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Relationship between Financial Risk Exposure and Financial Performance of Manufacturing Companies Listed at the Nairobi Securities Exchange Kenya

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Abstract:
Companies face various risks in the market. While studies have focused on business and market risk as a major risk that of companies in the market, there is still a wide gap that needs to be filled in determining the relationship between the financial risk exposure and financial performance of manufacturing companies listed at the NSE. This was after the literature review of the study established that most studies on financial risk exposure have concentrated mostly on the financial sector with a limited review on the manufacturing sector. Currently, the Kenyan government seeks to achieve its vision 2030 by ensuring that the country is well transformed into manufacturing capacity, which is one of its key pillars. Transformation of the manufacturing sector is one of the Big 4 Agenda that the current government seeks to achieve by the year 2022. The purpose of this study, therefore, was to determine the relationship between financial risk exposure and financial performance of manufacturing companies listed at the Nairobi Securities Exchange emphasizing the fast-moving consumer goods. The predictor variables are liquidity risk, credit risk, operational risk, and interest rates risk exposures. Shift-ability, Transaction cost, and agency theories guided the study. The study adopted a descriptive research design on the 9 listed manufacturing companies which were used as the target population. Secondary data from the financial statements for each company was considered from 2013 to 2018. Panel data were analyzed using statistical software (STATA). Descriptive analysis was performed and inferential statistics were regression and correlation analysis where moderated multiple regression model was used to test the relationship between the study variables. The results of the study revealed that both liquidity risk exposure (p=0.025) and operational risk exposure (p=0.047) had a significant positive relationship with the financial performance of listed manufacturing firms at the NSE. Also, the study established that there is an insignificant positive relationship between credit risk exposure and financial performance (p=1.113). Consequently, the study findings revealed that there is an insignificant positive relationship between interest rates and the financial performance of listed manufacturing firms at the NSE(p=0.083). This study was carried out on manufacturing companies listed at the NSE. At the center of the discussion was the current economic conditions that have seen some companies closing due to various economic conditions among them financial risk exposures. The study, therefore, recommends that there is a need for future study not only on big manufacturing corporations but also on the small manufacturing companies that are still struggling with understanding issues related to financial risk exposure. The study also recommends that other financial risk exposures such as market risk, foreign exchange, and currency risk need to be included in the future study and their effect investigated in relation the financial performance. While this study may have used ROA as the measure, there is a need for using other different accounting measures to determine financial performance.

Keywords: Financial risk exposure, financial performance

1. Introduction

1.1. Background of the Study

Financial risk exposure is any form of financial loss or challenge that a company could face or incur due to uncertainty, instability, and losses in the financial market caused by changes in the market (market anomalies) such as currency or interest rates (Arif&Showket, 2015; Fali, Nyor& Mustapha, 2020). The volatility, thus, affects an entity's financial performance. Financial performance is used to gauge how efficient an entity uses its resources to achieve set results. Studies have been conducted to establish the connection between the financial risks that an entity is exposed to and its financial performance (Dey, Hossain&Rezaee, 2018; Isiaka, 2018). However, there exist conflicting clarifications regarding the relationship between financial risk exposure and financial performance, making it challenging to provide conclusive information (Onsongo, Muathe&Mwangi, 2020). This research, therefore, offers to provide more emphasis regarding the effect of financial risk exposure on financial performance.

Even though unemployment has remained a big challenge among the developing countries (Odalo, 2016), manufacturing has been one of the areas that many countries have relied on to create employment opportunities for the youth (Shaban& James, 2018). However, with the diminishing performances and growth especially in Africa, it is rarely

possible for this industry to have effective resources and manpower aimed at enhancing its growth (Ngoze, Bwisa&Sakwa, 2013). In the face of this phenomenon, risk management activities have become integral management practices for many firms facing financial risk exposures, especially in the awakening global business challenges.

While many developed countries have made tremendous improvement towards financial risk management in this sector, developing countries still lag as most of their manufacturing companies are still struggling with effective ways of managing financial risk exposures (Ahmed, 2015). Globally, it has been established that manufacturing companies are focused on understanding their product cost and profitability. Approximately, 53% of the manufacturing companies globally (Europe) indicated that they are overwhelmingly focused on achieving growth through various strategies to minimize their financial risk exposures and increase their financial performance (KPMG Report, 2014). Also, a report by Brookings (2018) on the global manufacturing scorecard showed that China is leading in terms of manufacturing output while Poland remains the top nation with the highest percentage of employees in the manufacturing sector.

The report's findings concluded that the resurgence performance of the manufacturing sector in these two countries has been due to robust financial risk exposure management that promotes innovation, research, and development, good governance to enhance financial liquidity, leverage, and market risk (Brookings, 2018). Thus, there is a need for continuous assessments of these financial risk exposures using more advanced policies and frameworks to grow the manufacturing sector in other nations such as developing ones where manufacturing has been tipped as a critical avenue of creating millions of jobs.

Nevertheless, United Nations Economic for Africa (2016-2017) report found out that unlike other developed nations, most of the African countries have a stagnant or declining share of the manufacturing sector due to excessive dependence on the service sector, thus no sustainable management of financial risk exposures that could revive the performance of manufacturing industry and create millions of jobs. The report further stated that unlike Ethiopia that has implemented an ambitious program of export-oriented industrial parks, other African countries have not developed effective policies aimed at managing financial risks in the manufacturing industry, leading to lack of employment and poor performance (United Nations Economics report, (2016-2017)

Manufacturing organizations have been identified as a major player in realizing the Kenyan dream of achieving Vision 2030. Besides, it has been identified as one of the Big Four agenda that the country needs to achieve before the year 2022, hence the need to address it effectively (KAM, 2016). Data from Kenya National Bureau of Statistics (KNBS, 2016) indicated that in the first quarter of 2016, the manufacturing industry grew by 3.6 percent compared to 4.1 percent in the same quarter of 2015. The downward growth demonstrates that the industry is facing challenges such as financial risk exposures that need to be addressed to improve its financial performance to create employment opportunities (KNBS, 2016).

This study reports the findings of thorough research to determine the relationship between the financial risk exposure and financial performance of manufacturing companies listed at the Nairobi Securities Exchange (NSE). Emphasis was placed on the major types of financial risks that firms are exposed to in the market such as liquidity, credit, market, and operating risks which affect the financial performance of many organizations. The study sought to establish how financial risk exposure and financial performance increase the share of these companies at the stock exchange market.

1.1.1. Financial Risk Exposure

Financial risk exposure is any form of financial loss or challenge that a company could face or incur due to uncertainty, instability and losses in the financial market caused by changes in the market (market anomalies) such as currency or interest rates (Gietzen (2017). The volatility of prices affects every company's value and profitability, hence the need to examine and re-examine all the operations in the security market. This is because changes in the prices ranging from commodity prices to foreign exchange rates among others may affect a company's financial performance (Bartram, Brown & Waller, 2015). Companies, therefore, have continued to experience challenges of financial flows that have affected their financial performance.

Nevertheless, companies are exposed to various financial risks during their operations. According to Zaremba (2016), the risks that companies are exposed to are associated with the economic environment in which all the manufacturing firms, as well as other firms in the economy, operate and are made up of liquidity, credit, interest rate, operational risks among others. Gathogo and Ragui (2014) indicated that the management of each company has the responsibility of identifying these risks and determining their significant contribution to the profitability of the firm.

Currency risk exposure involves the fluctuation of the value of a company's financial instrument due to changes in the foreign exchange rates which can be translation exposure or transaction exposure (Chen & Pan, 2012). Liquidity risk exposure involves funding or cash flow risks which explain the difficulty that an organization might face in realizing assets or otherwise floating capital to meet its commitments related to assets instruments. Credit risk exposure is the possibility that a company may incur losses from the failure of another party (creditors) to perform according to the terms of a contract. Operational risk exposure looks at how changes in interest rates may affect cash flows from the operations (Douglas, 2014).

Interest rate risk, on the other hand, is the possibility of a decline in the value of an asset resulting from unexpected fluctuations in interest rates. Entities encounter interest rate risk in different ways. Several studies have indicated how interest rate affects financial performance (Odalo et al., 2016; Musiega, Olweny, Mukanzi&Mutua, 2017; Widyastuti, Oetomo&Lusy, 2018). The studies established a significant relationship between the interest rate and financial performance. Both studies used the annual interest rate as the measure of interest rate variable.

In operationalizing liquidity risk exposure, operating risk exposure, and credit risk exposure as the measures that the study adopted under financial risk exposure, Ahmed, Ankhtar and Usman (2011) indicated that liquidity risk exposure attempts to determine whether the company can pay its short-term debt when they fall due. This was determined using the working capital ratio. Also, Ahmed et al., (2011) noted that operational risk manages the effectiveness of how management utilizes assets of the company to generate sales and the study adopted a fixed asset turnover ratio as the measure. Credit risk exposure is the possibility that losses may occur if the company does not collect its debt on time (Douglas, 2014). Account receivable turnover was used as a measure that determines the average number of days it takes companies to collect their dues.

1.1.2. Financial Performance

In the available literature related to organizational performance (Smith, 2005; Murby& Gould, 2005; Martinez &Kennerly, 2006 Smith, 2005; Murby& Gould, 2005; Martinez &Kennerly, 2006),performance measures have been largely defined in various contexts. For instance, performance refers to 'the process of examining the proficiency with which an organization succeeds via the economic acquisition of assets, and how these assets are efficiently utilized to achieve results' (Chang, 2006). Another definition of performance is 'the process of designing measurable constructs or indicators that can be steadily observed to evaluate growth made in attaining pre-set objectives and utilizing such indicators to evaluate progress in attaining the goals'(Murby& Gould, 2005). Therefore, performance measures can either be non-financial or financial.

Regarding financial performance, it remains a complex term and activity across many organizations (Ramsey, 2013). The complexity in its nature is a result of an increase in the business operations of an entity. For entities that operate regionally and are listed at the security exchanges, certain challenges such as exchange rate fluctuations, inflation effects, transfer pricing, and cultural issues must be taken into account (Kori, Muathe&Maina, 2020). Because of these challenges, many researchers have published articles focusing on the necessity to balance financial and non-financial performance indicators. This is because focusing solely on financial performance gives an incomplete picture of the entity's performance. For instance, a previous study found out that the main drawback of financial performance is that it only focuses on short-term solutions whereas, non-financial performance measures are more strategic in nature (i.e., focuses on long-term solutions) (Chapman, 2005).

The focus of this study, therefore, is financial performance. According to Shaban and James (2018), financial performance has remained an important tool, usually, a quantitative tool that gauges an entity's performance regarding the set specific objectives or expected results. Financial performance measures are used for various reasons. For instance, (1) management uses financial performance to determine resource allocation, (2) evaluate the performance of the entity over a given period, (3) budgeting and planning purposes, (4) rewarding stakeholders or employees (incentive compensation), and (5) setting goals (Kori, Muathe&Maina, 2020). Besides, investors also use financial performance measures to make investment decisions. That is to say, financial performance provides effective information that shows the financial and growth position of the entity in the market against its competitors (Needles et al., 2011).

Traditionally, performance measures have predominantly focused on financial measures. In a highly competitive environment where companies constantly invest in multi-billion projects, the emphasis has been given to various financial measures to provide realistic information regarding project durations, returns, risks, and value of the project (Mashovic, 2018). Thus, financial performance measures are expressed in monetary terms like profit or revenue. The information used to represent financial performance indicators is found in income statements, statement of financial position, and cash flow statements (Mashovic, 2018).

Financial performance measures differ from each other on various dimensions. For instance, we may have absolute measures like sales and profit; return-based measures like profit/sales, profit/capital, or profit/equity; and external measures like the market value of the entity. Thus, finding the relevant measure is important and depends on an individual's understanding and perception of what needs to be measured. Several studies have been undertaken on the financial performance measures of an entity. For instance, Needles (2011) analyzed the best measures of organizational financial performance and proposed various measures like return on capital employed (ROCE), return on equity (ROE), return on assets (ROA), and earnings before interest and tax (EBIT) among other measures.

Besides, Aebi, Sabato, and Schmid (2012) examined the effect of risk management on the financial performance of banks during the financial crisis. The authors concluded that banks with effective credit management policies display higher financial performance measures such as return on asset (ROA) during such a crisis. Further, they added that other financial measures like return on equity (ROE) and return on investment (ROI) are significant for banks during such events.

Based on these studies highlighted in this section, it is evident that multiple indicators have been developed to measure financial performance. Additionally, the study notes that the most common and widely used measures of the financial performance of an entity in research comprise ROA, ROE, and ROI (Gunasekaran, Irani, Choy, Filippi& Papadopoulos, 2015).

ROA measures how efficiently companies derive high returns from the assets that they have and how investors benefit from such decisions. ROI is concerned with how effectively investors can obtain the maximum return from every investment that they put in the business. ROE addresses the extent of return that investors will get from the equity that they put in the business. Based on these measures, this study adopted ROA as the most effective measure of financial performance since it has been widely used by previous studies (Needles, 2011).

1.1.3. Nairobi Securities Exchange

The Nairobi Securities Exchange (NSE) is the main custodian financial platform for all listed companies in Kenya. Since 1958 – 1960, the NSE has been tasked with several functions but majorly to regulate and provide a ready-made capital market where investors (both borrowers and lenders) can transact their businesses with a high level of transparency and accountability (Ayako, Kungu& Githui,2015). A lot of improvement has been made in the financial market since the introduction and growth of technology as well as market integration. The financial market was mainly dominated by equity and bond securities. However, other financial securities have been introduced in the past few years such as exchange-traded funds, financial and commodity derivatives, and other securities (Mwangi, 2014).

However, in the past few years, the performance of entities listed at the NSE manufacturing segment experienced mixed results relating to financial performance. For instance, entities like Mumias Sugar Company have continued to experience losses over the years. However, organizations such as East African Breweries (EABL) have continued to maintain steady growth with insignificant changes relating to losses. The authority, NSE, noted that there has been a declining trend in the financial outcomes of various entities (Onsongo et al., 2020). In 2017 alone, close to 33% of entities listed in the manufacturing segment of NSE issued a profit warning compared to 9% in 2016 (Onsongo et al., 2020).

Based on these trends, the study examines whether entities listed under the manufacturing segment were more exposed to financial risks. The question, therefore, arises as to whether the declining financial performance of close to 33% of entities in the manufacturing segment of NSE is due to several risks they are exposed to in the market. NSE as the existing financial market in Kenyahas brought both international and local investors together by creating a liquid market where both primary and secondary markets allow easy transaction of financial services. The market is publicly traded and is the second biggest exchange market in Africa (Odalo et al., 2016). The study dwelled on nine manufacturing firms listed at NSE as indicated.

1.2. Problem Statement

Companies employ various strategies that can assist them to minimize inputs (cost) and maximize their outputs with continuous efficient operations. As such, it has been established that companies that want/intend to remain competitive in the market and compete with the global giants must address their financial risks that form part of market risks. Addressing these risks provides the company with mechanisms of developing strategies that can enhance their performance (Ayako et al., 2015). However, manufacturing companies in the market with the increased cost of production will face some risks that can either effectively improve or lower their financial performance. Most organizations do not have effective mechanisms of addressing their credit issues, operating challenges as well as liquidity issues which forms part of the financial risks that firms are exposed to in the market (Odalo et al., 2016)

A critical look at the financial performance of some manufacturing companies indicates that companies in the manufacturing sector are facing financial challenges due to various risks. For instance, data from KNBS indicated that the manufacturing industry grew by 3.6 percent in the first quarter of 2016 compared to 4.1 percent in the same quarter of 2015. The downward growth demonstrates that the industry is facing challenges such as financial risk exposures that need to be addressed (KNBS, 2016). Studies have addressed risk management mechanisms in the banking sector (Agwu, 2018; Abiola&Olausi, 2014), but not extensively to the extent of describing the effect of financial risk exposures on the financial performance of manufacturing companies at the NSE (Kargi, 2011). Ahmed (2015) and Ndung'u (2014) showed that if not well addressed, financial risk exposures could reduce the performance of the company. As shown herein, this study, therefore, aimed to show the relationship between financial risk exposures and the financial performance of manufacturing companies listed at the NSE.

1.3. Research Objectives

The study has general and specific objectives.

1.3.1. General Objective

To find out the relationship between financial risk exposures and financial performance of manufacturing firms listed at the NSE.

1.3.2. Specific Objectives

The specific objectives of the study are
- Determine the relationship between liquidity risk exposures and financial performance of manufacturing firms listed at the NSE.
- Establish the relationship between operating risk exposures and the financial performance of manufacturing firms listed at the NSE.
- Find out the relationship between credit risk exposures and the financial performance of manufacturing firms listed at the NSE.
- Assess the effect of interest rate exposure on the financial performance of manufacturing firms listed at the NSE.

1.4. Research Hypothesis

- Does liquidity risk exposure relate to the financial performance of manufacturing firms listed at the NSE?
- What is the relationship between operating risk exposure and the financial performance of manufacturing firms listed at the NSE?

- To what extent does credit risk exposure relate to the financial performance of listed manufacturing firms listed at the NSE?
- Does interest rate affect the financial performance of manufacturing firms listed at the NSE?

1.5. Scope of the Study

Whereas companies face various risks in the market, it is evident that financial risk remains the most common across sectors. And despite documentation on the impact and effect financial risks have onthe performance of an organization, the extent of the effect of financial risk exposures such as liquidity, operational, credit, and interest rates are still not consistent in other segments in the economy. This study, therefore, aims to report on the effect of financial risk exposures on the financial performance of manufacturing firms listed at the NSE.

The scope of this study is limited to nine manufacturing firms listed at the NSE. The technique involved the use of the census method. Panel data for six years was used (2013 – 2014). Various financial risk exposures affect financial performance as highlighted in the literature of this study. However, the study focused only on four risk exposures as indicated. Whereas this could signify omitted variable bias, the current variables included in the study are based on the researcher's perception and understanding of the existing literature supporting the study. Thus, there is a need for the study.

1.6. Significance of the Study

Financial risks remain the most common risks that organizations are exposed to in the market, regardless of whether they are listed or not listed at the security exchange. Previously, the relationship between financial risk exposures and financial performance has seen inconsistent results. This research helps to understand the effect of various financial risk exposures such as liquidity risk, operating risk, credit risk, and interest rate risk on the financial performance of manufacturing firms at the NSE. The findings of this report will directly benefit multiple industry players not only in the manufacturing segment of NSE but also in other sectors. Moreover, the findings of the study may be useful for investors and policymakers in developing a financial risk framework, which can be adopted by all the industry players listed at the NSE. Having good risk frameworks can assist entities to observe the market and find effective ways to design and implement financial risk management mechanisms.

The study is important to the management of manufacturing companies and other companies that want/intend to understand how managing their financial risk exposures enhance their financial performance in the market. First, it outlines some of the financial risks that these organizations are exposed to in the market. This is followed by the extent of the effect of such risks established on the financial performance. As a result, the findings will assist the management of these organizations to conduct risk analysis forecasts that focus on analyzing the environment, the projects, returns and risks involved, and the extent of risks impact on the performance of the organization., the study highlights the need to have the government implement effective policies that are useful in ensuring that the market remains competitive for every manufacturing company. The study also highlights the need for the government to address the challenges that are facing manufacturing companies. Additionally, the findings of this study will assist the government to ascertain whether companies issuing a profit warning and incurring losses are a result of risks that they are exposed to in the market. Once this is established, recommendations will be provided on the best practices to manage such risks in the market.

The study will be useful in assisting the management of NSE to come up with strategies that can be used to protect the business operation of all the listed companies in the market. The findings will assist NSE coordinators to appreciate the benefit of developing financial risk exposure frameworks not only for the listed firms but also for the NSE as an entity of its own.

This research will provide additional information regarding financial risk exposures and financial performance to the scholars and academicians. Moreover, it provides an area of insightful opinion on the need for financial risk exposures best management practices not only for listed firms but also for the non-listed entities. This information will form part of the emerging literature on financial risk exposures and financial performance for future researchers.

1.7. Chapter Summary

This chapter has presented the background information regarding the meaning and concept of financial risk exposures and the financial performance. Besides, the chapter has demonstrated the problem statement of the study and why the study is necessary to address the dwindling financial performance of the manufacturing firms listed in the manufacturing segment of NSE. The chapter concludes by discussing the research objectives, hypothesis, scope, significance and limitations of the study.

2. Literature Review

2.1. Introduction

The purpose of this chapter of the study was to present a far-reaching review of the literature relating to financial risk exposures and the financial performance of manufacturing entities. Particularly, the chapter provides the methodologies and findings of the previous studies related to the current topic of study. Besides, the chapter also presented models or theories that have been developed to explain the concept of financial risk exposures and financial performance.

Since the inception of the financial risk exposure concept in different segments of the economy, various studies have been conducted to clarify its impact, significance, effects, roles, and relationship with financial performance. For example, a

single search on the Google Search Engine for the term 'financial risk exposure' gives about 453,000,000 results within 0.55 seconds. This illustrates the extent of research in the area of financial risk exposures and financial performance. This study, therefore, undertakes the synthesis review of the literature to bring into light the techniques adopted and the findings established in the previous studies.

The remainder of this chapter discusses the theoretical review of the study. The objective is to identify various theories and illustrate the connection of the theories to the study. It then extensively provides the empirical review of the study based on study variables. The chapter also presents the operationalization of variables and effective measures. In summary, the chapter discusses a theoretical review of the study, review of the empirical studies, conceptual framework, and operationalization of study variables.

2.2. Theoretical Review

Theoretical frameworks are explanations or descriptions about a given phenomenon. The theoretical review provides the scholars or researchers with the lens to view the world. Thus, a theory is a technique of gathering interrelated ideas, not yet well-planned. It tends to describe the relationship that could exist on the factors of the examination and testing the hypothesis of the study. The study adopted the shift-ability theory of liquidity, transactions cost of credit theory, and agency theory.

2.2.1. Shift-Ability Theory of Liquidity

Shift-ability theory was coined by Moulton (1918) who argued that companies maintain a substantial amount of assets that can be easily and immediately shifted or converted to other assets preferably cash without a material loss in case of necessity. According to the theory, companies should keep liquid assets that can be helpful to them when a need may arise to convert them into cash within a short time. The conversion of such assets that are considered liquid in the firm should never incur any form of loss to the company in question. Companies that operate in the financial market have various ways of raising capital. However, the most common short-term securities available to them in the market are commercial paper and repurchase agreements which they use to raise short-term securities.

Moreover, the shift-ability theory postulates that companies should possess liquidity assets that can be easily shifted to the capital markets to raise funds for business operations should the need arise (Moulton, 1918). Also, the theory allows companies to shift some of their liquidity assets to other companies that operate in the financial market. This can be done through shares and debentures which are accepted as liquid assets along with commercial paper and repurchase agreements (Morton, 1939). This theory is very critical for this study. The theory is very significant as it demonstrates how companies can operate efficiently using a low amount of liquidity and making long-term investments. Thus, companies such as manufacturing ones that are listed at the NSE can control liquidity crisis by always offering their liquid assets at a good price as the theory suggest. That is, manufacturing firms should hold liquid assets that are marketable and do not incur a loss to the company during the conversion period.

Despite its applicability in explaining the concept of financial risk exposure and financial performance, scholars against the shift-ability theory have provided some of its demerits (Ibe, 2013). First, they argue that the simple shift-ability of assets does not give liquidity to the entity's system. That is to say, it squarely depends upon economic settings. Second, the shift-ability theory does not take into account that in terms of acute depression, the shares cannot be shifted to others by the entity. Thus, in such circumstances, there are no buyers even though individuals who possess the shares would like to sell them. The third demerit of the shift-ability theory is that if all the entities start to shift their assets, there would be disastrous impacts on both the lenders and borrowers (Akani& Vivian, 2018). The study notes, however, that the demerits provided are from the banking concept.

Many studies have used this theory to show the relationship between liquidity and financial performance. Maina (2017) adopted shift-ability theory to establish the relationship between liquidity and profitability of commercial banks. Koranteng (2015) also explained the liquidity and profitability of banks using shift-ability theory. This reveals that there is a need for the theory to also be used in describing the liquidity of other companies that are listed in the capital markets and not in the financial sector. Thus, this theory is effective in explaining liquidity risk as a predictor variable in the current study.

2.2.2. Transactions Cost of Credit Theory

According to Schwartz (1974) in the credit theory of transaction cost, he argued that information collection is the main source of trade credit cost advantages. In this regard, Schwartz views suppliers as people who are in a better position and who have capacity to gather information about buyers than traditional lenders. The number of times an individual buys and places orders is one of the factors that suppliers use to get information about the buyers' creditworthiness as their potential clients. In addition, the number of payments and the earlier payments made by buyers alert the suppliers about the creditworthiness of the buyer and their future potential financial difficulties (Schwartz, 1974).

Another source of cost advantage is the threatening power of the sellers compared tofinancial institutions. When companies reduce their repayment period and chances, sellers can threaten the company to reduce future supplies.

Kandori (1992) indicates that this power can become more effective and stronger when the company as the buyers does not have many alternative suppliers of the products and services needed in the company. Thus, this theory of trade credit is a flexible operational tool especially in regards to this study. That is, when demand fluctuates, the company may adjust price or production. Emery (1984) advanced the theory and indicated that in the case of changes in the market, a company can decide to change its trade credit terms to eliminate or control credit risks that companies may be exposed to in the market.

However, despite the increasing comprehension that transaction costs are essential in the study of economics, critics argue that most of its analysis relies on comparative statics and assumes an extent of accuracy which perhaps is not there. The static models fail to consider dynamic processes and do not appeal to the current business processes (Tisdell, 2004). That is to say, organizations can be become locked into irrational forms. Also/furthermore, others argue that due to difficulty in observing and measuring transaction costs, organizations and experts have to rely on estimations of reduced-form relationships between observed characteristics and organizational forms (Hodgson, 2010).

In relating this theory to the study specifically on credit risk exposure, the theory postulates what companies and their suppliers of various services and products need to do to ensure that the risk is minimized. Due diligence and gathering information about the parties to be involved in the trade is very important for each party. It also highlights measures that companies can take in case of price fluctuations in the market as explained in previous studies (Bellouma, 2014).

2.2.3. Agency Theory

Agency theory indicates that there exists a relationship between the management of a company as agents and shareholders as the principals or owners of the company. The theory was first introduced by Jensen and Meckling (1976). In their study, Jensen and Meckling (1976) argued that the goal of the theory was to address the conflict or challenges that could arise between the management of the company and the owners of the company. Further, the theory was later adjusted by Ross (2005) who postulated that shareholders as the business owners hire managers to act in their best interest through maximization of shareholders' value. However, due to some challenges, managers may break their agreement and act on their own without considering the interest of their managers. This creates conflicts or challenges.

As such, Ross (2005) stated that every decision that finance managers make in the organization should always put shareholders' interest first; since the goal of any business in a competitive environment is to maximize wealth for shareholders. This theory is thus significant for the study as it emphasizes the challenges that arise between management and shareholders; which in most cases may expose the company to various financial risks in the market. The study further emphasized the gap of ownership, control, and managerial motivation factors as major contemporary issues that agency theory tends to address. It is argued that for every company that wants/intends to remain competitive in the business environment and be free from various financial risks, ownership, control, and managerial motivational factors must be addressed regularly to eliminate any misunderstanding that could arise between the management and shareholders.

Nevertheless, the theory provides a clear understanding that differences exist between company management and business orders. Some of the differences identified by Ross (2005) include; decision making and earnings distribution, incremental on wages, investing either long-term or short-term assets among others. Such decisions may differ amongthe individuals resulting to agency problems. When such differences occur in the business, it results in poor management and decision making, which may lead to liquidity risk, operating risk, or poor credit policy mechanisms leading to poor financial performance in the company (Ross, 2005).

Agency theory is significant as it addresses the need for all shareholders and the management in the company to draft effective policies that can be used in managing the daily activities of the firm (Donaldson & Davis, 1991). This ensures that the company invests in the most viable assets and balances its assets to the liabilities it has to avoid liquidity risks that the company could be exposed to. Though there is a correlation between high return and high risk, most business owners may not understand the concept. Hence, there is need for the financial managers to provide a clear policy which explains how owners may benefit from every investment project in the company.

2.2.4. Liquidity Preference Theory

The liquidity preference theory originated from the work of Maynard Keynes around 1936 (Bibow, 2006). The theory is grounded on the idea that individuals hold money for three motives including transaction motive, precaution motive, and speculative motive. Thus, the duration that an individual holds or gives out money depends entirely on the interest rate charged. That is to say, the interest rate acts as the reward for holding liquidity. According to Keynes, a person needs money. After all, he or she has expenditure plans to finance, or is speculating on the future path of the interest rate, because he or she is not sure about what the future may have in store. So, at this point, it is advisable to hold some percentage of an individual's resources in the form of purchasing power (Bibow, 2005).

Therefore, the demand for assets and the supply of capital determines the interest rates. Since people prefer to hold cash (liquidity), the interest rate is the reward for liquidity. As such, interest rates change with variances in the demand and supply of money (Chick, 1991). For instance, individuals demand cash for the transaction, precaution, and speculative motives which describes the liquidity preference (i.e., how much money individuals are willing to keep with them at a given time). The quantity of liquidity preference determines the interest rates. Higher liquidity preferences result in higher interest rates and vice versa. Moreover, the higher the supply of money, the lower the interest rates and vice versa (McGorian, 2005)

In his illustration, Keynes stated that the supply of money purely depends on the policies of the Government and the country's Central Bank. Where the quantity of money demanded equals the money supply, equilibrium interest rates emerge. However, the theory faces multiple criticisms. For example, other scholars argue that interest rates are not purely a monetary issue. That, other forces like the productivity of capital and thriftiness also play a role. Besides, they add that interest rates are not independent of the demand for investment as Keynes puts it. As such, they argue that the cash-balances of entities are largely influenced by their demand for savings for capital investment(Abdulganiyy, 2018).

2.3. Empirical Review

An empirical review of a study examines the existing studies on financial risk exposure and financial performance and provides summarized literature on the work that has been previously done by other scholars. It identifies the design and methodologies adopted in the study, the objectives and measurements used, the data used, and the findings of the study. In addition to this, it tends to show how variables of the study (independent) are connected to the dependent variable of the study (financial performance). This section, therefore, identified and examined existing studies on each independent variable of the study since these findings were used in the discussion of the study to compare the findings.

2.3.1. Liquidity Risk Exposure and Financial Performance

Various studies have been conducted to assess the association between liquidity/liquidity risk/liquidity risk exposure and financial performance. For instance, Chen, Shen, Kao, and Yeh (2018) conducted a study to establish how liquidity risk exposures affect the financial performance of a company. The study employed a panel dataset of the commercial banks in 12 different emerging economies. The data was unbalanced from 1994 to 2006. Supervisory, regulatory factors, macroeconomic factors, and liquid assets for external funding were used as measures of liquidity in the study. The study findings revealed that there is a negative relationship between liquidity risk exposure and the financial performance of these banks. The study further showed that due to the increased cost of accessing liquidity, liquidity risk in the banks is regarded as a discount for the profitability of banks, since it shows a premium on bank performances with the banks' margin of interest.

In Oman, Salim and Bilal (2016) investigated the liquidity position and its effect on the financial performance of banks. The theme/goal/aim was to advise on policies to improve the management of liquidity risk in Omani banks. The study utilized panel data of five years from 2010-2014 from a sample of 4 banks. Measures such as liquidity risk in absorbing liquidity shocks (liquid assets/total assets), liquidity risk in coping with a high demand of short-term liquidity (liquid assets/short-term liabilities), and liquidity risk exposure (bank's loans – customer deposits/total assets) were derived to measure liquidity variable. For financial performance, the study used measures such as ROA, ROE, net interest margin, and return on average assets. The research concluded that there is no significant relationship between liquidity position and financial performance of Omani banks.

In another study focusing on exploring the effect of liquidity on the profitability of the banking sector in Pakistan, findings exposed a significant association among bank liquidity ratios and ROA, ROE, net profit margin, and Tobin's Q (Waleed, Pasha, &Akhtar, 2016). This study focused on all listed banks of the Pakistan Stock Exchange using panel data of a period between 2010-2015. Six models were estimated using the Ordinary Least Squares (OLS) technique. Liquidity measures included current ratio (i.e., current assets/current liabilities) and liquidity ratio (i.e., cash + investment/current liabilities). Profitability measures included ROA, ROE, ROI, earnings per share, and net profit margin. Additionally, the study adopted Tobin's Q to measure bank value (i.e., market capitalization/total assets). The study, thus, concluded that adequate liquidity supports the bank to decrease financial crises and liquidity risk.

In Kosovo, Rudhani and Balaj (2019) studied the effect of liquidity risk on the performance of banks for a period of six-year. The analysis was based on linear regression. Liquidity metrics included L_1 (i.e., liquid assets/total assets), L_2 (i.e., liquid assets/liquid liabilities), L_3 (i.e., loans/deposits and short-term liabilities). L_1 measured the ability of the bank to absorb the liquidity shocks, L_2 measured the ability of the bank to cope with a high liquidity demand in the short term, and L_3 measured liquidity risk in the presence of large non-liquid assets. Besides, the study adopted ROA and ROE and the performance metrics of these banks. Results established a positive and noteworthy connection between liquidity risk and performance of the banks in Kosovo.

Edem (2017) researched on liquidity risk management and profitability of 24 banks in the depository category in Nigeria from 1986 to 2011. The study was descriptive in nature and utilized secondary data extracted from the financial statements of these companies. Statistical software (SPSS) was used to establish the relationship between the study variables. For liquidity, the used cash reserve ratio and loan deposit ratio as its measures. The study also used ROE as a measure of profitability. The results of the study revealed that both liquidity and profitability of the deposit-taking banks had a positive relationship between them.

In Tunisia, Hakimi and Zaghdoudi (2017) conducted an empirical investigation onthe effect of liquidity risk on the Tunisian bank performance. The study used a sample of 10 commercial banks with secondary data from financial statements over the period of 1990 – 2013. Since the study used panel data techniques, random effect regression was adopted to illustrate the effect. Liquidity risk measure included liquidity risk ratio (i.e., the ratio of total credit to total deposit) whereas performance measure included net interest margin (i.e., ratio of net interest margin to total assets). The outcome of the random regression effect demonstrated that liquidity risk decreases the significant performance of the bank.

Muriithi and Waweru (2017) assessed the relationship between liquidity risk exposure and profitability of commercial banks in Kenya. The research used secondary data from 2005 to 2014 using the 43 registered commercial banks. Liquidity as the independent variable of the study was measured by liquidity coverage ratio and net stable funding ratio. As for profitability as the dependent variable, the study adopted ROE as the measure. Analysis of the panel data gathered was determined using the generalized method of moments (GMM) to record time-variant. Also/ in addition, multiple regression models were used. The results of the study revealed that as for net stable funding ratio, there was an inverse relationship between it and the profitability of the banks while the study also established that liquidity coverage ratio has no significant influence on the profitability of the banks considered for the study. The study, therefore, concluded that there is an inverse relationship between liquidity risk exposure and profitability of the banks.

2.3.2. Operational Risk Exposure and Financial Performance

In Taiwan, Lin and Chang (2015) analyzed the correlation between operational risks and operational performance by comparing independent banks with the financial holding subsidiary banks. A total of 30 banks listed at the over-the-counter were selected and grouped into two. Financial data for analysis were retrieved from the Taiwan Economic Journal Database from June 2007 to June 2014. Operational risk measures included operational risk capital requirements (basic indicator approach) and employee turnover rate. Operational risk capital requirements measured losses experienced by a bank due to reasons such as inappropriate internal procedures or operational failures, personnel, or system errors. Employee turnover rate measured bank employee's level of work experience. Performance measures comprised of earnings per share, operating expenses ratio, and revenue growth rate. The regression results elaborated that operational risk management practices were more effective in financial holding subsidiary banks compared to independent banks.

Rasheed, Saeed, and Gull (2018) researched on the role of operational risk management in the performance of Islamic banks in Pakistan. They selected a total of 15 banks (commercial and Islamic banks) from the year 2007 to 2011 focusing on the internal factors of the banks which are most impacted by operational risk. Asset management (i.e., operating income/total assets) was used to measure operational risk whereas two metrics (i.e., ROA and ROE) were used to measure performance. Using regression and collection analysis methods, the findings showed that there is a positive impact of operational risk management on bank performance. That is to say, a high level of awareness about operations risk has a greater effect on the management of operational risk.

Oye (2020) looked into the impact of operational risk management practices on the financial performance of commercial banks in Nigeria for a period of ten years (2008 – 2017). The study used secondary data extracted from the audited financial statements of selected banks in Nigeria. A linear multiple regression model was adopted for analysis. The operational risk was measured by the cost to income ratio whereas ROA measured the financial performance. Results showed that there exists a positive relationship between operational risk management and the financial performance of the selected banks. Thus, the need for bank's management to deploy adequate resources to manage operational risk and increase financial performance.

Hakimi and Boukaira (2020) also investigated the interactional connection between operational risk and Tunisian bank performance. The study focused on a sample of Tunisian banks over the period of 1990 – 2017. A basic indicator approach (i.e., capital charges to hedge operational risk) was used to measure operational risk. Also, the study used net interest margin (i.e., interest margin to total assets ratio) to measure performance. Panel data analysis was conducted to describe the relationship between the variables. The authors estimated that increase in required capital charge to hedge operational risk significantly increases the level of bank performance.

Additionally, Lyambiko (2015) examined the relationship between operational risk exposures and the profitability of the 36 Tanzanian commercial banks. The descriptive study used secondary data from 2009 to 2013 to aid in data analysis. Multiple regression analysis was developed to explain the extent of the relationship between the study variables. For measurement of the independent variable of the study, credit risk, insolvency, and efficiency risks were used while the study also adopted ROA for measuring the profitability of these banks. The findings of the report proved that indeed there exists a positive correlation between operational risk exposure and profitability. Thus, the study concluded that operational risks positively influence the profitability of commercial banks.

In Kenya, Arhenful, Yeboah, and Tackie (2019) sought to evaluate operational risk management of commercial banks. The study adopted a descriptive research design and used primary data gathered from 9 listed manufacturing companies at the stock exchange. The study identified the operational risk prerequisites, lack of systematic risk identification procedures, and minimal assessment as the measures of operational risk management.

Siminyu, Clive, and Musiega (2017) studied the influence of operational risk on the financial performance of deposit-taking SACCOs in Kakamega County, Kenya. The specific objective was to determine the influence of financial systems on financial performance. The study adopted a descriptive survey design with a population consisting of four deposit-taking SACCOs. Primary data was gathered using a semi-structured questionnaire from 56 sample respondents. SPPS was used to analyze data. A correlation was used to ascertain the relationship between the variables of the study. Findings recorded a significant positive linear relationship between financial systems as a measure of risk management practice and financial performance of deposit-taking SACCOs.

Subsequently, Maina, Alala, Wabwile, and Musiega (2014) assessed the effect of operational risks in the lending process of commercial banks' profitability in Kakamega town, Kenya. Focusing on 54 individuals as the research participants, the study adopted a descriptive design and use of questionnaire surveys. Likert-scale was analyzed using SPSS through ordinal regression analysis. Findings indicated that operation risks were significant in commercial bank performance. Such operational risk management practices like compliance, systems, character, and culture all have a significant positive effect on the profitability of the banks' lending processes.

2.3.3. Credit Risk Exposure and Financial Performance

In Sri Lanka, Rasika and Sampath (2015) carried out a study to investigate the quantile impact of credit risk on the financial performance of commercial banks using quarterly financial reports extracted from the banks' websites from 2011 through 2015. Purposive sampling was used in the study by considering the time concern and availability of data. In the model, ROE was used as the indicator of financial performance while capital adequacy ratio and non-performing loan ratio measured credit risk. The outcome of the examination using regression analysis stated that credit risk has an inverse relationship with banks' performance. Thus, the need for banks to design and implement effective credit risk management practices.

Agwu (2018) carried out a quantitative study to examine how credit risk exposure affects the financial performance of deposit money institutions in Nigeria for a period between 1998 – 2014. The study used secondary data drawn from the institution's financial statements. Further, the data was gathered from the CBN statistical bulletin and World Bank in 2014 and 2015 respectively. The non-performing loan was used as the indicator for sound credit risk management practices whereas money supply (i.e., loanable fund contribution to the bank and economy) measured the performance. Descriptive and inferential statistics were adopted for analysis where means and standard deviation, as well as correlation and regression analysis, were used respectively for the two methods of analysis. The results of the study showed that banks with a good credit risk management policy boost shareholders' and investors' confidence and in return improve the growth of these institutions. Also/furthermore, in addition, sound credit risk management may boost savers' confidence towards the bank hence increased financial performance.

Abiola and Olausi (2014) researched/ carried out a descriptive study to determine the impact that management of credit risk exposures have on the financial performance of Nigeria's commercial banks. Data for the study was based on the financial reports of these banks for a period of 2005 – 2011. Secondary data for 7 commercial banks were used. For analysis, the study used the panel regression model estimator. The study used ROA and ROE for measuring the profitability of the banks. For credit risk exposure, the study used indicators of non-performing loans and capital adequacy ratio as measures. The results of the study indicated that there is a significant impact on credit risk exposure on the financial performance of these banks in Nigeria.

Nevertheless, Nwanna and Oguezue (2017) examined the nexus between credit management and profitability of deposit-taking banks in Nigeria from 2006 to 2015. Secondary data were gathered from the Central Bank of Nigeria and the annual reports of all the existing deposit money banks. Credit risk was measured using loans and advances and loan loss provision whereas profitability was measured using ROA. Multiple regression was conducted using ordinary least squares with the aid of the E-view 9 tool. Results demonstrated that loans and advances and loan loss provision have a positive and insignificant effect on the profitability of these banks while there was an inverse relationship between non-performing loans and ROA.

Further, Bhattarai (2016) examined the influence of credit risk on the profitability of Nepalese commercial banks. The research employed descriptive and causal-comparative research designs with a pooled secondary data of 14 banks for a period of 6 years (2010 to 2015). Analysis for the study involved multiple regression models which were performed to estimate the relationship between the variables of the study. The findings revealed that of the independent variables of the study, the non-performing loan ratio is negatively correlated with the profitability of banks. Also, the study results indicated that cost per loan assets is positively related to the profitability of the banks.

Moreover, Kargi (2011) did a study to establish the impact that credit risk exposure has on the financial performance of banks in Nigeria. To effectively achieve the research objectives, the study used secondary data, specifically the financial ratios to measure the financial performance and credit risk exposures. The annual data was collected between 2004 and 2008. For analysis, the study used descriptive and inferential statistics which involves mean, standard deviation, correlation, and regression analysis. The study findings revealed that credit risk exposure had an inverse relationship with banks' profitability. However, the inverse relationship was significant.

In Uganda, Kalu, Shielder, and Amu (2017) evaluated whether there exists a relationship between credit risk management methods and the financial performance of microfinance institutions in Kampala. Credit risk management methods included identification, appraisal, monitoring, and mitigation. The study focused on three selected licensed microfinance institutions with a sample size of 60 participants. Both primary and secondary data were used in the study. Primary data was gathered using closed-ended questionnaires whereas secondary data included annual reports from 2011 to 2015. Correlation and regression analysis with the aid of SPPS suggested that both credit risk identification and credit risk appraisal have a strong positive and significant relationship with financial performance.

2.3.4. Interest Rates and Financial Performance

In Bangladesh, Jui, Sakib, and Rafsan (2020) conducted a comprehensive study to determine the association between interest rate changes and the profitability of commercial banks. The study utilized five years data (2014 – 2018) of all the listed 30 commercial banks in Bangladesh's stock exchange. The secondary data included information from the annual reports. The study adopted ROA and ROE as the metrics for the profitability of commercial banks and net interest margin (i.e., interest income – interest expense divided by total earnings asset) to measure interest rate changes. The study findings reported that change in interest rates has a significant effect on the profitability of commercial banks in Bangladesh.

Kar and Swain (2013) investigated whether interest rates influence the financial performance of Microfinance institutions based on global evidence. The study included a comprehensive global panel database having 379 microfinance institutions from 71 countries for 6 years (2003 – 2008). The study included real yield on loan portfolio (i.e., ability to generate cash financial revenues from the interest) to measure interest rates and ROA to measure financial performance. Using panel analysis, the study established that interest rates have a positive and highly significant impact on the financial performance of microfinance institutions.

Kostikov, Jílková, and Koťátková (2019) measured the influence of market interest rate on the business mix of commercial banks in the Czech Republic. The first aim of the research was to evaluate the effect of various types of interest rates on two types of loan products for a five-year period (2014 – 2018). The second aim was to analyze the effect of established various interest rates on the profitability of the selected commercial banks. Consumption interest rates, mortgage interest rates, and deposit interest rates among others formed the types and measures of market interest rates

included in the study. Besides, ROE was used to measure profitability. Findings revealed that these market interest rates have a significant influence on the volume of loans and profitability in the banks.

Musah, Anokye, and Gakpetor (2018) examined the effect of interest rates spread on the profitability of commercial banks in Ghana. The study focused on 24 commercials for a period of ten years (2003 – 2016) using panel data. Interest rates spread was measured using net interest income and net interest margin whereas bank profitability was measured using ROA and ROE. From the findings of the examinations, reports indicate that there exists a positive and statistically significant relationship between interest rates spread and profitability of commercial banks in Ghana.

Irungu (2013) conducted a study to establish the effect of interest rate spread on the performance of commercial banks in Kenya. Findings revealed a strong positive relationship between interest rate spread and the financial performance of commercial banks. The authors argued that interest rates spread affect the performance of assets in banks as it enhances the cost of loans charged on the borrowers. Thus, regulating interest rates had a significant impact on assets non-performers. Wambari and Mwangi (2017) in their study on the effect of interest rates on the financial performance of commercial banks in Kenya also established that the lending rate ratio influences the financial performance of commercial banks positively. The study adopted explanatory research and a census research design of all the 43 commercial banks.

Njeri (2016) researched on the effect of interest rate changes on the financial performance of insurance firms in Kenya. Specifically, the study sought to establish the effect of interest rates changes on loan performance; examine the effect of interest rates changes on investment income; assess the effect of interest rates changes on liquidity position, and determine the effect of interest rates changes on stock returns of insurance firms in Kenya. Using both secondary and primary data, findings revealed a significant positive relationship between loan performance, investment income, liquidity position, and stock returns with the financial performance of insurance firms. However, a review of the reviews indicates that most of the studies on interest rates focus most on banking institutions.

Variables	Author/Year	Purpose of the Study	Methodology	Findings	Gaps	How the Proposed Study Will Fill the Gap
Liquidity risk exposure	Chen et al., (2018)	Examine how liquidity risk exposure affect the financial performance of banks in emerging economies	Descriptive design	A negative relationship between liquidity risk exposure and financial performance	Was only specific tothebanking sector in emerging economies	Seek to examine other sectors of the economy, manufacturing
	Edem (2017)	Investigated relationship between liquidity risk management and profitability of banks in Nigeria	Descriptive design	A positive relationship between liquidity risk management and financial performance	Was conducted in Nigeria, and was also on liquidity risk management	Focuses on liquidity risk exposure in Kenya.
	Salim& Bilal (2016)	Liquidity position & its effect on bank performance	Panel data	No relationship	Conducted on commercial banks in Oman	Seek to offer insights into the manufacturing sector
	Waleed et al., (2016)	Liquidity effect on bank profitability	Ordinary least squares	There is a positive effect	Focused on the banking sector in Pakistan	Offers emphasis in the manufacturing organizations
	Rudhani & Balaj (2019)	Liquidity effect on bank performance	Longitudinal study	There is a positive & significant relationship between the variables	Was conducted in the banking sector in Kosovo	Seek to illustrate the effect of liquidity using different measure on performance
	Hakimi & Zaghdoudi (2017)	Liquidity risk effect on bank performance	Used metrics like total credit to total deposit ratio	There is an insignificant effect	Was conducted in the banking sector in Tunisia	Aim to include other measures to determine the effect.

Variables	Author/Year	Purpose of the Study	Methodology	Findings	Gaps	How the Proposed Study Will Fill the Gap
Operational risk exposure	Arhenful, Yeboah&Tackie (2019)	Examine operational risk management and profitability of banks in Ghana	Descriptive design	Minimal relationship between operational risk management and profitability	Was conducted in Ghana	To be conducted in Kenya, the manufacturing sector
	Lyambiko (2015)	The established relationship between operational risk exposure and profitability of banks	Descriptive design	A negative relationship between operational risk exposure and profitability of banks	The study focused on commercial banks	Seek to focus on Kenyan manufacturing sector
	Lin & Chang (2015)	Correlation between operational risk & operational performance	Used secondary data & regression analysis	There is an effective correlation	The study was conducted in Taiwan	Seek to illustrate the effect using panel data
	Rasheed et al., (2018)	Role of operational risk management in bank performance	Correlation and regression analysis	There is a positive role	The study focused on banking institutions	Focuses on manufacturing entities
	Oye (2020)	Impact of risk management practices on bank performance	Included metrics like the cost to income ratio; linear multiple regression	There is a significant impact	The study was undertaken in commercial banks in Nigeria	Focuses on manufacturing organizations the NSE in Kenya
	Hakimi&Boukaira (2020)	The interactional connection between operational risk and financial performance	Used panel data	There is a significant positive interaction	Focused on microfinance institutions	Provides a similar understanding from manufacturing sector perspectives
	Simiyu et al., (2017)	Influence of operational risk on financial performance	Used primary data with a sample of participants	Established positive influence	Focused on deposit-taking SACCOs in Kenya	Uses secondary data to illustrate the concept in the manufacturing sector
	Maina et al., (2014)	Effect of operational risk on lending process and profitability	Used Likert-scale to gather primary data	Establish a positive effect	Focused on banks in Kenya	Focuses on the manufacturing sector to provide more information
Credit risk exposure	Agwu (2018)	Examined credit risk exposure and financial performance of banks in Nigeria	Quantitative design	There is a positive relationship between credit risk exposure and the financial performance of banks in Nigeria	Was conducted in Nigeria and was in the banking sector	To be conducted in Kenya and provide insights intothemanufacturing sector

Variables	Author/Year	Purpose of the Study	Methodology	Findings	Gaps	How the Proposed Study Will Fill the Gap
	Abiola&Olausi, (2014)	Examined the impact of credit risk exposure on financial performance	Descriptive design	There is a significant and positive impact of credit risk exposure on financial performance	The study was conducted in the Nigerian banking sector	The proposed study seeks to examine credit risk exposure in the manufacturing section in Kenya
	Bhattarai (2016)	Effect of credit risk exposure on profitability	Descriptive design	There is a negative relationship between credit risk exposure and the profitability of banks in Nigeria	The study examined in Nigeria	To be conducted in Kenya, on manufacturing listed companies
	Kargi (2011)	Impact of credit risk exposure on financial performance	Descriptive design	Non-performing loans have a negative relationship with the financial performance of banks	The study involved Kenyan commercial banks	The proposed study will focus on the Kenyan manufacturing companies listed at NSE
	Rasika&Sampath (2015)	Impact of credit risk on financial performance	Purposive sampling; regression	Inverse relationship	Was conducted in Sri Lanka	Focuses on manufacturing organizations listed at NSE, Kenya
	Nwanna& Oguezue (2017)	Nexus between credit management and profitability	Used E-views for analysis; OLS	There is an insignificant relationship	Was performed in Nigeria	To be carried out in Kenya using SATA software
	Kalu et al., (2017)	Relationship between credit risk management and financial performance	Used both primary and secondary data; Correlation & regression	There is a positive relationship	Focused on microfinance institutions in Uganda	Seek to use secondary data to illustrate the effect on manufacturing firms
Interest Rates Risk Exposure	Jui et al., (2020)	Association between interest rate changes & profitability	Used panel analysis	There is a positive association	Was conducted in Bangladesh	Focuses in Kenya with a specific focus on listed manufacturing firms
	Kar& Swain (2013)	Influence of interest rates on financial performance	Panel analysis focusing on different countries	Established a positive influence	Focused on microfinance institutions of 12 different countries	Focuses on one country, one segment of the stock exchange to perform a similar study
	Kostikov et al., (2019)	Influence of market interest rate changes on business mix	Linear regression	There is a positive influence	Focused on banks in the Czech Republic	Focuses on manufacturing firms in Kenya
	Musah et al., (2018)	Effect of interest rate spread on profitability	Used panel analysis	Established significant effect	Was conducted in Ghana	Seek to show the effect on manufacturing firms
	Irungu (2013)	Effect of interest rate spread on financial performance	Census design	Established a significant effect	Focused on the 43 banks in Kenya	Focuses on manufacturing firms listed at NSE

Variables	Author/Year	Purpose of the Study	Methodology	Findings	Gaps	How the Proposed Study Will Fill the Gap
	Wambari&Mwangi (2017)	Effect of interest rate on financial performance	Exploratory design	Found out a significant effect	Focused on the 43 commercial banks in Kenya	Aim to illustrate how interest rate risks affect the financial performance of manufacturing firms listed at NSE
	Njeri (2016)	Effect of interest rate changes on financial performance	Used triangulation method	There exists a significant effect	Focused on insurance firms in Kenya	Focuses on listed manufacturing firms in Kenya

Table 1: Revised Summary of Literature Review& Gaps

2.4. Conceptual Framework

The review of the available literature in the empirical review section brings to light the extent of research work in the financial risks and performance field. Even though substantial effort has been made in the studies to illustrate the extent of liquidity, operational, credit, and interest risk exposures effect on financial performance and their various measures or indicators, there is an open acknowledgment that inconsistencies exist regarding the findings. For instance, there are mixed findings regarding the effect of liquidity risk exposure on financial performance (Waleed et al., 2016; Salim& Bilal, 2016), operational risk exposure on financial performance (Arhenful et al., 2019; Oye, 2020), credit risk exposures on financial performance (Rasika&Sampath, 2015; Kalu et al., 2017), and interest rates risk exposures on financial performance (Musah et al., 2018; Jui et al., 2020). Moreover, most of the studies identified on financial risk exposures have focused on the financial performance of commercial banks internationally (Rasika&Sampath, 2015; Waleed et al., 2016; Kostikov et al., 2019; Jui et al., 2020), regionally (Hakimi&Zaghdoudi, 2017; Nwanna&Oguezue, 2017; Kalu et al.,2017; Oye, 2020), and locally (Njeri, 2016; Siminyu et al., 2017; Wambari&Mwangi, 2017). Therefore, in these studies, most of the measures used are related to banking activities. This indicates that further examination is necessary to not only establish the effect of financial risk exposures in other segments of the economy but also to establish other financial risk measures or indicators. As such, the current study notes that the effect of the four financial risk exposures i.e., liquidity risk exposures, operational risk exposures, credit risk exposures, and interest rates risk exposures on financial performance, particularly in the manufacturing segment of the stock exchange, has not yet been conclusive. Thus, the paper reports the effects of financial risk exposures on the financial performance of listed manufacturing firms at the NSE.

2.5. Conceptual Framework

According to Mugenda and Mugenda (2012), a conceptual framework is a diagrammatical representation that indicates the relationship between independent variables and dependent variables. The dependent variable of the study is the variable that changes as a result of changes in the independent variable while the independent variable is the variable that causes changes in the dependent variable. From the literature review of the study, it has been established that varying views have taken center stage and the argument on how financial risk exposure affects financial performance. Conceptually, liquidity risk exposure, operational risk exposure, and credit risk exposure affect the financial performance of manufacturing companies listed at the NSE. This was demonstrated as shown in the model.
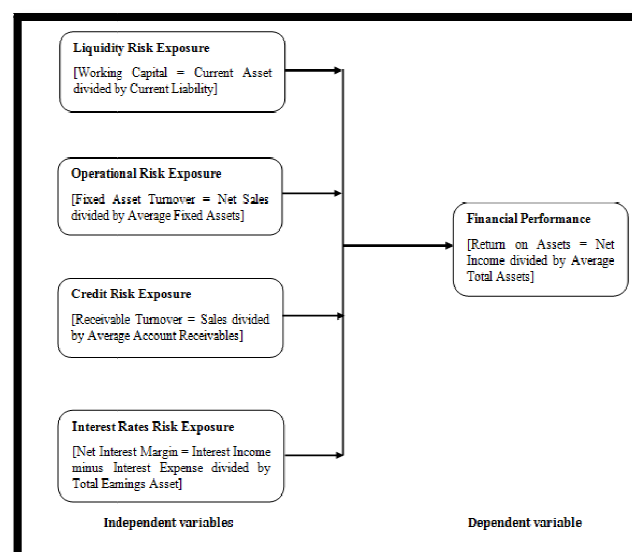

Figure 1: Conceptual Framework
Source: Author (2020)

2.6. Operationalization of Variables

In this section, the researcher attempts to vividly describe how the variables of the study were measured to facilitate the process of data collection, analysis and reporting of the findings. Once through with the synthesis review of the literature and the development of the conceptual framework, the goal was to determine the study indicators for each variable. A table showing the variable, indicator, or metrics, and measurement was developed based on the financial risk ratios extracted from the previous studies.

Variables	Indicators	Measurement
Liquidity risk exposure	Working capital ratio (WCR)	Measure a company's ability to meet its short-term obligations. $WCR = CR/CL$
Operational risk exposure	Fixed asset turnover (FAT)	Measures how well a company uses its fixed asset to generate sales. $FAT = Net sales / Average fixed asset$
Credit risk exposure	Receivable turnover (TR)	Measures the number of times that the company collects its debt from account receivables $RT = Sales/average account receivables$
Interest rates	Net Interest Margin (NIM)	Measures the difference between interest income and interest expenses. $NIM = (Interest income - interest expense)/(total earnings asset)$
Financial performance	Return on assets (ROA)	Measures how profitable a company is relative to its total assets $ROA = (Net Income) / (average total Assets)$

Table 2: Operationalization of Variables
Source: Author (2020)

2.7. Chapter Summary

This chapter provided a review of the literature regarding available studies on financial risk exposures and financial performance. Multiple studies have been identified and methodologies and findings are demonstrated in the empirical review section. This has been carried out based on each research variables. The study identified four theories/models and connected them to the research variables as well as their criticism. The idea was to demonstrate the relationship that the models have with the variables included in the current study. As such, the empirical review was significant to assist the researcher in developing both the conceptual framework and operationalization of the variables.

3. Research Methodology

3.1. Introduction

This chapter of the study provides strategies and procedures that the study used during the examination of the research objective. It provides types of tools that were used to gather information, how data were analyzed using the appropriate model of the study. In summary, the chapter covers research design, target population, data collection instruments, data processing, and analysis.

3.2. Research Design

Research design is a procedure, a step, or a plan that a researcher uses to examine the measurable objectives of the study (Kothari, 2014). A design explains what tools are needed, how the information should be collected, where the information is collected, which type of information and tools, and why certain tools are appropriate to analyse the data.

Therefore, we can conclude that study designs are available depending on the purpose of the study and the data expected. Besides, to determine the appropriate design for the study, the researcher should maintain a high level of precision in critical stages like determining objectives, effective tools to collect data, tools to analyse data, and reporting the results.

This study adopted a descriptive observation design. This design describes the systematic process to observe and describe a phenomenon in a way that external factors do not influence the process including the researcher. In this study, therefore, observation design described relevant elements of the research problem under examination from an industry perspective. Many researchers have adopted this strategy in their study (Kamau&Njeru, 2016). Besides, since the study is quantitative in nature, descriptive observation design fits the research process (Cooper & Schindler, 2011).

3.3. Target Population

Target population refers to the entire or whole population which the researcher needs to include in the study to achieve the research objective. It can be individuals, items, objects, or occasions (Mugenda&Mugenda, 2012). The

population identified for the study should possess the needed information to meet the research goals or objectives. This research focused on all the listed manufacturing firms at the NSE. From the NSE website, there are nine (9) listed firms under the 'Manufacturing and Allied' segment. Secondary data for use in the study was extracted from the financial reports for the period of 2013 – 2018. The inclusion-exclusion criterion for the study was based on the available data for all the study period as earlier indicated.

3.4. Sampling and Sampling Procedure

Sampling refers to the process of identifying and collecting a small number of individuals or objects from the target population to participate in the study (Kothari, 2014). The goal is to use the sample individuals as a representation of the population. Nevertheless, the sampling procedure refers to how and what techniques the researcher uses to pick the sample size. The method and the procedure used to pick the sample should ensure that the sample has similar attributes as the target population.

Since there are only 9 listed manufacturing firms and the study opted for panel data from 2013 through 2018 which makes it small enough and manageable to conduct, the census method was used as the sampling technique. One merit of the census method is that it is recommended where a target population is small and individuals or objects forming the population can all be included to form the sample of the study (Mugenda&Mugenda, 2012). As such, the sample for this study included the 9 listed manufacturing firms at the NSE.

3.5. Data Collection Instrument

First, this research used secondary quantitative data. The data were extracted from the annual reports or financial statements for a period of 2013 – 2018. Multiple tools are available for use to extract secondary information. However, the most recommended data collection instrument for such a study was data collection sheets. Such tools have been used in similar studies (Kamau&Njeru, 2016). The study, thus, adopted data collection sheets as the appropriate data collection instrument. One of the advantages of the data collection sheets is that they can easily be designed using an excel worksheet depending on the kind of information the researcher wants. Also, the validity and reliability of such tools are easy to maintain (Kothari, 2009).

This study followed desk review as the first data collection process. The tools were first designed according to how variables were operationalized (see Table 2). The idea was to ensure that the tool captures the information regarding the study indicators or measurement information. The researcher then visited various websites about the disclosure of financial statements and annual reports of all listed firms at the NSE. The researcher selected the manufacturing and allied segment for easy retrieval of the information. Where information was not available, the researcher visited the company and sought assistance regarding data collection. The final process of data collection involved transferring data into an excel worksheet to determine the accuracy of the data.

3.6. Data Analysis and Presentation

Data analysis is the utilization of thinking and judgment of the researcher to comprehend the information that has been obtained from the respondents to establish reliable information that is useful in making study conclusions (Zikmund et al., 2010). Because the study uses panel data, STATA software was considered as the most appropriate for determining the most effective regression model of the study. Panel data comprises observations of multiple units (manufacturing entities) over time (period). Panel data analysis technique not only increases observations of the study but also effective to change and dynamic analysis regarding the complex change in performance across entities in the sector. The analytical model, therefore, was as follows;

$$Y_{it} = \beta_0 + \beta_1 Li_{it} + \beta_2 Op_{it} + \beta_3 Cr_{it} + \beta_4 It_{it} + \varepsilon$$

Where β_0 is the intercept, β_1 is the regression coefficient of liquidity risk exposure (L_i), β_2 is the regression coefficient for operational risk exposure (O_p), β_3 is the regression coefficient for credit risk exposure (C_r), and β_4 is the regression coefficient for interest rate risk (I_t).

3.7. Diagnostic Tests

The study used panel data which incorporates three models (i.e., random effect (RE), fixed effect (FE), and pooled ordinary least square (OLS)). To determine the appropriate model of the study, the Hausman test was conducted to choose between RE and FE. The null hypothesis clarified that should the p-value be less than 0.05, FE should be selected (null hypothesis). However, if the p-value is greater than 0.05, RE model should be selected (alternative hypothesis). Hausman test, therefore, was performed at a 5% level of significance.

Nevertheless, before fitting the model of the study, other diagnostics tests such as serial autocorrelation, unit root test, normality test, heteroskedasticity tests, and multicollinearity test were conducted to ensure that data for the study fits the model.

Serial autocorrelation was established to confirm whether standard errors of the coefficient of the model were smaller than they are. The study used the Wooldridge test for autocorrelation where if the p-value > 0.05, there is no serial autocorrelation (null hypothesis), and if p-value < 0.05, serial autocorrelation exists (alternative hypothesis).
A unit root or stationarity test was conducted to determine whether possession of a unit root exists in the panel data of the study. Using the Harris-Tzevalis unit root test, a p-value > 0.05 suggested a problem of a unit root (null hypothesis) whereas a p-value < 0.05 suggested stationarity of the panel data (alternative hypothesis).

A normality test using the Skewness and Kurtosis test was conducted to indicate whether data for the study were normally distributed. A p-value greater than 0.05 suggests data was significantly normally distributed whereas a p-value less than 0.05 suggested that data was not significantly normally distributed.

Additionally, Breusch-Pagan/Cook-Weisberg test was used to test heteroscedasticity and whether data for the study was homogenous or not. A p-value greater than 0.05 suggests no presence of heteroscedasticity (null hypothesis) whereas a p-value less than 0.05 showed the presence of heteroscedasticity.

Lastly, the study conducted a multicollinearity test to determine whether there existed a correlation among the independent variables of the study. A variance inflation factor (VIF) above 5 may suggest problems of multicollinearity (null hypothesis) whereas a VIF of less than 5 suggested no challenges of multicollinearity.

3.8. Ethical Considerations

This study maintained the highest ethical research standards. A letter from the university was drafted which was later used for approval of data collection from various firms under the study. It clearly stipulated the purpose of the study and how the privacy of data gathered was to be maintained. The researcher assured the participants all the information given through their respective offices or their websites shall be used solely for academic purposes. And where the need arises for public use, all the information shall be retrieved from the university library in secured accounts authorized by the university or the librarian.

4. Data Analysis, Presentation, and Discussion

4.1. Introduction

This chapter presents the study findings based on the information collected from the field of study. The chapter starts by presenting the descriptive findings of the study. It then follows by presenting inferential analysis where correlation and regression findings are presented. The chapter then provides a detailed discussion of the study findings where a comparison of current findings and previous findings in the literature review of the study are carried out.

4.2. Descriptive Analysis

The section provides the summary of the descriptive statistics both the overall, between, and within descriptive results. It also highlights the total number of observations, duration of the study observations as well as the total number of companies included in the study. Table 3presented descriptive findings of the study; overall, between and within of the study variables.

Variable		Mean	Std. Dev	Min	Max	Observations
ROA	Overall	0.0829	0.2295	-0.7604	0.6032	N = 54
	Between		0.1641	-0.2298	0.4105	n = 9
	Within		0.1681	-0.4477	0.5471	T = 6
WCR	Overall	2.1133	2.0945	0.029	10.0893	N = 54
	Between		2.0709	0.2919	7.4043	n = 9
	Within		0.7094	-0.7805	4.7982	T = 6
FAT	Overall	3.0521	3.3333	0.0572	14.7718	N = 54
	Between		3.0745	0.4308	9.3463	n = 9
	Within		1.5969	-1.5001	8.4776	T = 6
RT	Overall	5.0705	3.1773	0.1254	14.3738	N = 54
	Between		2.873	1.5947	9.9013	n = 9
	Within		1.6185	1.5622	9.8216	T = 6
NIM	Overall	1.3492	1.9672	0.0864	0.1437	N = 54
	Between		1.5527	0.0792	0.1392	n = 9
	Within		0.6817	0.0944	0.1156	T = 6
*ROA - return on assets; WCR - working capital ratio; FAT - Fixed asset turnover; RT- Receivable turnover; AIR - Annual interest rates						

Table 3: Descriptive Findings
Source: Research Data (2020)

Mean and standard deviation were used as measures of central tendency and dispersion respectively (Table 4.1). The study findings revealed that financial performance (ROA), liquidity risk exposure (WCR), operational risk exposure (FAT), credit risk exposure (RT), and interest rates (NIM) all had a mean of 0.0829, 2.1133, 3.0521, 5.0705 and 1.3492 respectively. This means that the independent variables of the study had an almost equal average value of their performance, however, credit risk had the highest value in terms of performance. Table 3 also indicated that the study variables had an overall standard deviation of 0.2295, 2.0946, 3.3333, 3.1773, and 1.9672 for financial performance (ROA), liquidity risk exposure (WCR), operational risk exposure (FAT), credit risk exposure (RT) and interest rates (NIM). This implied that operational risk exposure had the highest performance while financial performance had the lowest performance based on the standard deviation (Levitas& Guy, 1996).

4.3. Diagnostic Statistics

Before determining the appropriate model of the study, various diagnostic tests were performed to illustrate whether data was fit for the study. This was estimated based on the hypotheses of each diagnostic test of the study. The diagnostic tests were discussed as follows.

4.3.1. Serial Autocorrelation

The test was performed to confirm that standard errors of the coefficient of the model of the study were smaller than they are and in achieving higher R-squared using Wooldridge test for autocorrelation. The null hypothesis of the test was that there is no serial autocorrelation if p-value > 0.05 while the alternative hypothesis serial correlation existed if the p-value < 0.05. Findings are presented in table 4.2.

Wooldridge test for autocorrelation in panel data
H_0: no first – order autocorrelation
F (1, 8) =   0.822
Prob> F =   0.3912

Table 4: Autocorrelation Test Results
Source: Field Data (2020)

The findings in Table 4reveal a p-value of 0.3912 > 0.05. The study, therefore, failed to reject the null hypothesis and concluded that data for the study did not have the first-order autocorrelation as indicated in the work of Kohler and Kreuter (2005).

4.3.2. Unit Root/Stationarity Test

This test was performed to indicate whether a level of non-stationarity or possession of a unit root existed in the panel data of the study. The null hypothesis showed that data contains a unit root if the p-value > 0.05 while the alternative hypothesis showed that panel data was stationary if the p-value < 0.05, and was determined using Harris-Tzevalis unit root test as shown in Table 5.

Harris-Tzavalis unit-root test for ROA			
H_0: Panels contain unit roots H_a: Panels are stationary		Number of panels = 9 Number of periods = 6	
AR parameter: Common Panel means: Included Time trend: Not included		Asymptotics: N⩾ Infinity T Fixed	
Statistic		z	p-value
rho -0.3883		-6.8231	0.0000

Table 5: Unit Root Test
Source: Research data (2020)

The findings in Table 5 reveal that the test had a p-value of 0.0000 < 0.05. An indication that the null hypothesis was rejected and an alternative hypothesis which suggests stationary data was accepted based on Harris and Tzevalis (1999) suggestions.

4.3.3. Normality Test

Using skewness and kurtosis for normality test, the test was determined to indicate whether data for the study were normally distributed. This test was determined after transforming the data using natural log/reciprocals. Results indicate observations as 54 with a probability of skewness (Prob>chi2) at 0.6138, indicating that the skewness is asymmetrically distributed. Besides, kurtosis is also asymmetrically distributed. The chi2(2) is 0.71 greater than 0.05. As such, the study concluded that data is normally distributed (Table 6).

Results in Table 6 show that all the variables of the study; financial performance (ROA), liquidity risk exposure (WCR), operational risk exposure (FAT), credit risk exposure (RT) and interest rates risk all had p-values < 0.05. This is an indication that data was not significantly distributed. Hence, we fail to reject the alternative hypothesis of the study (Shapiro &Wilk, 1965).

	Skewness/Kurtosis tests for Normality				
				– Joint –	
Variable	Obs	Pr (Skewness)	Pr (Kurtosis)	Adj chi2(2)	Prob>chi2
Resid	54	0.3229	0.5321	0.71	0.6138

Table 6: Normality Test
Source: Research data (2020)

4.3.4. Heteroskedasticity Test

Using Breusch-Pagan/Cook-Weisberg test, the heteroskedasticity test was determined to establish whether data for the study was homogenous or not. The null hypothesis of p-value > 0.05 suggested that there was no presence of heteroskedasticity while the alternative hypothesis of p-value < 0.05 showed the presence of heteroskedasticity as presented in table 4.5.

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
H_0: Constant variance
Variables: fitted values
Chi2 (1)   =   3.76
Prob> chi2   =   0.0524

Table 7: Heteroskedasticity Test
Source: Research Data (2020)

The results in Table 7show that the p-value of 0.524 > 0.05. Hence, we fail to reject the null hypothesis and conclude that the data was homogenous and no problems of heteroskedasticity. The findings concurred with the findings of Kim (2009).

4.3.5. Multicollinearity Test

The test was determined to show whether there existed a correlation among the independent variables of the study. A good model should be free from correlation. The null hypothesis of variance inflation factor (VIF) >5 shows problems of multicollinearity while the alternative hypothesis of VIF <5 indicated that multicollinearity was not a major problem. The test was determined using the Variance Inflation Factor (VIF) as shown in table 4.6.

The results in Table 8show that the independent variables of the study; operational risk exposure (FAT), credit risk exposure (RT), and liquidity risk exposure (WCR) all had VIF of less than 5. Moderating variable, interest rates risk also had a VIF <5. This is an indication that there was no problem of multicollinearity. The study, therefore, accepted alternative hypothesis and rejected the null hypothesis (Zainodin, Noraini& Yap, 2011)

Variable	VIF	1/VIF
Liquidity risk exposure (WCR)	1.05	0.9566
Operational risk exposure (FAT)	1.31	0.7617
Credit risk exposure (RT)	1.28	0.7827
Interest rate risk	1.25	0.7513
Mean VIF	1.23	

Table 8: Multicollinearity Test
Source: Research data (2020)

4.3.6.Hausman Test

To determine the study model as either RE or FE, the Hausman test was conducted and the findings are presented in Table 9of the study. The findings established a Prob>Chi12 of 0.6311 > 0.05. The study, thus, accepted the null hypothesis that the RE model fits the model.

	– Coefficients –		(b-B) Difference	Sqrt (diag{V_b-V_B}) S.E
	(b) fe	(B) re		
Liquidity risk	0.1820	0.2067	-0.0247	0.0131
Operational risk	0.2610	0.2905	-0.0295	0.0092
Credit risk	0.0105	0.0115	-0.0001	0.0095
Interest rate risk	0.0436	0.0473	-0.037	0.0351

Table 9: Hausman Test for RE and FE
b = consistent under H_0 and H_a; obtained from xtreg
B = inconsistent under H_a, efficient under H_0; obtained from xtreg
Test: H_0: difference in coefficient not systematic
Chi2(5) = {b-B}'[{V_b-V_B}`(-1)]{b-B} = 2.06
Prob>Chi12= 0.6311
*Liquidity Risk; Operational Risk; Credit Risk; Interest Risk

4.4. Model Fitting

The model of the study was fitted based on the random effect (RE) regression as shown under the Hausman test (Table 4.7). The regression equation model was based on equation (i) of the study as indicated in the methodology chapter under the data analysis section.

4.4.1. Correlation Analysis

The study uses Pearson Correlation Coefficient to determine the strength of the linear relationship between the study variables under 95% confidence level. The coefficient ranges between -1 to +1 where negative value implied negative correlation and positive value implied positive correlation. A coefficient above 0.3 was considered effective while below 0.3 was a weak one. The findings were presented in table 4.8.

Variables		ROA	WCR	FAT	RT	NIM
ROA	r	1.0000				
	sig. (2-tailed)					
	N	54				
WCR	r	0.1286	1.0000			
	sig. (2-tailed)	0.3541				
	N	54	54			
FAT	r	0.4773	-0.2055	1.0000		
	sig. (2-tailed)	0.0003*	0.1361			
	N	54	54	54		
RT	r	0.3816	-0.1259	0.4652	1.0000	
	sig. (2-tailed)	0.0044*	0.3641	0.0000*		
	N	54	54	54	54	
NIM	r	0.1861	-0.1026	0.0917	-0.1628	1.0000
	sig. (2-tailed)	0.0562	0.0452	0.1521	0.0972	
	N	54	54	54	54	54

Table 10: Correlation Analysis
*Correlation Is Significant At 0.01/0.05 Level (2-Tailed)
*Roa - Return on Assets,Wcr - Working Capital Ratio, Fat - Fixed Asset Turnover,
Rt- Receivable Turnover,Nim – Net Interest Margin
Source: Research Data (2020)

The correlation summary results asshown in Table 10of the study established that all the correlation coefficient values between independent variables and financial performance (ROA) were positive. That is 0.1286, 0.4773, and 0.3816 for liquidity risk (WCR), operational risk (FAT), and credit risk exposures (RT) respectively. Additionally, the study established a positive correlation coefficient value of 0.1861 between interest rates and the financial performance of manufacturing companies. Therefore, the study deduced that only operational risk and credit risk had a strong positive correlation with financial performance. Liquidity risk exposure and interest rates had a weak positive correlation with the financial performance of manufacturing firms. The findings in Table 10also recorded that only operational risk and credit risk exposures had a positive correlation with financial performance (ROA) at a 95% confidence level. That is, p-values of 0.0003 and 0.0044 for operational risk and credit risk exposures respectively were below 0.05. The findings were in agreement with the findings of Lin and Chang (2015) and Agwu (2018).

4.4.2. Random Effect GLS Regression

RE regression was examined to indicate the association between the study variables. The independent variables included liquidity risk exposure, operational risk exposure, credit risk exposure, and interest rates risk exposure. The dependent variable was financial performance. The regression aims to demonstrate the extent of the relationship between the variables as shown in Table 4.9.

Random-effects GLS regression Group Variable: Company1 R-sq: Within = 0.2760 Between = 0.5630 Overall = 0.3170 Corr(u_i, x) = 0 (assumed)					Number of obs = 54 Number of groups = 9 Obs per groups: min = 6 avg = 6.0 max = 6 Wald chi2(4) = 7.74 Prob> chi2 = 0.000	
Financial Performance	Coef.	Std. Err.	z	p>/z/	[95% Conf.	Interval
Liquidity risk	0.2067	0.0131	2.04	0.047	0.0004	0.0529
Operational risk	0.2905	0.0092	3.20	0.002	0.0109	0.0479
Credit risk	0.0115	0.0095	1.61	1.113	-0.0038	0.0346
Interest rates risk	0.0473	0.0351	1.15	0.083	-0.0152	0.0841
_Cons	-0.1415	0.0610	-2.32	0.0025	-0.2641	-0.0188
sigma_u	0.2949					
sigma_e	0.6830					
rho	0.2531		(fraction of variance due to u_i)			

Table 11: Re Model Output Summary
Dependent Variable: Financial Performance
Independent Variables: Liquidity Risk, Operational Risk, Credit Risk, Interest Rate Risk
Source: Research Data (2020)

The summary results Table 11presents estimate of regression coefficients. It shows summary statistics including the R-squared within, between, and overall as well as - F-statistics. The F-statistics tested the joint null hypothesis that all the coefficients in the RE model without the constant are zero, suggesting that the study rejects the null of zero and accepts that the model is highly significant to make study conclusions.

As shown in Table 4.9, R-squared within has all the attributes of the usual R-square of Ordinary Least Square (OLS) regression. The other two R-squares are correlations squared, corresponding to the estimator and an overall equation with a constant intercept. To describe the degree of changes in a financial performance held by manufacturing firms as a result of changes in financial risk exposures, the R-squared overall for the RE regression model demonstrates that the study model with four independent variables; liquidity risk, operational risk, credit risk, and interest rates risk accounts for 31.7% of the changes in the financial performance of manufacturing firms, leaving out 68.3% unaccounted for. Thus, the model was as follows;

$$Y = -0.1415 + 0.2067L_i + 0.2905O_P$$

Based on the findings of the study as shown in table 4.9, all the independent variables of the study had a positive coefficient; 0.2067, 0.2905, and 0.0115 for liquidity risk exposure (WCR), operational risk exposure (FAT), and credit risk exposure (RT) respectively, whereas the regression coefficient for interest rates was 0.0473. The results also revealed that the coefficients of liquidity risk exposure (WCR) and operational risk exposure were all significant at a 5% level of significance. That is, p = 0.047 and p = 0.002 respectively. Therefore, there is a statistically significant positive relationship between liquidity risk exposure, operational risk exposure, and financial performance of listed manufacturing companies at the NSE. The findings concurred with the study findings of Waleed et al., (2016)Rudhani and Balaj (2019), Arhenful*et al*., (2019), and Chen *et al*., (2018). However, the results disagreed with the previous findings such as Salim and Bilal (2016) and Hakimi and Zaghdoudi (2017) whose study findings established an inverse relationship between liquidity risk exposure and financial performance.

Additionally, the study established ap= 0.083 > 0.05, suggesting an insignificant positive relationship between interest rate risk and financial performance. The findings disagreed with previous results such as Kar and Swain (2013), Kostikov et al., (2019), and Jui et al., (2020) whose study results establish a significant positive relationship between interest rate risks and financial performance. Subsequently, the study also established an insignificant positive relationship between credit risk exposure and financial performance (p-value = 1.113 > 0.05). The study also agrees with Agwu (2018) that credit risk has a positive relationship with financial performance, however, the relationship was insignificant. The finding, however, supports Nwanna and Oguezue (2017) whose study finding established an insignificant positive relationship between credit risk exposure and financial performance.

Therefore, when all factors are held constant, the financial performance of the listed manufacturing firms at the NSE would be negative (-0.1415). This could be due to the ever-increasing risk exposures in the market. However, effective risk management techniques especially in regards to liquidity risk, operational risk, credit risk, and interest rates risks, would result in a positive or a unit increase in the positive financial performance of the manufacturing companies listed at the NSE. Results suggest that when other factors are held constant, a unit increase in liquidity risk exposure would result in a unit increase in positive financial performance. Also/ furthermore, in addition, the study established that a unit increase in operational risk exposure would result in a unit increase in the positive financial performance of the firms. Moreover, findings also reveal that a unit increase in credit risk exposure in terms of effective management techniques would slightly result in a unit increase in positive financial performance. Lastly, Table 11results suggest that a unit increase in interest rates risk would result in a unit increase in the positive financial performance of manufacturing companies listed at the NSE.

4.5. Chapter Summary

        This chapter presented the analysis and presentation of the findings. A detailed presentation of the research findings based on the field data has been presented. The chapter started by discussing descriptive of the companies' performances over the study period. Thereafter, diagnostics tests were performed to ensure data meets the threshold for the model. The chapter then conducted the Hausman test to estimate the appropriate model of the study, which has been estimated to be RE. A RE GLS regression was then conducted to demonstrate the relationships between the study variables. While presenting the findings, the study compared the findings to the previous results presented in the literature review of the study. The next chapter provides summary, conclusion, and recommendations of the study.

5. Summary, Conclusion, and Recommendations

5.1. Introduction

        The objective of this study was to determine the relationship between financial risk exposure, interest rates, and financial performance of listed manufacturing firms at the NSE, Kenya. The chapter presents the summary of the research findings as discussed in chapter four of the study. It also provides a detailed conclusion of the study based on the research findings and discussion of the findings. The chapter concludes by providing recommendations of the study as well as areas of the further researcher. The limitation of the study is also discussed.

5.2. Summary of the Research Findings

        This section of the chapter of the study presents the summary of the findings of the study as discussed earlier. The purpose of the study was to establish the relationship between financial risk exposure, interest rates, and financial performance of listed manufacturing companies at the NSE. The study collected secondary data for the period of 2013 to 2018 financial statements (data) for each company. Data collected was used to calculate working capital ratio as a measure of liquidity risk exposure, fixed asset turnover as a measure of operational risk exposure, and receivable turnover as a measure of credit risk exposure. Liquidity risk, operational risk, and credit, and interest rates risk exposures formed independent variables of the study. The study also collected net interest margin as a measure of interest rates for each company. A summary of the study findings was therefore discussed based on each objective of the study.

5.2.1. Liquidity Risk Exposure and Financial Performance

        The first objective of the study was to establish the relationship between liquidity risk exposure and the financial performance of manufacturing companies listed at the NSE. Descriptive findings established that liquidity risk exposure measured by working capital ratio had the lowest mean and standard deviation of the study. However, the distribution of the data was within range, suggesting that the performance of liquidity within the companies were almost on the same level across the study periods. Almost all companies had a stable and low level of working capital ratio that is always needed in the firms except for a few firms which had a high working capital ratio. Therefore, companies need to always monitor their working capital to ensure that they invest in securities or assets that can be easily converted to cash when the need arises (Eden, 2017). Having too many liquid assets in the company could signal bad liquid asset management. As a result, companies should observe their liquidity level at all times to minimize the risk associated with liquid assets in the company. The descriptive findings, thus, concur with Eden (2017) that liquidity risk exposure positively relates to financial performance.

        The inferential analysis provided the results on the relationship between liquidity risk exposure and financial performance of manufacturing companies listed at the NSE. From the correlation analysis, results reveal that the strength of the relationship between liquidity risk exposure and financial performance was insignificantly positive and weak compared to other variables under the study. Besides, the regression analysis established that there is a significant positive relationship between liquidity risk exposure and the financial performance of manufacturing companies listed at the NSE. This implied that the alternative hypothesis of the study was accepted while the null hypothesis was rejected. The study findings disagreed with the previous findings of Salim and Bilal (2016) and Chen et al., (2018) whose study established an inverse relationship between liquidity risk exposure and financial performance of banking institutions.

5.2.2. Operational Risk Exposure and Financial Performance

        Consequently, the study concluded that the level of operational risk exposures across the companies listed at the NSE varies over the period. From the evidence presented, the study showed that some companies had a steady balancing of operational risk, an indication that measures were put in place to effectively monitor risks that could affect the performance of the company from the under-utilization of fixed assets to raise sales. Also, the study concludes that there is a strong positive correlation between operational risk exposure and companies' financial performances. The findings are in agreement with the previous studies such as Lin and Chang (2015), Siminyu et al., (2017), and Rasheed et al., (2018) whose findings reported a significant positive correlation between operational risk exposure and profitability of companies.

        This was also supported by the significant positive relationship between operational risk exposure and financial performance based on the positive regression coefficient values within the recommended level of significance. As a result, the study accepted the alternative hypothesis of the study. This finding, however, disagreed with the previous findings of Oye (2020) whose study demonstrated a negatively insignificant relationship between operational risk exposure and profitability of commercial banks. Further, Maina et al., (2014) argued that operational risks focus on active decision making which may results in increased overall production costs when not critically examined, leading to operational risks

in the organization. Companies therefore should ensure that the fixed assets they have invested in are efficiently used to reduce the cost associated with asset valuations, with the goal of sales maximization. Effective application of such risk management mechanism can boost the financial performance of the company in the market hence giving it a competitive edge.

5.2.3. Credit Risk Exposure and Financial Performance

The study also made some conclusions regarding the effect of credit risk exposure on the financial performance of manufacturing companies listed at the NSE. The study concluded that almost half of the manufacturing companies under the study had a steady low level of an average number of account collection periods. Only a few companies experienced a continuous decrease in the number of days of debt collections. As a result, the study concluded that companies with good risk measures to improve the periods of debt collections annually can minimize credit risks that are associated with defaults hence maximizing more on sales. This is in agreement with Agwu (2018) whose study indicated that banks with a good credit risk management policy boost shareholders' and investors' confidence and in return, improve the growth of the institution.

Lastly, the study findings concluded that credit risk had a positive correlation between credit risk exposure and the financial performance of the manufacturing companies listed at the NSE. Also/in addition, the regression analysis performed showed that there was an insignificant relationship between the two variables. This was based on the regressed coefficient value having a higher p-value than the recommended significant level. While the study may indicate that the relationship is positive, it was, therefore, evident that the changes caused by credit risk are insignificant to the changes in the financial performance. The findings are in line with the previous study findings by Rasika and Sampath (2015), and Nwanna and Oguezue (2017) whose findings reported inverse and insignificant relationship between credit risk and financial performance respectively. However, the findings disagreed with Kalu et al., (2017) whose study established a positive relationship.

5.2.4. Interest Rates and Financial Performance

The study sought to determine the relationship between interest rates risk and financial performance of listed manufacturing companies at the NSE. Descriptive findings indicated that the distribution of interest of each company was within a close range. That is, interest rates that each company charged on their assets as well as on their activities were not much different. Interest rate as a risk needs to be observed as it can significantly affect a firm's performance. The study concluded that the interest rate of the listed manufacturing companies varies. However, there was no significant difference since they were within a close range as previously mentioned by Njeri(2016). According to Njeri (2016), interest rates charged on loans vary and, in most cases, maybe closely related within the banks.
Results reported that there is an insignificant positive relationship between interest rate risk and financial performance.

This was supported by the RE analysis. The finding concurs with the previous findings of Irungu (2013), Wambari and Mwangi (2017), and Njeri (2016) who found a positive relationship between interest rate changes and the financial performance of commercial banks. Thus, in conclusion, the results indicate that there is a statistically significant positive moderating effect of interest rates on the relationship between financial risk exposures and financial performance of listed manufacturing firms at the NSE.

5.3. Recommendations

The study made several recommendations based on the value of the study.

5.3.1. Management Practice

The study recommends that manufacturing companies should watch out for the various financial risks in the market, especially the ones discussed in the study. This is because; developing early measures to help in curbing some of the risks that the company may be exposed to may be effective in improving the financial performance of the company. Measures should be put in place to address areas such as effective working capital balance that ensures there are enough liquid assets to offset current liabilities in the company. Also, they should ensure that they efficiently utilize their fixed assets to raise sales and increase their number of account periods in a year.

5.3.2. Policy Makers and Investors

To the policymakers, the study recommends that there is a need to develop financial risk policies that could be used to guide the operations of manufacturing companies at the NSE, for both internal and external use. This will ensure that some of the minor risks that firms could be exposed to are minimized at an early stage of their occurrence. To the investors, the study recommends that there is a need for them to always perform feasibility studies to determine how effective and fast the company can pay its short-term suppliers and how efficiently it uses its fixed assets to generate sales before making investment decisions.

5.3.3. Academicians

A review of the study literature revealed that most financial risk exposure studies have been in the financial sector or banking. The study recommends that there is a need for current and future academicians to keep digging into how financial risk exposures relate to financial performance, especially in the manufacturing industry.

5.4. Areas of Further Studies

This study was carried out on manufacturing companies listed at the NSE. At the center of the discussion was the current economic conditions that have seen some companies closing down due to various economic conditions among them financial risk exposures. The study, therefore, recommends that there is a need for future studies to be done not only on big manufacturing corporations but also on the small manufacturing companies that are still struggling with understanding issues related to financial risk exposure. The study also recommends that other financial risk exposures such as market risk, foreign exchange, and currency risk need to be included in the future study and their effect investigated concerning the financial performance. While this study may have used ROA as the measure, there is a need for future studies to use other accounting measures to measure financial performance. Moreover, these studies could also use a cross-sectional approach instead of a descriptive approach.

5.5. Limitations of the Study

One drawback of this research is the use of descriptive design and not a longitudinal approach. Convincingly, longitudinal research is widely recommended at the current level of study as it provides expansive study results through a longer period of examination. As such, it could have been recommendable for this study. However, due to time constraints, the study opted for descriptive research. Besides, increasing the number of observation periods for each manufacturing company may enhance the generalizability of the study findings. Although the study attempted to achieve the research objectives by focusing on 6 years for each company, using an expanded period would have been better to aid in the long-term forecasting purposes for the companies.

Besides, the outbreak of Coronavirus also known as COVID-19 saw several companies closing their branches and businesses. This limited the chances of confirming the authenticity of the financial records accessed through the internet. However, the positive relationship that the researcher kept with the head of financial department individuals assisted in addressing the challenges.

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Appendix

B.O.C Kenya Ltd.								
Variable type	Variables	Measure	2013	2014	2015	2016	2017	2018
D.V	Performance	ROA	0.5557	(0.0953)	0.0296	0.0339	0.0104	0.0148
I.V	Liquidity	WCR	2.2270	2.1390	2.0635	2.2843	1.9539	1.8836
	Operational	FAT	1.7482	1.0215	1.0855	1.0336	0.9499	0.9703
	Credit	TR	7.6858	4.0250	3.4866	3.1674	3.3373	3.4164
M.V	Interest rates	AIR	16.9900	15.1600	16.1600	16.5800	13.6700	13.0600
BAT Company								
Variable type	Variables	Measure	2013	2014	2015	2016	2017	2018
D.V	Performance	ROA	0.6032	0.4000	0.4299	0.4003	0.2859	0.3435
I.V	Liquidity	WCR	1.2562	1.2491	1.4512	1.4132	1.3180	1.5911
	Operational	FAT	14.7718	11.1145	9.6783	6.9811	6.4937	7.0383
	Credit	TR	10.3869	6.8996	8.6869	7.8756	6.9873	7.3746
M.V	Interest rates	AIR	16.9900	15.1600	16.1600	16.5800	13.6700	13.0600
Carbacid Investments								
Variable type	Variables	Measure	2013	2014	2015	2016	2017	2018
D.V	Performance	ROA	0.0645	0.1842	0.1430	0.1241	0.1373	0.0930
I.V	Liquidity	WCR	10.0893	6.2963	4.5106	7.0885	7.0132	9.4280
	Operational	FAT	0.4104	0.5769	0.4754	0.4439	0.3773	0.3493

	Credit	TR	0.6408	5.0329	4.6604	4.7956	4.6459	5.1186
M.V	Interest rates	AIR	16.9900	15.9900	16.1600	15.5800	13.6700	13.0600

EABL Ltd.

Variable type	Variables	Measure	2013	2014	2015	2016	2017	2018
D.V	Performance	ROA	0.2077	0.1133	0.1472	0.1276	0.1203	0.0927
I.V	Liquidity	WCR	0.6988	0.7213	1.0229	0.7707	1.0069	0.8349
	Operational	FAT	2.8587	1.4915	1.5490	1.6019	1.6583	1.5587
	Credit	RT	12.8922	7.3261	7.6552	6.2189	6.5346	8.2192
M.V	Interest rates	AIR	16.9900	15.9900	16.1600	15.5800	13.6700	13.0600

Mumias Sugar

Variable type	Variables	Measure	2013	2014	2015	2016	2017	2018
D.V	Performance	ROA	(0.1045)	(0.1078)	(0.2141)	0.0743	(0.2662)	(0.7604)
I.V	Liquidity	WCR	0.8396	0.4093	0.1879	0.1765	0.1093	0.0290
	Operational	FAT	1.1681	0.6632	0.2984	0.2926	0.0884	0.0739
	Credit	RT	6.0993	4.1401	2.7084	4.8674	1.8651	2.1189
M.V	Interest rates	AIR	16.9900	15.9900	16.1600	15.5800	13.6700	13.0600

Unga Group

Variable type	Variables	Measure	2013	2014	2015	2016	2017	2018
D.V	Performance	ROA	0.0472	0.0617	0.0734	0.0555	(0.0006)	0.0270
I.V	Liquidity	WCR	1.8427	2.3322	2.3685	2.2986	1.6579	2.1418
	Operational	FAT	1.7425	7.0636	6.5422	6.0171	6.2633	6.4533
	Credit	RT	14.3738	9.1487	9.9958	9.9958	9.6291	8.6542
M.V	Interest rates	AIR	16.9900	15.9900	16.1600	16.5800	13.6700	13.0600

Eveready East Africa

Variable type	Variables	Measure	2013	2014	2015	2016	2017	2018
D.V	Performance	ROA	0.0012	(0.1897)	0.4099	(0.1621)	0.2940	(0.1659)
I.V	Liquidity	WCR	1.5404	1.3339	0.8665	0.4538	2.6948	2.5317
	Operational	FAT	0.0572	5.7315	2.3831	0.6945	0.6705	1.1278
	Credit	RT	0.3500	5.3228	5.2643	3.9570	2.7777	1.6539
M.V	Interest rates	AIR	16.9900	15.9900	16.1600	16.5800	13.6700	13.0600

Kenya Orchards

Variable type	Variables	Measure	2013	2014	2015	2016	2017	2018
D.V	Performance	ROA	0.0025	(0.4182)	0.4485	0.0448	0.0581	0.0798
I.V	Liquidity	WCR	1.9261	1.7738	2.0757	2.0214	1.7132	2.1138
	Operational	FAT	0.1249	1.6881	1.8583	1.4866	1.6775	1.6385
	Credit	RT	0.1254	2.9482	2.1765	1.6644	1.4036	1.1503
M.V	Interest rates	AIR	16.9900	15.9900	16.1600	16.5800	13.6700	13.0600

Flame Tree Groups Holding

Variable type	Variables	Measure	2013	2014	2015	2016	2017	2018
D.V	Performance	ROA	0.0270	0.1659	0.1812	0.0949	0.0063	0.0925
I.V	Liquidity	WCR	1.2061	1.5540	1.6410	1.5305	1.2909	1.1436
	Operational	FAT	0.9092	8.1253	8.0469	6.4178	5.2722	3.9968
	Credit	RT	0.9572	3.1121	3.3256	2.8795	3.0851	3.2742
M.V	Interest rates	AIR	16.99	15.99	16.16	16.58	13.67	13.06

Table 12: Computed Analysed Data
Source: Author (2020)

List of Manufacturing Companies Listed at NSE
1. B.O.C Kenya Ltd ord 5.00
2. British American Tobacco Kenya Ltd ord 10.000
3. Carbacid Investments Ltd ord 5.00
4. East African Breweries Ltd ord 2.00
5. Mumias Sugar Co. Ltd ord 2.00

6. Unga Group Ltd ord 5.00
7. Eveready East Africa Ltd ord 1.00
8. Kenya Orchards Ltd ord 5.00
9. Flame Tree Groups Holdings Ltd ord 0.825
Source: Author (2020)

Task	December 2019	January 2020	February 2020	March 2020	April 2020	May 2020
Topic identification, approval and allocation of supervisors by the university	■					
Draft proposal		■				
Final concept paper presentation			■			
Collection of data				■	■	
Data analysis				■	■	
Final dissertation presentation						■

Table 13: Time Frame
Source: Author (2020)

Transaction	Cash (Kshs.)
Stationery	30,000.00
Research permit	1,000.00
Publishing	7,000.00
Spiral binding	3,000.00
Print outs	5,000.00
Miscellaneous	10,000
Total	56,000.00

Table14: Budget
Source: Author (2020)