Volume: 3 Issues: 12 [June, 2018] pp. 49 - 62]
International Journal of Accounting, Finance and Business
eISSN: 0128-1844
Journal website: www.ijafb.com

AN INVESTIGATION INTO OPERATIONAL RISK IN COMMERCIAL BANKS: EMPIRICAL EVIDENCE FROM NIGERIA

Olalere Oluwaseyi Ebenezer[1], Aminul Islam[2], Wan Sallha Yusoff[3], Zelhuda Shamsuddin[4]

[1]School of Business Innovation and Technopreneurship, Universiti Malaysia Perlis, 01000, Kangar, Perlis, Malaysia. Email: oluwaseyi218@gmail.com
[2] School of Business Innovation and Technopreneurship, Universiti Malaysia Perlis, 01000, Kangar, Perlis, Malaysia.
[3] School of Business Innovation and Technopreneurship, Universiti Malaysia Perlis, 01000, Kangar, Perlis, Malaysia. Email: wansallha@gmail.com
[4] Faculty of Economics and Management Sciences, Universiti Sultan Zainal Abidin, Address: 21030 Kuala Terengganu, Terengganu, Malaysia

Accepted date: 14 February 2018 **Published date**: 24 June 2018

To cite this document: Olalere, O. E, Aminul, I., Yusoff, W. S., & Shamsuddin, Z. (2018). An Investigation into Operational Risk in Commercial Banks: Empirical Evidence from Nigeria. *International Journal of Accounting, Finance and Business (IJAFB)*, 3(12), 49 - 62.

Abstract: *The study was designed to explore operational risk in banking industry. The study identified that existing studies are sketchy in developing economies while most studies are largely theoretical and have lesser empirical evidence. Data on audited financial reports of selected sixteen (16) commercial banks over the period of 2009 to 2015 have been collected making up to 112 observations. Panel data approach is employed in the study for the analytical model which run Hausman test for random or fixed effect choice and hypothesis testing. The firm performance is measured by net interest margin while operational risk is proxy by cost to income and total operating expenses to total assets ratio. The controlled variables used in this study include bank size and GDP growth rate. Based on the random effect analysis in the model, bank efficiency ratio (ER) has a negative significant effect on firm performance, suggesting that the lower cost to income ratio, is the better the bank performance in terms of Net Interest Margin. Operating expenses ratio has a positive significant effect on firm performance. The firm size is not an important determinant to the firm performance of commercial banking sector in Nigeria, as compared to operational risk. GDP play an important role the performance of commercial banks during the period of study. Hence, this paper contributes to the understanding of the dynamic nature of operational risk and suggest that further study can explore the effects of operational risks on banks efficiency using wider time-frame.*

Keywords: *Operational Risk, Firm Performance, Financial Institution, Commercial Banks*

Introduction

The ever economic events that surrounds the financial activities of financial institutions has validated the theoretical fact that the nucleus of banks is intertwined with risks and copious financing opportunities (Suleiman & Abdullahi, 2011; Alper & Anbar, 2015). In the quest to survive severe market competitions and intricacies, financial ordeals and constraints, financial institutions are kin to boldly engage risks they rarely understand (Enofe, Ekpule, Onobun, & Onyekweni, 2015; Stephen, 2015). The issues regarding operational risk is still a relatively under-explored area in the field of finance (Yusoff et. al., 2016). Operational risk is quite different from other risks encountered by banks because it is asymmetric, reducing banks profitability mostly through the provision of loss, as well as having a negative mean due to losses suffered either from the external environment or through inadequate or failed internal processes, people and systems of the bank (Cummins, Lewis, & Wei, 2006). The Basel committee on banking supervision (2003) reform Basel accord II on banking supervision have expanded the knowledge of operational risk management which indicates that the wider trends such as globalization, the expansion of the business environment and increased sophistication in financial services, as well as the increasing demands for greater corporate accountability worldwide, reinforce the need for proper management of operational risk.

The occurrence of operational risk in financial institutions is often linked to small losses in operation that might become increasingly high. Basel Committee (2003) define operational risk as the loss resulting from inadequate or failed internal processes, people and systems or from external events. The explanation focused on four operational risk event causes, which are external events, systems, processes and people. According to Jarrow (2008), operational risk are of two types. The first type is related to risk of loss caused by the operating system of a company (i.e., investment or transaction failure) either caused by legal considerations or caused by an error in production (or in the back office) (Jarrow, 2008). The second type is related to the risk of a loss caused by incentives, which include both mismanagement and fraud; this represents an agency cost that occurs because of the separation of a company's management and ownership. These two types of operational risk losses transpire with recurrent regularity, and they might be minor or disastrous (Jarrow, 2008). Therefore, managing operational risk encompasses an array of approaches and methods that fundamentally work for two purposes, which are prevention of catastrophic losses and reducing average losses (Chapelle et al., 2008).

Globally, the sophistication of operating risk and fraudulent accounting practices in banking sector is on the rise which is presumably recurrent as a result of institutional and environment factor (Akinyele & Willy, 2015). The quantum of frauds and forgeries in recent years dictate that banks strengthened their operational risk management framework in the areas of internal control and security system to reduce the incidence of fraud (Olukotun *et al.*, 2013). The challenges popping up from various advancement in operations and services are overwhelming, as technology explodes, so does the sophistication of operational risk (Akinyele & Willy, 2015). Olukotun *et al.* (2013) refers to fraud as an act of dishonesty, deceit and imposture, which often includes embezzlement, theft or an attempt to steal or unlawfully obtain, misuse or harm the asset of the bank, Bank Administration Institute (1989) cited in (Ogunleye, 2000).

The report of NDIC (2014) argued that bank owners and managers have compounded the problem of weak management because of unprofessional behaviour. Therefore, many distressed banks experience a high incidence of frauds because inexperienced staff are relatively being saddled with management of some banks. This has reflected in the banks high

rate of labour turnover, inadequate internal control and poor credit qualities. Fraud is one of the major causes of bank failure and the number of fraud that occurs in Nigeria's banks is so alarming with the overall effect on banks financial performance. The cases of fraud and forgeries increased to 9,929 at end December 2016 from 9, 164 reported at end June 2016. While the actual loss is N1.003 billion in 2016, the total amount lost to fraud was to the tune of about N4.12 billion. Therefore, the objective of this study is to examine the effect of operational risk on the financial performance of commercial banks in Nigeria.

Literature Review

Early theoretical studies on operational risk were investigated by (Power, 2005; Cummins, Lewis & Wei, 2006; Jarrow, 2008), and more recently by Maytham (2013), Aruwa and Musa (2014). Then, in order to outline what operational risk truly means, little theoretical and empirical studies were held. Even in most recent literature, the determinant of operational risk is mostly discussed in a little detail or perhaps only given little empirical thought. Accordingly, the definitions, responsibilities, concepts of error and of loss, and potential risk management jurisdictions are mutually constitutive. Needless to say, what actually defines operational risk event is always institutional rather than a natural fact. Since agency cost could results in operation loss event, it is recognized as a significant force in economics, and they have received significant study in the corporate finance literature as key determinants of the firm's capital structure and dividend policy (Brealey & Myers, 2004; Yusoff et. al., 2015).

Operational Risk and Firm Performance Nexus

The study of Cummins, Lewis and Wei (2004) examines the impact of operational risk on stock returns using three factor model. It was emphasized in the study that the market value response is larger for insurers than for banks, implying that the market value loss significantly exceeds the amount of the operational loss reported. This suggests that such losses have a negative impact on future cash flows. Similarly, institutions with higher market value proportionately exhibits larger losses. This implies that operational loss events produce a stronger market value impact for institutions with stronger growth prospects. According to Power (2005), operational risk plan comprises of some paradox and challenges, by which the banking operations can be broadened via enforcing self-regulations. The study established that type of operational risk has been successfully institutionalized and pressure in three areas through the Basel II banking regulations; it includes representing the importance of operational risk such as definitional issues, data collection, and extents of quantification. In addition, the study of Flores, Ponte and Rodrıguez (2006) emphasized that conniving and scheming operational risk events can be reduced through information system (IS) by introduction of new methods and policies. In view of this, Laviada (2007) asserted that organization's internal controls can be reinforced and underpin with the well-ordered structure of operational risk management. In organizing operational risk, a whole new method of completion and execution is emphasized by labelling internal audit.

Similarly, Al-Tamimi, Miniaoui and Elkelish (2015) examined the relationship between financial risk and Islamic bank's performance in the Gulf Cooperation Council (GCC). The study selected 11 of the 47 Islamic banks of GCC region and the bank performance measure employed are return on asset and return on equity, while the proxy for operational risk was cost to income ratio. Thus, using regression analysis, the study found that there is a significant negative relationship between operational risk and Islamic bank's performance in the GCC

region. Also, Maytham (2013) also examined the relationship between operational risk and bank performance in Malaysia. The study uses return on asset and return on equity as a proxy for banks performance while EBIT/total assets was used as operational risk indicator. Using a regression analysis with GLS estimation, the hypothesis of the study found that operational risk have significant influence on return on asset and return on equity. Hence, the findings of the study supported the significant relationship between operational risk and bank performance.

Precisely, unlike market and credit risk, operational risk is a pure risk category and this implies that operational events lead exclusively to negative losses. Decomposition of operational risk event was elaborated in the study of (Olukotun *et al.*, 2013) to includes fraud, employment practices and workplace safety, clients, products and business practices, damage to physical assets, business disruption and system failures and execution, delivery and process management. In a more elaborate fashion, the blueprint of operational risk can be categorize into people risk which could be as a result of moral hazard risk, ethics risk and human error risk. Legal risk includes compliant risk and dispute risk, system risk includes hardware risk, software and model ICT risk while external risk includes event risk, client risk, security risk and supervisory risk. The hypotheses of the study was formulated in the next section.

Hypothesis Development

The study by Cummins et al. (2006) stressed that banks expenditures on the management of operational risk may as well be reduced to the barest minimum, where the marginal expenditure and the marginal reduction in expected losses from operational events will equal. In other words, by managing operational risk, future projected cash flows can be maximized by banks through reduction of the projected costs of operational loss events. In the same vein, Isshaq and Bokpin (2009) suggest that poor management of operational risk has an impact on firm performance by which an increase in operational losses through service delivery can minimize expected profit. As a result, operational risk exposures can have an impact on banks' revenues and net worth. The study of Ebrahim et al. (2013) and Bekele (2015) posits that a positive significant relationship exist between operational risk and firm performance. Thus, some previous studies found that there is a significant positive relationship between operational risk and firm performance of banks Ali et al. (2011), Ashraf et al. (2007), Demirovic and Thomasn (2007), Jacobson et al. (2006), Dinger and Hagen (2009) while some study found a negative significant relationship (Muriithi, 2016; Al-Tamimi et al., 2015; Aruwa & Musa, 2014; Nofiyanti, 2014; Yousfi, 2014). Therefore, the hypothesis for this study for effect of operational risk on financial performance of banks is:

H_1: Operational risk impact on firm performance of commercial banks in Nigeria.

$H_{1.1}$: Bank Efficiency Ratio have a negative impact on firm performance of commercial banks in Nigeria

$H_{1.2}$: Operating Expenses Ratio have a negative impact on firm performance of commercial banks in Nigeria

Research Methodology

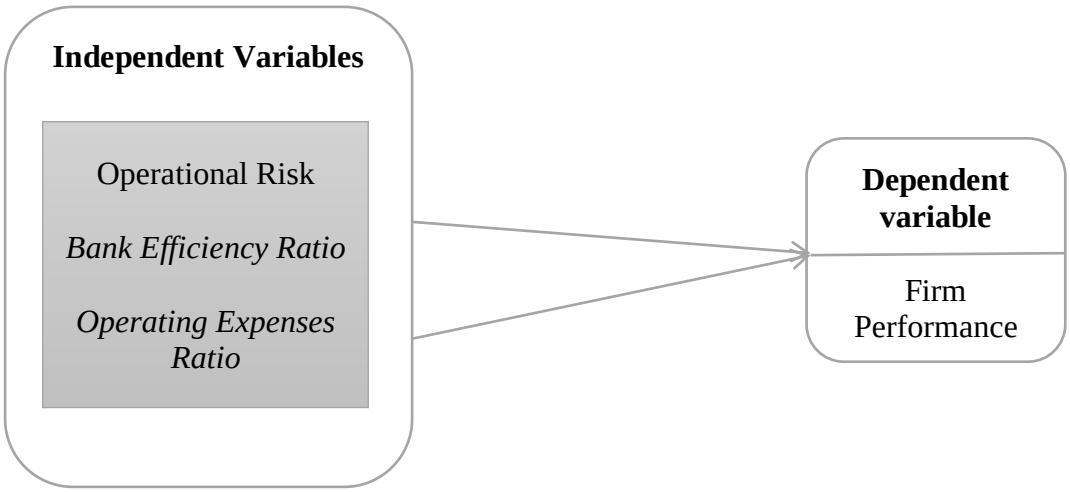

Figure 1: Research Framework

Measurement of variables

Net Interest Margin: Typically, banks profitability are often measured using the return on assets (ROA), return of equity (ROE), and the net interest margin (NIM). In this study, we use NIM as a measures of firms' performance in the aim to make new contribution to literature as extant literature have focus on ROA and ROE as a measure on performance. Using NIM is justify because a higher interest expenses than the amount of returns produced by investments implied a negative net interest margin, this indicates that the firm was unable to make an optimal decision during the financial year (FDIC, 2005; Khrawish, 2011). NIM is the net interest income divided average interest earning assets. Hence, the study justify using net interest margin because it measures the difference between the interest income generated by banks and the amount of interest paid out to their lenders, relative to the amount of interest earning assets (Owoputi et al., 2014; Dumicic & Ridzak, 2013; Khrawish, 2011; Ongore & Kusa, 2013; Hamadi & Awdeh, 2012; Tarus et al., 2012; Kalluci, 2010; FDIC, 2005)

Operational risk: The proxy for operational risk that is used in this study is the bank efficiency ratio which can be derived through ratio of operating expenses to gross earnings, and the total operating expenses ratio which are the proxy used by other prior studies (Kenny et al., 2014; Ponce, 2012; Yousfi, 2012; Adnan et al., 2011; Pasiouras & Kosmidou, 2007). Besides been use by previous studies, the justification for using the ratio is that it shows the overheads or cost of running the bank, including personnel expenses and operating expenses such as staff salaries and benefits, occupancy expenses as a percentage of income. It is expected to have a negative relationship with profit since improved management of this expenses will increase efficiency and therefore raise profits. Other similar study was also found in (Aruwa & Musa, 2014; Ali et al., 2011; Suleiman & Abdullahi, 2011; Isshaq & Bokpin, 2009).

Control variables

In order to isolate the effects of risk factors on firm performance, it is necessary to control for other factors that are expected to have some influence on firm performance. Thus, this study used firm size and gross domestic product as a control variables. The proxy for bank size that

is used in this study is the natural logarithm of total asset (Tafri et al., 2009; Akhtar et al., 2010; Athanasoglou, Brissimis, & Delis, 2008; Tafri et al., 2011). The bank size is generally used to capture potential economies or diseconomies of scale. Based on this premise, bank size controls for cost difference in product and risk diversification according to the size of the financial institutions (Tafri et al., 2011). Moreover, the effect of economic environment on banks financial performance is usually controlled by employing the GDP growth as the macroeconomic variable as used by (Tafri et al., 2011; Trabelsi, 2015; Eneyew, 2013; Dumicic & Ridzak, 2013). It is expected to have an impact on numerous factors related to the demand and supply for banks deposits and loans. According to the literature on the associated between economic growth and financial sector profitability, GDP growth is expected to have positive relationship on bank profitability (Bikker & Hu, 2002; Alper & Anbar, 2011).

Data and Research Method

This study observed the sample of balanced panel dataset of 16 commercial banks over the period of 2009 – 2015 consisting of 112 observations. The commercial banks whose shares are traded in the Nigerian Stock Exchange (NSE) are considered in the study. The observed variables in the study are derived from the annual financial report and balance sheet of commercial banks. The financial statement data is collected from the websites of the banks and Nigerian Deposit Insurance Corporation. With regards to the macroeconomic variables, the data of economic growth is obtained from the Nigerian Bureau of Statistics and the World Bank economic database. To examine the effects of operational risk on firm performance, this study use panel data analysis with random effect model.

$$NIM_{it} = \beta_0 + \beta_1 ER_{it} + \beta_2 OR_{it} + \beta_3 SIZE_{it} + \beta_4 GDP_{it} + \varepsilon_{it} \qquad (..1)$$

Empirical Findings and Discussion

Descriptive Statistics

The summary of the descriptive statistics of the variables are depicted in Table 1.

Table 1 Summary of Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Dev.
NIM	112	0.0187	0.1499	0.0806	0.0313
ER	112	0.2189	0.9135	0.5126	0.1311
OR	112	0.0151	0.1576	0.0599	0.0255
SIZE	112	0.1271	0.2160	0.1687	0.0315
GDP	112	-0.0000992	0.0499	0.0269	0.0157

Note: NIM = Net interest margin. ER = Bank Efficiency Ratio (Operational risk proxy). OR = Operating expenses ratio (Operational risk proxy). SIZE = Size of banks. GDP = Gross domestic product growth.

The net interest margin (NIM) of banks has a mean of 8.0 percent (i.e.0.0806), while the minimum and maximum are 1.87 and 14.9 percent (0.0187 and 0.149) respectively. In a strict sense, the implication is that most of the commercial banks does make good and sound investment decisions and thus resulting to averagely high performance metric (NIM). Consequently, the mean of bank efficiency ratio (ER) is 51.2 percent (i.e. 0.512), while the minimum and maximum value is 21.8 and 91.3 percent (i.e. 0.218 and 0.9135) respectively. This implies that the commercial banks in Nigeria incur relatively high operational risk, with little deviation from the mean at 13.1 percent during the period under study. The maximum value of 91.3 which was recorded in the year 2015 is a cause for concern, and it has risen mostly

within the year under study. The extremely high bank efficiency ratio as indicated above is capable of scaring away foreign and local investors in the sector. Operating expenses ratio (OR) has a mean of 5.99 percent (i.e. 0.0599), while the minimum and maximum are 1.51 and 15.7 percent (i.e. 0.151 and 0.157) respectively. This implies that the majority of the commercial banks incurs a relatively low cost in their service delivery and operations. The norms is that, commercial banks should keep a relatively low cost at 50 percent (i.e. low operating expenses to revenue ratio); thus, high efficiency (cost) implies low profit margin. The average size of the commercial banks in Nigeria is 16.86 (minimum value of 12.71% in 2009 and maximum value of 21.6% in 2015). Finally, the average of GDP growth is approximately 2.68% (minimum value of -0.0099% in 2009 and maximum value of 4.98% in 2015), with a little deviation from the mean at 1.56% during the period under study.

Panel Unit Root Test

The study conducted a reliability test on the data starting with ADF-Fisher to test for the presence of unit root in the data as presented in Table 2 below. The results indicated that majority of the variables passed the unit root test at level (i.e. stationary at level and at 1% significant level). Also, Breusch-Pagan / Cook-Weisberg test for heteroskedasticity was performed. The outcome of the test indicates that there is no presence of heteroskedasticity in the model. Implying that, since the p-value is greater than 0.05, we accept the null hypothesis supporting the absence of heteroskedasticity in the model.

Table 2 ADF Unit Root Test Results based on AIC Selection Criteria

Var.	with Trend and Intercept				with Intercept only			
	Level	1st Diff	2nd Diff	I(d)	Level	1st Diff	2nd Diff	I(d)
NIM	-2.03625*			I(0)	-2.50729*			I(0)
ER	-0.41099	-2.65997*		I(1)	-1.98837*			I(0)
OR	-1.83555*			I(0)	-4.48364*			I(0)
SIZE	-2.33691*			I(0)	0.22038	-0.49556	-3.63653*	I(2)
GDP	0.01199	1.81721	-2.43096*	I(2)	-0.34897	-2.28356*		I(1)

Notes: t-stat = t-statistics. NIM = Net Interest Margin. I(d) = integrated by the order of *d*. ER = Bank Efficiency Ratio. OR = Operating Expenses Ratio. SIZE = Size of Banks (natural log of total assets). GDP = Gross Domestic Product.
The null hypothesis is that the data are non-stationary, or contains a unit root.
*, ** Significant at 1% and 5% respectively.

Furthermore, the study examine the correlation between the five variables by employing the Variance Inflation Factor. The result indicates that there is no autocorrelation problem in the analysis.

Panel Data Analysis

Panel data analysis is applied in this study for its estimation which requires special techniques to account for time-series and cross-sectional dimension of the data. Therefore, the study use different techniques for estimation and choose among them based on the specific econometric test to find a model which fits our data best. As a results, Hausman specification was conducted to determine the effects (fixed or random) to be used in the two empirical models.

Table 3 Summary of Panel Data Analysis and Specification Tests

	Fixed Effect		Random Effect	
	Coef.	*t-stats*	*Coef.*	*t-stats*
(ER)	-0.0301	-1.06	-0.0589	-2.37**
(OR)	0.3071	1.92**	0.3908	2.92*
SIZE	0.0996	0.28	0.0986	0.75
GDP	0.3685	2.36**	0.3917	2.54*
_cons	0.0509	0.81	0.0602	2.32**
R-sqd	0.1116		0.4012	
F-stat	2.89		18.79	
Prob>F	0.0215**		0.0009*	
Hausman test			0.3189 (REM)	

Note: * indicates significant at 1%, ** indicates significant at 5%,

The result from the specification test in Table 3 above indicates that random effect should be employed in the empirical Model of the study proxy by Net Interest Margin (NIM) as dependent variable.

Interpretation of Empirical Model

Therefore, based on the coefficients values shown in Table 3 above, the model of the firm performance measure by Net Interest Margin (NIM) indicates the following empirical result:

$$\boldsymbol{NIM_{it}} = 0.0602 - 0.0589(\boldsymbol{ER}) + 0.3908(\boldsymbol{OR}) + 0.3917(\boldsymbol{GDP}) \qquad \textit{(..2)}$$

The empirical model above indicates that bank efficiency ratio (ER) has a negative and significant influence on NIM. This suggest that a decrease in bank efficiency ratio by 1%, firm performance (NIM) will improve by 0.5%, *ceteris paribus*. On the other hand, total operating expenses ratio (OR) risk has a correct positive and significant impact on NIM at 1% level. This suggests that a 1% improvement in OR increases NIM of banks by around 3.9%, *ceteris paribus*. Thus, size of banks has no influence on NIM during the period of study. In conclusion, GDP has a correct positive and significant impact on NIM. This implies that a 1% improvement in the gross domestic product implies an increase in NIM of banks by around 3.9%, *ceteris paribus*.

H_1: Operational risk have an impact on firm performance of commercial banks in Nigeria

The impact of operational risk on firm performance was tested using empirical model of the study. The empirical results indicate a correct negative and significant relationship between bank efficiency ratio (ER) and net interest margin as shown in table 3, (Beta = -0.0589, $p < 0.05$). On the contrary, total operating expenses to total assets (OR) has a positive and significant relationship with net interest margin as shown in table 3, (Beta = 0.3908, $p < 0.004$). Therefore, the hypothesis stating that bank efficiency ratio have a negative impact on firm performance of commercial banks in Nigeria is accepted. While the sub-hypothesis stating that Operating expenses ratio (OR) have a negative impact on firm performance of commercial banks in Nigeria is rejected. Hence, the hypothesis stating that operational risk impact on financial performance is partially accepted H_1.

Discussion of Findings

Thus, operational risk (bank efficiency ratio) has a negative and significant relationship with firm performance NIM of banks. The result is consistent with the findings of (Muriithi, 2016; Aruwa, 2014 & Yousfi, 2014). While total operating expense ratio is positive and significant with firm performance. This is consistent with the findings of (Bekele, 2015; Tarus *et al.,* 2012; Maudos *et al.,* 2004) in their studies. They find a positive and significant effect on financial performance. Generally, banks that focus more on cost control will naturally have a lower operating expenses ratio, thereby leading to higher profit margins. The fundamental issue behind operational risk are the frequent small losses in the banking operations that can become surprisingly high; although, the causes of fairly high operational risk and failures are due to the inability of the banks to leverage its fixed cost. Also, the bank size has a positive but no effect on NIM. This is inconsistent with the study of Smirlock (1985), Ayadi and Boujelbene (2012), Pasiouras and Kosmidou (2007), and the study of Owoputi *et al.,* (2014) who found a positive significant relationship between size and NIM in Nigeria. Although, the findings was in accordance with the theory and prior expectation that argued that larger banks may incur lower cost for efficient information gathering, processing and analysing due to economies of scale. That means bigger banks can have lower costs per unit of income and therefore higher profit margin. Similarly, banks with larger branch network can penetrate deposit markets and mobilize savings at a lower cost as compared to smaller banks, and declare higher profit at the year ended.

Therefore, larger banks were better placed than smaller banks in the country by harnessing economies of scale in transactions over the sampled period. On the contrary, GDP has a positive and significant effect on NIM. This indicates that a good economic conditions can significantly improves the NIM of banks during the period of study. Although, this is inconsistent with the study of (Alper & Anbar, 2011), the findings of the study was in accordance with prior expectation and theory that suggested that whenever there is a positive GDP growth, the economic activities/conditions in general were improving and the volume of cash held for either businesses or households improves simultaneously. These conditions contributed to decrease in the likelihood that borrowers will delay their financial obligations as at when they fall due. Therefore, the operational risk of financial institutions is characterized by the efficiency and effectiveness of banks operational activities. Thus, the study concludes that operational risk is part of the determinants of firm performance of commercial banks in Nigeria.

Conclusion

Based on the empirical evidence, this study confirms that operational risk is a major determining factor of profitability during the period of study. Firm performance is an important criterion to measure the financial health of banks, especially in the changing and ever dynamic environment in which banks operate. As a result of this, panel data method (random effect model) is applied to the data obtained from 16 banks financial reports for the period of 2009 to 2015. Summarily, the study found that the major factor that determines the banks performance (NIM) are operational risk variables and the gross domestic product (GDP growth rate). Furthermore, it is imperative to note that the financial institutions operates in a world of uncertainty, and in a rapidly growing dynamic environment where economic events are linked. As a result, the tremendous growth in scale and scope of banks has generated new risks with global consequences which created a unique sense of urgency. This paper provides an exclusive characterization of operational risk and this characterization originates in the corporate finance

and credit risk literature. Hence, other literature categorize it to include people risk, legal/compliance risk, system risk and external risk or event. It is extremely necessary that financial institutions pay particular attention to regulatory capital requirements and undertake commitments in lowering exposures and cost of financing.

Financial institutions as an economic agent wants to minimize risk exposures and at the same maximize profit. It is imperative for institutions to adopt strategy which entails mitigation and administrative procedures for banking risk in order to minimize the probability of financial loss and the potential exposure, and to achieve the strategic and operational objective. However, in real sense there are situations where the cost of financing, implementation and working procedures may be higher than the potential risk exposures. It is also highly possible that the strategy adopted by the bank could lead to high and or new risk as well. Financial institutions are encouraged to undertake risk in which they fully understand, and that minimizing risk should not be the sole objective of financial institutions.

Therefore, commercial banks should harness automated versus manual controls and continuously monitor critical controls and related costs through risk financing strategies that will support the banks long-term growth, cash flow management and balance sheet protection. Banks should always be cushioned with an adequate level of capital in order to execute its primary obligations, and by aligning and coordinating risk activities across all risk and compliance functions, institutions can reduce their risk burden (overlap and redundancy), lower their total costs, expand coverage and drive efficiency. For the purpose of future studies, it is therefore suggested that further research can explore how operational risks influences banks efficiency using the Data Envelopment Analysis (DEA) or the Stochastic Frontier Analysis (SFA) to assess the efficiency of the banking industry. As a matter of fact, further study should not be limited to the banking industry but should also extend to other sectors or industries as well.

Acknowledgment

This research is being funded by Ministry of Education, Malaysia under the FRGS Selected Grant FRGS 2017-1 and Reference Code FRGS/1/2017/SS01/UNIMAP/03/2

References

Aaron, M., Armstrong, J., & Zelmer, M. (2012). An overview of risk management at canadian banks. *Financial System Review*, 6 (7), 39-46.

Abdullah, M., Shahimi, S. & Ismail, A. G. (2011). Operational risk in Islamic banks: examination of issues. *Qualitative Research in Financial Markets*, Vol. 3 No. 2, pp. 131-151

Adnan, M. A., Htay, S. N., Rashid, H. M., & Meera, A. K. (2011). A panel data analysis on the relationship between corporate governance and bank efficiency. *Journal of Accounting, Finance and Economics*, 1(7), 1-15.

Akhtar, M. F., Ali, K., & Sadaqat, S. (2010). Factors influencing the profitability of Islamic banks of Pakistan. *International Research Journal of Finance and Economics*, Issue 66, 126-132.

Akinyele, A. I., & Willy, M. (2015). Financial innovation and fraud risk in deposit money bank. *EPRA International Journal of Economic and Business Review*, vol. 3(12), 56-66.

Ali, K., Akhtar, M. F., & Sadaqat, S. (2011). Financial and non-financial business risk perspectives: empirical evidence from commercial banks. *Middle Eastern Finance and Economics*, Issue 11, 150-160.

Alper, D., & Anbar, A. (2011). Bank specific and macroeconomic determinants of commercial banks profitability: Empirical evidence from Turkey. *Business and Economic Research Journal*, 2 (2), 140-152.

Al-Tamimi, H., Miniaoui, H., & Elkelish, W. W. (2015). Financial risk and Islamic banks performance in the Gulf Cooperation Council (GCC). *Working Paper Series in Business Studies*, 1, 1-18.

Aruwa, S. A., & Musa, O. A. (2014). Risk components and the financial performance of deposit money in Nigeria. *International Journal of Social Sciences and Entrepreneurship*, 1 (11), 1-8.

Ashraf, O. M. (2012). Bank specific and macroeconomic profitability determinants of Islamic banks. *Quantitative Research in Financial Markets*, 4(2/3), 256-268.

Athanasoglou, P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinant of bank profitability. *Journal of International Financial Markets, Institutions and Money*, 121-136.

Ayadi, N., & Boujelbene, Y. (2012). The determinants of the profitability of the Tunisian deposit banks. *IBIMA Business Review*, Vol. 20(12), DOI: 10.5171/2012.165418, 1-21.

Babalola, A., & Ajewole, O. (2013). Corporate governance: has the Nigerian banking sector learnt any lesson? . *International Journal of Business and Social Research*, 3(2), 49-59.

Baltagi, B. H., (2005). *Econometric Analysis of Panel Data (third Ed.)*. John Wiley & Sons Inc. New York.

BCBS. (2003). *Basel Committee on Bank Supervision: Overview of the new basel capital accord and Technical report* . CH-4002 Basel, Switzerland.: Basel Committee on Bank Supervision, Consultative Document.

Bikker, J. &. (2002). Cyclical Patterns in Profits, Provisioning and Lending of Banks and Procyclicality of the New Basel Capital Requirements. *BNL Quarterly Review*, 221, 143-175.

Blacker, K. (2000). Mitigating Operational Risk in British Retail Banks. *Journal of Risk Management*, 2(3), 23-33.

Brealey, R., Myers, S., (2004). *Principles of Corporate Finance*, sixth edition. McGraw Hill, New York.

Calmes, C., (2004). Regulatory changes and financial structure: the case of Canada. *Swiss Journal of Economics and Statistics*, 140(1), 1-35.

Chapelle, A., Crama, Y., & et al. (2008). Practical methods for measuring and managing operational risk in the financial sector: A clinical study. *Journal of Banking and Finance*, 32 (6), 1049-1061.

Cummins , J. D., Lewis, C., & Wei, R. (2006). The Market Value Impact of Operational Risk Events for U.S. Banks and Insurers. *Journal of Banking and Finance*, 30, 2605-2634.

Demirovic, A., & Thomasn, D. C. (2007). The relevance of accounting data in the measurement of credit risk. *The European Journal of Finance*, 13(3), 253-268.

Dumicic, M., & Ridzak, T. (2013). Determinants of banks net interest margin in Central and Eeastern Europe. *Financial Theory and Practice*, 37 (1), 1-30.

Ebrahim, H., Kazem, Y., Nader, M., & Reza, K. (2013). Effects of risk parameters (credit, operational, liquidity and market risk) on banking system efficiency: study of 15 top banks in Iran. *Iranian Economic Review*, 17(1), 1-23

Elliott, D., Letza, S., McGuinness, M., & Smallman, C. (2000). Governance, Control and Operational Risk: The Turnbull Effect. *Journal of Risk Management*, 2 (3), 47-59.

Eneyew, L. (2013). *Financial risks and profitability of commercial banks in Ethiopia*. Addis Ababa University, Ethiopia: A published research project.

Enofe, A., Ekpule, G., Onobun, S., & Onyekweni, V. (2015). Ethical challenges and financial performance in the Nigeria banking sector. *Research Journal of Finance and Accounting*, 6, 1-11.

Froot, K. A. (2007). Risk management, Capital budgeting and Capital structure policy for Insurers and Reinsurers. *Journal of Risk and Insurance*, 74, (2) pp. 273-299.

Hamadi, H., & Awdeh, A. (2012). The determinants of banks net interest margin; Evidence from the Lebanese banking sector. *Journal of Money, Investment and Banking*, (23), 85-98.

Isshaq, Z., & Bokpin, G. A. (2009). Corporate liquidity management of listed firms in Ghana. *Asia-pacific Journal of Business Administration*, 1(2), 189-198.

Jarrow, R. A. (2008). Operational Risk. *Journal of Banking & Finance*, 32, 870–879.

Kalluci, I. (2010). Determinants of Net Interest Margin in the Albanian banking system. *Working paper series*, Bank of Albania, 4, (Tirana).

Kargi, H. S. (2011). *Credit risk and the performance of Nigeria banks.* Zaria. Ahmadu Bello University, (7), 1-21.

Kenny, A. S., Jumoke, O. O., & Faderera, O. A. (2014). Risk management practices and financial pperformance: evidence from the Nigeria Deposit Money Banks. *The Business Management Review*, 4(4), 345-354.

Khrawish, H. (2011). Determinant of commercial banks performance in Jordan. *International Journal of Finance and Economics*, (81), 81-95.

Kolapo, F. T., Ajayi, L. B., & Aluko, O. A. (2016). How is size related to profitability? Post-consolidation evidence from selected banks in Nigeria. *Journal of Finance & Banking Studies*, 5(4), 30-38.

Kolapo, T. F., Ayeni, R. K., & Oke, O. (2012). Credit risk management and banks performance. *Australian Journal of Business and Management Research*, 2(2), 31-38.

Kumaran, S. (2012). Risk management and mitigation techniques in Islamic finance: A conceptual framework. *International Research Journal of Finance and Economics*, (98), 83-96.

Malhotra, D. K., Poteau, R., & Singh, R. (2011). Evaluating the performance of commercial banks in India. *Asia Pacific Journal of Finance and Banking Research*, 5(5), 15-37.

Maudos, J., & De Guevara, J. F. (2004). Factors explaining the interest margin in the banking sectors of the. *European Union Journal of Banking and Finance*, 28(9), 2259- 2281.

Maytham, H. (2013). *The relationship between operational risk and bank performance in Malaysia.* Sintok: Unpublished research paper, Universiti Utara Malaysia.

Micocci M., Massala G., Cannas G., & Flores G. (2009). Reputational effects of operational risk events for financial institutions. *Working paper, University of Cagliari, Cagliari, Italy*, pp. 1-12.

Muriithi, J. G. (2016). *The effect of financial risk on financial performance of commercial banks in Kenya*. Kenya: Jomo Kenyatta University of Agriculture and Technology.

Nora, A. A., & Maytham, H. (2015). An Empirical Analysis of Liquidity Risk and Performance in Malaysia Banks. *Australia Journal of Basic & Applied Science*, 9(28), 80-84.

Obawuyi, T. M. (2013). Determinants of banks profitability in a developing economy: Evidence from Nigeria. *Organizations and Markets in Emerging Economies*, Vol. 4, No. 2(8), 97-111.

Ogunleye, G. A. (2000). *Bank frauds: challenges and solutions*. NDIC Quarterly, 10(2), 22-35.

Olalere, O. E., Wan, A. B. O. (2016). Risk Management and the Financial Performance of Commercial Banks in Nigeria: A Literature Review Revisited. *IOSR Journal of Economics and Finance (IOSR-JEF)*. E-ISSN: 2321-5933, p-ISSN: 2321-5925. 7(2), 14-19

Olalere, O. E., Wan, A. B. O. (2016). The Empirical Effects of Credit Risk on Profitability of Commercial Banks: Evidence from Nigeria. *International Journal of Science and Research (IJSR)*. ISSN (Online): 2319-7064, DOI: 10.21275/ART2016315. 5(8), 1645-1650

Olalere, O. E., Wan, A. B. O., Syahida K. (2017). Bank Specific and Macroeconomic Determinant of commercial bank profitability: Empirical evidence from Nigeria. *Journal of Finance and Banking Studies,* 6(1), 25-38.

Olanrewaju, O. M., & Adeyemi, O. K. (2015). Causal relationship between liquidity risk and profitability of Nigerian deposit money bank. *International Journal of Academic Research in Accounting, Finance and Management Science*, 5, 165-171.

Olukotun, G. A., James, O. O., & Olorunfemi, K. (2013). Bank distress in Nigeria and the Nigeria Deposit Insurance Corporation Intervention. *Global Journal of Management and Business Research Finance*, 13(8), 51-60.

Olusanmi, O., Uwuigbe, U., & Uwuigbe, O. R. (2015). The Effect of Risk Management on Bank's Financial Performance in Nigeria. *Journal of Accounting and Auditing: Research & Practice.*, Acticle ID 239854, pp. 1-7.

Ongore, V., & Kusa, G. (2013). Determinants of Financial Performance of Commercial Banks in Kenya. *International Journal of Economics and Financial*, 3(1), 237-252.

Owojori, A., & Akintoye, I. a. (2011). The Challenge of risk management in Nigerian banks in the post consolidation era. *Journal of Accounting and Taxation*, 3(2), 23-31.

Owoputi, J. A., Kayode, O. F., & Adeyefa, F. A. (2014). Bank Specific, Industry Specific and Macroeconomic determinants of banks profitability in Nigeria. *European Scientific Journal*, 10(25), 408-423.

Pasiouras, F., & Kosmidou, K. (2007). Factors influencing the profitability of domestic and foreign commercial banks in the European Union. *Research in International Business and Finance*, 21 (2), 222-237.

Ponce, T. A. (2012). What determines the profitability of banks? Evidence from Spain. *Journal of Accounting & Finance*, 53(2), 561-586.

Power, M. (2005). The invention of operational risk. *Review of International Political Economy*, 12 (4), 577–599.

Smirlock, M. (1985). Evidence on the (none) relationship between concentration and profitability in Banking. *Journal of Money Credit and Banking*, 17, 69-83.

Suleiman, A. S., & Abdullahi, M. O. (2011). Risk components and the financial performance of deposit money banks in Nigeria. *International Journal of Social Science and Entrepreneurship*, 1(11), 1-8

Tafri, H. F., Rahman, R. A., & Omar, N. (2009). The impact of financial risks on profitability of Malaysian commercial banks. *International Journal of Social, Behavioral, Educational, Business and Industrial Engineering*, 3, 1320-1334.

Tafri, H., Rahman, R. A., & Omar, N. (2011). Empirical evidence on the risk management tools practiced in Islamic and conventional banks. *Qualitative Research in Financial Markets*, 3(2), 86-104.

Tarus, D. K., Chekol, Y. B., & Mutwol, M. (2012). Determinants of Net Interest Margin of commercial banks in Kenya: A panel study. *Procedia Economics and Finance*, 2, 199-208.

Trabelsi, M. K. (2015). *The impact of liquidity risk determinants on profitability: An empirical study on Islamic banks in the Kingdom of Bahrain*. Kedah, Malaysia: Univerisiti Utara Malaysia.

Yousfi, I. (2012). Risk management practices and financial performance in Jordan: Empirical evidence form Islamic banks. *International Shariah Research Academy for Islamic Finance*, 6, pp. 1-24.

Yusoff, W. S., Salleh, M. F. M., Ahmad, A., & Idris, F. (2015). Estimating the Value of Political Connection to Malaysia's Richest Tycoon Companies. *The Journal of Developing Areas*, *49*(5), 87-100.

Yusoff, W. S., Salleh, M. F. M., Ahmad, A., & Basnan, N. (2016). Financial Hegemony, Diversification Strategies and the Firm Value of Top 30 FTSE Companies in Malaysia. *Asian Social Science*, *12*(3), 14.