus mainly on effect of non-executive directors. The challenge associated with such studies is, how to isolate in real life, the effect of having a board with more non-executive directors from impact of another board of the same company made up of mainly executive directors. If the isolation could be achieved in real life, the preference for non-executive directors would be based on a more acceptable and reliable empirical evidence.

In this study, appointment of directors as an aspect of corporate governance is considered and, through improvised randomized experiment first introduced and applied by the researcher, the effect of both boards(one made up of non-executive directors and another mainly composed of executive directors) would be determined. This would help to decide whether we need more non-executive directors or executive directors. The corporate governance codes for the banking industry in most SSA countries including Nigeria specify that non-executive directors shall be more in number than executive directors. Though non-executive

directors may provide a balancing influence and help to minimize conflicts of interest among members of the Board and Management staff of a bank, there have been conflicting findings globally on the benefit of appointing more non-executive directors than executive directors on the board of directors of a deposit money bank (as required by most SSA countries' corporate governance codes).

While El Mehdi (2007) Wahab, Janice and Peter (2007), Atuahene (2016) and Dauda and Hawa (2016) documented a positive relationship between performance and board composition with more non-executive directors, Al-Baidhani (2013), John (2015) and Yilmaz and Buyuklu (2016) reported negative outcomes. To enrich empirical studies on corporate governance in SSA and attempt to resolve the documented conflicts employing the improvised randomized experiment approach are the motivating factors n for this study.

2.0 The Concept of Corporate Governance

Corporate governance according to (IFC, 2016) is defined as the structures and processes by which companies are directed and controlled. Going further, the Corporation notes that good corporate governance leads to efficient performance of companies, improved access to capital and serves as risk mitigant and a check on mismanagement resulting in more accountability and transparency to all stakeholders. The author adds that African countries have joined the global drive for greater transparency and accountability. Perhaps this informs the position of World Bank that good corporate governance enhances firms' performance and

access to capital (World Bank, 2005). A broader view of corporate governance is expressed in King IV Report on Corporate Governance for South Africa in which Corporate governance is also seen as the exercise of ethical and effective leadership by the executive management of a corporate entity with the broad objective of achieving ethical culture, good performance, effective internal control and legitimacy (IoDSA 2016).

Corporate governance can also be viewed from another broader perspective as the processes and structures by which organizations are directed and controlled so that they will operate at all times in a responsible, fair and transparent manner to all stakeholders while being held accountable in order to serve and sustain the interests and expectations of the stakeholders. Corporate governance of a firm can be seen primarily as the firm's broad framework of internal discipline for ensuring that the organization is run in fair, transparent and professional manner in order to achieve and sustain the goals of the stakeholders particularly the shareholders. As spelt out in Nigerian Corporate Governance Code-2018, a typical corporate governance code covers such issues as board of directors – the functions, composition, remunerations; internal control system and framework for risk management and exposing illegal and unethical activities in the firm; platforms for engaging the shareholders and ensuring the protection of their interest; ethical and professional standards to be followed while conducting business of the entity in order to enhance reputation of the entity and gain investors' confidence; how to sustain long term business goals via sustaining the employees, being a responsible

corporate citizen in the business environment /community; how to be transparent and to be seen to be so in the dealings of the firm with all stakeholders among others (FRC,2019).

There are two broad frameworks to corporate governance codes namely: Rules-based and Principles-based. In rules- based framework, the firms are mandatorily required to comply with relevant principles and rules specified by the code. With little or no exception to the rules. The philosophy behind this approach is the view that the companies need force of the law to observe principles and rules considered to be of best practices in either a particular sector or the economy as a whole. This framework does not give room for the entities/directors to bring their judgments' to bear in the application of the rules hence this approach lacks flexibility. However, under principles-based approach, the code specifies minimum principles and recommend best practices to enable the entities apply the principles. However, the entities are required to apply the principles based on their judgment in each circumstance but with the obligation to explain and justify why the principle is so applied. In essence, the directors are to adopt the "apply and explain approach" (Kaplan Financial knowledge Bank2012; Banff Executive Leadership 2016; FRC2018). The principles-based framework is characterized by flexibility and in the recent years, many countries are switching over to principles-based national code of corporate governance.

Ordinarily, the structures and processes by which companies are directed and controlled are primarily internal to a firm. However, as part of the government responsibility to provide legislation and

regulations to ensure that the business entities adopt best practices and operate in a manner that protect the interests of all stake holders, codes of corporate governance have been introduced for adoption by organizations. This cuts across the globe.

The necessity of adoption of the corporate governance codes for banks in Sub Saharan Africa stems particularly from the gross mismanagement hitherto witnessed in the region's banking sector particularly between the 1980s and 1990s. The mismanagement was fueled by technical and managerial incompetency and unethical practices which are some of the key issues being addressed by the corporate governance codes. This opinion agrees with the view of Akingunola, Olusegun and Oluseyi (2013) who linked the bank distress in Nigeria in the 1990s to failure of professional ethics which manifested in such acts as creative accounting practices, disregard to internal control systems among others.

Corporate governance in SSA has been on the fore burner through the activities of African Corporate Governance Network (ACGN) and African Corporate Governance Programme (AFCGP) supported by International Finance Corporation (IFC, 2016). As documented by Klynveld Peat Marwick Goerdeler- KPMG (2017) a number of countries in SSA have adopted corporate governance code of practice or its equivalent, with most countries adopting their first codes from 2000 onwards. The report reveals that corporate governance requirements for listed companies in 15 countries across Africa meet Principles of Corporate Governance

released in 2015 by Organization for Economic Co-operation and Development (OECD). The principles include: leadership and culture, strategy and performance, compliance and oversight, and stakeholder engagement. As documented in the report, South Africa ranks first in Africa while Kenya, Mauritius, Nigeria and Uganda are in the top five.

The African Corporate Governance Network (ACGN) is a collaborative network of directors of organizations which is engaged in promoting effective and inclusive corporate governance in Africa (ACGN, 2016). According to the ACGN (2016) by 2015 the ACGN had a membership strength of about 16 countries of Africa and 7 affiliate members with most of the members coming from Sub Saharan Africa. The assessment of ACGN suggests that SSA countries are making progress in the area of adopting best corporate governance codes. However, notwithstanding the progress in the issuance and adoption of the relevant corporate governance code in each country in SSA region, it seems appropriate to stress the need for effective internal control systems, integrity, professionalism, technical competency and commitment of the members of board of directors of each bank. This emphasis aligns with the view of First Bank Nigeria- FBN (2015, p105) that "Effective corporate governance practices are largely dependent on the skills, integrity and experience of individuals on the Board and how well they are committed to doing business in accordance with global best practices"

3.0 The Importance of Board Composition: The Theoretical Framework

Board composition is very crucial to the success and survival of a firm particularly a deposit money bank because it is the board members who collectively formulate and implement policies of the bank on behalf of the owners of the business - shareholders. As First Bank Nigeria- FBN (2015, p105) acknowledges "good governance practices are best initiated and observed in the boardroom". An ineffective policy will ordinarily produce at best a less desirable result and an effective policy poorly implemented will not give the desired outcome.

The real issues associated with board composition is the problem of conflicting interests among the directors and managers as agents of the shareholders on one hand against the interest of the shareholders- their principal on the other hand. This conflict is known as the agency problem which necessitates agency costs to the organization. The agency problem tends to hinder objective decisions which are in the best interest of the shareholders and other stakeholders for reasons which weigh more on personal interests of the agents. The agency problems are encapsulated in the agency theory which in turn is rooted in the firm theory.

The agency theory credited to Ross and Mitnick (Mitnick, 2006) is concerned with the nature of principal-agent relationship, the rights and responsibilities of each party, the agency problems and how to minimize them via various corporate governance practices and observations aimed at controlling decisions and actions of the agent's in the modern firm. Agency theory can be considered as

one of the oldest theory in the literature of the management and economics (Wasserman, 2006).

On the other hand the firm theory could be viewed as consisting a number of economic theories that explain and predict the nature of the firm, its existence, behavior, structure, and relationship with all stakeholders and the market Kantarelis (2007). The neo-classical or traditional firm is a single business entity whose entire operations are carried out by an entrepreneur with the main objective of profit maximization (Jhingan and Stephen, 2009). It considers the sole objective of a firm to be profit maximization and measures profit as the difference between a firm's total revenue and total cost and asserts that in order to maximize profit, the firm is expected to maximize its revenues and minimize or stabilize its costs. However, the authors recognize that modern firms have varied objectives because of the complexities, politics and separation of ownership from management which characterize them. They note that modern firms are run by managers/directors while shareholders are the owners with separate roles and motives from those of the managers. These facts render the sole objective of profit maximization of the traditional firm unrealistic as the modern firm has varied objectives.

In 1964 Robin Marris developed a dynamic balanced growth maximizing managerial model of the firm in recognition of the varied interests of the managers and shareholders (Marris, 1964). Marris suggests that managers/directors are usually more concerned with salary, prestige, status, power, job security while shareholders are more interested in profits, market share and

output (Rekhi, n.d.) This tendency introduces conflict of interests which implies that the directors/mangers may not act in the interest of the shareholders. This conflict of interests is known as the agency problem and was as far back as 1776 noted by Adam Smith (Panda and Leepsa, 2017).

It is therefore very imperative for not only organizations but governments to take well-thought out steps to checkmate this necessary evil called agent problem. The corporate governance code in most countries specifies that more number of non-executive directors shall be appointed on the board of directors of a firm as a way of minimizing the agent problem. Generally, corporate governance code and specific regulatory directives on board composition are part of the attempt at minimizing the problem of conflict of interests in organizations. It is assumed by the policy makers and governments -regulators and supervisors that non-executive directors particularly independent non-executive directors are more objective since they are independent and are not in full-time employment of the organization concerned.

4.0 Summarized Empirical Review

Empirical works which documented a general positive-performance link outcomes are: Black (2001)-Russia; El Mehdi (2007)-Tunisia; Wahab, Janice and Peter (2007)-Malaysia; Brown and Caylor (2008)-USA and particularly in Chepkosgei (2013)-Kenya, Dauda and Hawa (2016)-Nigeria, Atuahene (2016)-Ghana and in Herdjiono and Sari (2017)-Indonesia where board of directors with more number of independent/non-executive directors - BNEDDUM indicated positive relationship with Return

on Assets (ROA) (Duada and Hawa) and positive effect on ROA (Chepkosgei; Atuahene; Herdjiono and Sari).On the other hand, empirical studies which indicated generally negative outcomes are: Bhagat and Black (2002), Al-Baidhani(2015)-Arabian Penisula, John (2015)-Nigeria, Yilmaz and Buyuklu (2016)-Turkey where independent directors/ non-executive directors board had negative and significant effect on ROA(Al-Baidhani); also where it exhibited negative relationship (Bhagat and Black; Yilmaz and Buyuklu; John).

5.0 Research Methodology

The research design adopted in this work is *ex-post facto*. Secondary data from 12 deposit money banks selected from six Sub Saharan African countries of Nigeria, South Africa, Ghana, Kenya, Mauritius and Botswana were collected for the period 2004 -2016. The banks are: Guaranty Trust Bank, First Bank, Zenith Bank and Access Bank for Nigeria; Standard Bank and Nedbank for South Africa: Kenya Commercial Bank and Equity Bank for Kenya; Mauritius Commercial Bank and SBM Bank for Mauritius; Standard Chartered Bank of Ghana for Ghana and Barclays Bank of Botswana for Botswana.

The selection of the six countries was primarily based on sub regional representation. The sub regions are: West Africa represented by Nigeria and Ghana, Southern Africa by South Africa and Botswana, East Africa by Kenya and the Small Island Countries of SSA by Mauritius. The deposit money banks were selected on the basis of their status as leading banks in their countries with most of them having checkered history. Four banks

were selected from Nigeria to reflect the status of the country as the biggest economy in Africa (Worldatlas, 2019; Forbes Media.2019). Panel data multiple regression approach was employed to analyze the data with the aid of EViews 9 and SPSS(20). The dependent variables used in this study are bank-level factors and they are ROA to proxy profitability and Net Interest Margin (NIM) to measure efficiency. The independent variable is board composition innovatively divided into: BNEDDUM - a dummy to reflect if number of none-executive directors is more than those of executive director on the Board of each bank and BMEDDUM – a dummy to reflect a hypothetical board of directors composition with 61% of the directors as Executive Directors innovatively introduced by the researcher. The final model is a modified version of the model adopted by Flamini, et al (2009) and it is given as:

$$ROAic,t/NIMic,t = \alpha + \sum\beta_1 BNEDDUMic,t + \sum\beta_2 BMEDDUict + Vi,t \quad (1)$$

Where:
ROAic,t = return on total assets of bank *i* in country *c* for period *t*;
NIMic,t = net interest margin of bank *i* in country *c* for period *t*
BNEDDUMic,t / BMEDDUMict = the board composition of bank i in country c for period t
α = the constant for the model
β_1 to β_2 = parameters/ beta coefficients to be estimated
$v_{it} = u_{it} + \varepsilon_{it}$ is the composite disturbance factor, while
*u*it = between-entity errors and εit= within-entity errors (the idiosyncratic errors).

Table 1: Measurement of Variables of the Study

S/n	Variable Dependent /Independent	Measurement	A priori Expectation
1	ROA - Return on Assets (**Dependent**)	Profit before tax divided by total tangible asset :; Iacobelli ,(2017), Mungly et al,(2016) or as given in the annual accounts of each bank	
2	NIM **-** Net Interest Margin (**Dependent**)	Net interest income expressed as a percentage of net earning assets (Kosmidou, Tanna and Pasiouras (2012), or as given in the annual accounts of each bank.	
4	BNEDUMM-Board with more non-executive directors **(Independent)**	Dummy assumes 0 (zero) if No. of nonexecutive directors is > No. of executive director and 1(one) if otherwise(Atuahene 2016, Dauda and Hawa 2016, Yilmaz and Buyuklu 2016)	**-/+**
5	BMEDDUM-Board with more executive directors (**Independent)**	A hypothetical Board composition introduced by the researcher via improvised randomized experiment, as an innovation and a check on outcome of non-executive dummy. Assumes a Board with over 60% Executive Directors	-/+

Source: *Author's Compilation, 2019*

6.0 Data Presentation and Analysis

Table 2: Correlation among the Variables

Correlations

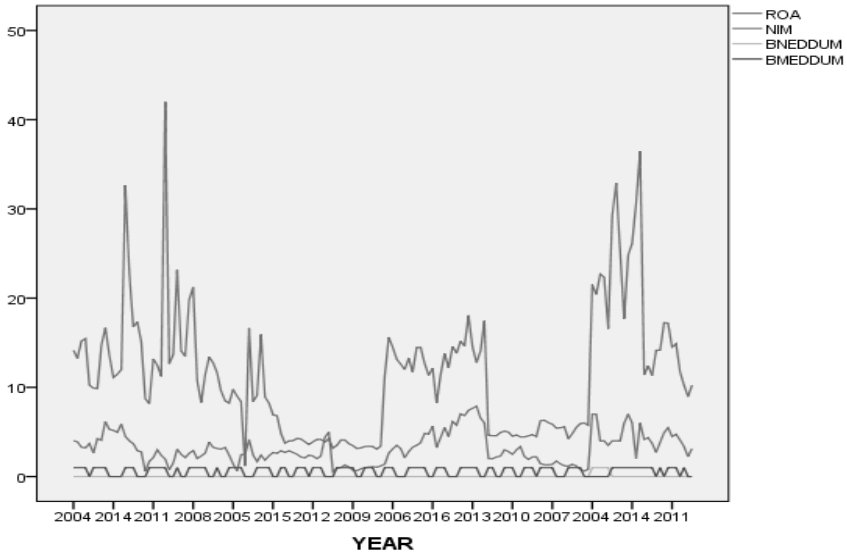
		ROA	BNEDDUM	BMEDDUM	NIM
ROA	Pearson Correlation	1	.209**	-.043	.393**
	Sig. (2-tailed)		.009	.598	.000
	N	156	156	156	156
BNEDDUM	Pearson Correlation	.209**	1	-.227**	.183*
	Sig. (2-tailed)	.009		.004	.022
	N	156	156	156	156
BMEDDUM	Pearson Correlation	-.043	-.227**	1	.123
	Sig. (2-tailed)	.598	.004		.127
	N	156	156	156	156
NIM	Pearson Correlation	.393**	.183*	.123	1
	Sig. (2-tailed)	.000	.022	.127	
	N	156	156	156	156

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

*. Correlation is significant at the 0.05 level (2-tailed).

Source: *SPSS (20) output, 2019*

Figure 1: Trend of the Variables within the Period, 2004-2016



Source: *SPSS(20) output, 2018*

The Figure 1 above indicates that the variables fluctuated reflecting changes in board composition, economic situations and market structures particularly with respect to net interest margins.

Table 3: Summary of Random Effects and Fixed Effects Models' Results on ROA

Fixed Effects – FE Random Effects-RE

Independent Variables	Details in Appendix	Beta Coef. under FE	P-value Under FE	Beta Coef. Under RE	P-value Under RE	Adopted Model based on Hausman Test Result	Adjustd R-Square	F-Stat. p-value
BMEDDUM	-do-					Random Effects	15.26%	0.000
		0.079961	0.8805	0.116264	0.8256			
BMEDDUM	-do-					Random Effects		
		-0.094849	0.5469	-0.090283	0.5655			

Source: *Extracted from Eview9 Results, 2018*

Table 4: Summary of Random Effects and Fixed Effects Models' Results on NIM

Fixed Effects-FE Random Effects-RE

Independent Variables	Details in Appendix	Beta Coef. under FE	P-value Under FE	Beta Coef. Under RE	P-value Under RE	Adopted Model based on Hausman Test Result	Adjustd R-Square	F-Stat. p-value
BNEDDUM	-do-	-5.311891	0.1507	-3.895574	0.2793	Random Effects	10.85%	0.000
BMEDDUM	-do-	2.389905	0.0296	2.491411	0.0226	Random Effects		

Source: *Extracted from Eview9 Results, 2019*

6.0 Discussion of Results

The board of directors with more number of non-executive directors than executive directors (BNEDDUM) has positive insignificant effect on return on assets (ROA) while exhibiting negative insignificant effect on net interest margin-NIM (Tables 3& 4). It also shows positive significant correlation with both ROA and NIM (Table 2). The hypothetical board composition (BMEDDUM) with more number of executive directors indicates negative insignificant effect on ROA while showing positive significant effect on NIM. It equally exhibits negative insignificant correlation with ROA and positive insignificant relationship with NIM. The negative insignificant effect on ROA of BMEDDUM aligns with the results in Al-Baidhani (2015), Yilmaz and Buyuklu (2016), John (2015).

The positive effect of BNEDDUM on ROA (though not significant), coupled with its positive correlation with ROA and NIM is

consistent with general positive-performance link outcomes documented in El Mehdi (2007)-Tunisia; Wahab, Janice and Peter (2007)-Malaysia; Brown and Caylor (2008)-USA and particularly in Chepkosgei (2013),-Kenya, Dauda and Hawa (2016)-Nigeria, Atuahene (2016)-Ghana and in Herdjiono and Sari (2017)-Indonesia where board of directors with more number of independent/non-executive directors - BNEDDUM indicated positive relationship with ROA (Duada and Hawa) and positive effect on ROA (Chepkosgei; Atuahene; Herdjiono and Sari). However, it contradicts findings in Bhagat and Black (2002), Al-Baidhani (2015)-Arabian Penisula, John (2015), Yilmaz and Buyuklu (2016)-Turkey where independent directors/ non-executive directors board had negative and significant effect on ROA (Al-Baidhani); also where it exhibited negative correlation (Yilmazand Buyuklu; John).

The outcomes associated with BNEDDUM when compared with those of BMEDDUM in totality suggest that BNEDDUM may be preferred to BMEDDUM. This view tends to support the regulatory requirement for more number of non-executive directors to be appointed on board of directors of banks in many countries in Sub Saharan Africa.

According to the work of a World Bank research staff (Love, n.d.), most of the studies on corporate governance and firm performance suggest a positive correlation between corporate governance and various measures of performance though a number of studies as well have questioned the relationship. The author notes that one of the challenges associated with the

relationship between corporate governance and firm performance is the question of causality, in other words does positive or negative correlation with performance imply that corporate governance causes the change in performance? Logically, if corporate governance affects performance, it implies that changes in corporate governance will produce changes in performance. This may only be true if the variation in corporate governance measure is at random and independent of other variables in the model under study. The problem of endogeniety arises when variation in corporate governance variable depends on some un-modeled causes (the error terms) that also affect other variables in the model (Antonakis, Bendahan, Jacquart and Lalive, 2014).

An adjudged credible method of resolving this challenge is the randomized experiment in which a researcher randomly assigns some subjects to receive a treatment, while others do not receive any treatment (Love, n.d.). The outcomes are compared between the two groups. In the case of governance-performance relationship research, the design would include firms as the subjects, the treatment as the changes in corporate governance and the results as performance. Because the treatment is random by design, any differences in outcome could credibly be attributed to the treatment - improvements in corporate governance. In real world, this methodology will be very hard to implement because of practical involvements such as identifying firms willing to form a list for random selection of firms which will in turn form a group also willing to have some aspects of their corporate governance structures changed in the experiment. Such a change may entail

dropping some executive directors for more non-executive directors or vice versa among others.

In this study, the researcher tries to be innovative by introducing a hypothetical board of directors composed of more executive directors (BMEDDUM) for eight years (61%) out of the thirteen years period covered by this study. The eight years for each bank is randomly populated with ones (1s) which is the dummy for executive directors. The introduction is an attempt to improvise a mechanism mirroring the randomized experiment so that the outcome based on the non-executive directors board-BNEDDUM may be compared and accepted or otherwise with a level of credibility.

It appears that the introduction has added to the acceptability of the outcome with respect to board composition with more non-executive directors (BNEDDUM). For instance, BNEDDUM indicates positive significant relationship with both ROA and NIM (Table2) while the introduction of BMEDDUM (more executive director's board) reverses the positive significant relationship to a negative insignificant correlation with ROA and positive insignificant relationship with NIM (Table1). The negative insignificant correlation of BMEDDUM with ROA seems to logically confirm the positive significant relationship of BNEDDUM with ROA. The same reasoning applies to NIM. It also suggests that a board with more non-executive directors enhances performance more than one with more executive directors.

With respect to the effect of BNEDDUM (more non-executive directors board) on ROA and NIM under Tables 1&2), it exhibits positive insignificant effect on ROA and insignificant negative effect on NIM. The introduction of BMEDDUM (more executive director's board) again reverses the outcome showing a negative and insignificant effect on ROA and positive significant effect on NIM. This appears to imply that replacing the board composition with one with more executive directors will have negative effect on profitability (ROA). The reversal tends to confirm that the board with more non-executive directors (BNEDDUM) actually has a positive insignificant effect on ROA. This is the essence of the introduction of the hypothetical board composition which analogically serves as a change of existing composition of board of directors which may be very difficult to achieve in real world.

However, when we consider the effect of the two types of board composition on NIM only, the board with more executive directors is preferred as it exhibits a positive significant effect against the insignificant negative effect of board with more non-executive directors. Conversely, the board with more non-executive appears more beneficial to the deposit money banks when effect of the two boards on ROA only is taken into account as this board indicates a positive insignificant effect against a negative and insignificant effect of the board with more executive directors.

This suggests that the conflict in the findings associated with board composition globally is not yet fully resolved. In view of this, it appears that the desired corporate governance is likely to emerge from within rather than exogenously and hence be

dependent on specific characteristics of each firm and its environment. This humble opinion of the researcher is in agreement with the view of World Bank research staff, Love (Love, n.d.). This view seems to be further echoed by the collapse of Carillion in 2018. Carillion was the second largest construction giant in Britain with more experienced independent non-executive directors appointed into its board and with its annual accounts signed off in March 2017 on a going - concern basis but yet in January 2018, it went into liquidation (ACCA, 2018).

7.0 Conclusion and Recommendations

Conclusion

Appointment of more non-executives on a Board of directors of deposit money banks in SSA appears more beneficial to banks than appointment of more executive directors. However, the conflict in the findings associated with directors' appointment globally is not yet fully resolved and suggests that the desired corporate governance is likely to emerge from within rather than exogenously, and hence be dependent on specific characteristics of each bank and its environment.

8.0 Recommendations

It is recommended that while more non-executive directors than executive directors may be appointed to the Board of Directors of deposit money banks in SSA, each bank must ensure that it puts in place a robust, effective and strong internal control systems which promote culture of prudency and professionalism in management. Appointment of non-executive directors should be

devoid of interference of the executive directors as much as possible in order to minimize the incident of conflict of interests. Also the principles-based approach to corporate governance is recommended for universal adoption as it is more flexible and dynamic.

9.0 Contribution to Knowledge

To the best of the knowledge of the author, this Work is the only academic and empirical study that introduces and applies improvised randomized experiment as an innovation in determining effect of two sets of board composition on performance of deposit money banks particularly in Sub Saharan Africa. By this, the work provides empirically stronger basis for support for regulatory preference appointment of more non-executive directors on corporate boards.

References

Adeoye, A. A. (2013). The Key Challenges of The Corporate Governance of Firms: Empirical Evidence from Sub-Saharan African Anglophone (SSAA) Countries. *Brunel University London, UK. bura.brunel.ac.uk/bitstream/2438/7654/1/FulltextThesis.pdf*

African Corporate Governance Network (ACGN 2016). State of Corporate Governance in Africa: An Overview of 13 Countries. Retrieved from www.afcgn.org.

Ailemen, I.O. & Oyero, K.B.L (2013). The Effect of Merger on Deposit Money Banks Performance in the Nigerian Banking Industry; *Journal of Applied Finance & Banking, 3(4)105-123*

Akingunola, R.O., Olusegun.A.A. & Oluseyi .A. A. (2013). Corporate Governance and Bank's Performance in Nigeria (Post – Bank's Consolidation). European Journal of Business and Social Sciences, Vol.2, No.8, pp 89-111, URL: http://www.ejbss.com/recent.aspx

Al-Baidhani, A.M. (2013). The Effects of Corporate Governance on Bank Performance**:** Evidence from the Arabian Peninsula**.** Putra Business School, Universiti Putra Malaysia. Retrieved fromhttps://www.researchgate.net/publication/271442386 on April 13, 2018.

Antonakis, J., Bendahan, S., Jacquart, P., & Lalive, R. (2014). Causality and Endogeneity: Problems and Solutions. In D.V. Day (Ed.), The Oxford Handbook of Leadership and Organizations, New York: Oxford University Press.

Association of Certified Chartered Accountants-ACCA (2018). The Governance Lesson: Carillion's Collapse. Available onhttps://www.accaglobal.com/uk/en/member/member/accountingbusiness/2018/04/corporate/carillions-collapse.html

Atuahene, R. A. (2016). Corporate Governance and Financial Performance: Evidence from the Ghanaian Banking Sector; University of Bradford Thesis (https://bradscholars.brad.ac.uk/handle/1054/)

Banff Executive Leadership (2016). Improving Governance Performance: Rules-Based vs. Principles-Based Approaches.http://www.banffexeclead.com/AcumenPDF/Governance%20Articles/Leadership%20Acumen%2016%20V10%20Governance%20Principles%20vs%20Rules.pdf

Beck, T., Fuchs, M., Singer, D. & Witte, M. (2012). Making Cross-Border Banking Work for Africa- Brief History of Banking in Africa (Brownbridge and Harry, 1998). Retrieved from http://aff.mfw4a.org/fileadmin/data_storage/documents/other-internal-documents/Making_Cross-Border_Banking_Work_for_Africa.pdf

Brown, L.D. & Caylor, M. L. (2004). Corporate Governance and Firm Performance. Retrieved from SRN: http://ssrn.com/abstract=586423 on April 14, 2018.

Chepkosgei, P. (2013). The Influence of Board of Directors Composition on Financial Performance of Commercial Banks in Kenya; University of Nairobi E-repository. Retrieved from http://erepository.uonbi.ac.ke/bitstream/handle/11295/59267/Chepkosgei_%20The%20influence%20of%20board%20of%20directors%20composition%

Dauda, R.O.S. & Hawa, A. (2016) Corporate Governance and Bank Performance: A case Study of Selected Commercial Banks in Nigeria. Retrieved from: http://repository.unilag.edu.ng:8080/xmlui/handle/123456789/983 on April 13, 2018.

ELMehdi, I.K. (2007). Empirical Evidence on Corporate Governance and Corporate Performance in Tunisia. Corporate Governance: An International Review, Vol 15, No. 6

FBN (2015, p 105). First Bank Nigeria Holdings Plc Annual Report and Accounts 2015: Chairman's Introduction

Flamini, V.; McDonald, C. & Schumacher, L. (2009). The Determinants of Commercial Bank Profitability in Sub-Saharan Africa; IMF Working Paper, No. WP/09/15.

Forbes Media (2019). Nigeria GDP $376 B As of December 2018: Profile Available on https://www.forbes.com/places/nigeria/

FRC (2019). FRC unveils Nigerian Code of Corporate Governance (NCCG 2018). https://www.financialreportingcouncil.gov.ng

Gyamerah, S. & Agyei, A, (2016). OECD Principles of Corporate Governance: Compliance among Ghanaian Listed Companies; International Journal of Advanced Multidisciplinary Research Vol.3, No.11

Herdjiono, I. & Sari, I.M.(2017)The Effect of Corporate Governance on the Performance of a Company. Some Empirical Findings from Indonesia. *Journal of Management and Business Administration, Central Europe,* Vol.25, No.1, pp33-52

Institute of Directors in Southern Africa- IoDSA (2016) King IV Report https://www.iodsa.co.za/page/KingIVReport

International Finance Corporation (IFC, 2016) Corporate Governance: Sub Saharan Africa (https://www.ifc.org/wps/wcm/connect/bf9aff0047f4dbbdad23fd299ede9589/CG+AfCGP+Program+Fact+Sheet.pdf?MOD=AJPERES

Jhingan, M.L. & Stephen, J.K. (2009). *Managerial Economics (2nd Edition).* Delhi, India, Vrinda Publications (P) Ltd.

John, E. I. (2015). Corporate Governance and Banking Sector Performance in Nigeria. Nnamdi Azikiwe University Awka African Banking & Finance Review, Vol2, No.1

Kantarelis,D.(2007) *Theories of the Firm 2nd Edition;* Inderscience Publishers, Olney, United Kingdom. http://www.inderscience.com/books/TOF_leaflet.pdf

Kaplan Financial knowledge Bank (2012) Corporate Governance: Rules-based versus principles-based approach.http://kfknowledgebank.kaplan.co.uk/KFKB/Wiki%20Pages/Corporate%20governance.aspx

King, M.E. (2016). State of Corporate Governance in Africa: An Overview of 13 Countries. https://www.afcgn.org/wp-content/uploads/2016/03/ACGN-Corporate-Governance-Report-Feb-2016.pdf

Kolawole, Y. (2018). New Corporate Governance Code Takes off January 2020 — FRC https://www.vanguardngr.com/2018/06/new-corporate-governance-code-takes-off-january-2020-frc/

KPMG (2017). Africa's Economy Continues to Develop under Robust Corporate Governance Principles. Retrieved from: https://home.kpmg.com/xx/en/home/media/press-releases/2017/06/africa-grows-under-robust-corporate-governance-principles.html

KPMG (2014). Corporate Governance and King III: South Africa. https://assets.kpmg.com/content/dam/kpmg/pdf/2016/07/Corporate-Governance-and-King-III.pdf

Love I. (n.d.). Corporate governance and performance around the world: What we know and what we don't. Development Research Group, the World Bank. Retrieved from *documents.worldbank.org/curated/.../696940ESW0P1040vey0WBRO0revised0806.d.*

Marris, Robin (1964). The Economic Theory of "Managerial" Capitalism; Glencoe, IL: Free Press of Glencoe.

Mauritius Financial Services Commission Circular Letter- (FSC, 2018). National Code of Corporate Governance; FSC Circular Letter, No. CL280218

Mitnick, B.M. (2006) Origin of the Theory of Agency: An Account by One of the Theory Originators' Katz Graduate School of Business, University of Pittsburgh (http://www.pitt.edu/~mitnick/agencytheory/agencytheoryoriginrev11806r.htm)

Mitnick, Barry M. (1973). Fiduciary Rationality and Public Policy: The Theory of Agency and Some Consequences. *Paper presented at the 1973 Annual Meeting of the American Political Science Association, New Orleans, LA. In Proceedings of the APSA, 1973 (formerly available from Xerox University Microfilms and, later, UMI Serials).*

Moyo, J.; Nandwa, B.; Oduor, .J & Simpasa, J. (2014). Financial Sector Reforms, Competition and Banking System Stability in Sub-Saharan Africa; *.Being Paper presented at the joint RES-SPR Conference on "Macroeconomic Challenges Facing Low-Income Countries" Hosted by the International Monetary Fund with support from the UK Department of International Development (DFID) Washington, DC—January 30–31.*

Nwaubani, A.N. & Ezeudu, J.I. (2015). Mergers and Acquisitions: An Approach for Addressing Crisis of Confidence in the Nigerian Banking Sector, *.ESUT Journal of Accountancy,Vol 6,No 2 PP,139-156.*

Nweze, C. (2018). Poor Corporate Governance Killing Airlines, says AMCON http://thenationonlineng.net/poor-corporate-governance-killing-airlines-says-amcon/

Ogunbiyi, S.S. & Ihjirika, P.O. (2014). Interest Rates and Deposit Money Banks' Profitability Nexus: The Nigerian Experience; Arabian Journal of Business and Management Review (OMAN Chapter) Vol. 3, No.11

Otchere, I. & Senbet, L. (2017). Financial Sector Development in Africa–An Overview. Review of Development Finance, Vol7, pp, 1-5. *(http://ac.els-cdn.com/S1879933717300544/1-s2.0-S1879933717300544*

Panda, B. & Leepsa, N.M. (2017) Agency Theory: Review of Theory and Evidence on Problems and Perspectives. Indian Journal of Corporate Governance, Vol.10, No.1, pp 74-95 Proshare (2016) Financial Reporting Council (FRC) of Nigeria: National code of corporate governance 2016'. Retrieved from

https://www.proshareng.com/admin/upload/reports/PrivateSectorCode.pdf

Rekhi, S. (n.d.) Top 3 Theories of Firm (With Diagram): Marris's Model of Managerial Enterprise. www.economicsdiscussion.net/firm/top-3-theories-of-firm-with-diagram/19519

Ross, Stephen A. (1973). The Economic Theory of Agency: The Principal's Problem. American Economic Review Vol.62, No.2, pp134-139.

Wahab, E. A. A, Janice, C.Y. H. & Peter, V. (2007). The Impact of the Malaysian Code on Corporate Governance: Compliance, Institutional Investors and Stock Performance. Journal Contemporary Accounting and Economics, Vol.3, No.2

Wasserman, N. (2006). Stewards, Agents, and the Founder Discount: Executive Compensation in New Venture. Academy of Management Journal, Vol.49, No.5, pp 960–976.

Worldatlas (2019). The Biggest Economies in Africa: World Facts. https://www.worldatlas.com/articles/the-biggest-economies-in-africa.html

Yilmaz, C. and Buyuklu, A.H.(2016). Impact of Corporate Governance on Firm Performance: Turkey Case with a Panel Data Analysis, .*Eurasian Journal of Economics and Finance*, Vol.4, No.1, pp56-72.

EFFECTS OF MONETARY POLICIES ON STOCK MARKET PERFORMANCE IN NIGERIA

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Abstract

The roles of efficient and developed capital market in an economy cannot be over emphasised. A robust and efficient capital market has positive impact on economic growth and development through a number of ways, which include mobilising capital, raising equity for investment, moderating the share values, and ensuring stability of financial market among many other roles. This paper examined the effects of monetary policies on stock market performance in Nigeria using All Share Index (ASI) as proxy for stock price. Based on the deficiency of pervious methods of estimation, Generalised Moment Method (GMM) capable of solving the problem of simultaneity or endogeneity inherent in analysing the effects of monetary policies on stock markets was used. The result

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showed that monetary policies are important in driving the performance of stock market in Nigeria. While interest rate reduces stock market performance (increase in interest rate reduces ASI), the effects of inflation and exchange rate increases are positive. Oil price, tax and growth rate of GDP produced negative significant effects on stock market performance.

Keywords: *Monetary Policies, Stock Market, All Share Index, GMM, Performance.*

1. Introduction

The importance of stock market in economic development cuts across individuals, firms and governments. It is a means of long-term savings and investment for individual shareholders. Also to the corporate entities, it provides the opportunity of long term and non-debt financial capital such that it enables firms to avoid over reliance on debt financing (Yerty & Adjasi, 2007). For government, the stock market helps to finance new projects and expand old ones. Therefore, a viable stock market is very important for countries like Nigeria that has low investment and huge infrastructural deficit.

Fundamentally, the role of the monetary authority in a nation like Nigeria is to focus on targeting inflation as a basis of interest rate adjustment (Hung & Ma, 2016). This is usually with the ultimate goal of facilitating stable growth in the economy. Iddrisu and Harvey (2017) added that, economic prosperity of individuals, firms and government is another objective of the monetary

authorities. This is because the activities of the stock market permeate the real sector through a number of channels provided by monetary policies. These channels include debt instruments (interest rate), assets prices (stock prices), consumption, and wealth effects (Laopodis, 2013; Iddrisu & Harvey, 2017). Implying that interest rate volatility affects stock performance negatively.

In specific terms, how do monetary policies affect stock market activities? Considering interest rate, the present value of future earning flow would be lowered if there is an increase in the rate of interest. This will result into a depression in equity market, because the value of firms' assets relative to their replacement cost is likely affected (Prabu, Bhattacharyya, & Partha, 2016). Besides, higher interest rate causes investments other than stock (bonds) to be more attractive. This of cause would then require an increase in the return on stocks and subsequent reduction in its price. Bernanke (2002) and Prabu et al., (2016) had maintained that stocks are viewed as relatively risky investments, investors generally demand an equity premium for holding stocks. Therefore, the expected yield on stocks *ceteris paribus* can rise only through a decline in the current stock price. In all, the price and return on stock are likely to be influenced by the activities of the monetary authorities.

The performance of the stock market in Nigeria has not been encouraging in the last one decade. The All Share Index (ASI) reached its peak of 57,990 in 2007. The peak level was un-sustained as it declined drastically to 20,730 in 2011. Although, the ASI improved to 41,329 two years after, it stays at 26,874

which is less than half of its value a decade ago. Market capitalisation is not an exception among the indicators of the stock market that are under performing. Despite the fact that it grew to N19,077 billion in 2013, it declined to N16,185 in 2016. Also, Nigeria's Stock Market Capitalisation (SMC) is much lower compared with countries under Organization for Development Cooperation tagged ([1]D-8 countries.) For instance, while Nigeria's SMC was $37.2 billion in 2017 that of Turkey, Indonesia and Malaysia were $227.5 billion, $520.6 and $455.7 respectively.

Having discussed the link between stock market performance and monetary policies and the poor performance of the former in Nigeria, it is expedient to empirically analyse the link. Expressed differently, this study analysed the effects of monetary policies on the performance of Nigeria's stock market. This paper is particularly desirable because of the dearth of studies on the subject matter especially in Nigeria. Most of the studies on Nigeria stock markets have focused on the impact of stock market development on economic growth in Nigeria (Okodua, 2013; Okonkwo, Ogwuru, and Ajudua, 2014). Some other studies have considered impact of oil price shocks on stock markets performance (Akinlo, 2014; Asaolu & Ilo, 2012; Salisu & Isah, 2017). The few studies that have considered the effects of monetary policies on stock market in Nigeria suffered a number of econometrics challenges. For instance, while Abaenewe and

[1] D-8, also known as Developing-8, is an organization for development cooperation among the following countries: **Bangladesh**, **Egypt**, **Indonesia**, **Iran**, **Malaysia**, **Nigeria**, **Pakistan** and **Turkey.**

Ndugbu (2012) used Ordinary Least Square (OLS), Okpara 2010 adopted Error Correction Model (ECM), Ekene (2016) utilised Vector Autoregression (VAR).

The deficiency of the various methods of estimation adopted in previous study is in their inability to solve the problem of simultaneity or endogeneity problem that is inherent in joint determination of stock market variables and monetary policies. This is so because stock market variables can instantaneously react to changes in monetary policies. Moreover, the challenge of omitted variable could occur as the monetary policy and stock markets variables may jointly react to some other economic variables like economic growth, hence the possibility of bias. These factors are capable of influencing and complicating the identification of the responsiveness of stock prices to monetary policy (Rigobon & Sack, 2004).

The next section reviews the literature while section three explores the theoretical framework and methodology behind the study while the empirical evidence is provided in section four, and section five discusses the conclusion and policy recommendations.

2. Literature Review

Clarifications of the key concepts that appear in this study becomes expedient in view of the dynamism of the subject matter. We start with monetary policy which is one of the two legs of macroeconomic policy, the other leg is fiscal policy. The earlier definitions of monetary policy have emphasized the use of money. For instance, Holtrop (1963) had opined that monetary policy is

“the art of managing money”. More elaborately, CBN (2006) described monetary policy as sets of actions the monetary authority, usually the Apex bank, takes for the purpose of regulating the cost, supply and value of money in the economy, with the aim of achieving the macroeconomic goals of the government. According to the Federal Reserve System (2017), the monetary policy goals most often influences economic activities.

Another key concept of this study is the stock market. It is one of the aspects of the financial system. Yasav (2017) described stock market as a hub where facilities are provided to the investors to trade in financial securities such as Bonds, Shares and Debenture and others. The basic variables often used to measure the performance of stock market are, Market Capitalization and All Share’s Index. For many countries, the objectives of monetary policy are explicitly stated in the laws establishing the central bank, while for others they are not. The objectives of monetary policy may vary from country to country but there are two main views. The first view calls for monetary policy to achieve price stability, while the second view seeks to achieve price stability and other macroeconomic objectives. The Central Bank of Nigeria, like other central banks in developing countries, achieve monetary policy goals through the amount of money supplied.

Several theories have evolved linking government policies to investment in economic literature some of these theories include: the Neo-classical school, Keynesian school, the Ricardian equivalence theory, standard dividend discount model. The relationship between stock market and monetary policy can be

established through two channels. The interest rate channel and the exchange rate channel, the former could be explained by classical monetarism, as well as in modern literature such as the Keynesian IS–LM (investment saving–liquidity preference money supply) model. A fall in the rate of interest stimulates the demand for credit and increase aggregate demand, including the demand for investing in the capital market. Keynes (1936) opined that an expansionary monetary policy reduces the interest rate, which if lower than the marginal productivity of capital broadens investment demand until the marginal productivity of capital is equalized to the lower interest rate.

On the other hand, currency depreciation will increase the importing expenditures of raw materials for domestic manufacturers, which is expected to have a negative impact on their cash flow and on stock prices. Thus, the net effect of the exchange rate variation on stock prices is undetermined.

Several studies have empirically examined, the impact of monetary policies on stock markets performance across the world. Some of these studies and papers were examined in this section. Starting with Zervou (2013) that studied a segmented financial markets model where only the agents who trade stocks encounter financial income risk. In such an economy, the welfare-maximizing monetary policy attains the novel role of redistributing the traders' financial market risk among all agents in the economy. In order to do that, optimal monetary policy reacts to financial market movements; it is expansionary in bad times for the financial markets and contractionary in good ones. In their quantitative

exercise, a dividend shock generates different policy responses and consumption paths among the optimal and the 2% inflation targeting policy. The latter implies large distributional welfare losses and risk sharing losses of similar magnitude with those generated by business-cycle fluctuations. In addition, the optimal monetary policy does not minimize stock price volatility and implies slower inflation volatility than other commonly used policies.

Zare, Azall M. and Habibullah (2013) examined the asymmetric response of stock market volatility to monetary policy over bull and bear market periods in ASEAN5 countries (Malaysia, Indonesia, Singapore, the Philippines and Thailand) using the well-tested pooled mean group (PMG) technique. Bull and bear markets are identified by employing Markov-switching models and the rule based non-parametric approach. Estimating the models using monthly data from 1991:1 to 2011:12, their results show that a contractionary monetary policy (interest rate increases) has a stronger long-run effect on stock market volatility in bear markets than bulls consistent with the prediction of finance constraints models.

Tang, Yong, Xiong, Zhao and Zhanget al (2013) analysed the impact of monetary policy changes on the monetary market and stock market in China. The changes of two major monetary policy variables, the interest rate and the required reserve ratio, are analyzed in a study period covering seven (2004-2011) years on the interbank monetary market and Shanghai stock market. They found that the money market is related to the macroeconomic

trend and they also found that the monetary change surprises both of lowering and raising bring significant impacts to the two market and the two markets respond to the changes differently. Their results suggest that the impact of fluctuations is much larger for raising policy changes than lowering changes in the monetary market on policy announcing and effective dates. This is consistent with the ‘‘sign effect’’, (i.e. bad news brings a greater impact than good news). By studying the event window of each policy change, they also find that the ‘‘sign effect’’ still exists before and after each change in the monetary market.

Morais, Peydro, Ruiz (2015) analysed the effects of European Central Bank (ECB) monetary policy on the Spanish stock market returns. The data sample run all over the euro period: from January 1999 to December 2014. This period is split into two well-defined sub-periods based on the structural change brought about by the financial crisis in August 2007. Spanish stock market returns are approximated by the returns of the selective index Ibex 35 while monetary policy of the Eurozone is measured by the nominal target interest rate on the last day of the month. The results show that monetary policy shocks have a considerable effect on the Spanish stock market returns in the long run. The results also show that monetary policy shocks of the ECB monetary policy lead to a different long-term effect in the pre-crisis period and the post-crisis sample.

Edwin, Indranil and Partha (2016) used "event study" and "identification through heteroscedasticity" methodology to study the impact of Indian monetary policy announcements on stock

indices during 2004-2014. Although stock indices decline after announcement of policy tightening, the results are statistically insignificant. Unanticipated policy announcements have weakly significant impact, particularly on banking stocks. Dominance of the banking channel and ineffectiveness of the asset price channel in monetary transmission could have contributed to this non-confirmative result. Finally, (Unconventional Monetary Policies (UM announcements of the US Fed also do not impact Indian stock returns except for a few events of Large scale asset purchases (LSAP) in 2008 and Operation Twist in 2011.

Hung and Ma (2016) re-examined the effect that price movement expectations of traders in different stock markets have on monetary authorities when deciding monetary policy. They used heterogeneous agent models to estimate the trading strategies of chartists who use expected stock price movements as the basis of their trading strategy. In contrast to the traditional view that monetary policy is not subject to the influence of the stock market, they found that during stock market bubbles (stock market crises), an increase in the fraction of chartists influences subsequent policy decisions to raise (lower) interest rates. This is mainly because monetary authorities are aware of the impact of abnormal stock price volatility on the overall economy. In the year following the occurrence of a bubble (crisis), there were slight decreases (increases) in interest rate levels. However, policymakers' adjustments of interest rate policy during bull and bear markets may encourage stock price movements.

Marinescu, Alexandra. and Lupu, (2017) investigated the microeconomic effects of the monetary policy conduct in the United States by observing the response of the domestic capital market with respect to unexpected changes in the Fed Funds rate target in discretionary as opposed to rules-based policy eras. These dichotomous situations are identified by means of a model with structural breaks applied on the deviations of the effective Fed Funds target rate changes from the Taylor (1993) rule implied rate change. Employing an event-study analysis, they measure the response of the S&P500 index to unexpected Fed Funds rate changes, determined from comparison with the futures rates. They find strong evidence which suggests that the monetary policy based on rules spawns consistent rational stock market reactions, while a discretionary policy increases microeconomic uncertainty. They analysed the implications of this effect at the level of the risk-taking monetary transmission channel and also provide evidence with respect to the accounts of a monetary policy based on forward rate guidance on the equity market.

Iddrisu et al., (2017) took a comprehensive look at the monetary policy and stock market dynamics from the African perspective, using five indicators namely; S&P global equity indices, inflation rate, money and quasi money growth (M2), real interest rate and GDP growth in a panel VAR model. The panel VAR approach addresses the endogeneity problem by allowing the endogenous interaction between the variables in the system of equations.

The study models the dynamic relationship in the system of panel VAR equations with data from 1979:2013, performing cross-

sectional dependence, unit-root and cointegration tests, and thus estimated the contemporaneous regression model. The study established that, the stock markets of the 12 African countries are positively affected contemporaneously by their respective monetary policies through the interest rate channel, but could not find evidence of the reverse reaction.

3. Methodology

3.1 Model Specification

Arising from the theoretical postulations discussed in section 2, the monetary factors affecting stock market performance is presented in equation (1). Aside the monetary variables such as interest rate, exchange rate, money supply and inflation rate, other variables suggested by previous studies are added to the model.

STOCKP =f(INTR, EXCH, INFL, M2, GRGDP, OILP, TAX) (1)

Where INTR is real interest rate, EXCH is exchange rate, INFL inflation rate, M2 is money supply, GRGDP is growth rate of GDP, OILP is international price of crude oil, TAX is taxation, STOCKP is the all share index. Equation (1) is translated to econometric model expressed in equation (2).

$$STOCKP_t = \beta_0 + \beta_1 INTR_t + \beta_2 EXCH_t + \beta_3 INFL_t + \beta_4 M2_t + \beta_5 GRGDP_t + \beta_6 OILP_t + \beta_7 TAX \quad (2)$$

3.2 Estimation Technique

In view of the possibility of endogeneity in the model presented in equation (2), the Generalised Moment Method (GMM) was adopted as the estimation technique. Expectedly, the correlation result showed a strong relationship between all share index (STOCKP) and interest rate (INTR) hence there is the possibility

of endogeneity problem in the model. The Generalised Method of Moment (GMM) was used to estimate the model. The reason for using the GMM was to allow the identification of variables and control the potential endogeneity of all the explanatory variable. Instruments must satisfy two conditions: (1) they are correlated with the endogenous regressors they are going to replace (2) they must be orthogonal to the error terms. It follows that exogenous regressors are instruments for themselves. Although, there several ways of testing overidentifying restrictions, however, the method used in this study is J-test. This method involves a number of steps which include estimating the specific equation by Instrumental Variable and obtaining the residuals, regressing the residuals on all exogenous variables and computing the F-statistic to test the null hypothesis that all instruments are jointly insignificant.

4. Results and Discussions

4.1 Descriptive Analysis

Presented in Table 1 is the descriptive statistics of the variables used in the study. While the all share index was used to proxy the performance of the stock markets, the others (interest rate, inflation, exchange rate and money supply) are proxies for monetary policies, tax and oil prices others are control variables. The average all share index of Nigeria's stock market between the 1985 and 2016 is 14298. The minimum value of 127 was recorded in 1985 while the maximum of 57990 was recorded in 2008. Regarding the exchange rate (EXCH), while the minimum value was ₦0.80 to 1$ in 1985, the Naira depreciated to ₦169.7 to 1$ in 2014, although, the average in the period under consideration is

₦76.6 to 1$. Moving to the measures of the monetary policies, the average rate of inflation (INF) in Nigeria stood at 20.5% in the period, it rose to the maximum of 76.4%, while its lowest was 1.90%.

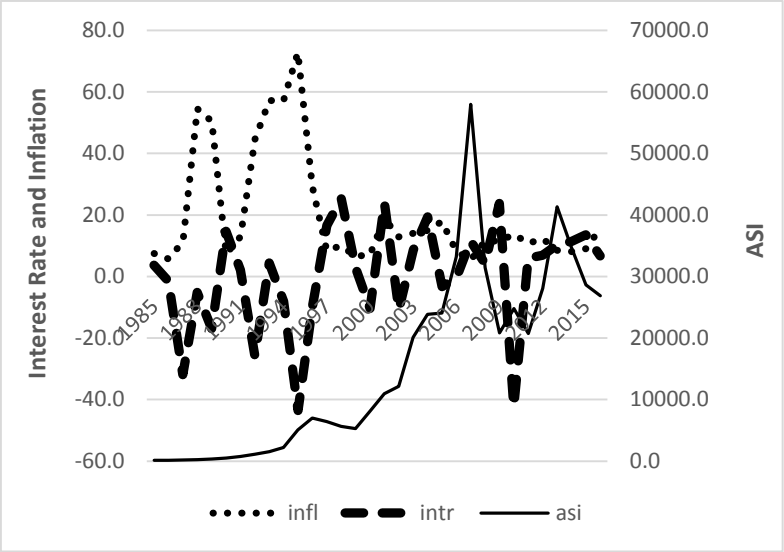
Table 1: Descriptive Statistics

	EXC	GRG	INF	INT	M2	OIL	STOC	TA
Mean	77	5	20.	19	4010	38	14298	749
Median	97	5	29	18	868	22	7552	270
Maximu	169.	34	76.	32	1930	96	57990	327
Minimu	0.80	-11	1.9	9	23	11	127	4
Std.	63	7	44	5	5910	30	15049	969
Skewne	0	2	1	0	1	1	1	1
Kurtosis	1	10	3	4	4	2	3	4
Obs	30	30	30	30	30	30	30	30

Source: Authors calculation

The trend of Growth Rate of All Share Index (ASI) that summarises the status of stock market performance in Nigeria is also presented in Figure 1. The figure showed that ASI was relatively positive between the period considered, except between 1997 and 1999 as well as due to global financial crisis declined in year 2008, 2009 and 2011.

Figure 1: Relationship between All Share Index, Inflation and Interest Rate.



The trend of GASI after 2011 has unassumingly been positive; it was 35.45% in 2012 and 47.19% in 2013.

4.2: Empirical Analysis

The result of the GMM estimated model is presented in Table 2. Starting with the preliminary results, the presence of endogeneity in the model was tested using the Durbin and Wu-Hausman tests statistics. Conventionally, the null hypothesis of the Durbin and Wu–Hausman tests is that the variable under consideration can be treated as exogenous. In interpreting the Hausman result, when the p-value is smaller than 0.05, we reject the null hypothesis and accept the alternative. The result showed that Durbin (3.61) and Wu–Hausman test (12.9) statistics are highly significant, that is

less than 5 percent, therefore, we reject the null hypothesis of exogeneity and we must conclude that there is endogeneity problem in the model.

Table 2: Estimated Result of the Effects of Monetary Policies on Stock Market Performance (GMM)

Instrumental variables (2SLS) regression Number of obs = 30
Wald chi2(7) = 489.94
Prob > chi2 = 0.0000
R-squared = 0.9365
Root MSE = .46838

asi	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
intr	-.1446046	.0934638	-1.55	0.122	-.3277902	.0385811
tax	.406278	.3024848	1.34	0.179	-.1865813	.9991372
oilp	-.2114876	.3486072	-0.61	0.544	-.8947451	.4717698
m2	.4913721	.3940151	1.25	0.212	-.2808834	1.263628
infl	.0239036	.0070492	3.39	0.001	-.0377199	-.0100874
grgdp	-.0611271	.1087441	-0.56	0.574	-.2742617	.1520074
exch	.6833425	.5367092	3.27	0.003	-.3685882	1.735273
_cons	-4.956968	9.699446	-0.51	0.609	-23.96753	14.0536

Instrumented: intr
Instruments: tax oilp m2 infl grgdp exch empl elec

Durbin (score) chi2(1)	=	3.61766 (p = 0.0572)
Wu-Hausman F(1,23)	=	12.93162 (p = 0.0009)

Source: Authors calculation

Interest rate Effect.

The result showed that real interest rate has negative and insignificant effects on stock price. This is not un-expected as the high interest rate in Nigeria may not have attracted much fund from foreign investors as expected. Assefa, Esquefa and Mollick (2016) had remarked that due to the need to attract foreign capital, developing market economies may be reluctant to cut rates that would decrease the attractiveness of their fixed-income financial assets in local currency. However, several factors other than interest rate influence the flow of funds from foreign countries. The author equally found insignificant effect of interest rate on stock price previously. In the case of exchange rate, positive significant impact is produced on stock market price. Implying that depreciation of exchange rate increases the price of stock. Similar result was reported by Hussein and Mgammal (2012) and Ajayi and Mougoue (1996).

Inflation Rate Effect

Another important monetary policy variable is inflation rate. The variable has positive significant effect on rate return of stock market meaning that increase of inflation produces increase in the stock prices. This agrees with the findings of Charles et al (2008).

Effect of other variables

Regarding money supply, this study found positive but insignificant effects on stock price, previous studies have produced contradictory results. While Norfeldt (2014) reported negative significant effects of money supply on stock prices, the report of Rahman and Mustafa (2008). We equally considered

some control variables in the estimated model, some of which are oil price, tax and growth rate of GDP. These variables have insignificant effect on stock market price.

5.1 Conclusion and Policy Recommendations

The effects of monetary policies on stock market performance was analysed in this paper. All Share Index was used as proxy for stock price. The deficiency of the various methods of estimation adopted in previous study occasioned the used of GMM for this paper. The potential problem of simultaneity or endogeneity is inherent in joint determination of stock market variables and monetary policies. This is so because stock market variables can instantaneously react to changes in monetary policies. The result showed the importance of monetary policies in driving the performance of stock market in Nigeria. While interest rate causes stock market performance to decline, inflation and exchange rate devaluation increases it. The control variables (oil price, tax and growth rate of GDP) were not found important in driving the performance of stock market.

Policy Recommendations

I. Reduction in interest rate is required as reliance on foreign investors in the stock markets might not be sustainable.

II. Indecisive issues clouding exchange rate policy should be cleared. Exchange rate stability will give right signal to investors, both within and outside of the country, to invest in the economy, either through portfolio investment or direct investment.

III. Efforts must be made by monetary authority to return inflation to single digits in the country.

References

Abaenewe Z, C. and Ndugbu M. O. (2012) "Analysis of the Effects of Monetary Policy Development on Equity Prices in Nigeria" West Africa Journal of Industrial and Academic Research. Volume 5, Number 1, December 2012

Ajayi, R. A. & *Mougoue*, M. (*1996*): On the Dynamic Relation between *Stock* Prices and *Exchange* Rates. *Journal of Financial Research,* .19, xi-x20.

Akinlo E. O. (2014) A unidirectional causality runs from oil price change to *stock market* European *Journal of Sustainable Development* (*2014*), 3, 2, 33-40. ISSN: 2239-5938;

Asaolu, T. & B. Ilo, 2012. The Nigerian stock market and oil price: A cointegration analysis. *Kuwait Chapter of Arabian Journal of Business and Management Review*, 1(5): 39-54.

Assefa, T. A., Esqueda, O. A., & Mollick, A. V., (2016) Stock Returns and Interest Rates around the´ World: A Panel Data Approach. *Journal of Economics and Business* http://dx.doi.org/10.1016/j.jeconbus.2016.10.001

Bernanke, B. S. & Reinhart, V. R. (2004). Conducting monetary policy at very low short-term interest rates. *American Economic Review,* 94 (2), 85-90.

Bernanke, Ben S., (2002) Deflation: Making Sure 'It' Doesn't Happen Here," Remarks at the National Economists Club, Washington DC, November 21st, 2002.

CBN (2006) What Is Monetary Policy? Monetary Policy Series, CBN/MPD/Series/01/2006.

De Santis, Giorgio, and Bruno Gerard, 1998, How big is the premium for currency risk? *Journal of Financial Economics* 49, 375-412.

Edwin P. A, Indranil B. & Partha R., (2016) Is the Stock Market impervious to Monetary Policy Announcements: Evidence from Emerging India, *International Review of Economics and Finance,* http://dx.doi.org/10.1016/j.iref.2016.09.007

Ekene, O. C. (2016). Impact of monetary policy on stock returns in Nigeria. Middle –East *Journal of Scientific Research*, 24(5), pp.1779

Federal Reserved System (2017) Monetary Policy Report, July 7, 2017, Federal Reserve System

Holtrop M. W. (1963) "Monetary Policy in an Open Economy: Its Objectives Instruments, Limitations and Dilemmas" *Essays in International Finance* No. 43, September 1963.

Hung K. & Ma, H. T. 2016). Does Monetary Policy Have Any Relationship with the Expectations of Stock Market Participants? *Journal of Multinational Financial Management*
http://dx.doi.org/10.1016/j.mulfin.2016.11.004

Hussein M. & Mgammal H. (2012) The Effect of Inflation, Interest Rates and Exchange Rates on Stock Prices Comparative Study Among Two GCC Countries. *International Journal of Finance and Accounting* 2012, 1(6): 179-189

Iddrisu, S., H. & Simon K., A, (2017), The Impact of Monetary Policy on Stock Market Performance: Evidence From Twelve (12) *African Countries. Research in International Business and Finance* http://dx.doi.org/10.1016/j.ribaf.2017.07.075

Laopodis, T. L. (2013), Monetary policy and stock market dynamic across monetary regimes. *Journal of International Money and Finance*. 33 (2013) 381-406.

Marinescu I., Alexandra H. & Lupu R. (2017) Dichotomous stock market reaction to episodes of rules and discretion in the US monetary policy. *Economic Modelling* (2017) 1-11

Martin, R., Martin, P. Y., Smith, J., & Hewstone, M. (2007). Majority versus minority influence and prediction of behavioral intentions and behavior. *Journal of Experimental Social Psychology*, 43, 763-771.

Mishkin FS (2001). The International Lender of Last Resort: What are the issues? In The World's New Financial Landscape: Challenges for Economic Policy. Horst Siebert, ed. Berling: Springer-Verlag pp. 291 -312.

Morais, B., J. L. Peydro, and Ruiz, (2015). The International Bank Lending Channel of Monetary Policy Rates and QE: Credit Supply, Reach-for-Yield, and Real Effects, International Finance Discussion Papers 1137, Board of Governors of the Federal Reserve System (US).

Mun H. W, Siong E. C, & Thing T. C. (2008). "Stock market and economic growth in Malaysia: Causality test" *Asian Social Science*, 4:86-92.

Norfeldt (2014) “The effects of Monetary Policy on Stock Market Returns” A study of how the actions of the Federal Reserve affect the returns on the American stock market.

Okodua, H. & Ewetan, O. (2013) ‘Stock Market Performance and Sustainable Economic Growth in Nigeria: A Bounds Testing Co-integration Approach’, *Journal of Sustainable Development*; Vol. 6, No. 8. http://dx.doi.org/10.5539/jsd.v6n8p84

Okonkwo, O., Ogwuru, H. & Ajudua, E. (2014). Stock market performance and economic growth in Nigeria: An empirical appraisal, *European Journal of Business and Management,* 6(26), 33 – 42..

Okpara, G. C. (2010) “Analysis of Weak-Form Efficiency on the Nigerian Stock Market: Evidence from GARCH Model”, *The International Journal of Applied Economics and Finance,* 4 pp 62-66

Patro D. K., Wald J. K., & Wu Y. (2002), “Explaining exchange rate risk in world stock markets: A panel approach” *Journal of Banking & Finance* Volume 26, Issue 10, October 2002, Pages 1951-1972

Phylaktis K. & Ravazzolo F. (2005) Stock market linkages in emerging markets: implications for international portfolio diversification. Int. Fin. Markets, Inst. and Money 15 (2005) 91–106

Prabu E., Bhattacharyya I., & Ray Partha (2016) Is the stock market impervious to monetary policy announcements: Evidence from emerging India. *International Review of Economics & Finance*, Volume 46, November 2016, Pages 166-179

Rahman & Mustafa (2008). Influences of Money Supply and Oil Price on U.S. Stock Market *North American Journal of Finance and Banking Research Vol. 2. No. 2. 2008.*

Rigobon & Sack, (2004). "Response of Spanish stock market to ECB monetary policy during financial crisis"

Salisu A. S. & Isah K. O., (2017). "Revisiting the oil price and stock market nexus: A nonlinear Panel ARDL approach" *Economic Modelling*

Tang T., Yong L., Xiong J., Zhao F. & Zhang Y. (2013) Impact of monetary policy changes on the Chinese monetary and stock markets. Physica A 4435-4449.

Yartey CA, & Adjasi CK (2007). Stock Market Development in Sub Saharan Africa: Critical Issues and Challenges", 2007 IMF Woking Paper WP/07/209

Yasav (2017) "Stock Market Volatility - A Study of Indian Stock Market" *Journal for Research Analysis*. Volume 6, Issues 4, 2017.

Zare R, M. Azall M. & Habibullah M. S. (2013) Monetary Policy and Stock Market Volatility in the ASEAN5: Asymmetries over Bull and Bear Market. *Procedia Economics and Finance* 7 (2013) 18 – 27

Zervou A. S (2013) Financial market segmentation, stock market volatility and the role of monetary policy. *European Economic Review* 63, 256-272

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