

Credit Risk Measures of Quoted Manufacturing Firms in Nigeria: Further Findings

Omiete Victoria Olulu-Briggs

Department of Finance and Banking, University of Port Harcourt, Nigeria.

Correspondence: omiete.olulu-briggs@uniport.edu.ng

Abstract

This study examined credit risk measures and financial performance of quoted manufacturing firms (QMFs) in Nigeria for the period 2008-2020. Annual secondary series was sourced from audited financial reports of 16 QMFs; making a total of 208 observations. The independent variables used to measure credit risk are default risk, operational risk and recovery risk while the dependent variable, return on asset, is a measure for financial performance. Unit root test was applied to test for stationarity of the variables, Hausman test for independency of the explanatory variables from random effects, and the Fixed Panel Ordinary Least Square (POLS) to test for the relationship between the variables, at the 5% level of significance. From the estimation, the panel unit root test show that all the variables are integrated at level. The Hausman test shows that the random effects are correlated with the explanatory elements. The Fixed POLS show that default and exposure risks are negative but statistically significant; while recovery risk shows negative and insignificant association with ROA. In conclusion, default risk and exposure risk are the key underlying credit risks facing QMFs in Nigeria. Subsequently, the study recommends that manufacturing firms should seek out credit insurance on their invoices, or ensure guaranteed payment using banks as third parties or adopt early short term payments by giving discounts to their customers or the use of debt factoring. Secondly, proper and thorough credit analysis should be conducted on current and new customers before extending credit to them. As regards exposure risk, payments for transactions should be hedged against inflation and exchange rate risk; more so, manufacturing firms should design friendly and flexible credit policies based on industry standards or competition to ensure clients are accountable.

Keywords: Exposure risk, Default risk, Recovery risk, Quoted firms, Panel OLS

1. Introduction

Manufacturing firms are fundamental in the economic and financial transformation of any nation. They are the cardinal businesses through which the wheels of any nation's economy revolves. These firms carry out extensive productive activities and as such involved in the purchase of large stock of raw materials as well as finished goods inventory (Olulu-Briggs & Wobo, 2022). Manufacturing can also be seen as the engine room of any given economy. This means that it involves the continuous processing of large volumes of raw materials into finished goods, which

in turn invigorates business activities in the economy. However, as an instrument for economic progression and structural transformation, they carry a lot of risk in their production and financial operations, particularly, credit risk. Tandelilin, Kaaro and Mahadwartha (2007) assert that the most critical risk confronting firms are credit, operational and liquidity risk. Hertrick (2015) view credit risk as probable loss elicited by debtors' default and leads to cash flow interruption. Hence, the need for effective and efficient management of its risk exposure so as to achieve the desired performance that engenders economic advancement. Mu (2020) advocated for effective risk management in order to curb the adverse effect of loss through loss minimization, volatility, and opportunity maximization. When effective risk management practices are carried out, the process of risk identification, assessment, and prioritization becomes a norm to counter its cyclical effect on the performance of firms.

Risk constitutes a limiting factor towards the attainment of an assured predefined objectives (Kanchu & Kumar, 2013). It is the probability of losing all or some of your investments; which means that potential investment returns might experience some variations (Siringi & Obange, 2021). Thus, risk can affect the performance of a firm and render it incapable of achieving its proposed objectives. Credit risk is the possibility that lenders such as bond issuers, mortgage lenders, insurance firms and customers may not get back invoice payments, principal and or interest from their investment; or may be unable to pay insurance claims. For manufacturing firms, it is the likelihood that they may experience unpaid account receivables which may lead to an increase in collection cost and disruptive cash flows. The credit risk of a firm is usually assessed by its financial position using its past financial statement with particular reference to performance, ability to raise external/internal financing and the adequacy of its capital. Others are its operational efficiency, market position, management expertise in terms of payment of obligations and how it applies financial moderation in its operations (Olulu-Briggs & Wobo, 2022).

The constant recurrence of bad debt stimulates credit risk and is a source of worry to business managers. Kumbhar (2009) argued that despite the effort of managers, bad debts are always present and this makes debt recovery a significant aspect of credit risk management. Financial performance objectives cannot be met if credit risks are not properly identified and addressed. Otekunrin et al (2018) opine that for the stability of financial performance and adaptability to risk, business environs should be properly identified, prioritized, assessed, and well managed to avoid any

form of vulnerability that can give rise to insolvency. This is the motivation for this study to critically examine the various measures of credit risk manufacturing firms face in the Nigerian business environment that mostly affects their performance. Our study fills the gap by segregating credit risk into default risk, exposure risk and recovery risk (Bessis, 2011) with an up-to-date data of quoted manufacturing firms as against commercial banks and insurance firms that flock the empirical studies in Nigeria.

This research is very meaningful to both business operations and financial risk managers on appropriate measures to employ when face with particular risk. It also provide suggestions to lenders on how to guard against economic changes associated with their finances. Furthermore, scholars will find it noteworthy to advance their investigations.

The study is limited to only 16 quoted manufacturing firms on the NSE due to availability of complete information for those companies. As well, the risk measures utilized were only default risk, exposure risk and recovery risk, which may not be the only risk factors affecting the activities of manufacturing firms in Nigeria. The remaining sections 1-5 of this study are as follows: analysis of literature; methodology; research results; conclusion and recommendations.

2.1 Literature Review

Conceptual framework: Overview of Default risk, Exposure risk and Recovery risk
The risk of default constitutes the inability of borrowers to meet up with their indebtedness, in this case, account payables. Businesses encounter default mostly from economic recessions, poor cash flows, war, changes in government and systemic corruption. This risk can be evaluated using the firm's quarterly reports of past financial performance, their good will, market position, whether government or privately owned and credit rating agencies. A look at its free cash flow or interest coverage ratio reports how well the firm is generating cash to cover its periodic interest expenses. Exposure risk is the risk of potential losses from a firm's operations. Manufacturing firms are usually exposed to employee misconduct/sabotage, strike actions, inadequate internal processes relating to insurance, asset management and controls, fire incidences or flood, changes in government policies, inadequate customer service and old-fashioned credit policies, equipment failures, environmental accidents and changes in demand due to obsolete technology. Exposure risk can be subdivided into transaction, operation and translation risk. *Transaction exposure* is when firms' incur changes in trade or

payments due to fluctuations in the exchange rate. *Operating exposure* is when a firm's future cash flows are affected by substantial inflationary pressures and the exchange rate; which depletes the overall value of the firm as well as competitiveness owing to changes in technology. Translation exposure is by means of changes in exchange rate that leads to changes in the translation of a firm's financial statements between the home and foreign country in an accounting period. *Recovery risk* arises from the borrower's default. It is a firm's disclosure to losses that makes it difficult to pilot its routine operations. This risk is in consequence of natural disasters like fire, flood, major power breakdown or explosions, damages to facilities, supply chain disruptions, non-functional virtual systems as well as cyber-attacks. Recovery risk if not well planned for may lead to financial losses and subsequent business failure (Al-Nimer, Abbadi, Al-Omush, & Ahmad (2021).

Theoretical framework: The Lemon Theory of Asymmetric Information and Signaling theory.

The role of managing risks are part of the tasks of executive board and managers of firms (Omasete, 2014), and these risks affects firms' financial performance. Smith and Stulz (1985) describe the hedging and risk-taking activities of managers as the core facet that influence agency problems. Akerlof (1970) put forward the Lemon theory which says that firms' agents have more information than others which poses a great challenge in terms of project finance. Thus, there exist inadequate information on borrowers before credit is advanced to them which may result to the inability of firm's to extend credit to only good borrowers. The asymmetric information results in adverse selection and moral hazard leading to an increase in default and credit risk which has a negative impact on performance (Bofondi & Gobbi, 2004). However, when risk is properly identified and measured, the goals of the firm can easily be attained (Fama, 1980; Jensen & Meckling, 1976; Collier & Agyei-Ampomah, 2006).

Likewise the signaling theory is basis for demonstrating the information contents in financial statements; which acts as signals on the overall well-being of the firm. Spence (2002) hold forth that financial statements signal information to the firms' stakeholders on the level of risk it has. However, studies have shown that not all the information contents are available to the shareholders from the managers that drive risky ventures (Kaplan & Jeremy, 1993; Wruck, 1990; Andrade & Kaplan, 1998; Pearson 2002; Whitaker 1999).

Empirical Framework

Isanzu (2017) examined various measures of credit risk and its impact on the financial performance of 5 big Chinese banks from 2008-2014. Measures adopted were capital adequacy ratio (CAR), nonperforming loans (NPL), loan reserves (LR) and charges on impaired loans (IL). From the panel regression, only CAR and NPL has significant impact on financial performance. The study recommends that there is need to institute credit control measures to secure the growth of the banks. Ekinci and Poyraz (2019) investigated the relationship between credit risk and performance of deposit banks in Turkey. Nonperforming loans was used as a proxy for credit risk while ROE & ROA was for performance. Utilizing a 13 year data on panel regression, the study shows that a negative link exists between credit risk and all performance variables. The study recommends for Turkish banks to enforce more control measures on their credit in order to reduce the NPLs. Al-Yatama, Al Ali, Al Awadhi and Al Shamdi (2020) evaluated risk factors that affect financial performance of insurance firms quoted on the Kuwait stock exchange (KSE) from 2009-2017. The outcome supports credit and operational risk as the core factors that affect financial performance.

Adopting the structural equation model, Gadzo, Kportorgbi and Gatsi (2019) assessed credit and operational risk in financial performance of Ghanaian universal banks. The result of the analysis is in line with the Lemon theory of asymmetric information. A negative connection exists between credit risk and financial performance. Based on this finding, the study put forward that firms should restrict lending rate so as to reduce credit risk. In addition, banks should constitute their portfolios in liquid assets which will increase their liquidity. Sisay (2017) strongly supports inverse association linking credit, solvency and liquidity risk to financial performance of Ethiopian firms. Nyasaka (2017) found that non-performing loans is inversely related to banks' lending aptitude. Thus, creating a harmful signaling impact on credit risk.

Muriithi, Wiaweru and Maturi (2016) explored credit risk and financial performance of 43 Kenyan banks from 2005-2014. The variables used to measure credit risk are asset quality, loan advance, risk weighted assets and return on equity. Utilizing the panel fixed effect model, credit risk showed a negative but significant impact on bank profitability. Thus, management should improve on their capacity to analyze and administer loans; and also make suitable credit policies to bring in more profits. In a study of the impact of operational risk on financial performance of supermarkets in Nairobi, Wangalwa and Maturi (2018) utilized the multiple

regression method and found an inverse association between operational risk and financial performance. Kamau and Njeru (2016) affirm that operational risk has negative significant effect on financial performance of Kenyan firms. Mathuva (2009) gave an inverse relationship between operational risk and financial performance of Kenyan firms.

Employing a 6-yearly data alongside cross-sectional analysis, Ogboi and Unuafé (2013) found that capital adequacy and credit risk impact positively on the financial performance of Nigerian Banks. Contingent on this finding, the study recommends that banks should carry out an in-depth credit appraisal on customers before loans are advanced. In assessing how financial risk influence financial performance of 14 firms quoted in Nigerian exchange from 2013-2017, Onsongo, et al. (2020) employed the panel regression and revealed credit risk as having insignificant but positive impact on financial performance while liquidity risk has significant but negative impact on financial performance and operational risk has insignificant but positive impact on financial performance. Folajimi and Dare (2020) conducted an empirical analysis on credit risk and financial performance of 13 quoted deposit money banks in Nigeria. Nonperforming loans, capital adequacy ratio, loan loss provision to deposit ratio, and bank size which was used as a control variable. From the estimation, credit risk has positive effect on financial performance. Thus, it was recommended that Nigerian banks should adopt a robust credit management policy to ensure NPLs are at low levels, and performance is at high levels

3. Methodology

This study adopts the ex-post facto research design. Available data was gotten from the annual reports of 16 Quoted manufacturing firms (QMFs) in Nigeria from 2008-2020; making 208 observations. The NSE (2017) published that there are 71 QMFs, out of which 16 was selected based on convenience sampling. Following Bessis (2011), credit risk was disintegrated into default risk (DFR), exposure risk (EXR) and recovery risks (RCR); while return on assets (ROA) was used as a proxy for financial performance (Odubuasi, et al., 2020). Techniques adopted to analyze the series are: Descriptive test, Unit Root, Hausman, and Fixed Effect Panel OLS tests. The functional model for the study becomes:

$$\begin{aligned}
 \text{ROA} &= f(\text{DFR}, \text{EXR}, \text{RCR}) \dots\dots\dots 1 \\
 \text{ROE}_{it} &= \beta_0 + \beta_1\text{DFR}_{it} + \beta_2\text{EXR}_{it} + \beta_3\text{RCR} + \sigma_{it} \dots\dots\dots 2 \\
 &\beta_1, \beta_2 \text{ and } \beta_3 < 0
 \end{aligned}$$

Where, ROA = return on assets, DFR = default risk (earnings before interest and tax/debt interest payments), EXR = exposure risk (net sales/trade receivables), RCR

= recovery risk (net sales/allowance for bad debts), β_1 , β_2 and β_3 = constant parameters, β_0 = intercept, i = different firm I in year t , σ_{it} = error term.

4. Results and Discussion

Table 4.1: Descriptive Analysis

	ROA	DFR	EXR	RCR
Mean	0.240162	18.93021	68.47233	30.70934
Standard Dev.	0.098650	33.43287	23.91169	11.58255
Skweness	0.277208	6.041529	1.383760	0.747875
Kurtosis	3.313859	51.40260	5.580187	3.876447
Jarque-Bera	3.517669	21569.70	124.0766	25.91103
Probability	0.172245	0.000000	0.000000	0.000002

Source: E-views10 outcome

From table 4.1, the mean values for ROA, DFR, EXR and RCR are 0.240162, 18.93021, 68.47233 and 30.70934. The deviation from mean values are ROA (9.8%), DFR (33.4%), EXR (23.9%) and RCR (11.6%). Kurtosis measures if the data distribution is heavily tailed or lightly tailed. From the estimation, all the variables are greater than 3 which means that they are heavily tailed and as such leptokurtic in nature. This means that the default risk, exposure risk and recovery risk level of the 16 quoted manufacturing firms in Nigeria are somewhat very high. However, there is a moderate level of risk associated with performance. From the Jarque-Bera probability values, only ROA is normally distributed as its value, 0.172245, is more than the 5% level of significance.

Table 4.2: Levin, Lin & Chu (LLC) Stationarity test

Variables	LLC Statistics	P-value	Remark
ROA	-3.01686	0.0157	I(0)
DFR	-39.5449	0.0000	I(0)
EXR	-6.15834	0.0000	I(0)
RCR	-4.25166	0.0000	I(0)

Source: E-views10 outcome

The essence of the stationarity test is to see if the variables used for the study changes over time. From table 4.2, the LLC stationarity test shows that all the variables are integrated at levels at the 95% confidence interval. This means that

the variables at levels do not have seasonal changes. Thus necessitating the use of the Panel regression methods.

Table 4.3: Hausman Test for Cross-Section Random Effects

Test Summary	Chi square Statistic	Chi square d.f	Probability
Cross-Section Random	8.329285	3	0.0397

Source: E-views10

Hausman test is a test of the consistency of an estimator, in so doing, evaluating the fitness of the statistical model to the data gathered. With this test, the study identified if the Random-effect or Fixed-effect model should be adopted for further analysis. From table 4.3, the Hausman test shows that individual effects are not independent of the explanatory variable given that the probability value of 0.0397 is below the 5% significant level, thereby rejecting the null hypothesis. Accordingly, the study adopts the Fixed Panel OLS.

Table 4.4: Fixed Effect Panel OLS

The Dependent Variable = Return on Assets (ROA)

Variables	Coefficient	Standard Error	T-Statistic	Probability
DFR	-0.000679	0.000211	-3.221926	0.0015
EXR	-0.195674	0.030889	-6.334834	0.0000
RCR	-0.000663	-0.000742	0.893316	0.3728
C	0.000663	0.000742	0.893316	0.3728

Effects Specification

Cross-Section Fixed (Dummy Variables)

R-squared	0.584960	F-Statistic	8.082743
Adj. R-squared	0.531146	Prob (F-Statistic)	0.000000

Durbin-Watson Stat. 1.785273

Source: E-views10

The outcome from table 4.4 indicates that only DFR and EXR have negative but statistically significant as their values indicates. This implies that 1% increase in

DFR and EXR will lead to 0.000679% and 0.195674% decrease in ROA individually. RCR is negative and insignificant to ROA. This infers that 1% increase in RCR will cause ROA to reduce by 0.000663%. Adjusted R-squared signifies that credit risk explains 53.1% variations in ROA; while the other are captured by variables not included in this study. Durbin Watson demonstrates correlations among the variables. A statistic of 1.785273 indicates that the model is free from first order serial correlation; and the F-stat. of 8.082743 indicates that jointly, the model best fits all quoted manufacturing firms in Nigeria; and as such can be used to make generalizations.

Discussions and Policy Implication

The negative value of default risk indicates that manufacturing firms are continuously faced with so much of unpaid receivables which results to poor cash flows and may impede their production cycle and lead to a fall in their performance. This finding is in support of the study by Muriithi, Wiaweru and Maturi (2016), Ekinci and Poyraz (2019) and Gadzo, Kportorgbi and Gatsi (2019) that a negative relationship exist between credit risk and financial performance. Similarly, the rate of default risk is due to exposure risk. From the finding, the high value of the coefficient for exposure risk (-0.195674) is an indication that manufacturing firms are quite exposed to losses in their day-to-day business operations and transactions which may be as a result of inflationary trends, exchange rate fluctuations, new technology that sparks competition, staff unrest, equipment failure, and most importantly, changes in demand which affects cash flows considerably and may lead to a plunge in performance levels. Also, recovery risk though negative and insignificant, does not show much substantial impact on financial performance. This means that manufacturing firms in Nigeria may have only experienced slight supply chain disruptions, damages to facilities or a breakdown of virtual systems which may have been fixed as quickly as possible.

The policy implication of this is that manufacturing firms should seek for ways to address their cash flow problems, so as to avoid bankruptcy. In addition, efforts should be geared towards minimizing their exposure to risk as well as manage disruptions that seems inevitable.

5. Conclusion and Policy Recommendations

This study investigate the relationship between credit risk measures and financial performance of 16 QMFs in Nigeria for the period 2008-2020. It is centered on the Akerlof (1970) Lemon Theory of Asymmetric Information and Signaling theory

which assert that there exist inadequate information on borrowers before credit is advanced, leading to adverse selection and moral hazard effect and thus, credit risk. Following, Bessis (2011) model, credit risk measures significant to manufacturing firms was disintegrated into default risk, exposure risk and recovery risk. Unit root test reveal that the variables were stationary at levels and so do not change overtime. Hausman test indicate that the fixed effect panel model was appropriate, which also prove that default and exposure risk are the major underlying credit risks facing QMFs in Nigeria. This is in support with previous findings by Muriithi, Wiaweru and Maturi (2016); Ekinici and Poyraz (2019); Gadzo, Kportorgbi and Gatsi (2019); and Wangalwa and Muturi (2018) that there exist an inverse relationship between credit risk, operational risk and financial performance. The policy recommendation is that: first, in order to curb defaults, manufacturing firms should seek out credit insurance on their invoices, or ensure guaranteed payment using banks as third parties or adopt early short term payments by giving discounts to their customers or the use of debt factoring. Second, a proper and thorough credit analysis should be conducted on current and new customers before extending credit to them. As regards exposure risk, payments for transactions should be continuously hedged against inflation and exchange rate risk (Wani & Ahmad, 2013); more so, manufacturing firms should design friendly and flexible credit policies based on industry standards or competition to ensure clients are accountable. In addition, virtual systems and machineries should be periodically optimize to avoid supply chain disruptions, stem competition and gain continuous demand for their products.

References

- Akerlof, G. (1970). The market for “lemons”: Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics*, 84, 488–500. <https://doi.org/10.2307/1879431>
- Al-Nimer, M., Abbadi, S. S., Al-Omush, A., & Ahmad, H. (2021). Risk management practices and firm performance with a mediating role of business model innovation: Observations from Jordan. *Journal of Risk and Financial Management*, 14(3), 1-20, <http://dx.doi.org/10.3390/jrfm14030113>
- Al-Yatama, S. K., Al Ali, M. S., Al Awadhi, K. M., & Al Shamali, N. M. (2020). The effects of credit risk, operational risk and liquidity risk on the financial performance of insurance companies listed at Kuwait Stock Exchange. *European Journal of Economic and Financial Research*, 3(6), 1-9. <http://dx.doi.org/10.5281/zenodo.3605378>

- Andrade, G., & Kaplan, S. N. (1998). How costly is financial (not economic) distress? Evidence from highly leveraged transactions that became distressed. *The Journal of Finance*, 53(5), 1443-1493. <https://doi.org/10.1111/0022-1082.00062>
- Bessis, J. (2011). *Risk management in banking*. New Jersey, United States, John Wiley & Sons
- Bofondi, M., & Gobbi, G. (2004). Bad loans and entry into local credit markets (No. 509). *Bank of Italy, Economic Research and International Relations Area*.
- Collier, P. M., & Agyei-Ampomah, S. (2006). *Management accounting: Risk and control strategy*. Oxford: Elsevier.
- Ekinci, R., & Poyraz, G. (2019). The effect of credit risk on financial performance of deposit banks in Turkey. *Procedia Computer Science*, 158, 979-987. <https://dx.doi.org/10.1016/j.procs.2019.09.139>
- Fama, E. (1980). Agency problems and the theory of the firm. *Journal of Political Economy*, 88, 288-307. <https://www.journals.uchicago.edu/doi/pdf/10.1086/260866>
- Folajimi, A. F., & Dare, O. E. (2020). Credit risk and financial performance: An empirical study of deposit money banks in Nigeria. *European Journal of Accounting, Auditing and Finance Research*, 8(2), 38-58.
- Gadzo, S. G., Kportorgbi, H. K., & Gatsi, J. G. (2019). Credit risk and operational risk on financial performance of universal banks in Ghana: A partial least squared structural equation model (PLS SEM) approach. *Cogent Economics & Finance*, 7(1), 1589406. <https://doi.org/10.1080/23322039.2019.1589406>
- Hertrich, M. (2015). Does credit risk impact liquidity risk? Evidence from credit default swap markets. *International Journal of Applied Economics*, 12(2), 1-46. <http://dx.doi.org/10.2139/ssrn.2426979>
- Isanzu, J. S. (2017). The impact of credit risk on financial performance of Chinese banks. *Journal of International Business Research and Marketing*, 2(3). <http://dx.doi.org/10.18775/jibrm.1849-8558.2015.23.3002>
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3, 305-60. [https://doi.org/10.1016/0304-405X\(76\)90026-X](https://doi.org/10.1016/0304-405X(76)90026-X)
- Kamau, F., & Njeru, A. (2016). Effect of Liquidity Risk on Financial Performance of liquidity risk has no significant effect on return on asset. *International Journal of Science and Research*, 5, 867-72. https://www.ijsr.net/get_abstract.php?paper_id=ART20162288

- Kanchu, T., & Kumar, M. M. (2013). Risk management in banking sector—an empirical study. *International Journal of Marketing, Financial Services & Management Research*, 2(2), 145-153.
- Kaplan, S. N., & Jeremy C. S. (1993). The evolution of buyout pricing and financial structure in the 1980s. *Quarterly Journal of Economics*, 108, 313–57. <https://doi.org/10.2307/2118334>
- Kumbhar, V. M. (2009). Alternative Banking: A Modern Practice in India. *Professional Banker*, 9(9), 54-58. <https://doi.org/10.4236/tel.2016.64070>
- Mathuva, D. M. (2009). Capital adequacy, cost income ratio and the performance of commercial banks: The Kenyan Scenario. *The International Journal of Applied Economics and Finance*, 3(2), 35-47. <https://dx.doi.org/10.3923/ijaef.2009.35.47>
- Mishra, M. K. (2018). Determinants of manufacturing sector growth in Ethiopia. *Amity Journal of Management*, 6(2), 1-12. <http://dx.doi.org/10.14414/jebav.v23i1.2164>
- Mu, J. (2020). Effect of risk management strategy on NPD performance. *International Journal of Project Management*, 21(18), 367 - 377.
- Muriithi, J. G., Waweru, K. M., & Muturi, W. M. (2016). Effect of credit risk on financial performance of commercial banks Kenya. *IOSR Journal of Economics and Finance*, 7(4.1), 72-83. <http://hdl.handle.net/123456789/278>
- NSE (2017). Listed Companies. Available online: <https://www.nse.co.ke/listed-companies/list.html>
- Nyasaka, F. O. (2017). *The relationship between credit risk management practices and non-performing loans in Kenyan commercial banks: A case study of KCB group limited* (Doctoral dissertation, United States International University-Africa).
- Obamuyi, T. M., Edun, A. T., & Kayode, O. F. (2012). Bank lending, economic growth and the performance of the manufacturing sector in Nigeria. *European Scientific Journal*, 8(3), 19-36. <https://doi.org/10.19044/esj.2012.v8n3p%25p>
- Odubuasi, A., Wilson-Oshilim, U. D., & Ifurueze, M. (2020). Effect of market risks on the financial performance of firms in Nigeria. *European Journal of Accounting, Auditing and Finance Research*, 8(6), 28-45. https://www.researchgate.net/publication/351941566_EFFECT_OF_MARKET_RISKS_ON_THE_FINANCIAL_PERFORMANCE_OF_FIRMS_IN_NIGERIA

- Ogboi, C., & Unuafé, O. K. (2013). Impact of credit risk management and capital adequacy on the financial performance of commercial banks in Nigeria. *Journal of Emerging Issues in Economics, Finance and Banking*, 2(3), 703-717.
- Olulu-Briggs, O. V., & Wobo, H. O. (2022). Cash positioning and financial performance of telecommunication firms in Nigeria. *Nigerian Journal of Management Sciences*, 23(1), 167-176.
- Omasete, C. A. (2014). *The effect of risk management on financial performance of insurance companies in Kenya* (Doctoral dissertation, University of Nairobi).
<http://erepository.uonbi.ac.ke/bitstream/handle/11295/74732/Omasete%20Catherine%20Asemit%20The%20effect%20of%20Risk%20Management%20on%20financial%20performance%20of%20Insurance%20companies%20in%20Kenya.pdf?sequence=3&isAllowed=y>
- Onsongo, S. K., Muathe, S. M. A., & Mwangi, L. W. (2020). Financial risk and financial performance: Evidence and insights from commercial and services listed companies in Nairobi Securities Exchange, Kenya. *International Journal of Financial Studies*, 8(51) 1-15.
<https://doi.org/10.3390/ijfs8030051>
- Otekunrin, A. O., Nwanji, T. I., Olowookere, J. K., Egbide, B., Fakile, S. A., Lawal, A. I., Eluyela, F. D. (2018). Financial ratio analysis and market price of share of selected quoted agriculture and agro-allied firms in Nigeria after adoption of International Financial Reporting Standard. *The Journal of Social Sciences Research*, 12(4), 736-744.
<https://doi.org/10.32861/jssr.412.736.744>
- Pearson, R. (2002). Moral hazard and the assessment of the insurance risk in the eighteenth and early—nineteenth-century Britain. *Business History Review*, 76, 1–35. <https://doi.org/10.2307/4127750>
- Siringi, E., & Obange, N. (2021). Implications of cogeneration policy on performance of manufacturing firms. *International Journal of Statistics and Economics Formerly Bulletin of Statistics & Economics*, 89(99), 144 - 165.
- Sisay, D. (2017). The effect of financial risk on performance of insurance companies in Ethiopia. Ph.D. thesis, Addis Ababa University, Addis Ababa, Ethiopia. Unpublished.
- Smith, C., & Stulz, R. (1985). The determinants of firms' hedging policies. *Journal of Financial and Quantitative Analysis*, 20 (12), 391–405.
<https://www.jstor.org/stable/2330757?origin=crossref>

- Spence, M. (2002). Signaling in retrospect and the informational structure of markets. *American Economic Review*, 92, 434–59. <https://doi.org/10.1257/00028280260136200>
- Tandelilin, E., Kaaro, H., & Mahadwartha, P. A. (2007). Corporate governance, risk management and bank performance: Does type of ownership matter. *EADN Individual Research Grant Project*, 34, 115-118.
- Wangalwa, M., & Muturi, W. (2018). Effect of financial risk on financial performance of large-scale supermarkets in Nairobi County, Kenya. *International Journal of Social Science and Technology*, 4, 574–591.
- Wani, A., & Ahmad, S. (2013). *The effect of hedging on firm value and performance: Evidence from the nonfinancial UK firms*. Hull: Hull University Business School.
- Whitaker, R. B. (1999). The early stages of financial distress. *Journal of Economics and Finance*, 23, 123–33. <https://doi.org/10.1007/BF02745946>
- Wruck, K. H. (1990). Financial distress, reorganization, and organizational efficiency. *Journal of Financial Economics*, 27, 419–44. [https://doi.org/10.1016/0304-405X\(90\)90063-6](https://doi.org/10.1016/0304-405X(90)90063-6)