

The Effects of Operational Risk and Market Risk on the Profitability of Deposit Money Banks In Nigeria: A Panel-ARDL Analysis

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Article DOI: 10.48028/iiprds/ijcsird.v8.i1.07

Abstract

The study examined the effects of operational risk and market risk on the profitability of Deposit Money Banks in Nigeria. The broad objective of the study was to ascertain the effect of risk management components (operational risk and market risk) on the profitability of deposit money banks in Nigeria. The study is a longitudinal survey, so the ex-post facto research design was applied. Research data were analysed using A Panel-ARDL Analysis, after testing and adjusting the data for stationarity and Cointegration. The research findings were: in the long-run, the operating risk increase profitability because the banks have longer time to adjust and minimize the risk involved in their operation which resulted to a positive effect but have a shorter time in the short-run to adjust which resulted in a negative and decreasing effect in their profitability. Also, in the short-run, the increase in the market risk will significantly increase the profitability of the selected banks under study. But in the long-run the relationship is negative. The study contributed to knowledge by establishing that; the effects of operating risk and the market risk affect profitability of the deposit money banks in the long-run and the short-run differently.

Keywords: *Risk, Operational risk, Market risk, Profitability, Risk management, Panel-ARDL.*

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Background to the Study

The emergence of global financial crisis has impacted negatively on the nation's financial sector, triggering instability in banks and the capital market (Inegbedion et al 2020). The Financial Crisis Inquiry Commission of Nigeria stated that the financial crisis was caused by significant failures of corporate governance, risk management, failure of accountability and responsibility throughout each level of the lending system. This included borrowers, mortgage brokers, appraisers, originators, securitizers, credit rating agencies, and investors, which ranged from corporate boardrooms to individuals. In response to the global financial crisis, governments and authorities in various nations took various actions to stabilize and save financial institutions in their economies. Some of the actions taken to bolster liquidity and restore market confidence; are state guarantee of wholesale debt obligations, recapitalization of banks or partial nationalisation; asset purchases; and Central Bank liquidity schemes (Soludo, 2009).

Consequently, Nigeria was not an exception such that between 2006 and 2009, eight banks were saved from imminent collapse, with the sum of N620 billion injections by the Central Bank of Nigeria (CBN) (Institute of Credit and Collection Management- ICCM, 2014). The CBN, Securities and Exchange Commission (SEC) and National Insurance Commission (NAICOM) took significant measures to address the issues that led to the collapse or failure of the money and capital markets. Apart from the rescuing operations of the eight banks and the purchase of six of them by other banks, Assets Management Corporation of Nigeria (AMCON) was also established to take over the bad risk assets (ICCM, 2014). Thereafter, a great deal of efforts went into changing the governance structure and risk management departments of banks, including reporting on risk management issues. CBN brought risk management and compliance functions to the front burner.

Despite efforts of the Central Bank of Nigeria (CBN), the banks credits are still failing. Credit problems appear to include poor quality and poor lending decision at initial application stages, poor or inadequate security documentation, lack of follow-up and monitoring after disbursement. Perhaps if these problems are proactively managed, banks could make profit and remain in business. This has led to the dwindling of profits among banks which may be linked to risk management. Risk management introduces the idea that the likelihood of an event happening can be reduced, or its consequences minimized. Effective risk management seeks to maximize the benefits of a risk (usually a reduction in time or cost) while minimizing the risk itself (Njogo, 2012).

Profitability of Nigerian DMBs was impaired which resulted in reduced dividends, absence of bonus share and outright non declaration of dividends, even the big banks were not exempted. The strength of the banking industry is an important prerequisite to ensure the stability and growth of economy (Halling and Hayden, 2006). As a consequence, they asserted that the assessment of banks' financial condition is a fundamental goal for regulators. Besides, Tabari, Ahmadi and Emami (2013) have remarked that the safety of banking system is depending on the profitability and capital adequacy of banks. The issues of risk management in banking sector have greater impact not only on the bank but also on the economic growth (Tandelilin et al., 2007). Risk Management is the application of proactive strategy to plan, lead, organize and

control the wide variety of risks that are rushed into the fabric of an organization's daily and long-term functioning. Risk management plays an important discipline in business especially the banking sector. This is because, businesses put great emphasis on risk management as this determines their survival and profitability. Better risk management indicates that banks operate their activities at lower relative risk and at lower conflict of interests between parties. These advantages of implementing better risk management lead to better bank performance which also leads to better profit (Olawale, 2013). This study seeks to examine the effects of Operational Risk and Market Risk on the Profitability of Deposit Money Banks in Nigeria. The paper is organized as follow: The second section consists of the empirical literature review on risk management components and profitability, while the third section includes the model, econometric techniques and results. The fourth section includes the conclusion of this paper.

Literature

Concept of Risk Management

Operational Risk

Operational risks are the possibility that stem from the failure of people and process within an organization. It arises as a result of the breakdown of internal procedures, people, policies and system (Osisoma, 2000). These specific risks include human error; system failure or the possible break down of computer system; lack of back-up or disaster recovery plan and external events. The concern here is that system failure or human error will result in losses to the bank that could substantially affect its viability. The operational risk is conceptualized as the risk of loss arising from failed processes, people and systems as well as external events. In other words, operational risk refers to the possibility that transactions or processes can fail as a result of poor design, inadequately trained personnel and external disruptions. These failures could be sudden, such as a computer breakdown, it could be cumulative, such as the inability to bring on line a new computer application. Also, inability to balance ledger accounts including dormant and special ledger accounts could lead to losses that could weaken the ability of a bank to continue in operations.

The Basel accord (2007), defined operational risk as the risk of direct or indirect loss resulting from inadequate or failed internal processes, people and systems or from external events. Malfunctions of the information systems, reporting systems, internal monitoring rules and internal procedures designed to take timely corrective actions, or the compliance with the internal risk policy rules result in operational risks (Bessis, 2011). Operational risks, therefore, appear at different levels, such as human errors, processes, technical and information technology. Because operational risk is an event risk, in the absence of an efficient tracking and reporting of risks, some important risks will be ignored, there will be no trigger for corrective action and this can result in disastrous consequences. Developments in modern banking environment, such as increased reliance on sophisticated technology, expanding retail operations, growing e-commerce, outsourcing of functions, activities and greater use of structured finance (derivative) techniques that claim to reduce credit and market risk have contributed to higher levels of operational risk in banks (Greuning and Bratanovic, 2009).

Market Risk

Market liquidity or market price risk arises only for those assets, which are traded on low volume. Market risk is the risk of possible losses due to adverse movements in market prices (Thodludhar, 2017) such as short-term loss in foreign exchange and long-term loss for derivatives (Bessis, 2011). Elmer (2010), in his article on risk management and banking defined market risk as the risk to earnings arising from changes in underlying economic factors such as interest rates or exchange rates, or from fluctuations in bond, equity or commodity prices. Banks are subject to market risk in both the management of their balance sheets and in their trading operations.

Market risk is generally considered as the risk that the value of a portfolio either an investment portfolio or a trading portfolio, will decrease due to the change in value of the market risk factors. There are three common market risk factors to banks and these are liquidity, interest rates and foreign exchange rates. Market risk management provides a comprehensive framework for measuring, monitoring and managing liquidity, interest rate, foreign exchange and equity as well as commodity price risk of a bank that needs to be closely integrated with the bank's business strategy (Bessis, 2011).

According to Basel accord, market risk represents “risk of loss in balance and off-balance sheet items due to changes in market prices” (Basel, 2005). Dominant factors which may cause emergence of market risk are: equity prices, interest rates, foreign exchange rate and commodity risk. Equity risk is related to risk of equity prices changes which have impact on balance and off-balance sheet items of bank (Elmer, 2010).

Concept of Profit

There are two concepts of profit, accounting and economics. Accounting profit is the difference between revenue generated from output and the full cost of factors used in the production of that output. Profit maximization is the ultimate goal for trading firms and organization. The ways of improving profit include enhancing revenues and minimizing cost (Ibe, 2013).

Tariq, Muhammad, Haseeb, Inam, and Imran (2014), defined profit as “that portion of the total increase in the business earning that due to the recognized production performance of the enterprise during the period”. The matching principles maintains that revenue and expenditure should be matched so far as their relationship can be established or justifiably assumed in order to declare the differences as the profit, meaning that profit is the difference between the revenue and expense and also expired cost of a particular period (Okwoli, 1993).

Profit, as net income, is the amount of earnings that exceed expenses for the period. In other words, it is the amount of income left over after all the necessary expenses are subtracted for the period (Eniola, and Akinselure, 2016). According to the matching principle all of the expenses that were incurred to produce the income must be recognized in the period in which the revenue is earned (Barker, 2010).

Theoretical Review

Agency theory

Different researchers have used agency theory in their studies to provide theoretical base for risk management (Smith and Stulz, 1985; Fite and Pflleiderer, 1995; Tufano, 1998; Fatemi and Luft, 2002). This theory helps to examine a social phenomenon from a principal - agent (investor- manager) perspective. Jense (1976), describe this agency relationship as: A contract under which one or more persons (the principals) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent (Jensen, 1976, p.308).

This theory has two fundamental assumptions (Jensen, 1976). Firstly, the principal as well as agent pursue to maximise their own interest. Secondly, the interest of agent may diverge from the interest of the principle and agent is not likely to perform in the best interest of the principal. Hence, a conflict of interests may emerge between principal and agent. Smith and Stulz (1985) have applied agency issues in corporate risk management and indicate the managers (agents) attitudes toward risk taking and hedging.

Risk bearing theory

The risk bearing theory was developed by the American economist Prof. Hawley in his book Enterprise and productive process published in 1907. According to this theory profit is a reward for risk bearing. He justifies his views in the following manner. Some risks are inherent in every business, this is because all business are more or less speculative, thus profit is not reward for differential ability.

The essential function of the entrepreneur is the risk taking because he cannot delegate this function to anybody else, he alone has to bear the risk and profit is the reward for this risk taking. As we know every business in modern time involves some risk. Only entrepreneur bears risk. Except entrepreneur all parties which are connected in business activity. They are working with pre-fix contract, therefore they don't have any business risk in this way only entrepreneur bearing the risk without any expectations nobody is willing to bear the risk. The degree of risk varies in different business. According to Prof. Hawley there is a positive relationship between risk and profit - higher the risk greater is the possibility of profit and smaller the risk, lower is the possibility of profit in this way profit is a reward for risk taking.

A refinement was however made by Prof. knight in Hawley's risk bearing theory of profit, pure profit are linked with uncertainty and risk bearing; He classifies risk as follows:

- (1) Insurable risks and
- (2) Non- insurable risks.

However, of the many risks involved in the business, some risks are predictable because they are certain and hence are insurable, for example fire , theft, accident etc. which are risks in business but these can be insured. True entrepreneurship lies in bearing non insurable risks. There are some risks in business which are uncertain and non-calculable. Such risks being unpredictable, no insurance company would be willing to cover them. We can include in non-insurable risks-such as fluctuations in demand, depression phase of trade cycle. Technological changes, changes in degree of competition, changes in government policies etc.

According to Prof. Knight, all these risks are uninsurable and uncertain. Every business involves less or more uncertainty. It is the main function of the entrepreneur to bear all such uncertainties of business. Thus, profit is an exclusive reward for the entrepreneur, for making business decision under unpredictable and uncertain economic condition. In short Knight theory implies that uninsurable risks are uncertainty of business and profit is the reward for uncertainty bearing.

Empirical Review

Koomson (2011). "Operational risk management and competitive advantage in the Ghanaian banking industry" The aim was to identify the importance of operational risk management practices in the firm and whether it can be a source of competitive advantage. Closed-ended questionnaire was administered to two hundred and fifty (250) respondents from seven selected banks. The multiple linear regression was used to analysed the data collected. The findings of the study indicated that even though operational risk is quite new in the Ghanaian Banking industry, its effects are being realized. It also reveals that Ghanaian banks are realizing the significance and importance of operational risk management as a tool for gaining competitive advantage and are allocating the requisite resources for it.

Asare-Bekoe (2010), "Risk management at Ecobank Ghana Ltd" The aim of the study was to identified the complex and diverse nature of operational risk, the study used Ecobank Ghana Limited's main strategy for managing risk, is to develop a strong operational risk management culture amongst its entire staff. Closed-ended questionnaire was administered to Three hundred and forty (340) respondents from seven branches of Ecobanks in Ghana and has therefore committed significant resources to it in the last Five (5) years. The study used questionnaire and interview method to collected data among 7 operational risk managers in Ecobank Ghana, Pearson correlation method was used to analysed the collected data. The findings reveled that most of the efforts towards this issues of operational risk have been in the form of sensitizing and training staff on how their daily work activities can contribute to operational risk and what they can do to avoid potential losses. Board of directors and the managing director of Ecobank Ghana Limited have keen interest and are directly responsible for the management of operational risk in the bank. The responsibility for executing the framework and implementing the strategy is however vested in all heads of units and departments since the sources of operational risks cuts across the entire operations of the bank. They also participates in preparing, testing and reviewing the business continuity and disaster recovery plan of every business unit.

Wachiaya, (2011), "Market hazard technique used by asset mobilizing institution within the industry and its appropriateness in the process of mitigating financial loss" The aim of the study is to identify the market hazard technique used by asset mobilizing institution within the industry and its appropriateness in the process of mitigating financial loss. The research design adopted in the study was a census survey, population used consisted of 43 commercial banks licensed to operate in Kenya and listed by Central Bank of Kenya. Data collection through use of survey method was applied to gather information from the target population outlining issues useful to the study. The main techniques used were scenario analysis and stress testing to a very large extent.

Methodology

This study adopted the causal research design under the longitudinal sub-group. This is justified by the fact that this type of research is associated with the longitudinal design because according to Pettigrew (1990) longitudinal study organizes the data in such a way that they are repeated over time for different banks. The population of this study is made up of 14 deposit money banks operating in Nigeria as at 31st December, 2020 for 11 years as from 2010 – 2020. The data for the variables (operational risk, market risk and profitability) was collected from the annual reports of the banks used for this study.

The panel ARDL technique was applied to investigate the long-term and short-term cointegration correlations between risk management components and profitability. The panel ARDL approach is applied regardless of whether unit root level of stationarity is I(0), I(1), or both I(0) and I(1) (Sulaiman and Abdul-Rahim, 2018). Panel ARDL with various variables can include various lags, which are inapplicable using the standard cointegration test. Using panel ARDL, both long-term and short-term coefficients are produced at once (Sulaiman et al., 2015; Sheng and Guo, 2016).

The panel-ARDL has three types; Mean Group (MG) model in order to resolve the bias due to heterogeneous slopes in dynamic panels, the MG estimator on the other hand, provides the long-run parameters for the panel through making an average of the long-run parameters from ARDL models for individual banks. The Pool Mean Group on the other hand, was applied in order to detect the long and short run association between risk management on financial profitability of Deposit Money Banks in Nigeria., and also investigate the possibly heterogeneous dynamic issue across banks, the appropriate technique to be used to the analysis of dynamic panels is Autoregressive distributed lag ARDL(p,q) mode in the error correction form and then estimate the model based on the mean group (MG) presented by Pesaran and Smith(1995) and Pooled mean group(PMG) estimators developed by Pesaran et al. (1999).

The dynamic FE estimator is remarkably similar to PMG estimator, however; it confines the coefficient of the co-integrating vector to be equal across all panels in the long run. The DFE model further restricts the speed of adjustment coefficient and the short-run coefficient to be equal. Dynamic fixed effect model allows panel-specific intercepts. DFE also calculate the standard error while making allowance of intra group correlation.

Hausman test can be used to test whether there is a significant difference between the PMG and MG. The null hypothesis of this test is that the difference between PMG and MG estimations is not significant. If the null is not rejected, then they are not significantly different; in this respect the PMG will be adopted. The alternative hypothesis here is that there is a significant difference between PMG and MG.

Model Specification

$$\Delta ROA_{it} = \alpha_0 + \alpha_1 \Delta ROA_{it-1} + \alpha_2 \Delta OPRK_{it-1} + \alpha_3 \Delta MKTRK_{it-1} + \beta_1 ROA_{it-1} + \beta_2 OPRK_{it-1} + \beta_3 MKTRK_{it-1} + \varphi z_{t-1} + U_t \quad \dots (1)$$

Where:

ROA_{it} = Return on Asset of Bank i in time t .

$OPRK_{it}$ = Operational Risk of Bank i in time t .

$MKTRK_{it}$ = Market Risk of Bank i in time t .

i = number of banks (1, 2, 3, 14)

$it-i$ = Lag length

t = 2010, 2011, 2012...2020

U_{it} = Component error term

Φ = coefficient of the Error correction term

z_{t-1} = Error Correction Variable

α_0 = constant intercept

α_1 and β_1 = the coefficient of Return on Asset.

α_2 and β_2 = the coefficient of Operational Risk.

α_4 and β_4 = the coefficients of Market Risk.

Δ = difference operator

Result

Descriptive Statistics

Table 1: Summary of Descriptive Statistic

Variable	Mean	Std. Dev.	Min	Max	Observations
roa	4.108751	8.295883	-9.531833	75.51875	N = 154
operat~k	86.58466	128.8921	9.168736	1341.533	N = 154
mktrisk	-6.500002	105.8918	-602.5151	204.9169	N = 154

Table 1 shows the descriptive statistics for variables return on asset (ROA), Operational Risk (OPRK), and Market Risk (MKTRK). The results indicated that the mean of ROA for the firms under study is 4.108. The mean of operational risk is 86.58. Consequently, mean value for market risk, is -6.500. Again, the standard deviation for these variables is 8.29, 128.89, and 105.89 which are great than their mean values. This means that the variables are highly dispersed and indicating risky tendencies.

Table 2: Correlation Matrix

	roa	operat~k	mktrisk
roa	1.0000		
operatingr~k	-0.0711	1.0000	
mktrisk	-0.1649	0.1366	1.0000

Table 3 shows result of the matrix correlation for return on asset (ROA), Operational Risk (OPRK), and Market Risk (MKTRK). The result revealed that operational risk negatively correlates with return on asset, by -7.11%. Also, there is a negative correlation between market risk correlate negatively to ROA. All the variables are below 50% which connotes that they are weakly correlated to ROA.

Table 3: Test for Multicollinearity

variable	VIF	1/VIF
mktrisk	1.03	0.966383
operatingr~k	1.03	0.970563
Mean VIF	1.02	

It is observed that in Table 3, VIF value revealed absence of multicollinearity because the VIF values are way below 10.

Preliminary Analysis

The Unit root test adopted for this study are Levin Lin and Chu and Im Pesaran and Smith unit root tests.

Table 4: Levin, Lin Chu(LLC) and Im, Pesaran Shin (IPS) Unit root Tests

Variable	LLC@ Level	IPS@ Level	LLC @ First difference	IPS @ First difference	Order of co- integration
ROA	-2.19**	-8.07**	-19.84**	-5.71**	I(0)
OPRK	-3.59**	-3.18**	-9.23**	-2.81**	I(0)
MKTRK	10.21	2.63	-70.44**	-58.85**	I(1)

Source: EViews 10 analysis of data

Table 4 shows the result of the unit root test for the variables under study, which was derived from the Levin, Lin Chu (LLC) and Im, Pesaran Shin (IPS) methods. The result shows that return on asset (ROA), and Operational Risk (OPRK) were stationary at level which have integration order of I(0). While Market Risk (MKTRK) is stationary at first difference which implies that it have an integration order of I(1). This result has a mixture of I(1) and I(0) integration. Hence, this study applied the Panel-ARDL method of analysis.

Table 5: Co-integration Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
COINTEQ01	-0.947	.0881858	10.74	0.0000

Table 5 shows the results of the co-integration test demonstrated that the null hypothesis against its alternative is easily rejected at the 5% significance level, since the p-value is less than 0.000. Therefore, there exists a long run equilibrium relationship among return on asset (ROA), Operational Risk (OPRK) and Market Risk (MKTRK).

Table 6: Results of Hausman test for Mean Group (MG), Pooled Mean Group (PMG) and Dynamic Fixed Effect (DFE) Estimates

N		139		139		139
Hausman Test (1)	<i>PMG vs MG</i>	P-value = 1.00				
Hausman Test (2)	<i>PMG vs DFE</i>	P-value = 0.00				
Hausman Test (3)			<i>DFE vs MG</i>	P-value = 1.00		

Note: * ** *** show significance at 1%, 5% and 10% respectively

Table 6 shows the summary of results for the Mean Group (MG), Pooled Mean Group (PMG) and Dynamic Fixed Effect (DFE). The Hausman specification test in table 6 shows that the dynamic fixed effect model is a better estimator than the Mean Group (MG) and Pooled Mean Group (PMG) model. The first Hausman test result shows a high p-value of 1.000. This implies that PMG is a better estimator. For second Hausman test, the p-value is 0.000 which signifies that the DFE is a better estimator. The third Hausman test with p-value of 1.000 is greater than 0.05 maintained the DFE estimator as the best estimator. Hence, all interpretation are based on the DFE outcome.

Table 7: Results of Mean Group (MG), Pooled Mean Group (PMG) and Dynamic Fixed Effect (DFE) Estimates

	Mean Group MG		Pooled Mean Group PMG		Dynamic Fixed Effect DFE	
	Coeff	P-value	Coeff	P-value	Coeff	P-value
	<i>Long-Run</i>					
<i>OPRK</i> _{it}	-0.0484	(0.320)	-0.0061	(0.000)**	0.004	(0.592)
<i>MKTRK</i> _{it}	0.2725	(0.345)	0.0037	(0.000)**	-0.0131	(0.335)
	<i>Short-Run</i>					
ECM(-1)	-1.1297	(0.116)	-0.6095	(0.000)**	-0.947	(0.000)**
Δ <i>OPRK</i> _{it}	0.1625	(0.626)	-0.2814	(0.256)	-0.001	(0.728)
Δ <i>MKTRK</i> _{it}	0.1180	(0.587)	-0.1295	(0.147)	0.0273	(0.012)**
CONST	29.38	(0.453)	-1.0820	(0.565)	4.0431	(0.000)**
N		139		139		139

Dependent variable: (ROA)_{it} Note: * ** *** show significance at 1%, 5% and 10% respectively

Long-run Relationships

The relationship between operating risk and profitability in the long-run, revealed that operating risk has a positive and insignificantly effect on the profitability of the Deposit Money banks under review from 2010 to 2020. The beta coefficient of the variable is 0.004 and the p-value of 0.592. The implication of this finding is that the bigger the operating risk, the more the profitability of the banks

From the result, it revealed that the effect of market risk (MKTRK) on profitability which is proxied as (ROA) is negative with coefficient value of -0.0131 and the p-value of 0.335. By this, it means that the increase in the market risk will insignificantly reduce the profitability of the selected banks under study. It indicated that the consistent increase in market risk will consistently decrease profitability by 1.31%.

Short-run Relationships

Consequently, the following outcomes are obtained from the short-run relationship between the risk management components and profitability are: the result of the ECM (-1) revealed that there is a long-run equilibrium relationship among the variables and due to the presence of the unit root, it takes a very high speed of 94.7% for disequilibrium caused by the presence of unit root to adjust to equilibrium in the following year.

The relationship between operating risk and profitability in the short-run, revealed that operating risk has a negative and insignificantly effect on the profitability of the Deposit Money banks under review from 2010 to 2020. The beta coefficient of the variable is -0.001 and the p-value of 0.728. The implication of this finding is that the in the long-run, the operating risk increase profitability because the banks have longer time to adjust and minimize the risk involved in their operation which resulted to a positive effect but have a shorter time in the short-run to adjust which resulted in a negative and decreasing effect in their profitability.

From the result, it revealed that in the short-run, the effect of market risk (MKTRK) on profitability which is proxied as (ROA) is positive with coefficient value of 0.0273 and the p-value of 0.012. By this, it means that the increase in the market risk will significantly increase the profitability of the selected banks under study. But in the long-run the relationship is negative. This implies that market price risk arises only for those assets, which are traded on low volume. The Changes in market environment could enforce companies to adjust its prices of products and services, simultaneously changing sales volumes or competitiveness, depending upon positioning and market exposure of the main competitors (indirect impact of market risk on business operations of the company). In that sense, most companies intend to manage market risk on financial result of the company, especially it is case with non-financial institutions

Discussion of Findings

Because operational risk is an event risk, in the absence of an efficient tracking and reporting of risks, some important risks will be ignored, there will be no trigger for corrective action and this can result in disastrous consequences. Developments in modern banking environment, such as

increased reliance on sophisticated technology, expanding retail operations, growing e-commerce, outsourcing of functions, activities and greater use of structured finance (derivative) techniques that claim to reduce credit and market risk have contributed to higher levels of operational risk in banks. This finding is consistent with the findings of Koomson (2011), who found that operational risk is quite new in the Ghanaian Banking industry, its effects are being realized. It also reveals that Ghanaian banks are realizing the significance and importance of operational risk management as a tool for gaining competitive advantage and are allocating the requisite resources for it.

This finding is inconsistent with Arnold (2008), who found a positive impact of liquidity (market risk) on Profitability” The aim of the study was to examine the benefit which liquidity could bring for the companies, the study used questionnaire method to collect data from 10 selected LCBs (Licensed Commercial Banks) from 2006 to 2014 in Sri Lanka, points out the positive impact of liquidity on profitability in short run, and the research doesn't find explicit relationship between them in the long term. Similarly, the result was found to be in disagreement with the outcome of Valverde and Fernandez (2007), who examined the determinants of bank profitability in Europe, the positive impact of LDR (market risk) on bank profit.

Conclusion

The study concluded that in the long-run, the operating risk increase profitability because the banks have longer time to adjust and minimize the risk involved in their operation which resulted to a positive effect but have a shorter time in the short-run to adjust which resulted in a negative and decreasing effect in their profitability. Also, in the short-run, the increase in the market risk will significantly increase the profitability of the selected banks under study. But in the long-run the relationship is negative. Market price risk arises only for those assets, which are traded on low volume. The Changes in market environment could enforce companies to adjust its prices of products and services, simultaneously changing sales volumes or competitiveness, depending upon positioning and market exposure of the main competitors (indirect impact of market risk on business operations of the company). In that sense, most companies intend to manage market risk on financial result of the company, especially it is a case with non-financial institutions.

Contribution to Knowledge

The study contributed to knowledge by establishing that; the effects of operating risk and the market risk affect profitability of the deposit money banks in the long-run and the short-run differently. Again, of the reviewed study, none applied the Panel Auto-regressive distributed lagged model, which was applied in this study.

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