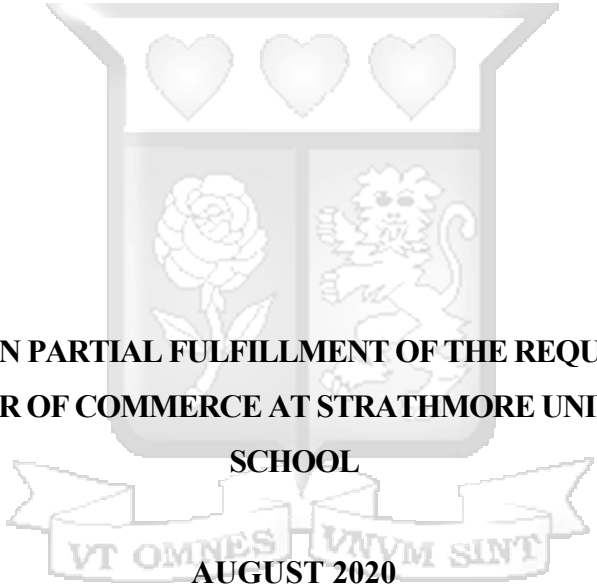
THE INFLUENCE OF PRODUCT DIVERSIFICATION AND FIRM CHARACTERISTICS ON PERFORMANCE OF COMPANIES LISTED AT NAIROBI SECURITIES EXCHANGE

STEPHEN KAMAU MUCHIRI



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DECLARATION

I declare that this thesis is my own work and has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made in the proposal itself.

Name: Stephen Kamau Muchiri Signature:_____

Date: _____

Approval

The thesis of Stephen Kamau Muchiri was reviewed and approved by the following:

Dr. Hellen Otieno: _____

Senior Lecturer, Strathmore University Business School,

Strathmore University

Dr. George Njenga: _____

Dean, Strathmore University Business School,

Strathmore University

ABSTRACT

This study sought to establish the influence of product diversification and firm characteristic on performance of listed companies at Nairobi Securities Exchange which was guided by three specific objectives. The first specific objective was to determine the motives of product diversification on companies listed at the Nairobi Securities Exchange. The second specific objective was to establish the effect of product diversification on performance of companies listed in Nairobi Securities Exchange. The third specific objective was to establish the effect of product diversification and firm characteristics on the performance of companies listed in the Nairobi Securities Exchange. The study adopted a correlation research design. Census method was used to study all the targeted population which was the listed firms at the Nairobi Securities Exchange. Primary data was collected through questionnaires to address the first objective. Secondary data was collected from the audited financial reports of the listed firms to address the second and the third objectives. The financial data ranged between 2011 and 2017. The variables being studied were performance, diversification, size and age of the companies. Descriptive analysis was employed to analyze both primary and secondary data. The primary role of the model was to establish the major motives of product diversification. Pearson correlation and Multiple Linear regression models were employed to establish the effect of product diversification and firm characteristic on performance. The findings revealed that the major motives of diversification were to minimize risk and increase tax shield in order to enhance the capacity to borrow and to access more markets. The second specific objective, both the correlation and regression analysis revealed that product diversification had a negative significant influence on firm performance. The third specific objective, the regression analysis results revealed that firm age and firm size as firm characteristics had a positive significant influence on firm performance. Thus, listed firms which have advanced in age and have plenty of resources experienced a high degree of performance. The fourth specific objective, revealed that firm age and firm size has a positive significant influence on performance of diversified firms. The study was only limited to listed firms at the Nairobi Securities Exchange. Future studies could consider studying all firms whether listed or not listed in each sector. Additionally, future studies could distinguish between related and unrelated product diversification.

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ABBREVIATIONS

ANOVA	-	Analysis of variance
KSHS	-	Kenya Shillings
NSE	-	Nairobi Securities Exchange
ROA	-	Return on Assets
SD	-	Standard Deviation
SIC	-	Standard Industrial Code
SPSS	-	Statistical Package for Social Sciences
USA	-	United States of America
VIF	-	Variance Inflation Factor

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Many organizations have been pressurized to review their strategies in order to manage the stiff competition stemming from globalization and the growing dynamics of business environment characterized by technological and legal changes (Ng'ang'a, Namusonge & Sakwa, 2016; Njuguna, Kwasira & Orwa, 2018). Due to these challenges which are significantly detrimental to the financial performance and sustainability, many firms have been forced to embrace new ideas. According to Njuguna, Kwasira & Orwa (2018), diversification is one of the strategies used by firms to improve performance. The firms also diversify as a result of saturated domestic markets and the desire to attain greater market share internationally (Wachira & Amata, 2017). Many companies also employ diversification to boost their performance, curb risk and achieve growth (Wanyonyi, 2018). Diversification has been cited as particularly beneficial to agricultural sector because it helps them to cope with rising demand for food from the market, respond to climate fluctuations or reduce risk caused by climate change, and develop farming systems resilience to market demand and climate (Wanyonyi, 2018). Listed firms in Asian countries such as Japan, South Korea and Thailand have been successful especially in the agricultural sector due to diversification (Wanyonyi, 2018). In addition, various firms are engaging in diversification through development of new product lines, acquisitions, mergers and opening businesses in other countries (Wachira & Amata, 2017).

The business environment in Kenya has been changing rapidly (Nyaingiri & Ogollah, 2015). The environment has been characterized by competition, industry volatility, rapid technology changes and declining profits, leading to fluctuation in demand and threatening a company survival (Nyaingiri & Ogollah, 2015). Many companies have been forced to be innovative in their business processes as well as to diversify their products (Nyaingiri & Ogollah, 2015). Evidence has shown that diversified companies achieves great performance and are able to survive for long in the business environment (Adamu, Zubairu, Ibrahim & Ibrahim, 2011). The performance of a firm is also affected by the interaction of diversification with firm characteristics. Diversification process involve the availability of resources and how they are coordinated effectively to make the firm

competitive Penrose (1959). According to resource-based view, internal attributes determines the firm performance Giachetti (2012). The attributes enable the firm to develop strategies that improves its efficiency and effectiveness and thereby improving performance. According to Holcomb, Holmes, & Hitt, (2006), product diversification affects company scale and scope. Scale and scope contribute to a company's unique resources that are difficult to imitate. Holcomb further describe a company's scale to be the size of operation and production volume, the economies are realized when increase in production reduces the average unit cost. Company scope is the range of products in a business, the economies are realized when resources shared across product reduces the average cost. Age of a firm influences diversification positively or negatively. Young companies have a positive influence on diversification since they are able to exploit synergies through diversification. On the contrary, old firms experience complexities arising from coordinating and monitoring multiple business units, this can neutralize the benefits of product diversification hence age will have negative influence diversification (Holcomb et al., 2006).

1.1.1 Product Diversification

The concept of product diversification has been defined differently by scholars. Kamien and Schwartz (1975) defined product diversification as a company's degree of product and market involvement. According to Rumelt (1974), product diversification is viewed as a strategy of adding related product or service lines to existing business. Zaninotto and Tran (2016) defines product diversification as company's entry into a new market or increase in the kinds of business it operates. Based on the context of this study, product diversification was defined and understood as a firm's degree of product involvement in a particular industry. This meant that diversification is the extent to which a firm invests in various related/unrelated product lines Penrose (1959). In the current study, product diversification was assessed based on the firm expanding into multiple production lines whether in related or unrelated business sectors.

There are various studies on the factors that motivates firm to diversify. Oladele (2012), Hashai and Delios (2012) and Muzyrya (2010) established that firms diversify to improve their profitability, economies of scale, exploitation of underutilized resources and to seek growth opportunities. According to Benito-Osorio, Ángel Guerras-Martín and Ángel Zuñiga-Vicente (2012) some firms diversify in order to practice unfair competition. This is achieved through the

transfer of resources from a regulated market to unregulated market resulting to inefficient allocation of capital (Benito-Osorio et al., 2012). Other scholars such as Matsusaka and Nanda (2002) contended that firms are motivated to diversify their products and operations only when the benefits of diversification is above its costs. Thus, resulting to shareholder value maximization. Pandya and Rao (1998) also added that firms are motivated to diversify their activities in order to boost their shareholders' wealth. Thus, allowing the funding of projects with low revenue streams that could not be financed by existing operations. Nevertheless, despite the benefits diversification is not without challenges. For instance, Benito-Osorio et al (2012) and Shyu and Chen (2009) argued that diversification leads to high coordination, control and management costs that are caused by information asymmetry. Establishing the optimum balance of product diversification is very difficult and it can lead to under or over diversification (Hashai and Delios, 2012).

Different scholars used different diversification measures. Some measured diversification using Entropy measure (Muzyrya, 2010; Purkayastha, 2013), which measures product diversification as sales attributable to a certain segment to total sales. Others use Standard Industrial Code (SIC) system (Li & Rwegasira, 2008) whereby product diversification is measured based on a numerical system that classifies all the types of economic activities limited to USA. While others used Herfindal index (Colak, 2010) which measures diversification as the total squared share of each product's contribution to the company's aggregate output. The current study adopted entropy measure since it is widely accepted and allows distinction between related and unrelated diversification and captures size of a company (Ravichandran, Liu, Han & Hasan, 2009). It captures distribution of company sales across different product markets and a number of products that a company is active in and their importance as measured by the amount of sales the company has allocated in each segment (Kim, 1989; Goerzen & Beamish, 2003; Muzyrya, 2010).

The economic literature has concentrated on the relationship of different levels and types of diversification and performance. The two types of diversification are related and unrelated diversification (Pandya & Rao, 1998). Related diversification occurs when a firm adds more products in its product line or expands its markets in the same industry (Pandya & Rao, 1998). Unrelated diversification involves a firm engaging in business activities outside its sector (Lichtenhaler, 2005). For instance, a firm dealing with the production and selling of sugar can engage in unrelated diversification by offering advertisement services or by selling electronics,

which are completely unrelated activities when compared to its original business operation. Various scholars such as Palich, Cardinal and Miller (2000), Bryce and Winter (2009), Panzar and Willing (1981) together with Teece (1982) argued that related diversification provide better value than unrelated diversification.

The measure of diversification employed was entropy. The entropy measures sales linked to a particular segment equated to the total sales based on each listed firm in Kenya as it was conducted and recommended by Muzyrya (2010) together with Goerzen and Beamish (2003). Consequently, it assisted in establishing the level of production diversification of the companies listed at the NSE. This was particularly important so that its effect on the performance of listed companies at the NSE could be clearly established. The motives of diversification solicited through primary data and assessed by descriptive analysis was employed to provide a deeper understanding on the level of production diversification among listed companies at the NSE. This was in terms of providing reasons as to why listed firms have opted to diversify their business operations.

1.1.2 Firm Performance

Performance has been used as a criterion in evaluating the impact of product diversification (Kahloul & Hallara, 2010). Various indicators and measurement techniques have been used; some researchers such as Oladele (2012), Zaninotto and Tran (2016) together with Purkayastha (2013) have used financial indicators example return on assets and return on equity. Whereas others such as Rogers (2001) together with Sindhu and Ali (2014) used the market indicators to measure performance. According to Rogers (2001), the market value is an indicator of the anticipated future returns of a company thus, it is a potentially valuable measure of performance. The market indicators comprise the market value of equity based on the firm's stock prices, the book value of total assets and the book value of liabilities (Kahloul & Hallara, 2010; Ravichandran et al., 2009). Market measures have the following instrumental benefits. First, stock prices reveal all the characteristics of performance (Lubatkin & Shrieves, 1986). Second, stock price is the sole direct measure of the shareholders' wealth (Lubatkin & Shrieves, 1986). Third, stock prices are not only accounted for in a transparent manner but can be easily accessed in a Stock Exchange platform (Lubatkin & Shrieves, 1986). Finally, stock prices can be modified to incorporate other essential factors such as the firm's market risk, inflation and the general market movements (Lubatkin & Shrieves, 1986). The major shortcoming of market measure of performance is that the assumption

that the market is correct in its expectations may be questioned (Rogers, 2001). This is because one needs to be careful when interpreting the findings of the market-based ratios since market value, by description, reflects the expectations of the market which might not transpire when that time comes (Rogers, 2001).

The financial performance indicators are based on the profitability of the firm, they are anchored on the revenues/net profit that a firm is making yearly, the annual return on assets and return on equity (Pierre, Timothy, George & Gerry, 2009). Financial indicators have been criticized for using historical information that capture after the fact effects and other problems (Denton, 2005). The accounting ratios are affected by non-standardization of computation, assets valuation and manipulation of accounting information (Asrarhaghighi, Abd-Rahman, Murali & Zainal, 2013). Thus, market-based ratio is a reliable, effective measure of performance when compared to the accounting measure of performance. This research adopted Tobin's Q as the most popular market measure of performance, since it is forward looking and risk adjusted (Kahloul & Hallara, 2010; Ravichandran et al., 2009; Chari, Devaraj & David, 2007). Tobin's Q is based on stock market values that capture current and future profitability of a company and the value of intangible assets hence less chances of accounting distortion (Ravichandran et al., 2009). The performance of listed firms at the NSE was assessed in terms of financial outcomes as a result of business diversification. This is the reason why Tobin's q was used as an applicable measure for the dependent variable. Since Tobin's q includes the capitalized value of the financial benefits derived from diversification (Lang & Stulz, 1994). Lang & Stulz, (1994) further explains that there is a risk of attributing the changes in performance to diversification whereas it is due to variables correlated to diversification. The risk is reduced by investigating whether variables known to affect performance can explain the relationship between diversification and performance.

1.1.3 Firm Characteristics

Firm characteristics include structure-related variables (firm age, firm size and ownership), market-related variables (market environment, industry type and environmental uncertainty), and capital-related variables (liquidity and capital intensity) (Mgeni, & Nayak 2016). The firm performance is affected by diversification and firm characteristics, firm characteristics influences firm decision to diversify (Lang & Stulz, 1994). Size and age are internal to a firm and they relate to survival of the firm whereas industry is external factor and is important for competitive

advantage of a firm. The current research applied the size and age as independent variables to study their influence on performance since they have high explanatory power when used in a model (Mwangi, Oluoch & Ndambiri, 2018).

The size of company represents physical and financial resources that it possesses. It is used in competitive positioning within a particular industry (Nyaingiri & Ogollah, 2015; Oladele, 2012). Mayer and Whittington (2003) stated that firm size is negatively related to performance. However, Gassenheimer and Keep (1995) found that as a company gets economies of scale, the return on assets increases hence the company size is positively related to the performance. According to Santarelli and Tran, (2013), company size can be measured by logarithm of total assets. Chang and Singh (2000) measured company size by the total turnover while Caloghirou, Protogerou, Spanos and Papagiannakis (2004) measured company size by the number of employees. Based on these studies (Mayer & Whittington, 2003; Gassenheimer & Keep, 1995; Santarelli & Tran, 2013; Lahiri & Pukayastha, 2017) reviewed, there was inconsistencies to show how firm size influences performance in the context of listed firms at the NSE. Thus, the study sought to bridge the knowledge gap. This was done in order to establish if the level of firm size on diversified listed firms as one of the firm characteristics plays a significant role in their performance. The current study used logarithm of total assets, which is a measure of economic size, and it predicts the trend and smooth the differences between large and small sizes amongst the firms in the study.

Age is level of experience and management exposure that a company accumulates (Santarelli & Tran, 2013). It influences the radical innovations and operations of a company hence the performance (Oladele, 2012). In the case of new products, age may cause delay in taking advantage of profit opportunities in a timely and efficient manner (Santarelli & Tran, 2013). Age is measured as logarithm of the years since its founding (Oladele, 2012). Natural logarithm is used normalize the distribution of data referred to as scale effect where some values are too large or too small leading to outliers (Osborne, 2016). There existed limited research based on the studies reviewed (Oladele, 2012; Raza et al., 2012; Mwangi et al., 2018) to show how firm age influences the performance of companies listed at the Nairobi Securities Exchange. The findings on the influence of firm characteristics on performance by various scholars were inconsistent, this study sought to establish if firm characteristics in terms of firm age and firm size of diversified firms plays a considerable role on the performance of companies listed at the Nairobi Securities Exchange.

1.1.4 Companies Listed at Nairobi Securities Exchange

The Nairobi Stock Exchange was setup in the 1920's with an aim of dealing with shares on a gentleman's agreement with no trading floor. In 1953, London Stock Exchange agreed the setting up of Nairobi stock exchange as overseas stock exchange. In 2011, Nairobi Stock Exchange evolved to Nairobi Securities Exchange, which supports trading, clearing and settlement of equities, debt and derivatives (NSE, 2016). The move created more economic activities for companies to participate and encouraged growth of financial markets hence affecting the operating environment of companies. Listed firms especially in the agricultural sector in Kenya have experienced poor financial returns that has adversely affected their performance leading to firms like Rea Vipingo to be delisted in 2015 (Wanyonyi, 2018). It has been recommended that listed firms in Kenya should diversify their product lines both in related and unrelated segments in order to boost their financial performance (Wanyonyi, 2018). Kenya in recent times has experienced an inflow of a huge number of investors due to the performance and growth of the NSE together with the changes realized in economic policies (Wachira & Amata, 2017). Thus, there has been need for incorporation of diversification as one of the most fundamental growth strategies among listed firms in Kenya (Wachira & Amata, 2017).

There are currently 63 firms listed at the Nairobi Securities Exchange (NSE, 2019). The targeted firms operate in 13 sectors (NSE, 2019). The banking sector and commercial services sector each had 12 listed firms. The manufacturing and allied sector comprised of 8 listed companies. The agricultural sector and insurance sector each comprised of 6 listed firms. The investment sector and construction and allied sector each had 5 listed firms. The energy sector had 4 listed firms. The automobiles and accessories sector, telecommunication sector, exchange traded fund sector, real estate investment trust sector and investment services each had 1 listed firm (NSE, 2019).

Between 2011 and 2017 the economy was considered stable with an average growth of 5% for the listed firms (NSE, 2019). This is the reason why the period was selected for the study. There were limited studies conducted to establish what motivates listed companies to diversify, the effect of product diversification and firm characteristics on performance on companies listed at the NSE. Thus, this study sought to address the knowledge gap.

1.2 Problem Statement

Performance has been a primary concern of various stakeholders in all sectors of business because of its implication on firm's survival. High performance reflects the firm's ability to utilize resources efficiently and effectively. Firms have used diversification as a strategy of improving performance and ensuring survival (Adamu et al., 2011). The studies conducted by Hashai and Delios (2012), Oladele (2012), Muzyrya (2012), Benito-Osorio et al. (2012), Guo (2005) and Eukeria and Favourate (2014) to establish the motives of product diversification have observed different findings on what really motives firms to diversify their operations. The studies conducted by Hashai and Delios (2012), Oladele (2012) and Muzyrya (2012) have observed that firms diversify to boost their economies of scale, profitability, and exploitation of underutilized resources. A study conducted by Benito-Osirio et al. (2012) observed that firms diversify in order to practice unfair competition. Guo (2005) observed that firms diversify to seek growth opportunities and increase internal market while Eukeria and Favourate (2014) observed that firms diversify to minimize risks. These findings reveal that firms in different geographical set-ups do not have the same motives for diversification. Owing to the inconsistencies in the findings of the various studies reviewed this study sought to establish the motives of product diversification on companies listed in Nairobi Securities Exchange.

The empirical findings on diversification-performance relationship have not been consistent and there is no clear conclusion on the effect of product diversification on performance. The studies have yielded mixed result. Some empirical findings made by Zaninotto and Tran (2016) and Palich, Cardinal and Miller (2000) suggests that moderate levels of diversification yield higher levels of performance than either lower or higher levels of diversification this means that diversification performance relationship follows a non-linear form rather than linear form. Some studies conducted by Oyedijo (2012), Muzyrya (2010), Purkayastha (2013) and Ravichandran et al. (2009) found a positive relationship, implying that diversification improves performance over time. Other studies conducted by Braakmann and Wagner (2011), Rogers (2001) and Pandya and Rao (1998) found negative relationship, which meant that diversification decreases performance. Still other scholars such as Marinelli (2011) together with Delios and Beamish (1999) found no relationship since diversification performance relationship depends on business cycle. Benito-Osorio et al. (2012) together with Burgers, Padgett, Bourdeau & Sun (2009), pointed out that it is

difficult to explain the effect of diversification on performance. As such, this opened a door for further research investigation.

Empirical results from various researchers differed on the effect of firm characteristics on performance. Some researchers argued that firm characteristic have an influence on performance of listed companies (Mwangi et al., 2018, Mayer and Whittington 2003, Niresh and Velnampy (2014). Do˘gan (2013), and Gassenheimer and Keep (1995), found a positive relationship between firm characteristics and performance. Whereas Becker-Blease et al. (2010) and Angelini and Generale (2008), observed that firm characteristic is negatively related to performance. These studies show the effect of firm characteristic on performance, however, they don't indicate what would be the effect of firm characteristic on diversified firms. Thus, this study sought to establish the influence of product diversification and firm characteristic on performance.

The research gaps under study may be attributed to the geographical scope of the firms and the sector under study since different countries and sectors will yield different results. The scholars used different sampling methods, population size and data analysis methods that yielded different results. The proxies used to measure the variables were also found to be different for the different researchers. As a result of the above factors the findings and conclusions were different for the various researchers.

1.3 Research Objectives

The general objective of the study was aimed at establishing the influence of product diversification and firm characteristics on performance of listed companies in Nairobi Securities Exchange. The research was guided by the following specific objectives:

1. To determine the motives for product diversification of companies listed in Nairobi Securities Exchange.
2. To analyze the influence of product diversification on performance of Companies listed in Nairobi Securities Exchange.
3. To analyze the influence of firm characteristics on performance of Companies listed in Nairobi Securities Exchange

4. To examine the influence of product diversification and firm characteristics on the performance of Companies listed in Nairobi Securities Exchange.

1.4 Research Questions

The research seeks to answer the following questions:

1. What are the motives for product diversification for the companies listed in Nairobi Securities Exchange?
2. What is the influence of product diversification on performance companies listed in Nairobi Securities Exchange?
3. What is the influence of firm characteristics on performance of Companies listed in Nairobi Securities Exchange?
4. What is the influence of product diversification and firm characteristics on the performance of Companies listed in Nairobi Securities Exchange?

1.5 Significance of the Study

The findings of this study will be useful to the management and shareholders, policy makers and future researchers as discussed in the ensuing subsections.

The Management and Shareholders

The knowledge on the primary motives that encourages firms listed in the NSE to diversify can be useful for managerial decisions. Managers could use the information to guide them in product diversification and thereby increasing firm performance. For instance, besides diversifying to increase the economies of scale the managers may also be motivated to increase tax shield due to increased capacity to borrow. The shareholders and the management can make meaningful decisions based on the observed effect of product diversification on performance from the findings of this study. Diversification can have a negative impact on performance since the management has no capacity to deal with the consequences of the expansion of business operations or because the firm's products are not profitable. Thus, in the best interest of the investors of the firm a decision can be made for a firm not to diversify its operations.

The findings of the study will also assist the management to know if firm aspects influence the relationship between product diversification and performance either positively or negatively. For instance, whether firm age (a firm characteristic) in relation to aged firms having mature products

and experienced management plays a vital role in the positive relationship between product diversification and performance. Then the managers of the firms that have been in the market for a long time can invest the firm's resources in different product lines. This is because it will enhance the company's performance.

Policy Makers

The information will also be important to the policy makers/regulators in terms of knowing why the firms in the NSE have chosen to diversify their operations. NSE regulate listed companies to ensure they are not operating at a loss to protect the investors by ensuring regular disclosures. A negative relationship between diversification and performance will guide the regulator on the policy statement to give the investors. The effect of age and size on the performance is will enlighten the regulators on the monitoring of new and small firms seeking to raise capital from the public. The Government may decide to allocate resources or incentives to the firms that are diversifying to improve performance. Thus, based on the findings of this study, the regulators could formulate policies that would make the firms to diversify their operations without facing any legal obstacles. The findings of this study can enlighten the policymakers to review their policy frameworks with the intention of making the process of diversification less costly. This is in case the high governance cost is the reason why product diversification has a negative influence on firm performance.

Future Researchers and Academicians

The findings of the study will benefit future academicians who are interested in the field of product diversification and performance. They can explore on the existing knowledge gaps that exists in this study, which needs to be bridged. Thus, future researchers in other countries can investigate the control effect of firm characteristics. This is with a view of establishing which firm aspects have a positive, negative or insignificant impact on the relationship between product diversification and performance in the context of those countries.

1.6 Scope of the Study

The study focused on the effect of product diversification on performance. It was based on Kenyan listed companies in Nairobi Security Exchange. It was done through cross sectional survey design. The period of study was based on seven years from 2011 to 2017, which was consistent with

studies of (Campillo & Gago, 2011). The selection from year 2011 was inspired by year Nairobi Stock Exchange evolving to full-service security exchange that incorporated trading, clearing and settlement of debt, equity, derivatives and other instruments (NSE, 2019). The theoretical scope was limited to the resource-based and agencies theories that was linked to the first and second objectives of this study seeking to explain the motivations behind pursuing diversification and how diversification can be an important resource for boosting performance. The time scope of the study was limited to the period between January 2019 and June 2020. The time period involved data collection and analysis. It also involved the interpretation of the findings and policy recommendations before the report was presented in the seminar defense and the final defense stages.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The purpose of this chapter is to review the existing underlying theories and empirical studies of product diversification and to present evidence linking product diversification to performance and the role of firm characteristics. Then it closes by pointing out the research gaps to be bridged and the conceptual framework showing the relationship between the study variables.

2.2 Theoretical Literature Review

The study is anchored on two theories namely, resource-based theory and agency theory to explain the reasons and motivations for pursuing diversification (Hilman, 2015). The theories are discussed in the ensuing subsections.

2.2.1 Resource Based View

Resource based theory was originated by Jay Barney in 1991 based on the article he wrote about firm resources and sustained competitive advantage (Barney, 1991). The theory conceptualizes firm resources as assets, capabilities, knowledge, firm characteristics, information and organizational processes managed by an organization to enhance its effectiveness and efficiency (Barney, 1991). The theory argues that shared strategic resources comprising of tangible and intangible resources within a company portfolio are critical to performance, and company strategy relies upon scope economies of that type of resource in various products (Barney, 1991). However, those valuable resources must be managed effectively to achieve competitive advantage (Barney, 1991). The essence of diversification is to efficiently use and share the underutilized resources and capabilities to improve performance in response to excess capacity in productive resources (Giachetti, 2012). These resources include tangible, intangible, capabilities and knowledge-based resources (Giachetti, 2012; Purkayastha, 2013; Holcomb, Holmes & Hitt, 2006).

According to Giachetti (2012), companies coordinate different businesses to capture economies of scale and scope because of product diversification. Managing of resources efficiently to achieve positive outcomes is easier for businesses with limited diversification. However, when businesses

are many it becomes complex (Hashai & Delios, 2012). The complexity increases since each product represent unique mix of resources, customers and competitive structure. When diversification is at moderate levels, an ideal balance exists between the costs and benefits (Hashai & Delios, 2012). Excess diversification may lead to insufficient resources for production. Diversification enables utilization of increased expert capacity (Hashai & Delios, 2012). It also gives opportunity to share knowledge and management systems in the success areas (Giachetti, 2012). The synergies provide more business by expanding package offering to new customers or fully serve the existing customers with a wide range of products Giachetti (2012). This provides support for a positive relationship between product diversification and firm performance.

The resource-based view forms the connection between resources, capabilities and synergy. It supports the sharing of strengths across businesses of a diversified business group increasing performance (Holcomb et al., 2006). Holcomb et al. (2006), postulates that to achieve superior performance through resource-based view, resources must be managed effectively. This entails structuring the resource portfolio, pushing resources to form capabilities, and taking advantage of those capabilities to generate and maintain value for customers and owners. Penrose (1959) points out that a company has certain productive resources. These resources can be used to exploit productive opportunities that allow a company to grow successfully.

Resource-based view also predicts a negative relationship between product diversification and firm performance (Santarelli & Tran, 2013). Santarelli further explains that the deployment of surplus resources to more productive areas comes with a challenge of transfer or transplant of those resources to a new application (Santarelli & Tran, 2013). Consequently, the value of diversification depends on the match between internal resources and the industry the firm enters (Santarelli & Tran, 2013). This ignores the possibility of exploiting resources through market arrangement. In addition, resources cannot be exploited through contracts since they are specific to business (Santarelli & Tran, 2013). Resource based theory enables companies to enjoy benefits of synergy that leads to superior performance (Santarelli & Tran, 2013). The theory contends that unique resources and capabilities that can provide sustainable competitive advantages could be utilized through product diversification (Matrin & Sayrak, 2003).

The theory is relevant to this study since the firms that diversifies into different product lines with an aim of managing their unique resources in an efficient and effective manner, product

diversification has a positive influence on the performance. In such a case the effect of diversification on performance will uphold the theoretical proposition of the resource-based theory. If the study establishes that product diversification has a negative relationship with the performance of listed firms at the NSE, then, it will support the theoretical proposition of the model that excess diversification can lead to insufficient resources for production or it might be too costly for the organization that will lead to the downfall of its profits. The theory was linked to the independent variable (diversification of listed firms) and the dependent variable (performance).

The theory was also linked to the third objective of this study that sought to establish if product diversification and firm characteristics (firm size and firm age) influences the performance of listed companies in NSE, Kenya. The firm age and firm size are intangible assets diversified firms can employ to boost their performance. The study will seek to establish if diversification based on the firm's experience in the market and its size would enhance their financial performance. Thus, firm characteristics acted as additional independent variable as presented in Figure 2.1 of the conceptual framework.

2.2.2 Agency Theory

The theory was developed by Jensen and Meckling (1976). The theory demonstrates a principal-agent relationship between the owners of the company (shareholders/stockholders) and the top-management acting as agents. Based on the theory the top-management's personal interests do not certainly go in line with the interests of the owners of the organization (Jensen & Meckling, 1976). Agency theory proposes that diversification is motivated by managers' self-interest (Li & Rwegasira, 2008). They diversify to pursue their own interest example by increasing their compensation and establishing specific skills to make it costly for their replacement (Li & Rwegasira, 2008). A highly centralized ownership structure prevents the managers from focusing on their self-interest at the cost of shareholders since effective governance is exercised (Li & Rwegasira, 2008; Hilman, 2015).

In diversification, on one hand, stewards are inclined in profitability benefit and seeks related diversification (Pandya & Rao, 1998). Sometimes agents may put emphasis on growth benefits and seek unrelated diversification to increase their private gains (Pandya & Rao, 1998). Managers satisfy their self-interest using the free cash flows, which is not available to the shareholders. The

managers may diversify to get compensation while the shareholders may prefer concentrating on the core business to maximize their returns, the conflicting interest leads to moral hazard (Benito-Osorio et al. 2012). Hilman (2015), highlighted the cause of poor performance for highly diversified company as misallocation of capital that leads to inefficiencies, high management cost due to information asymmetries and higher agency cost caused by conflict of interest between the management and the shareholders.

Managers are expected to behave as agents a number of situations namely; when they are driven by extrinsic factors, when they are not identified with the company, when they use their office power to influence subordinates and individualistic culture (Campillo & Gago, 2011). Similarly, steward managers are motivated by intrinsic factors that are intangible; they identify closely with the firm, use personal power and involve others in management (Campillo & Gago, 2011). Agency theory classify motives for diversification into two: private benefit intent and risk aversion (Shyu & Chen, 2009). Risk aversion implies reduction of professional risk exposure; this has a positive effect to the company (Shyu & Chen, 2009). However private benefit theory argues that management diversify not for company benefit but rather to enhance their own growth, motives and personal benefits, this result to higher agency cost caused by conflict of interest between shareholders and managers (Li & Rwegasira, 2008). In such a case, agency is negatively related to diversification (Shyu & Chen, 2009; Li & Rwegasira, 2008).

The theory informs the current study since the managers may be motivated to use product diversification for self-interest to build empire by gaining control over key diversified projects to maximize job security. This will force the shareholders to incur cost of control or award them compensation incentive to avert the self-interest as a result this negatively affect performance. In such a case, diversification is negatively related to performance. If managers behave like stewards and they diversify for the interest of shareholders' profitability, as a result, diversification is positively related to performance. Thus, if the study establishes a negative relationship between product diversification and performance of listed firms at NSE then it would mean that the managers diversified the firm's operations at their own personal interests at the expense of the shareholders' wealth maximization. This means that the agency theory was linked to the independent variable diversification and performance of listed firms.

2.3 Empirical Literature Review

This section reviews some of the empirical studies done by various scholars that focus on assessing the various reasons that management diversify their products. The measured and observed influence of product diversification and firm characteristic on performance will also be reviewed. The review highlights the studies done, methodologies used and conclusions thereon that is useful to guide the research gaps of the current study.

2.3.1 Motives for Product Diversification

According to Trautwein (1990) the motives of product diversification is anchored on empire-building whereby the management is motivated to diversify the operations of their organization in order to maximize their own personal interests instead of the owners of the organization (Trautwein, 1990). Markowitz (1952) revealed that a firm can be motivated to diversify its operations in order to minimize its financial/market risks. The industry economic motives a company may opt to diversify its operations in order to access more markets. The financial motive is criticized since shareholders can distribute finances to minimize unsystematic risk. Diversification leads to more cost because of inefficiencies. In addition, the diversification does not have any positive effect in efficient markets (Teece, 1982; Chatterjee et al., 1999). Additionally, Teece (1982) established that a firm can be driven to diversify its operations in order to increase its economies of scale with an aim of reducing its cost per unit thus enhancing its efficiency in business operations. Firms diversify to increase economies of scale which is earned through synergy of different business areas (Teece, 1982).

Guo (2005) examined what drives firms to be more diversified and looked at four common motives for diversification namely, to seek growth opportunities, increase internal capital market and deal with agency problem. The findings indicated that firms diversify to increase internal capital, which in turn increase investment. However, the companies were not motivated to diversify by agency cost reasons. Ojo (2009) observed that the Nigerian companies were motived to diversify by factors related to competitiveness and performance. According to his study, the motives for diversification were synergistic motive, financial motive, market power motive, agency motive and resource motive. The studies conducted by Hashai and Delios (2012), Oladele (2012) and Muzyrya (2012) have observed that firms diversify to boost their economies of scale, profitability

and exploitation of underutilized resources. A study conducted by Benito-Osirio et al. (2012) observed that firms diversify in order to practice unfair competition.

In the study conducted by Eukeria and Favourate (2014) on the Zimbabwean listed companies in food and beverage sector found out that diversification is motivated by economies of scale and scope, shared skills, risk reduction and resources and competencies. Briglauer (2000) observed that there are several motives for diversification and the main question is how to categorize them. The study divided the motives into three groups, synergy, agency and market power view. Synergy is related to performance and resource allocation, whereas market power is related to resource allocation while agency view lacks the functions in the other two. Synergy and market power have a positive relationship while agency has a negative relationship with performance.

Based on the studies that were conducted by Chatterjee et al. (1999), Muzyrya (2012), Oladele (2012), Hashai and Delios (2012), Eukeria and Favourare (2014), Ojo (2009), Guo (2005), Teece (1982) together with Briglauer (2000), there exist inconsistencies across firms and sectors on what really motivates them to diversify into different product lines. Thus, this study sought to investigate the motive of diversification on companies listed in Nairobi Securities Exchange.

2.3.2 Influence of Product Diversification on Firm Performance

There have been various studies done by, Braakmann and Wagner (2011), Burgers et al. (2009), Ojo (2009), Krivokapic et al. (2017), Sindhu and Ali (2014), Zaninotto and Tran (2016), Muzyrya (2010) and Oyedijo (2012) conducted in various countries and industries to establish if product diversification had a significant effect on firm performance. Virtually all the studies were based on a longitudinal design. Some of these studies that were done by Ojo (2009), Krivokapic, Njegomir and Stojic (2017), Iqbal, Hameed and Qadeer (2012), Zaninotto and Tran (2016) together with Muzyrya (2010) revealed that product diversification has a positive effect on firm performance. The findings which these studies actually came up with meant that when companies diversify their operations by investing in different product lines then it would consequently boost their overall organizational performance. Conversely, there has been some studies conducted by Burgers et al. (2009), Braakmann and Wagner (2011) and Sindhu and Ali (2014) which came up with inconsistent findings by revealing that product diversification has a negative effect on firm performance. The findings actually meant that when firms diversify their operations by expanding their product lines then it would consequently reduce their overall performance.

In the studies which revealed that product diversification has a positive effect on performance, Ojo (2009) who conducted a study on Nigerian companies using Pearson correlation observed that there is a linear and a positive relationship between diversification and performance. Additionally, a survey conducted by Krivokapic et al. (2017) on the Serbia insurance companies between 2004 and 2014 observed that there is a positive and significant relationship between diversification and performance. The findings were consistent with the research findings of Iqbal et al. (2012) who conducted a research study in Karachi stock exchange of Pakistan between 2005 and 2009. The ANOVA results showed a positive relationship between diversification and performance.

Zaninotto and Tran (2016) conducted a similar study on the Vietnam firms between 2003 and 2006 by using the generalized method of moment's estimation method to control for endogenity of diversification decision also observed that product diversification has a positive relationship with performance. Muzyrya (2010) who conducted a survey on the Singapore firms between 1995 and 2009 using generalized least squares model to allow for efficient estimate in data where there is autocorrelation and heteroscedasticity. The results revealed that product diversification is positively related to performance. This is as a result of the firm benefiting from exploiting resources across many products. Oyedijo (2012) also observed the same in the study he conducted on the Nigerian companies using data from 2006 to 2010 that was analyzed using ordinary least square. The findings of the study actually revealed a high positive and significant correlation between diversification and firm performance.

Conversely, in the studies that revealed that product diversification has a negative effect on performance, Burgers et al. (2009) who conducted a study on the Shanghai stock market, observed that diversification has a negative relationship with performance. The study was done between 1997 and 2001 using hierarchical regression over two periods. It was also observed that diversification is common in low performing firms than in high performing firms. Braakmann and Wagner (2011) conducted a study on German manufacturing firms between 1999 and 2002 also revealed a negative relationship. The findings revealed that the higher the degree of product diversification the lower the performance. In addition, a study conducted by Sindhu and Ali (2014) on Pakistan firms from 2004 to 2009, indicated that diversified firms are riskier, and they result to low returns. The findings indicated that the extra cost incurred to serve additional product is more than additional profit.

The empirical findings of Santarelli and Tran (2013) based on a survey conducted in Vietnam firms were consistent with resource-based view that the diversification has a curvilinear effect on performance. The findings revealed that product diversification improves performance up to a certain point after which further increase result to declining performance. Additionally, Purkayastha (2013) who conducted a study on the Indian manufacturing firms from 1997 to 2006 using ordinary least square method observed that the relation between diversification and performance in chemical and allied products was inverted U shaped relationship with unrelated diversification. This is the point at which marginal increase in diversification result to increase in performance. The relationship was inverted U shaped indicating that diversification has reached the level where marginal increase in diversification result to decrease in performance. The shape was caused by the organization filling the vacuum with fixed resources that were unique, valuable and not imitable to the diversified products and thus increasing performance. It supports resource-based theory by linking resources, capabilities and synergy.

Liebenberg and Sommer (2008) who conducted an empirical study on the insurance companies in the US between 1995 and 2004 using ordinary least squares method observed that undiversified insurance companies perform better than diversified companies. Rogers, (2001), observed the same findings in a study conducted on the Australian companies from 1994 to 1997. The random effect and fixed effect models showed that the focused firms had a higher performance than the diversified firms, there was no relationship between diversification and performance. The findings on the influence of product diversification on performance were inconsistent and contradictory. This study used multiple regression to establish the nature of influence of diversification on performance.

2.3.3 Influence of Firm Characteristics on Firm Performance

The firm characteristics studied together are firm size and firm age since they have high descriptive power Mule et al. (2015). The studies on the influence of firm size on performance have shown contradicting results. Studies conducted by Do˘gan (2013) and Mule et al. (2015) have shown that firm size and performance have a positive relationship. Other scholars such as Becker-Blease et al. (2010) revealed that firm size has a negative influence on performance while others such as Whittington (1980) and Niresh and Velnampy (2014) have shown there is no relationship between firm size and performance. The study conducted by Mwangi et al (2018) on companies listed in

Nairobi securities exchange between year 2007 to 2018, which employed regression analysis revealed that there is positive and significant relationship between size and performance. A study conducted by Farhan, Muhammad & Sharif, Saqib (2015) that sought to establish the impact firm size on performance of Karachi stock exchange between year 2007 to year 2013, revealed that firm size had a positive influence on performance. The study had employed both ordinary least square and fixed effect regression analyses for the data analysis. Duy and Phuoc (2016) examined the relationship between firm size and performance of Ho Chi Minh City Stock Exchange from 2009 to 2014 using regression analysis revealed that firm size had a negative relationship with performance.

The studies reviewed such as Barron et al. (1994), Jovanovic (1982) and Leonard-Barton (1992) have focused on establishing the influence of firm age on organizational performance. Studies conducted by Chen and Ho (2000) and Tongli, Ping and Chiu (2005) observed that firm age has an effect on firm performance/value. In the study conducted by Chen and Ho (2000) in Singapore to establish the influence of corporate diversification and ownership structure on firm value, the findings revealed that firm age had an insignificant effect on performance. Based on a study conducted by Tongli, Ping and Chiu (2005) to establish the influence of international diversification on performance during the Asian financial crisis, the study revealed that firm age had no effect on performance. The study of Italian firms between year 1998 and year 2001 using ordinary least squares method, Angelini and Generale (2008) concluded that young organizations are normally financially constrained leading to low performance. Jovanovic (1982) in the study of promotion of small firms in Kosovo between year 2004 and year 2006 affirmed that the longer the firm is in operation, then it will be able to learn its cost model and areas of efficiency and this increases performance. The firm also evolves to incorporate the changes in technology that increases performance. Coad, Segarra & Teruel (2013) explored Spanish manufacturing firms for eight years and found evidence that firm's performance improves with age, they are able to convert sales to positive performance. Firms with more years in operation are not able to convert sales faster lowering performance as a result. According to Leonard-Barton (1992), age negatively affect performance because of organization rigidities that ignores valuable signals, discourage change and reduces flexibility and as a result losing their competitive edge.

The studies reviewed such as Doˇgan (2013), Mule et al. (2015), Becker-Blease et al. (2010), Mwangi et al. (2018), Duy and Phuoc (2016) and Hui et al. (2013), there existed inconsistencies on how the firm size and firm age influences performance. In the study by Doˇgan (2013) to investigate the effect of firm size on performance of listed firms in Turkey between years 2008 to 2011, it was found that there exists a positive relation between size and performance and a negative relationship between age and performance. Mule et al. (2015), in the study of the effect of corporate size on performance of listed firms in Kenya between years 2010 to 2014 observed that there was a positive relationship between size and performance but a negative relationship between firm age and performance. In the study to examine the relationship between size and performance of 109 manufacturing industries of U.S, Becker-Blease et al. (2010) observed that there is a negative relationship between size and age on performance. The study by Hui et al. (2013) on impact of size and age on performance of 168 manufacturing firms of Asia, observed that both size and age has a positive relationship with performance. Barron et al. (1994) in analyzing the effect of age and size on Credit Unions in New York during 1914 to 1990 found evidence that old and small organization have lower performance while young and small organization have a highest positive performance. There existed inconsistencies on how the firm size and firm age influences performance. Thus, this study sought to establish the influence of firm size and firm age as firm characteristics on performance of firms listed at NSE.

2.3.4 Influence of Product diversification and Firm Characteristics on Firm Performance

There are various studies conducted to establish the effect of product diversification on performance and influence of firm characteristics on performance. However, there has been relatively little attention on the inter-relationship between product diversification and firm characteristics. Most extant literature such as Roberts and Batra (1998), Untoro and Rahardian (2015) and Crossman (2007) focused on seeking to establish the influence of firm size on product diversification. Roberts and Batra (1998) observed that an increase of firm size is related to the increase of product diversification based on the study they conducted on five key manufacturing companies in Taiwan. Likewise, Untoro and Rahardian (2015) in the study of impact of firm size on performance of Indonesian firms, revealed that firm size is positively related to diversification strategies whereby big companies can broaden their geographic area of sales only if they do not face labor problems. Crossman (2007) also revealed that firm size had a significant relationship

with product diversification whereby big firms were associated with larger diversified product lines. In the study conducted by Santarelli and Tran, (2013), in Vietnam between 2001 to 2006, on diversification decision and diversification degree, it was observed that there was a significant positive effect of firm characteristic on diversified firms. The study used Heckman two step method. Thus, this study sought to establish the influence of firm size and firm age as firm characteristics on performance of diversified firms in the context of firms listed at NSE.

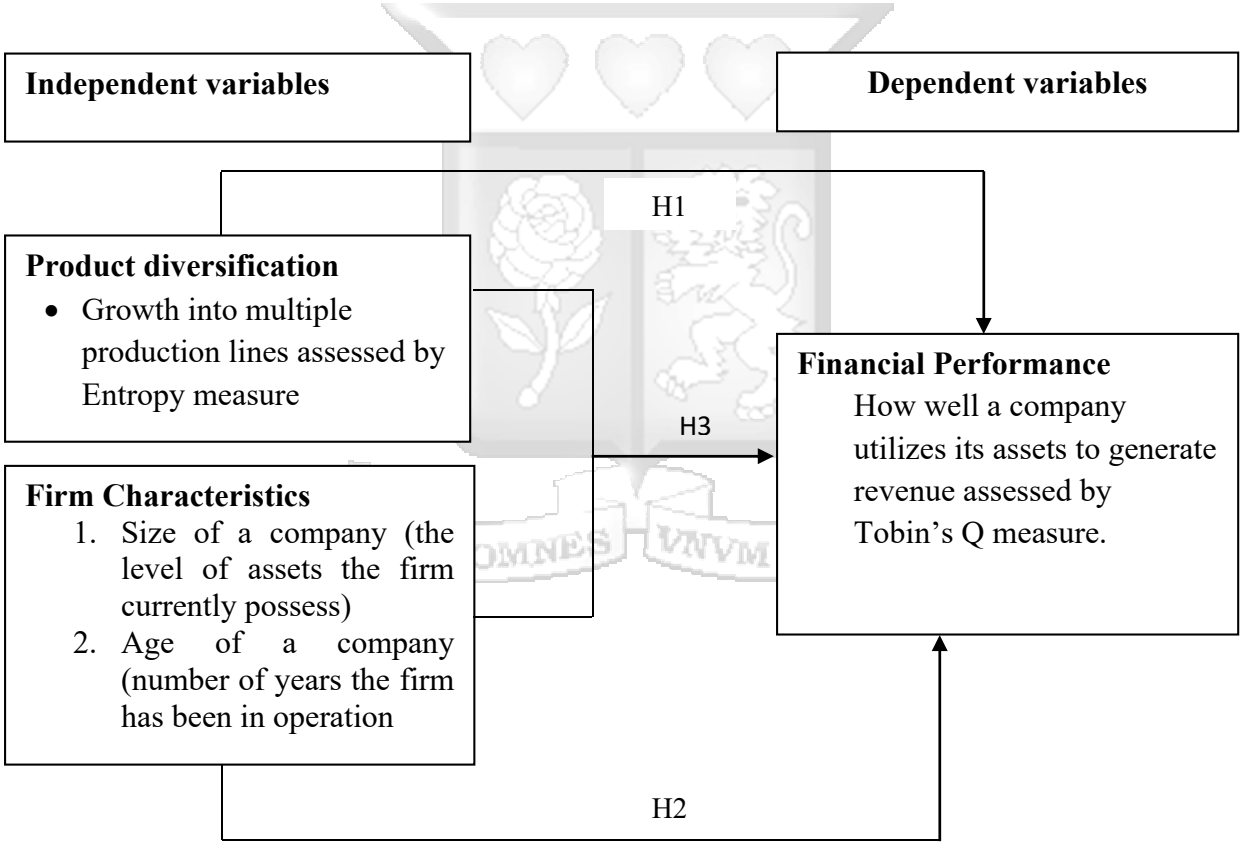
2.4 Summary of Literature Review and the Knowledge Gaps

This chapter presented the theories linked to the objects of this study and the theoretical propositions that the study intended to test. The theories comprised of the resource-based view theory and the agency theory. It also presented the existing literature and studies conducted to establish the motives for product diversification, the influence of product diversification on performance and the influence of firm characteristics linked to diversification and performance. The findings established that the motives of diversification are different in different industries and countries. Owing to these inconsistencies the findings of the aforementioned studies could not be relied on to reveal the motives of diversification among listed companies at the NSE where limited research had been conducted. Therefore, this called for a research investigation to establish the motives of product diversification on companies listed at the NSE.

In establishing the influence of product diversification on performance conducted by various studies, there has been no consistent and clear conclusion. Some studies revealed a non-linear rather than linear relationship between diversification and performance. Other studies observed a positive significant linear relationship between diversification and performance. While others revealed a negative relationship and no significant relationship between diversification and performance. Thus, this motivated the research investigation to conduct further research in the context of firms listed at the NSE where limited studies had been conducted. In addition, there exists a knowledge gap to show how the combined effect of diversification and firm characteristics plays a role in organizational performance. Thus, this study sought to establish the influence of product diversification and firm characteristics on the performance of companies listed at the Nairobi Securities Exchange.

2.5 Conceptual Framework: The Influence Product Diversification and Firm Characteristics on Performance of listed Companies at the NSE

The conceptual framework has been developed following discussion on the measures of product diversification and performance from review of previous research. Performance was the dependent variable and it was measured using Tobin's Q. The independent variable was product diversification and the measure adopted was the Entropy measure. The relationship between diversification and performance is affected by firm characteristics comprising of firm age and firm size. Figure 2.1 in the next page presented the conceptual model of the influence of product diversification and firm characteristics on performance of companies listed at the NSE.



Source: Researcher (2020)

Figure 2.1 The Influence of Product Diversification and Firm Characteristics on performance of Companies listed at the NSE

2.6 Operationalization of Variables

Table 2.1 in below presents how each of the study variables were operationalized.

Table 2. 1: Operationalization of Variables

	Variables	Operation definition	Measurement indicator	Source
Dependent Variables	Performance	A measure of how well a company can use its assets to generate revenue in the ordinary course of business	Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities	Kahloul & Hallara, (2010); Ravichandran et al., (2009)
Independent variables	1) Product diversification	It is growth into multiple production lines	Entropy measure $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$, P_i is sales attributable to segment i to total sales and ln (l/Pi) is weight for each segment or natural logarithm of the inverse of its sales.	Kim (1989); Goerzen and Beamish (2003); Muzyrya, (2010)
	2) Firm Characteristic a) Firm Size b) Firm Age	The total assets owned by the firm	Natural logarithm of value of total assets. Natural logarithm preferred to reduce the impact of outliers	Santarelli& Tran, (2013); Zaninotto& Tran, (2016)
		Number of years in continuous operation	Logarithm of the years since its founding. Natural logarithm preferred to reduce the impact of outliers	Oladele, (2012)

Source: Researcher (2020)

2.7 Chapter Summary

Chapter two provide details of the existing theoretical literature on resource-based theory and agency theory and how they are connected to variables (diversification, firm characteristics and performance). In resource-based view, firms will be motivated to diversify if they have excess resources (tangible and intangible) that can be utilized in the market to increase performance when the markets are efficient. In addition, firms with underused resources employ them by expanding into other products to generate higher return. The theory considers diversification where there is

presence of excess resources which imply large firm size and experience gathered through many years of existence should be sufficient. Based on agency theory, managers may use stakeholder approach and diversify the firm's assets in generating higher return. This commonly happens when the firm is beginning and profitable opportunities to invest are many as opposed to mature firms when opportunities are scarce. The two theories depict that the variables are interrelated, the independent variables jointly affect the dependent variable. The chapter further summarizes the past empirical studies in relation to the independent and dependent variables and the gaps that the current study sought to address. The chapter ends with conceptual framework operationalization of study variables.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presented the methodological approaches the study employed in determining its research strategy, sampling the respondents, settling on the research instruments used and the data analysis techniques employed in line with addressing its objectives.

3.2 Research Design

The study employed a correlation research design to address its research purpose. Correlation studies utilizes secondary data from two or more variables of interest from various sources with an aim of trying to ascertain the relationship between them (Omair, 2015). This study used secondary data of firms listed at the NSE to retrieve information on the level of product diversification, firm characteristics and performance. This was in order to establish the influence of product diversification on performance of firms listed at the NSE and if firm characteristics influence the relationship. This type of research design is less costly and less time consuming since it is based on secondary data which is readily available from various sources (Omair, 2015).

3.3 Ethical consideration

The study was conducted with due respect of the privacy of the individual and entities involved. The data collected was handled with utmost confidentiality and was not used for any other purpose apart from academic research. The respondent to the questionnaire was neither be coerced nor put into any physical or mental stress to participate. The researcher applied for NACOSTI research permit letter after passing the Proposal defense stage. The permit was used to retrieve primary data from the field. The letter helped the researcher in being granted permission to access the respondents of the study from the targeted firms. The study was free from plagiarism and work from other scholars was disclosed and acknowledged.

3.4 Target Population of the Study

The population of interest comprised of all the 63 firms listed at the Nairobi Securities Exchange (NSE, 2019). The targeted firms operate in 13 sectors which are located throughout the country

although most of them had an office in Nairobi. The banking sector and commercial services sector each had 12 listed firms. The manufacturing and allied sector comprised of 8 listed companies. The agricultural sector and insurance sector each comprised of 6 listed firms. The investment sector and construction and allied sector each had 5 listed firms. The energy sector had 4 listed firms. The automobiles and accessories sector, telecommunication sector, exchange traded fund sector, real estate investment trust sector and investment services each had 1 listed firm (NSE, 2019). The unit of analysis was the listed firms at the NSE while the unit of observation was senior finance officers of the firms.

The study employed census design to study all the listed firms at the NSE. Census method involves studying the entire population and it provides a more accurate and exact information as no unit is left out (Pandey & Pandey, 2015). The sole reason why census design was considered appropriate was that the target population was relatively small for a sample to be conceived from it.

3.5 Data Collection

Primary and secondary data was collected from the population under study and compiled. The primary data was collected using questionnaire while secondary data was collected through analyzing the various published annual financial statements of the listed companies. Structured questionnaires as a research instrument was employed to get primary data on the motives of product diversification. The questionnaire had two sections; section A and B. Section A sought to obtain general information regarding the company. Section B focused on motives for product diversification. The questionnaire items in Section B that addressed the first objective of the study was measured by a 5-point Likert scale of agreement (5 = “Strongly Agree”; 4 = “Agree”; 3 = “Somewhat Agree”; 2 = “Disagree”; 1 = “Strongly Disagree”). The questionnaire intended to collect information on the reasons as to why listed firms at the NSE diversifies their operations and not to ascertain the level of diversification. The level of diversification was determined by the entropy measure based on the secondary data retrieved from the annual reports.

The second objective sought to establish the effect of product diversification on performance of companies listed in the NSE. Secondary data was obtained from audited financial reports published in the listed firms’ websites. The secondary data was based on the period between 2011 and 2017. The period was chosen because the economy was considered stable with an average growth of 5%

(NSE, 2019). The secondary data included the market value of equity, book value of liabilities and book value of equity, which addressed the dependent variable (performance). The secondary data also provided information on how the listed firms expanded into multiple production lines thus providing information on the level of product diversification which addressed the independent variable. Specifically, the data retrieved for product diversification was the value of sales in each segment that the firm diversified into.

Secondary data was used to address the third objective that sought to determine the influence of product diversification and firm characteristics on the performance of companies listed in NSE. Secondary data linked to the firm characteristics was retrieved from the audited financial reports of the listed firms' websites.

The secondary data provided information on the with regard to the firm size, the value of the total assets (as a measure of firm size) was retrieved from the audited financial reports. The firm age based on the firm's number of years the firm existed since inception was also retrieved from the audited financial reports.

3.6 Data Collection Process

The primary data was collected by distributing the questionnaires to the senior finance officers in their offices, waiting for them to respond to the question items and then handpicking them. However, for the companies without an office in Nairobi, the questionnaires were shared through email after the researcher had called, introduced himself and agreed with the senior finance officers of the said companies. The filled questionnaire was returned through email. The process took one month and the participants who failed to respond to the questionnaires within that time were provided an allowance of one week for them to fill the questionnaires. Necessary follow-ups to ascertain the progress of filling the questionnaires were made through e-mails and phone calls. Financial reports were obtained from Google search engine. The relevant secondary data linked to the level of diversification, performance and firm characteristics were retrieved from the financial reports and entered in the Excel work sheet for analysis. The secondary data research instrument is presented in Appendix VI.

3.7 Data Analysis

The study after the data collection process, discarded the incomplete questionnaires and data from duly completed questionnaires were entered into the excel sheet based on code numbers, the same process was applied to the retrieved secondary data. When this process was completed, the SPSS software was employed to conduct descriptive, correlation and regression analysis. The study used descriptive statistics comprising of mean and standard deviation to establish the motives of product diversification with the highest and the lowest ratings. This was in line with addressing the first objective that sought to determine the motives of product diversification of companies listed in NSE. The descriptive statistics involving means scores was used to generalize the perceptions of the respondents on each statement of the motive of diversification. The highest mean score meant that the respondents agreed that a certain statement in the questionnaire was a motive for product diversification while the lowest mean score meant that the respondents disagreed that a certain statement in the questionnaire was not a motive for product diversification.

Pearson correlation analysis and regression analysis were employed to address the second and the third objectives of the study. In establishing the influence of product diversification on performance of companies listed at NSE. Pearson correlation analysis was employed to establish if product diversification had a significant or insignificant positive or negative relationship with performance. In addition, Simple Linear regression was used to establish if product diversification had a significant or insignificant positive or negative effect on performance of companies listed at NSE. The study developed the regression equation presented below explaining the influence of product diversification on performance of listed companies at the NSE in line with addressing the second objective of the study:

$$Y_1 = \alpha + \beta_1 Pd + e \quad \text{..... (i)}$$

Where:

Y_1 is performance of a company.

α is the constant term.

Pd is product diversification.

β_1 – is the beta coefficient.

e is the error term.

In the third objective that sought to determine the influence of product diversification and firm characteristics on the performance of firms listed at NSE, Pearson correlation was employed. The correlation model was used to ascertain the relationship between firm characteristics and performance. This was done in order to establish a common link between firm characteristics and performance together with product diversification. To ascertain if the influence of firm characteristics influences performance based on diversified firms. Multiple Linear regression analysis was employed to establish if firm characteristics significantly or insignificantly influences performance of listed firms at the NSE.

$$Y_2 = \alpha + \beta_3 S + \beta_4 A + e \quad \ldots\ldots\ldots\ldots \text{(ii)}$$

Where:

Y_2 is performance of a company.

α is the constant term.

S is the size of a company.

A is the age of the company.

$\beta_1 - \beta_4$ are the beta coefficients.

e is the error term.

In addition, the study developed the regression equation presented below explaining the influence of product diversification and firm characteristics on performance of listed companies at the NSE (diversification was also incorporated in the model since it was important to reveal how firm characteristics can influence performance in the context of the level of diversification):

$$Y = \alpha + \beta_1 Pd + \beta_3 S + \beta_4 A + e \quad \ldots\ldots\ldots\ldots\ldots\ldots \text{(iii)}$$

Where:

Y is overall performance of a company.

α is the constant term.

Pd is product diversification.

S is the size of a company.

A is the age of the company.

$\beta_1 - \beta_4$ are the beta coefficients.

e is the error term.

To determine the variables to subject to multiple regression, calculations were carried out using the financial statement published by the listed companies. Performance was calculated using Tobin's Q formulae as shown in operationalization of variables table above for each company and for each year. Tobin's Q formulae used the market value of equity, book value equity and liabilities as presented in the statement of financial position of the companies under study. Likewise, the product diversification was calculated using entropy measure formulae. The information was derived from statement of comprehensive incomes. This was calculated by taking summation of the products sales after getting the proportion of each product sale to total sales multiplied by the natural logarithm of its inverse.

The natural logarithm of total assets was calculated for each company for each year to determine the size. The size of company was calculated using the information on the company's statement of financial performance. The number of years were counted and the logarithm of the year since inception was used to calculate the variable to represent company's age. The financial statement contained information on the company's history which indicated the year when the company was founded.

3.8 Test of Reliability and Validity

The study assessed the reliability and validity of the research instruments to ascertain their quality in collecting data. Reliability is the extent to which results are consistent over time and if the results of a study can be reproduced under a similar methodology (Joppe, 2000). Validity determines if the research measures what it was intended to measure and how accurate the research results are (Salkind, 1997). The reliability and validity of secondary data was ensured by collecting data from the audited financial reports of the listed firms and by ensuring that the data collected reflected the variables that were being assessed. In assessing the reliability and validity of the questionnaire a pilot study was conducted. The pilot test was conducted on 6 listed firms at NSE which were randomly picked from the 6 sectors. This represented 10% of the target population. The study settled on 10% for the pilot test because Connelly (2008) postulated that 10% of the target population is adequate and appropriate for pilot studies.

The study sampled one listed firm from the agricultural sector, banking sector, commercial services sector, investment sector, construction and allied sector and manufacturing and allied

sector. The sampled firms were not studied in the main data collection exercise since the researcher wanted to avoid any form of biasness. The test of reliability was carried out using Cronbach's Alpha test. Cronbach's coefficient alpha was computed to test the internal consistency of the questionnaire items linked to motives of product diversification. An alpha of 0.7 and above is desirable and an alpha higher than 0.6 is be acceptable (Lin, 2010). The Cronbach's alpha for the motives of product diversification posted a value of 0.805 as shown in table 3.1. Thus, this meant that the questionnaire could be relied on retrieving the perceptions of the respondents on the motives of product diversification.

Table 3. 1: Cronbach's Alpha for the questionnaire

Reliability Statistics					
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items			
0.805	0.793	9			
Item-Total Statistics					
No.		Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1.	Our organization diversify to minimize risk.	27.600	26.989	0.348	0.862
2.	Our organization diversify to access to markets.	27.950	21.313	0.702	0.777
3.	Our organization diversify to remove entry barriers.	28.450	20.366	0.451	0.792
4.	Our organization diversify to increases economies of scale by cost reduction and improving efficiency.	28.350	16.555	0.801	0.737
5.	Our organization diversify to increase synergies.	28.750	15.671	0.762	0.743
6.	Our organization diversify in order for the management to build empire	30.300	20.011	0.536	0.781
7.	Our organization diversify to create internal capital market where departments can borrow from each other.	29.750	21.566	0.406	0.797
8.	Our organization diversifies for vertical integration.	28.450	17.734	0.762	0.747
9.	Our organization diversifies to increases interest tax shield due to increased capacity to borrow.	27.600	21.726	0.512	0.789

Source: Researcher (2020)

In addition, Table 3.1 also provides the details of the Cronbach's Alpha results in regards to the inter-correlation between each individual item of the motive of product diversification and the

effect of deleting any item to the Cronbach's Alpha results. The findings presented in Table 3.1 showed that each item was strongly positively correlated between each other and if any of the items were deleted the Cronbach's Alpha results will still be above 0.7. Consequently, it proved that the research instrument was reliable for collecting data on the motives of product diversification and can be used in different methodological set-ups and periods of time.

The content validity which entails the degree to which the items in a research instrument adequately represents all the possible relevant questions (Cresswell, 2005) was assessed by the senior finance officers who were deemed as experts on the aspects this study covered. The construct validity test was conducted on the questionnaire to establish if the question items accurately measured the construct that they were expected to measure (Field, 2013). The construct validity test was conducted by factor analysis. To establish if the dataset was appropriate and sufficient for factor analysis, the KMO and Barlett's tests were conducted. Kaiser (1974) postulated that the KMO value of a particular dataset should be above 0.5 and the Bartlett's Test of Sphericity should be statistically significant (p-value<0.05) in order for the dataset to be considered suitable for factor analysis.

The results as depicted in Appendix IV revealed that the dataset was appropriate and sufficient for factor analysis since the KMO value was more than 0.5 and the Barlett's Test of Sphericity was statistically significant (p-value = 0.000<0.05). Field (2013) posited that if the questionnaire items has factor loadings that are greater than 0.4 in the rotated component matrix then they should be reserved for further analysis since they measure accurately the constructs expected to be measured. The findings in the component matrix of this study as presented in Appendix IV revealed that each item had a factor loading of more than 0.5 thus this meant that the construct validity of the research instrument was suitable.

3.9 Diagnostic Tests

The study conducted the diagnostic tests before conducting Multiple Linear regression analysis as explained in the ensuing subsections.

3.9.1 Test of Multicollinearity

A test of the degree of correlation among the independent variables was carried out. A high degree of Multicollinearity increases standard error of coefficient and leads to incorrect estimates (Lin,

2010). Two methods used to test Multicollinearity are correlation matrix and variance inflation factors (VIF). The current study used variance inflation factors, a VIF for the variables was between 1 to 5 and they were deemed to be within the acceptable limits as shown in table 3.2.

Table 3. 2: VIF test of Multicollinearity

Model		Collinearity Statistics	
		Tolerance	VIF
	(Constant)		
	Firm size	.986	1.014
	Firm age	.957	1.045
	Product diversification	.967	1.035

a Dependent Variable: Performance

Source: Researcher (2020)

3.9.2 Test for Autocorrelation

Durbin Watson was used to test for autocorrelation in the study to find out if the residuals were correlated so that they do not affect the model negatively. A test of hypothesis was carried out whereby:

H_0: There is autocorrelation

H_1: There is no autocorrelation

If Durbin Watson calculated is closer to two, we reject the null hypothesis. The study shows that Durbin Watson was 1.683 (see table 3.3) which was closer to 2 hence reject the null hypothesis and conclude there is no autocorrelation.

Table 3. 3: Durbin Watson of Autocorrelation

Model	Durbin-Watson
1	1.593
b. Predictors: (Constant), Diversification, Age, Size	
b. Dependent Variable: Performance	

Source: Researcher (2020)

3.9.3 Test for Normality

Test for normality was carried out by drawing a normal curve on a histogram, and a P-P plot for standardized residual. In addition, Kolmogorov-Smirnova was also carried out to find the p values. All the tests were normal. The data covered the density curve to conclude that it was normal, P-P plot the data fell along the straight line hence the variable was normally distributed, and the p values were less than 0.05. The Kolmogorov-Smirnova test was carried out for normality test, the results showed that p values were small which indicated that the data was from population that had different distribution as shown in table 3.4.

Table 3. 4: Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	Df	Sig.
Performance	0.334	299	0.000	0.648	299	0.000
Size	0.145	299	0.000	0.929	299	0.000
Age	0.125	299	0.000	0.951	299	0.000
Diversification	0.085	299	0.006	0.964	299	0.000
a. Lilliefors Significance Correction						

Source: Researcher (2020)

Based on the findings of the study the Q-Q plot in the histogram portrayed a positive symmetrical distribution indicating that the data is normal as shown in Appendix V. The P-P plot in Appendix V indicated that the data fell along a straight line hence the assessed variables were normally distributed.

CHAPTER FOUR

DATA ANALYSIS OF RESEARCH FINDINGS AND INTERPRETATIONS

4.1 Introduction

The chapter presented data analysis results and interpretations of the data retrieved from the questionnaires and secondary data from financial reports. The response rate and the demographic characteristics were analyzed by frequencies and percentages. To address the first objective, descriptive statistical analysis that involved the use of mean and standard deviation was used to examine the motives of product diversification on companies listed in the NSE. To address the second and the third objectives of the study Pearson correlation analysis and Multiple Linear regression analysis were conducted to establish the influence of product diversification on performance of the listed firms at NSE together with the influence of firm characteristics on the listed firms at NSE.

4.2 Response Rate

The research investigation administered 57 questionnaires during the main data collection exercise in each listed firm at the NSE. This is considering the fact that the 6 firms assessed during the pilot study were not included in the final study to avoid biasness. The study was able to retrieve 45 questionnaires, which were duly completed and considered worthwhile for analysis. Only 12 questionnaires were not retrieved since some firms refused to participate in the study and some failed to complete the questionnaires. This represented a response rate of 79%. Dillman (2000) recommended that a minimum of 50% response rate is adequate for further analysis. Consequently, going by Dillman (2000) rule of thumb the 79% response rate of this study was considered satisfactory for data analysis.

4.3 Firm Profile

Primary data was collected through questionnaire, which had two parts; the first part was aimed at understanding the company's profile. The first part had six questions that sought to know the companies' years of existence, number of product lines, asset base, the type of sector they operate in, the number of employees and the number of branches they currently have. The demographic aspects of the study which were tested portrayed the state of affairs of firm characteristics which

was linked to the third objective of the study. The third specific objective of the study was to establish the influence product diversification and firm characteristics on the performance of companies listed in Nairobi Securities Exchange.

The first firm characteristic (age) was analyzed using secondary data. Firms age was arrived at by the number of years a firm was in existence since inception as reported in the firms' website. The youngest company was 10 years and the oldest company was 148 years. The NSE requires a firm to be in existence for at least 3 years and two years must be a positive networth to qualify for listing (NSE, 2016). It typically takes time for firm to grow and mature as a result, the average age was 60 years which meant that most firms existed for around 60 years as shown in table 4.1 below.

Table 4. 1: Firm age

Descriptive Statistics				
	Minimum	**Maximum**	**Mean**	**Std. Deviation**
Firm Age	10.00	148.00	60.60	30.36

Source: Researcher (2020)

The second firm aspect was the only exception that was linked to the second objective of the study by seeking the level of product diversification and how it consequently affects firm performance. Thus, the level of product diversification was assessed as the number of product line the companies were selling in the market. These were the products that generate revenue, which reflects the level of diversification of the companies based on the primary data retrieved. The findings of the study revealed that 51.11% of the companies had below 5 product lines. The data showed that 44.44% of the companies had 5-10 product lines and 4.44% had above 10 product lines. The findings revealed that in a broad-spectrum the companies listed in the NSE had a considerably high level of product diversification. Hence showing that the companies listed in the NSE have several product lines that generates revenue for their sustainability. The finding of this demographic aspect was summarized in Table 4.2.

Table 4. 2: Number of Product Lines

	Frequency	Percentage
Below 5 product lines	23	51.11%
5-10 product lines	20	44.44%
Above 10 products lines	2	4.44%
Total	45	99.99%

Source: Researcher (2020)

The firm size measured as asset base was another demographic aspect studied as a firm characteristic which was relevant to the third objective of this study. The primary data tried to clearly show the state of affairs of the present asset base that the listed NSE firms possessed. The data helped in understanding how asset base as one of the firm characteristics influence the relationship between production diversification and firm performance. The data analysis results in Table 4.3 revealed that 35.56% of the companies listed at the NSE had an asset base ranging between 0 and 5 billion Kenyan shillings. The companies listed at the NSE 11.11% had an asset base ranging between 5 and 10 billion Kenyan shillings. Finally, 53.33% of the companies listed at the NSE had more than 11 billion Kenyan shillings.

Table 4. 3: Asset Base

	Frequency	Percent
0-5 Billion	16	35.56%
5-10 Billion	5	11.11%
Above 11 Billion	24	53.33%
Total	45	100.00%

Source: Researcher (2020)

Firm sector was another demographic aspect studied as a firm characteristic which was relevant to the third objective of this study. The primary data tried to show the sectors which each listed NSE firm operated in. The findings in Table 4.4 revealed that most respondents operated in the banking (22.22%), commercial services (20%), manufacturing and allied (11.11%), agricultural (8.89%), construction and allied (8.89%) and investment sectors (8.89%). Only one listed firm operated in automobiles and accessories sector (2.22%), real estate investment trust sector (2.22%), telecommunication & technology sector (2.22%) and exchange traded fund sector (2.22%).

Table 4. 4: Type of Sector

	Frequency	Percentage
Banking	10	22.22%
Commercial Services	9	20.00%
Manufacturing and Allied	5	11.11%
Agriculture	4	8.89%
Construction and Allied	4	8.89%
Investment	4	8.89%
Insurance	3	6.67%
Energy & Petroleum	2	4.44%
Real Estate Investment Trust	1	2.22%
Automobiles and Accessories	1	2.22%
Telecommunication & Technology	1	2.22%
Exchange Traded Fund	1	2.22%
TOTAL	**45**	**100.00%**

Source: Researcher (2020)

The firm size measured as the size of employee base was another demographic aspect studied as a firm characteristic which was relevant to the third objective of this study. The primary data tried to clearly show the state of affairs of the present employee size that the listed NSE firms possessed. The data helped in understanding how firm size assessed in terms of employee size as one of the firm characteristics influence the relationship between production diversification and firm performance of staff population of the studied firms. Some researchers have used staff population to determine the size of a company. The findings of the staff population size among the studied firms were presented in Table 4.5. It was observed that 6.67% of the companies had below 100 employees. This meant that the firms were small sized businesses. It was also observed that 22.22% of the companies had 101 to 500 employees which meant that the firms were medium sized enterprises. The data showed that 71.11% of the firms had above 500 employees which meant that the firms were large corporations.

Table 4. 5: Number of Employees

	Frequency	Percentage
Below 100 employees	3	6.67%
101-500 employees	10	22.22%
Above 500 employees	32	71.11%
Total	45	100.00%

Source: Researcher (2020)

The firm size measured as the number of branches the firm has was another demographic aspect studied as a firm characteristic which was relevant to the third objective of this study. The primary data tried to clearly show the state of affairs of the present business branches that the listed NSE firms possessed. The data helped in understanding how firm size assessed in terms of the number of branches as one of the firm characteristics influences the relationship between production diversification and firm performance. This is because the number of branches has an effect on increasing asset base and in some cases, it is viewed as a form of product diversification where a company set up a facility to produce a certain product. Based on the findings presented in Table 4.6 it was noted that 8.89% of the companies at the NSE had 1 to 5 branches, 20% had 6-10 branches and 71.11% had more than 10 branches.

Table 4. 6: Number of Branches

	Frequency	Percentage
1-5 Branches	4	8.89%
6-10 Branches	9	20.00%
Above 10 Branches	32	71.11%
Total	45	100.00%

Source: Researcher (2020)

4.4 Motives for Product Diversification for Companies listed at the Nairobi Stock Exchange

The first specific objective of the study was to determine the motives for diversification among the companies listed at the NSE. The respondents were asked to rate the motives of diversification statements in the 5-point Likert scale of agreement that ranged from one (strongly disagree) to five (strongly agree). The primary data retrieved on the motives for diversification were analyzed by employing descriptive statistical analysis comprising of mean and standard deviation and the results were presented in Table 4.7.

Based on the results displayed in Table 4.6, it was observed that most of the incentives assessed motivated firms listed at the NSE to diversify (Mean = 3.572; SD/Standard Deviation = 0.858). The greatest motives for product diversification by the listed NSE firms were to minimize risk (Mean = 4.55; SD = 0.686) followed by increasing interest tax shield in order to achieve high capacity to borrow (Mean = 4.55; SD = 0.605). The listed NSE firms were least motivated to diversify in order for the management to build an empire (Mean = 1.85; SD = 0.875). In general, as presented in Table 4.7 the findings unraveled that the firms listed at the NSE diversifies to

increase economies of scale, remove entry barriers, achieve economies of scale, remove entry barriers, achieve vertical integration and increase synergies.

Table 4. 7: Motives for Diversification

Motives for Diversification	Mean	Standard Deviation
Our organization diversifies to minimize risk.	4.550	0.686
Our organization diversifies to increases interest tax shield due to increased capacity to borrow.	4.550	0.605
Our organization diversifies to access to markets.	4.200	0.523
Our organization diversifies to increases economies of scale by cost reduction and improving efficiency.	3.800	1.105
Our organization diversifies to remove entry barriers.	3.700	0.923
Our organization diversifies for vertical integration.	3.700	0.979
Our organization diversifies to increase synergies.	3.400	1.273
Our organization diversifies to create internal capital market where departments can borrow from each other.	2.400	0.754
Our organization diversifies in order for the Management to build empire.	1.850	0.875
Overall Score	**3.572**	**0.858**

Source: Researcher (2020)

4.5 Effect of Product Diversification and Firm Characteristics on the Performance of firms listed at the Nairobi Securities Exchange

4.5.1 Descriptive Statistics

The descriptive findings based on the secondary data retrieved was presented in Table 4.8.

Table 4. 8: Descriptive Statistics Results based on Secondary Data

Descriptive Statistics					
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
Firm Age	299	10.00	148.00	60.60	30.36
Firm Age -Logarithm	299	0.48	2.17	1.71	0.29
Firm Size	299	1,929,161	646,668,000,000	87,591,091,034	118,704,416,435
Frim Size - Natural logarithm	299	14.47	27.20	23.56	2.89
Firm Performance - Tobin's Q	299	0.13	6.96	1.05	0.95
Product diversification - Entropy measure	299	0.01	1.36	0.60	0.36

Source: Researcher (2020)

The 299 observations were derived from observing the performance, diversification and firm aspects of each of the 45 companies listed in the NSE from the year 2011 to 2017 (for the 7 years). The observations are further adjusted for 16 data sets that had a zero equity and market capitalization; the remaining observations summed up to 299. The mean performance as calculated using Tobin's Q formulae for the 299 observations was 1.0532 with a standard deviation of 0.95019. The mean figure of 1.0532 indicated a higher Tobin's Q ration figure being greater than 1. This meant that the firms are earning a rate that is higher than their replacement costs. Thus, the market value of the studied firms was much higher than the recorded value of their assets which meant that the firms' stock was overvalued and they could issue shares and with the proceeded realized could be invested in capital and in turn they would be able to obtain high level of economic gains. The mean Tobin Q compares well with that obtained by Mule et al. (2015) of 1.328 for the listed firms in Kenya. The natural logarithm mean score for firm size was 23.5582 with a standard deviation of 2.8897. The mean and standard deviation of the size are comparable with that obtained by Mule et al. (2015) of 15.494 and 1.785 respectively. The figures denoted natural logarithm value of the average total assets for all the studied firms which was similar to what was used by Mule et al. (2015). The mean size in absolute figures was Kshs 87 billion with a standard deviation of Kshs 118 billion. This meant that most of the listed companies a large with average total assets' value in billions of Kenyan shillings. Natural logarithm was used normalize the distribution of data referred to as scale effect where some values are too large or too small leading to outliers (Osborne, 2016).

The mean score for firm age was 1.7111 with a standard deviation of 0.2861. The figure was a logarithm value of the years since the companies came into existence. The absolute mean score value was 60.60 with a standard deviation of 30.36. This meant that most of the firms have been in existence for more than 60 years. The mean age is much higher to the mean age obtained by Mule et al. (2015) of 26.260. The number of years in existence we different and had outliers, the data was transformed using logarithm to reduce the influence of the outliers (Oladele, 2012). Diversification as calculated using entropy measure had a mean of 0.5996 and a standard deviation of 0.3629. The mean score of 0.5996 meant that the firms listed in the NSE have been involved in high levels of product diversification between the year of 2011 and 2017 since the entropy co-efficient value was greater than 0.5 and closer to 1.

4.5.2 Pearson Correlation

Pearson correlation was employed to establish the association between product diversification and performance of companies. It was also used to determine the relationship between firm characteristics comprising of size and age on diversification and company performance. Pearson's correlation model assesses the degree of the linear association between two or more variables (Gogtay & Thatte, 2017). For this particular model to be employed three assumptions must be addressed. The first assumption is that there must be a linear relationship between the studied variables whereby linearity denotes a straight-line relationship between the predictor and the independent variables (Lund Research, 2018). The study was able to meet this assumption. Since the independent variable (product diversification, size and age) had a linear relationship with performance (dependent variable). The second assumption is that the variables should be autonomous from each other (Gogtay & Thatte, 2017). This assumption was met since the Collinearity diagnostic tests proved that the predictor variables were completely independent from each other.

The third and the most essential assumption is that the variables should be normally distributed (Lund Research, 2018). This assumption was also met since the normality tests' results revealed that there was a normal distribution of data between the predictor variable when plotted against the dependent variable. Pearson correlation model was best suited in the case of this study when compared to Spearman's rho correlation model. Since Spearman's rho model is applicable when the dataset is not normally distributed (Gogtay & Thatte, 2017) and only when all the variables assessed are on an ordinal or categorical scale (Chok, 2010) which was not the case in this study.

The correlation co-efficient figures ranges between -1 to +1 (Chok, 2010). Whereby correlation co-efficient figures ranging between 0 to +1 denotes that the studied variables are indeed associated in a positive linear mode (Chok, 2010). A correlation co-efficient figures ranging between 0 to -1 denotes that the studied variables are indeed negatively associated in a negative linear mode (Chok, 2010). Finally, a 0 correlation co-efficient denotes that there exists no linear association between the studied variables (Chok, 2010). Pearson correlation analysis was conducted by using the SPSS software and the results were displayed in Table 4.9.

Table 4. 9: Pearson Correlation Analysis Results

		Performance	Firm size	Firm age	Product diversification
Performance	Pearson Correlation	1	0.129(*)	0.101	-0.159(**)
	Sig. (2-tailed)		0.025	0.080	0.006
	N	299	299	299	299
Firm size	Pearson Correlation	0.129(*)	1	-0.105	0.036
	Sig. (2-tailed)	0.025		0.071	0.532
	N	299	299	299	299
Firm age	Pearson Correlation	0.101	-0.105	1	0.174(**)
	Sig. (2-tailed)	0.080	0.071		0.002
	N	299	299	299	299
Product diversification	Pearson Correlation	-0.159(**)	0.036	0.174(**)	1
	Sig. (2-tailed)	0.006	0.532	0.002	
	N	299	299	299	299

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Source: Researcher (2020)

Lund Research (2018) provided the following rules of thumb for interpreting the Pearson's correlation co-efficient figures. Whereby the correlation co-efficient figures ranging between +0.1 to +0.3 and -0.1 to -0.3 denotes a weak linear positive association and a weak linear negative association respectively. The correlation co-efficient figures ranging between +0.3 to +0.5 and -0.3 to -0.5 denotes a moderate linear positive association and a moderate linear negative association respectively. Finally, the correlation co-efficient figures ranging between +0.5 to +1 and -0.5 to -1 denotes a strong linear positive association and a strong linear negative association respectively. These are the rules of thumbs that this study used to interpret the correlation co-efficient results depicted in Table 4.9.

The Pearson correlation results revealed a positive weak linear insignificant relationship between performance and age at 0.101 (p-value=0.000<0.01). There was also a positive and weak linear significant relationship between performance and size at 0.129 (p-value=0.032<0.05) and a negative and weak significant linear relationship between performance and diversification of -0.159 (p-value = 0.000<0.01). The results meant that as the company matures in age the performance increases. As companies expands their overall organizational performance increases since resources put in new investments generate returns.

There was a positive but weak significant correlation between firm size and diversification of 0.036 (*p*-value = 0.000<0.01). This meant that when companies increase in size then they consequently engage in expanding their product lines. Thus, diversification increases with size of the company, as the company can accommodate more product because of expansion and proper resource allocation. There was a positive but weak significant correlation between firm age and diversification of 0.174 (*p*-value = 0.000<0.01). This meant that when companies mature in age the gather management and strategic experience to diversify. This is consistent with resource allocation theory.

4.5.3 Regression Analysis

Multiple Linear regression analysis was used to establish the influence of product diversification and firm characteristics on performance of companies listed at NSE which addressed the second and third objectives of the study.

4.5.3.1 Influence of Product Diversification on Performance of Companies listed in Nairobi Securities Exchange

Concerning the second objective of the study, which sought to examine the effect of product diversification on performance of companies listed in Nairobi Securities Exchange, Simple Regression model was employed. The regression analysis findings depicting the influence of product diversification on the performance of companies listed in the NSE were displayed in Tables 4.10, 4.11 and 4.12 while model summary findings are presented in Table 4.13.

Table 4. 10: Model Summary of Product Diversification

Model	R	R^2	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.159(a)	.025	.022	.93961	.025	7.749	1	297	.006

a Predictor: (Constant), Product diversification

Source: Researcher (2020)

Based on the results presented in Table 4.10 above the R-value of 0.159 meant that 15.9% of the dataset was accounted by the regression model which showed that the model had a reasonable

predictive power. The R-square of 0.025 denoted that 2.5% variability in the performance of companies in the NSE was explained by product diversification while the rest of the percentage was explained by other factors. Additionally, the value of the standard error of estimate, which was 0.93961, was a considerably low figure. This pointed out that that the observations made by this research inquiry were nearer to the regression line and for this reason the dataset had a moderate goodness of fit.

The Analysis of Variance (ANOVA) was employed to establish if the variability in the performance of companies in the NSE explained by product diversification was statistically significant ($0 < p\text{-value} \leq 0.05$). The ANOVA results were presented in Table 4.11.

Table 4. 11: Analysis of Variance (ANOVA) of Product Diversification

Model	ANOVA(b)	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.841	1	6.841	7.749	.006(a)
	Residual	262.211	297	.883		
	Total	269.053	298			

a Predictor: (Constant), Product diversification
b Dependent Variable: Performance

Source: Researcher (2020)

In Table 4.11, the ANOVA results actually revealed that product diversification significantly accounts for 2.5% variability in the performance of companies in the NSE (p-value = $0.006^a <$ 0.05). This is because the p-value of the model was 0.006^a, which was less than 0.05. If the p-value had been more than the benchmark value of 0.05 then it would have meant that the model was statistically insignificant. In addition, the F-value of 7.749 was considerably high which also denoted that product diversification significantly accounts for the variance in the performance of companies in the NSE.

Table 4.12 below displayed the regression co-efficient results of product diversification. The results depicted to what extent the predictor variable influences the dependent variable (performance) and if the influence was significantly/insignificantly positive or negative.

Table 4. 12: Regression Coefficients of Product Diversification

Model	Coefficients(a)	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	1.304	.105		12.406	.000
	Product diversification	-.417	.150	-.159	-2.784	.006

a Dependent Variable: Performance

Source: Researcher (2020)

Based on the regression analysis findings portrayed in Table 4.12, the study developed and proposed the following regression equation as presented below:

$$Y_1 = 1.304 - 0.417Pd$$

Whereby, Y_1= Firm performance and Pd = Product Diversification

The constant value of 1.304 signified that when there is absence of product diversification then the level of performance of companies in the NSE would be 1.304 when all other factors are held constant which was a considerably low value. In addressing the second objective of the study that sought to establish the effect of product diversification on performance of companies listed in Nairobi Securities Exchange. The negative unstandardized co-efficient value of product diversification, which was -0.417, revealed that a unit increase of product diversification would significantly decrease the performance of firms listed in the NSE by 41.7% if other factors were constant. Product diversification would have a significant impact on the performance of firms listed in the NSE because its *p*-value was 0.000, which was less than the benchmark figure of 0.05, and the t-value of -2.784 was a considerably huge figure. Thus, in general, the findings established that product diversification had a negative significant effect on the performance of companies listed in the NSE. Since firms diversifies to access more markets and increase economies of scale which is a costly type of investment, it cuts down on their retained earnings and equity thus reducing their financial performance. The money is prioritized on product expansion and is not reinvested in procuring more stock that can generate more sales for the firms thus enhancing their performance.

4.5.3.2 The Influence of Firm Characteristics on the Performance of Companies Listed at the Nairobi Securities Exchange.

Multiple Linear regression analysis model employed to establish the influence of firm characteristics on the performance of companies at the NSE since there were several variables were involved. Table 4.13 presented the model summary findings based on the regression model that sought to establish the influence of firm characteristics on the performance of companies listed at Nairobi Securities Exchange.

Table 4. 13: Model Summary of Firm Characteristics

Model	R	R^2	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.174(a)	.030	.024	.93893	.030	4.595	2	296	.011

a Predictors: (Constant), Firm age, Firm size

Source: Researcher (2020)

Based on the results presented in Table 4.13, the R-value of 0.174 meant that 17.4% of the dataset was accounted by the regression model which showed that the model had a reasonable predictive power. The R-square of 0.03 denoted that 3% variability in the performance of companies in the NSE was explained by product diversification and firm characteristics (age and size). Additionally, the value of the standard error of estimate, which was 0.93893, was a considerably a small figure. This actually pointed out that that the observations made by this research inquiry were nearer to the regression line and for this reason the dataset had a goodness of fit.

The Analysis of Variance (ANOVA) was employed to establish if the variability in the performance of companies at the NSE explained firm characteristics (age and size) was statistically significant ($0 < p\text{-value} \leq 0.05$). The ANOVA results were presented in Table 4.14.

Table 4. 14: Analysis of Variance (ANOVA) of Firm Characteristics

Model		ANOVA(b)	Sum of Squares	df	Mean Square	F	Sig.
1		Regression	8.102	2	4.051	4.595	.011(a)
		Residual	260.951	296	.882		
		Total	269.053	298			

a Predictors: (Constant), Firm age, Firm size
b Dependent Variable: Performance

Source: Researcher (2020)

In Table 4.14, the ANOVA results actually revealed that product diversification and firm characteristics (age and size) significantly accounts for 3% variability in the performance of companies at the NSE (*p*-value = 0.011^{a}< 0.05). This is because the *p*-value of the model was 0.011^{a}, which was less than 0.05. If the *p*-value had been more than the benchmark value of 0.05 then it would have meant that the model was statistically insignificant. In addition, the F-value of 4.595 was considerably high which also denoted that firm characteristics (age and size) significantly accounts for the variance in the performance of companies at the NSE.

Table 4.15 shows the regression co-efficient results of firm characteristics (age and size). The results depicted to what extent the aforementioned variable influences the dependent variable (performance) and if the influence was significantly/insignificantly positive or negative. The regression analysis results also depicted how each of the firm characteristic influenced performance of companies listed in NSE.

Table 4. 15: Regression Coefficient of Firm Characteristics

Model	Coefficients(a)	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.704	.582		-1.209	.228
	Firm size	.047	.019	.142	2.459	.014
	Firm age	.386	.191	.116	2.020	.044

Source: Researcher (2020)

Based on the regression analysis findings the study developed and proposed the following regression equation as presented below:

$$Y_1 = -0.704 + 0.047S + 0.386A$$

Whereby: Y_1= Firm performance , S= Firm Size A = Firm Age.

The constant value of -0.704 showed that when there is absence of firm characteristics (size and age) then the level of performance of companies listed at the NSE would be -0.704 when all other factors are held constant. It actually denoted that the lack of firm characteristics (size and age) would deteriorate the performance of the companies at the NSE at the point of making losses though not significantly (*p*-value = 0.228>0.05).

The size of a company as a firm characteristic was established to have significant influence on the performance of companies listed at the NSE. Since the firm size posted an unstandardized beta co-efficient of 0.047 and a *p*-value of 0.014 was more than 0.05. Thus, the size of the firm does not have any significant influence on the financial performance when it diversifies in different product lines. Firm age as a firm characteristic was established to have a positive significant influence on the performance of companies listed at the NSE. This is because firm age posted an unstandardized beta co-efficient of 0.386 and a *p*-value of 0.044 which was less than 0.05. Consequently, it meant that a unit rise of firm age would significantly escalate the performance of firms listed at the NSE by 38.6%. Therefore, it meant that as firms matures in age they gain experience and adequate knowledge in products that generate consistent profits and those that do not. Thus, with such awareness gained from business experience the matured firms only diversify into profitable product lines which consequently boosts their financial performance. Consequently, the firm age as a firm characteristic positively boosts the performance of companies at the NSE.

4.5.3.3 The Influence of Product Diversification and Firm Characteristics on the Performance of Companies Listed at the Nairobi Securities Exchange.

Multiple Linear regression analysis model employed to establish the influence of diversification and firm characteristics on the performance of companies at the NSE since there were several variables were involved. Diversification was included in the model since the main aim of the objective was to establish combined effect on the performance of the companies listed at the NSE as a result of diversification. Table 4.16 presented the model summary findings based on the regression model that sought to establish the influence of diversification and firm characteristics on the performance of companies listed at Nairobi Securities Exchange.

Table 4. 16: Model Summary of Production Diversification and Firm Characteristics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.256(a)	.065	.056	.92322	.065	6.890	3	295	.000

a Predictors: (Constant), Product diversification, Firm size, Firm age

Source: Researcher (2020)

Based on the results presented in Table 4.16, the R-value of 0.256 meant that 25.6% of the dataset was accounted by the regression model which showed that the model had a reasonable predictive power. The R-square of 0.065 denoted that 6.5% variability in the performance of companies in the NSE was explained by product diversification and firm characteristics (age and size). Additionally, the value of the standard error of estimate, which was 0.92322, was a considerably a small figure. This pointed out that that the observations made by this research inquiry were nearer to the regression line and for this reason the dataset had a goodness of fit.

The Analysis of Variance (ANOVA) was employed to establish if the variability in the performance of companies at the NSE explained by product diversification and firm characteristics (age and size) was statistically significant ($0 < p\text{-value} \leq 0.05$). The ANOVA results were presented in Table 4.17.

Table 4. 17: Analysis of Variance (ANOVA) of Production Diversification and Firm Characteristics

Model	ANOVA(b)	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	17.616	3	5.872	6.890	.000(a)
	Residual	251.436	295	.852		
	Total	269.053	298			

a Predictors: (Constant), Product diversification, Firm size, Firm age
b Dependent Variable: Performance

Source: Researcher (2020)

In Table 4.17, the ANOVA results revealed that product diversification and firm characteristics (age and size) significantly accounts for 25.6% variability in the performance of companies at the

NSE (p-value = 0.000[a]< 0.05). This is because the p-value of the model was 0.000[a], which was less than 0.05. If the p-value had been more than the benchmark value of 0.05 then it would have meant that the model was statistically insignificant. In addition, the F-value of 6.890 was considerably high which also denoted that product diversification and firm characteristics (age and size) significantly accounts for the variance in the performance of companies at the NSE.

Table 4.18, displayed the regression co-efficient results of product diversification and firm characteristics (age and size). The results depicted to what extent the aforementioned variable influences the dependent variable (performance) and if the influence was significantly/insignificantly positive or negative. The regression analysis results also depicted how each of the firm characteristic influenced performance of companies listed in NSE.

Table 4. 18: Regression Coefficient of Production Diversification and Firm Characteristics

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.681	.573		-1.190	.235
	Firm size	.050	.019	.152	2.683	.008
	Firm age	.501	.191	.151	2.621	.009
	Product diversification	-.501	.150	-.191	-3.341	.001

Dependent Variable: Performance

Source: Researcher (2020)

Based on the regression analysis findings the study developed and proposed the following regression equation as presented below:

$$Y_1 = -0.681 - 0.501Pd + 0.050S + 0.501A$$

Whereby: Y_1= Firm performance , Pd = Product Diversification, S= Firm Size A = Firm Age.

The constant value of -0.681 showed that when there is absence of product diversification and firm characteristics (size and age) then the level of performance of companies listed at the NSE would be -0.681 when all other factors are held constant. It actually denoted that the lack of product diversification and firm characteristics (size and age) would deteriorate the performance of the

companies at the NSE at the point of making losses though not significantly (*p*-value = 0.235>0.05).

The size of a company as a firm characteristic was established to have positive significant influence on the performance of companies listed at the NSE. The firm size posted an unstandardized beta co-efficient of 0.05 and a *p*-value of 0.0.008 was less than 0.05. Thus, the size of the firm has a significant influence on the financial performance when it diversifies in different product lines. Firm age as a firm characteristic was established to have a positive significant influence on the performance of companies listed at the NSE. This is because firm age posted an unstandardized beta co-efficient of 0.501 and a *p*-value of 0.009 which was less than 0.05. Consequently, it meant that a unit rise of firm age would significantly escalate the performance of firms listed at the NSE by 50.1%. Therefore, it meant that as firms matures in age they gain experience and adequate knowledge in products that generate consistent profits and those that do not. Thus, with such awareness gained from business experience the matured firms only diversify into profitable product lines which consequently boosts their financial performance. Consequently, the firm age as a firm characteristic positively boosts the performance of companies at the NSE.

CHAPTER FIVE

DISCUSSION OF RESEARCH FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presented a comprehensive discussion of the research findings in line with the specific objectives of the study. It also presented the conclusions drawn from the discussion of the research findings and the recommendations to the relevant stakeholders who will benefit from the findings of this study. The chapter also presented the limitations of the study and suggestions on the possible areas for future research investigations.

5.2 Discussion of Research Findings

The subsections below present a detailed discussion of the research findings in line with the specific objectives of this study. Sub-section 5.2.1 presented the discussion of research findings addressing the first specific objective of the study that sought to examine the motives of product diversification for companies listed in the Nairobi Securities Exchange. Sub-section 5.2.2 presented the discussion of research findings addressing the second specific objective of the study that sought to examine the effect of product diversification on performance of companies listed in Nairobi Securities Exchange. Sub-section 5.2.3 presented the discussion of research findings addressing the third specific objective of the study that sought to examine the influence of product diversification and firm characteristics on performance of companies listed in Nairobi Securities Exchange.

5.2.1 Motives for Product Diversification for Companies listed in the Nairobi Securities Exchange

The study indicated that most companies are motivated to diversify by the nine factors as indicated in the previous chapter. None of the respondent had an additional motive of diversification as requested in the questionnaire. This is consistent with Trautwein (1990) and Dautwiz (2009) where the identified motives had the theoretical stands. Oladele (2012) and Oyedijo (2012) supported the risk minimization motive by concluding that the listed companies diversify to reduce risk and improve performance. Shyu and Chen (2009) and Li and Rwegasira (2008) in the review of agency

theory classified agency into private benefit interest and risk aversion, the risk aversion focuses on risk minimization by reduction in professional risk exposure. Sindhu and Ali (2014) found diversified firms to be riskier and this result indicate that the companies give more prominence to risk reduction than the other motives.

The descriptive analysis results also revealed that organizations diversify to increase interest tax shield due to increased capacity to borrow. This was in agreement with the proposition made by Furrer (2011) and Gertner, Scharfstein and Stein (1994) that diversification consequently offers tax savings benefits. The findings of the study support the notion that companies yearning for a greater debt capacity works to achieve supplementary tax benefits through diversification (Ajay & Madhumathi, 2012). Organizations that have no interest for additional debt do not strive to achieve additional tax benefits by diversifying their operations (Ajay & Madhumathi, 2012). Additionally, the findings reaved that companies listed in the NSE are highly motivated to diversify their operations in order to access new markets. This is because the attractiveness of a particular market persuades a company to consider diversification in that particular area (Githira, 2008). In addition organizations could be provoked to diversify into a new market due to its potential size in terms of the customer base and the amount of reveune that could be gained from entry (Sakarya et al., 2007).

The findings also revealed that companies listed in the NSE are motivated diversify their operations in order to increases economies of scale by cost reduction and improving efficiency. The findings of the study concurred with Ajay and Madhumathi (2012) who contended that companies expands their operations across various product lines in order to enhance the economies of scale which consequently enhances efficiency. This meant that when a firm diversifies it increases in size and consequently saves in cost of production by enhancing the scale of product and service production. The findings also revealed that companies listed at the NSE are motivated to diversify their operations in order to create internal capital market where departments can borrow from each other. The findings of the study conflicted with Guo (2005) whose findings indicated that firms diversify to increase internal capital which in turn increases investment.

The possible explanation for the research outcome of the eleven motives under study could be that the internal market incurs detrimental costs that may make diversification to destroy the firm value even when other benefits are earned. The motive with the lowest level of agreement mean score

was organizations diversify in order for the management to build empire. This indicates that the managers do not diversify for the purpose of self-interest. This occurs where the management feels that their remuneration does not depend on the overall company's performance. In such a situation, the agency conflict will not occur since the managers aim to increase the performance for the benefit of shareholders.

5.2.2 The Influence of Product Diversification on Performance of Companies listed in the Nairobi Securities Exchange

The findings of both the correlation and regression analysis revealed that product diversification has a negative significant effect on performance of companies listed in the NSE. This was consistent to the findings by (Braakmann & Wagner, 2011; Burgers et al, 2009; Sindhu & Ali, 2014) who also concluded that diversification decreases performance. The findings of this study were inconsistent with the research outcomes of Ojo (2009), Krivokapic et al. (2017), Iqbal et al. (2012) and Muzyrya (2010) who revealed that product diversification had a positive effect on firm performance. The findings of this study concurred with the theoretical proposition of resource-based theory that excess diversification can lead to the costs outweighing the benefits thus decreased financial performance due to limited resources for production. The findings of the study also agreed with the theoretical proposition of the agency theory that managers are primarily motivated to diversify the firm's operations in order to attain personal benefits without considering the aspect of shareholders' wealth maximization.

Diversifying to a certain degree can obliterate the original business investment since the management time, energy and valuable resources are diverted from their original focus (Lynch & Rothchild, 2000). Santarelli & Tran, (2013) viewed the negative effect of product diversification on performance as a challenge in allocating the resource to a new application and the absence of available external market for the resource. The sharing of the resource may also pose a challenge since they are specific to the business in which a company operates. Example in Kenya banking sectors banks use various systems (Temenos 24, Finnacle, Bank Master among others) and any excess resource may not be diversified to other products since it is specific to the main bank product.

Tallman and Li (1996) and Muzyrya (2010) suggested that the negative relationship occurs where the governance cost is too high and result to negatively affecting the performance. Zaninotto and Tran (2016) observed the negative relationship as caused by diversification exceeding limits that the management has no capacity to deal with. The listed companies are in a situation that Palich, Cardinal and Miller (2000) described as linear discount model where the cost outweighs the benefits of diversification. Some of the company's products may not be profitable even though they are using some of the available resources. Although the respondents strongly disagreed that the listed companies are motivated to diversify for management to increase empire (agency theory), the negative relationship can also be explained by high monitoring cost and compensation to the manager to reduce negative effects of agency (Benito-Osorio et al., 2012; Shyu & Chen, 2009).

5.2.3 The Influence of Firm Characteristics on the Performance of Companies listed in the Nairobi Securities Exchange

Most of the companies had an asset base of over Kenya Shillings 11 billion. It was observed that the firm size had a significant effect on performance of the diversified firms. Thus, the bigger the firm imply the better the performance. The size of a firm has significant influence on the financial performance. This is the case where the company may have many branches where they have invested on assets and the branches are generating good returns. The observation supports Benito-Osorio et al., (2018) conclusion that the large companies enjoy economies of scale which leads to high performance. The findings of this study is also consistent with the research outcomes of Mule et al. (2015) and Mwangi et al. (2018) who established a positive significant relationship between size and performance. The findings contradicted with the research outcomes of Niresh and Velnampy (2014) who revealed that firm size has no impact on the performance of the firm. It was also established that bigger companies have higher performance that indicates ability of the listed companies to use their assets for competitive positioning (Nyaingiri & Ogollah, 2015; Oladele, 2012).

The findings of this study revealed that firm age had a positive significant influence on the performance of listed companies at NSE. The findings contradict those of Tongli, Ping and Chiu (2005) who established that firm age had no impact in explaining the level of performance. The findings also concurred with Rossi, (2016) who established that old companies dominate the

environment and increase efficiency resulting to increased performance. The age of all the companies was observed to be more than 10 years. The companies were viewed as having a high level of accumulated management experience. This forms the reason behind the age having a positive significant influence on performance. Therefore, it meant that as firms matures in age, they gain experience and adequate knowledge in products that generate consistent profits and those that do not. Thus, with such awareness gained from business experience the matured firms only diversify into profitable product lines which consequently boosts their financial performance. The study concludes that firm age positively and significantly boosts performance of companies listed in Nairobi Securities Exchange.

5.2.4 The Influence of Product Diversification and Firm Characteristics on the Performance of Companies listed in the Nairobi Securities Exchange

It was observed that the firm characteristic had a significant effect on performance of the diversified firms. Thus, the findings depict that the diversified firms are able to utilize their resource effectively to improve performance which is consistent with resource based view. The findings disagree the agency theory since they indicate that most managers when they diversify and expand into various branches, they do so for the interest of the shareholder. This is also consistent with the findings in objective one above where building empire was not viewed as a motive of diversification. The findings support the argument by Chatterjee et al. (1999) that the firms' diversification strategy is driven by resources, firms with resource advantage are more likely to diversify. Firms with large assets base are driven to diversify and also expand in size after exploiting economies of scope Chatterjee et al. (1999). The study is also consistent with Mgeni, & Nayak, (2016) who observed that size and age have a positive relationship and a moderate positive effect on performance. The findings indicate the role that the economies of scale are likely to have played in the firms listed in NSE.

5.3 Conclusion

In the first objective, that sought to establish the motives of product diversification for the companies listed in Nairobi Securities Exchange. It was noted that firms listed at NSE are greatly motivated to diversify their product lines in order to minimize risk, increase tax shield and access

wider markets. It can be concluded that firms listed at the NSE are not motivated to diversify in order to create internal capital market where departments can borrow from each other and for the management to build an empire. In the second objective, which sought to establish the effect of product diversification on performance of companies listed in Nairobi Securities Exchange adversely affects performance. The performance is higher at lower levels of diversification based on the seven years of study. The study revealed that the more mature the company is then the higher the performance. In the third objective of the study, the findings showed that the firm size and firm age greatly affect the performance of the company when diversifying.

5.4 Recommendations

The following are the recommendations based on the findings above:

5.4.1 Managerial Recommendations

The management on behalf of the companies should not diversify the firms' operations for the sake of diversifying since it might consequently lead to their downfall in the end. This is because the study has shown that product diversification significantly reduces firm performance. Since diversification can exceed the limits of the management to the extent, whereby they will have no capacity to deal with its consequences. Diverting the resources, time and energy from the firm's core business can adversely affect its financial performance and sustainability. Since its core business, would be diluted and its customer base can be forced to procure the same products and services from other firms. In addition, the management on behalf of the companies should consider diversifying their operations when the firms have a greater asset and revenue size. This is because the study revealed that firm size has a positive significant influence on firm performance.

The management are recommended to diversify the firm's operations only when the firm has been in existence in the market for a very long period. This is because such type of organizations has matured products and the management have a high level of business experience. Thus, the experienced management will make wise decisions on the product lines to expand to, which would consequently be profitable in the end. In addition, the diversification process would not affect its customer base since they will still be loyal to their core products that are at a maturity level. Therefore, diversification would lead to positive performance only when the aspect of firm age is considered based on the findings of this study. The management is recommended to diversify into the product lines that are profitable in a different industry.

5.4.2 Contribution to Knowledge

The study introduces the concept of other motives for diversification as an important consideration apart from increasing performance. It was noted that the main motive for diversification of the Kenyan listed companies is risk minimization. The findings showed that the managers agreed with the eleven motives of diversification as proposed in the questionnaire with no additional motive. The study was able to connect the resource based view and agency theory with diversification - performance relationship. In the context of Kenyan listed companies when the unique resources are diversified, the firm performance increases, and when the managers of a firm diversify for personal gain, the performance declines.

This study contributes to the existing literature of the relationship between product diversification and performance for the years 2011-2017 which was negative relationship (increase in product diversification decreased performance). The size and age as firm characteristic had a positive relationship with performance in the context of listed NSE firms in Kenya. It was also observed that the firm characteristics had a positive effected on diversified firms.

5.6 Limitation of Study

The study was only limited to the listed firms at NSE since the data is readily available and it was possible to study the whole population. However, the findings from this study may not be applicable to the firms not listed since they are not regulated the same way as the listed companies. In addition, the number of listed firms are few compared to the firms not listed as a result the finding may not represent the firms operating in Kenya. The findings may also not be relevant to the firms not listed at NSE. The findings are applicable for the current period under study, the changes in the business environment example political instability, may cause changes in the diversification – performance relationship.

5.5 Future Research

This research was able to cover the objectives highlighted, however, to study more on the relationship between diversification and performance future research should consider company's strategy and management skills which have direct effect on the relationship. In addition, there is need to include additional variables like inflation which is an external factor affecting an individual

organization and the industry. Amit and Livnat (1989) concluded that in related diversification, company risk is not diversified unlike the unrelated diversification. This calls for a need to study the related and unrelated diversification separately.

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APPENDICES

APPENDIX I: INTRODUCTION LETTER

Date

TO WHOM IT MAY CONCERN

Academic Reference for Stephen Muchiri – Reg 008650

Mr. Stephen Muchiri is a post graduate student in our Master of Commerce (MCom) program. As requirement for the partial fulfilment of the Mcom degree, student carry out a research project and write a thesis on current issues in their area of specialization. In the process of doing the project data is collected for analysis and recommendation.

Stephen is requesting to collect information from your university to be used in his research. The information collected will be used for the academic thesis only and will be kept confidential. The result from the research will not disclose any individual, company name or company information in any way.

The research study is entitled "*The influence of product diversification and firm characteristics on performance of companies listed at Nairobi Securities Exchange"*

We hope your Organization can assist by providing information that the student may require.

Yours faithfully

Quindos Karanja

Strathmore University Business School

APPENDIX II: QUESTIONNAIRE

The influence of product diversification and firm characteristics on performance of companies listed at Nairobi Securities Exchange

Questionnaire

The purpose of this questionnaire is to examine the company's diversified products and how they are related to performance.

All information provided in this questionnaire will be treated in strict confidentiality.

Name: (optional) _____

Part A: Company's Profile

Please tick (√) or mark X where appropriate

A1: How many products lines does your company sell in the market?

☐below 5 products lines ☐5-10 products lines ☐above 10 products

A2: What was the asset base of your company in Kenya shillings for the following years?

Year	Assets base				
2017	☐ 0 - 5 billion		☐6 – 10 billion		☐above 11 billion

A3: Which industry sector does your company belong to?

☐Banking ☐Manufacturing ☐Agriculture ☐Energy & Petroleum

☐Real Estate Investment Trust ☐Automobiles and Accessories ☐Commercial Services

☐Construction and Allied ☐Investment ☐Telecommunication

☐Exchange Traded Fund ☐Insurance ☐Investment services

A4: How many employees do your company has?

☐below 100 employees ☐101-500 employees ☐above 500 employees

A5: How many branches does your company has?

☐1-5 branches ☐6-10 branches ☐above 10 branches

Part B: Motives for product diversification

B1: The following are some of the motives for product diversification; please indicate the extent to which they relate to your company. Where on a Likert scale of 1 -5: 5 is strongly agree, 4 Agree, 3 somewhat agree, 2 Disagree and 1 is strongly disagree.

Please tick (√) or mark X where applicable

		1	2	3	4	5
1	Our organization diversify to minimize risk					
2	Our organization diversify to access to markets					
3	Our organization diversify to remove entry barriers					
4	Our organization diversify to increases economies of scale by cost reduction and improving efficiency					
5	Our organization diversify to increase synergies					
6	Our organization diversify in order for the Management to build empire					
7	Our organization diversify to create internal capital market where departments can borrow from each other					
8	Our organization diversify for vertical integration					
9	Our organization diversify to increases interest tax shield due to increased capacity to borrow					
10	Any other please specify…….					

THANK YOU

APPENDIX III: LISTED COMPANIES AT THE NSE

Energy and Petroleum	Agricultural
1. KenGen Ltd. 2. Total Kenya. 3. Umeme Ltd. 4. Kenya Power & Lighting Co. Ltd.	33. Kapchorua Tea Co. Ltd. 34. Eaagads Ltd. 35. Kakuzi Ltd. 36. Sasini Ltd. 37. Rea Vipingo Plantation Ltd. 38. Williamson Tea Kenya Ltd.
Real Estate Investment Trust	**Automobiles and Accessories**
5. Stanlib Fahari I-REIT.	39. Car and General (K) Ltd.
Banking	**Commercial Services**
6. Stanbic Holdings PLC. 7. Barclays Bank Ltd. 8. Diamond Trust Bank Kenya. 9. I & M Holdings Ltd. 10. KCB Group Ltd. 11. H & F Group Ltd. 12. NIC Group PLC. 13. National Bank of Kenya Ltd. 14. Equity Group Holdings. 15. Standard Chartered Bank Ltd. 16. BK Group PLC. 17. The Cooperative Bank of Kenya.	40. Sameer Africa PLC. 41. Express Ltd. 42. Kenya Airways Ltd. 43. Standard Group Ltd. 44. Nation Media Ltd. 45. Scan group Ltd. 46. TPS Eastern Africa (Serena) Ltd. 47. Uchumi Supermarket Ltd. 48. Deacons (East Africa) PLC. 49. Longhorn Publishers Ltd. 50. Nairobi Business Ventures Ltd.
Manufacturing and Allied	**Insurance**
18. British American Tobacco Kenya Ltd. 19. B.O.C. Kenya. 20. East African Breweries Ltd. 21. Carbacid Investment Ltd. 22. Mumias Sugar Co. Ltd. 23. Eveready East Africa Ltd. 24. Unga Group Ltd. 25. Flame Tree Group Holdings Ltd. 26. Kenya Orchards Ltd.	51. Britam Holdings Plc 52. CIC Insurance Group Ltd 53. Jubilee Holdings Ltd 54. Kenya Re Insurance Corporation Ltd 55. Liberty Kenya Holdings Ltd 56. Sanlam Kenya Plc
Investment	**Construction and Allied**
27. Centum Investment Co. Ltd. 28. Olympia Capital Holdings Ltd. 29. Home Africa Ltd. 30. TransCentury Ltd. 31. Kurwitu Ventures.	57. Bamburi Cement Ltd. 58. Athi River Mining Ltd. 59. E.A. Cables Ltd. 60. Crown Paints Kenya PLC. 61. E.A. Portland Cement Ltd.
Exchange Traded Fund	**Telecommunication and Technology**
32. New Gold Issuer (RP) Ltd.	62. Safaricom PLC.
	Investment services
	63. Nairobi Securities Exchange

Source: NSE (2019)

APPENDIX IV: KMO & BARLETT'S TEST AND ROTATED COMPONENT MATRIX

The factor analysis was used in validity test as explained in chapter 3 above.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.655
Bartlett's Test of Sphericity	Approx. Chi-Square	114.575
	df	36
	Sig.	0.000

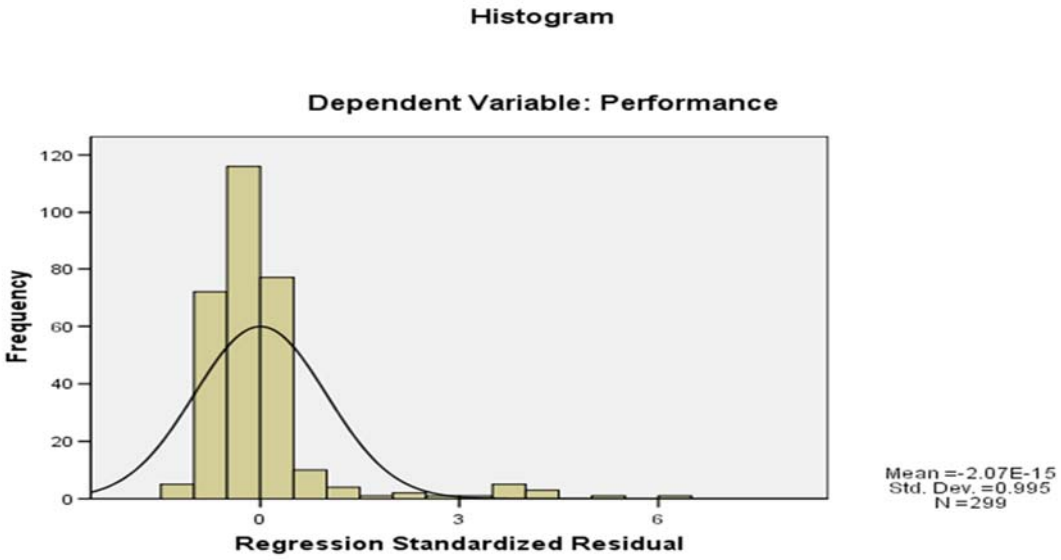
Source: Researcher (2020)

Rotated Component Matrix[a]		
	Component	
	1	2
Our organization diversify in order for the Management to build empire.	0.884	
Our organization diversify to increases economies of scale by cost reduction and improving efficiency.	0.856	0.420
Our organization diversify to minimize risk.	0.820	0.376
Our organization diversify to increase synergies.	0.799	0.454
Our organization diversify for vertical integration.	0.708	0.479
Our organization diversify to access to markets.	0.158	0.872
Our organization diversify to remove entry barriers.		0.831
Our organization diversify to increases interest tax shield due to increased capacity to borrow.	0.204	0.660
Our organization diversify to create internal capital market where departments can borrow from each other.	0.341	0.408
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.		
a. Rotation converged in 3 iterations.		

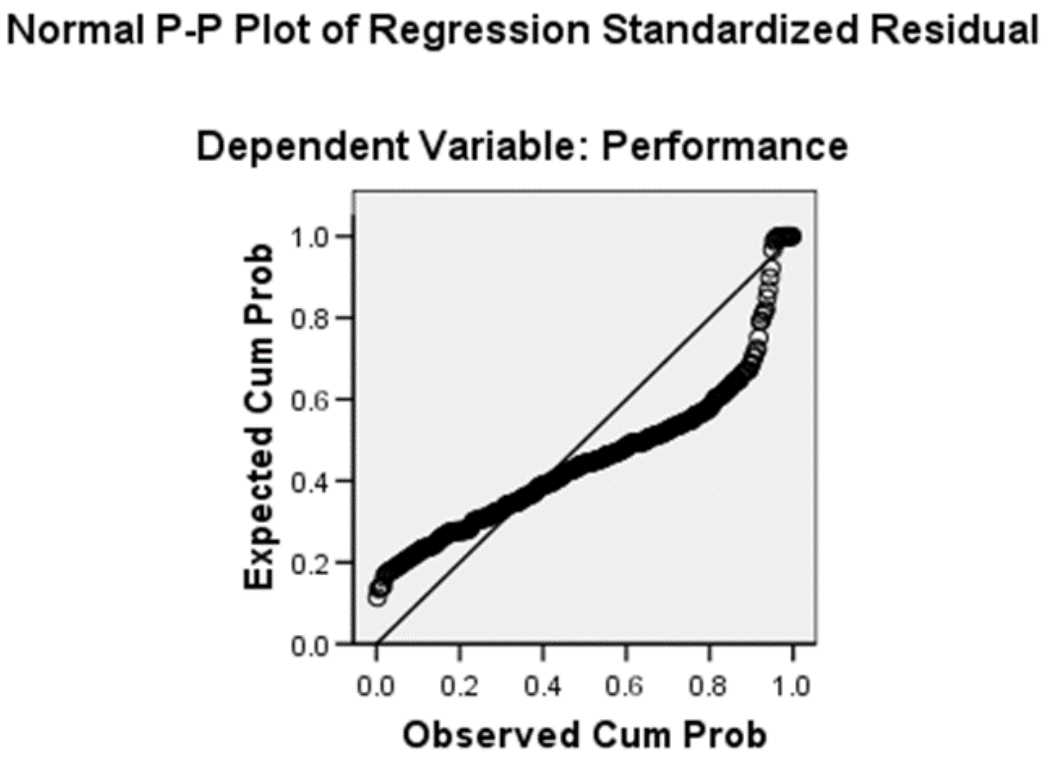
Source: Researcher (2020)

APPENDIX V: NORMALITY TEST – Q-Q AND P-P PLOTS

Normality Test - Histogram



Source: Researcher (2020)



Source: Researcher (2020)

APPENDIX VI: SECONDARY DATA RESEARCH INSTRUMENT

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$,
			Kshs M	Kshs M	Kshs M	Kshs M	Kshs M				
2011	BOC Kenya	71	1	1,817	488	1,329	1,953	1.34	21.32	1.85	0.82
2011	Carbacid	50	1	1,740	273	1,467	3,109	1.94	21.28	1.70	0.49
2011	EABL	89	45	49,712	22,824	26,888	136,013	3.20	24.63	1.95	0.06
2011	Mumias	40	16	23,177	8,701	14,476	8,109	0.73	23.87	1.60	0.22
2011	Unga	103	13	5,709	1,964	3,745	681	0.46	22.47	2.01	0.70
2011	Barclays	95	27,634	165,994	139,001	26,993	70,882	1.26	25.84	1.98	1.07
2011	Cooperative Bank	46	23,633	167,772	147,396	20,376	42,782	1.13	25.85	1.66	0.75
2011	Diamond Trust Bank	66	12,784	107,765	94,516	13,249	17,706	1.04	25.40	1.82	0.71
2011	Equity Bank	27	28,282	176,911	141,864	35,047	60,726	1.15	25.90	1.43	1.07
2011	Housing Finance	46	4,047	31,871	27,154	4,717	2,923	0.94	24.18	1.66	0.51

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2011	I & M Bank	37	11,502	108,064	92,897	15,167	47,083	1.30	25.41	1.57	0.67
2011	Kenya Commercial Bank	115	41,576	330,664	286,177	44,487	50,022	1.02	26.52	2.06	0.90
2011	National Bank	43	9,178	68,665	58,208	10,456	5,670	0.93	24.95	1.63	0.89
2011	NIC Bank	52	9,213	78,984	68,461	10,523	9,478	0.99	25.09	1.72	0.90
2011	Stanbic Bank	53	13,659	150,171	130,842	19,329	10,947	0.94	25.74	1.72	0.97
2011	Stanchart Bank	100	18,284	164,047	143,352	20,694	45,932	1.15	25.82	2.00	0.94
2011	Kakuzi	105	2	4	1	3	1	0.63	15.16	2.02	0.97
2011	Sasini	59	3	9	3	7	3	0.60	16.06	1.77	1.10
2011	Williamson Tea	142	4	6	2	4	2	0.70	15.61	2.15	0.42
2011	Bamburi Cement Ltd.	60	36,226	33,502	9,328	24,174	45	0.28	24.23	1.78	0.05

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2011	Athi River Mining Ltd.	37	8,300	20,516	14,413	6,103	16	0.70	23.74	1.57	0.08
2011	E.A. Cables Ltd.	45	4,977	4,993	2,719	2,274	3	0.55	22.33	1.65	0.01
2011	Sameer Africa PLC.	42	3,785	3,125	875	2,250	1	0.28	21.86	1.62	0.15
2011	Kenya Airways Ltd.	34	86,008	78,712	55,569	23,143	10	0.71	25.09	1.53	0.50
2011	Standard Group Ltd.	109	3,260	3,512	1,858	1,654	2	0.53	21.98	2.04	0.75
2011	Nation Media Ltd.	52	11,398	8,816	2,694	6,122	22	0.31	22.90	1.72	0.47
2011	Scan group Ltd.	15	11,964	8,490	4,135	4,355	12	0.49	22.86	1.18	0.09
2011	TPS Eastern Africa (Serena) Ltd.	14	5,797	13,132	5,085	8,047	8	0.39	23.30	1.15	0.25
2011	Uchumi Supermarket Ltd.	36	11,062	4,005	1,726	2,279	2	0.43	22.11	1.56	1.04
2011	KenGen Ltd.	57	15,222	160,993	91,575	69,419	19	0.57	25.80	1.76	0.25

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2011	Total Kenya.	56	106,271	35,198	26,003	9,195	3	0.74	24.28	1.75	0.04
2011	Kenya Power & Lighting Co. Ltd.	89	74,738	121,172	81,565	39,606	30	0.67	25.52	1.95	0.11
2011	Centum Investment Co. Ltd.	44	2,261	12,302	2,742	9,559	9	0.22	23.23	1.64	1.09
2011	Home Africa Ltd.	10	522	2,236	2,044	192	7	0.92	21.53	0.48	0.02
2011	Car and General (K) Ltd	75	6,086	3,446	2,727	719	1	1	21.96	1.88	0.19
2011	Safaricom PLC	11	94,832	113,855	46,401	67,454	118	0	25.46	1.04	0.30
2011	Britam Holdings Ltd	46	3,383	25,639	17,082	8,557	11	0.67	23.97	1.66	0.22
2011	CIC Insurance Group Ltd	43	6,020	11,121	6,827	4,294	3	0.61	23.13	1.63	0.41
2011	Jubilee Holdings Ltd	74	10,569	38,040	31,328	6,712	8	0.82	24.36	1.87	0.81

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2011	Kenya Re Insurance Ltd	40	8,126	19,096	7,570	11,526	4	0.40	23.67	1.60	0.90
2011	Liberty Kenya Holdings Ltd	47	6,419	23,896	20,143	3,753	2	0.84	23.90	1.67	0.85
2012	BOC Kenya	72	1	1,995	540	1,455	1,943	1.24	21.41	1.86	0.96
2012	Carbacid	51	1	2,013	360	1,653	4,146	2.24	21.42	1.71	0.36
2012	EABL	90	61	54,584	45,868	8,716	209,555	4.68	24.72	1.95	0.33
2012	Mumias	41	16	27,400	11,676	15,724	7,421	0.70	24.03	1.61	0.29
2012	Unga	104	16	6,410	2,421	3,989	988	0.53	22.58	2.02	0.75
2012	Barclays	96	30,320	184,826	155,242	29,583	85,547	1.30	25.94	1.98	0.95
2012	Cooperative Bank	47	32,505	200,887	171,519	29,367	52,805	1.12	26.03	1.67	0.87
2012	Diamond Trust Bank	67	19,653	135,461	116,834	18,627	25,312	1.05	25.63	1.83	0.56

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2012	Equity Bank	28	43,711	243,170	200,254	42,916	87,941	1.19	26.22	1.45	0.96
2012	Housing Finance	47	5,353	40,957	35,819	5,137	3,642	0.96	24.44	1.67	0.21
2012	I & M Bank	38	17,478	144,725	125,309	19,416	47,083	1.19	25.70	1.58	0.64
2012	Kenya Commercial Bank	116	57,044	388,019	313,724	54,295	88,365	1.09	26.68	2.06	0.74
2012	National Bank	44	11,273	67,155	56,705	10,450	4,830	0.92	24.93	1.64	0.80
2012	NIC Bank	53	14,364	108,349	92,867	15,482	20,769	1.05	25.41	1.72	0.71
2012	Stanbic Bank	54	19,378	143,212	115,971	27,241	16,604	0.93	25.69	1.73	0.94
2012	Stanchart Bank	101	26,650	195,353	164,600	30,753	72,652	1.21	26.00	2.00	0.79
2012	Kakuzi	106	2	4	1	3	1	0.61	15.09	2.03	1.25
2012	Sasini	60	3	9	2	6	3	0.58	16.00	1.78	1.08

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2012	Williamson Tea	143	4	7	2	5	2	0.56	15.80	2.16	0.42
2012	Bamburi Cement Ltd.	61	38,148	43,038	12,177	30,861	67	0.28	24.49	1.79	0.30
2012	Athi River Mining Ltd.	38	11,505	26,953	19,833	7,121	22	0.74	24.02	1.58	0.06
2012	Crown Paints Kenya PLC.	54	4,485	2,258	1,082	1,176	1	0.48	21.54	1.73	0.83
2012	Sameer Africa PLC.	43	4,152	3,400	1,073	2,327	1	0.32	21.95	1.63	0.23
2012	KenGen Ltd.	58	17,436	163,145	70,180	92,965	19	0.43	25.82	1.76	0.36
2012	Total Kenya.	57	120,140	32,981	18,788	14,193	2	0.57	24.22	1.76	0.02
2012	Kenya Power & Lighting Co. Ltd.	90	97,940	134,132	90,620	43,512	33	0.68	25.62	1.95	0.12
2012	Centum Investment Co. Ltd.	45	1,272	11,568	1,526	10,041	8	0.13	23.17	1.65	1.25
2012	Home Africa Ltd.	11	712	2,479	2,201	279	6	0.89	21.63	0.60	0.72

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2012	Car and General (K) Ltd	76	5,712	5,705	3,562	2,143	1	1	22.46	1.88	0.19
2012	Safaricom PLC	12	107,483	121,900	49,818	72,082	202	0	25.53	1.08	0.29
2012	Britam Holdings Ltd	47	11,743	35,820	24,976	10,844	11	0.70	24.30	1.67	1.21
2012	CIC Insurance Group Ltd	44	8,902	14,070	8,599	5,471	3	0.61	23.37	1.64	0.65
2012	Jubilee Holdings Ltd	75	14,326	47,258	38,558	8,700	8	0.82	24.58	1.88	0.94
2012	Kenya Re Insurance	41	10,598	23,788	9,175	14,613	10	0.39	23.89	1.61	0.92
2012	Liberty Kenya Holdings Ltd	48	8,049	27,372	22,818	4,554	7	0.83	24.03	1.68	1.03
2012	Sanlam Kenya Plc	66	7,921	16,474	14,100	2,373	4	0.86	23.53	1.82	1.06
2013	BOC Kenya	73	1	2,633	557	2,076	2,441	1.14	21.69	1.86	1.09

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$
2013	Carbacid	52	1	2,204	280	1,924	13,125	6.08	21.51	1.72	0.42
2013	EABL	91	59	58,556	50,122	8,434	229,325	4.77	24.79	1.96	0.04
2013	Mumias	42	13	27,148	13,859	13,289	4,973	0.69	24.02	1.62	0.47
2013	Unga	105	15	8,108	3,817	4,291	1,363	0.64	22.82	2.02	0.74
2013	Barclays	97	30,360	206,737	174,366	32,371	95,595	1.31	26.05	1.99	0.95
2013	Cooperative Bank	48	33,956	231,215	194,631	36,584	74,388	1.16	26.17	1.68	0.95
2013	Diamond Trust Bank	68	20,529	166,520	142,996	23,744	42,259	1.11	25.84	1.83	0.57
2013	Equity Bank	29	47,260	277,729	226,173	51,556	113,860	1.22	26.35	1.46	1.07
2013	Housing Finance	48	6,808	47,389	41,530	5,860	7,426	1.03	24.58	1.68	0.50
2013	I & M Bank	39	17,982	141,364	117,508	23,856	47,083	1.16	25.67	1.59	0.63

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$,
2013	Kenya Commercial Bank	117	19,610	390,852	327,497	63,355	141,000	1.20	26.69	2.07	1.14
2013	National Bank	45	11,030	92,556	80,667	11,888	8,050	0.96	25.25	1.65	0.81
2013	NIC Bank	54	14,861	121,063	103,494	17,570	32,579	1.12	25.52	1.73	0.75
2013	Stanbic Bank	55	18,822	180,512	148,086	32,426	34,393	1.01	25.92	1.74	1.00
2013	Stanchart Bank	102	29,214	220,391	184,185	36,206	93,984	1.26	26.12	2.01	0.79
2013	Kakuzi	107	1	4	1	3	2	0.72	15.13	2.03	1.24
2013	Sasini	61	3	9	3	6	3	0.66	16.02	1.79	0.92
2013	Williamson Tea	144	4	8	2	6	2	0.54	15.90	2.16	0.45
2013	Bamburi Cement Ltd.	62	34,401	43,016	11,506	31,510	76	0.27	24.48	1.79	0.31
2013	Athi River Mining Ltd.	39	14,445	29,705	21,482	8,224	45	0.72	24.11	1.59	0.10

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2013	Crown Paints Kenya PLC.	55	5,243	2,945	1,584	1,362	2	0.54	21.80	1.74	0.59
2013	Kenya Airways Ltd.	35	108,141	77,432	54,409	23,023	17	0.70	25.07	1.54	0.48
2013	Standard Group Ltd.	110	3,730	3,502	1,663	1,839	2	0.48	21.98	2.04	0.75
2013	Nation Media Ltd.	53	12,699	11,284	3,960	7,324	35	0.35	23.15	1.72	0.53
2013	Scan group Ltd.	16	12,642	8,362	3,462	4,900	20	0.42	22.85	1.20	0.07
2013	TPS Eastern Africa (Serena) Ltd.	15	5,755	13,484	5,303	8,181	6	0.39	23.32	1.18	0.27
2013	Uchumi Supermarket Ltd.	37	14,181	4,942	2,284	2,658	5	0.46	22.32	1.57	1.01
2013	Longhorn Publishers Ltd.	47	785	663	398	265	1	0.60	20.31	1.67	0.06
2013	KenGen Ltd.	59	17,722	188,673	114,545	74,129	30	0.61	25.96	1.77	0.31

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2013	Total Kenya.	58	155,090	39,984	24,605	15,379	4	0.62	24.41	1.76	0.02
2013	Umeme Ltd.	15	33,231	29,630	20,105	9,526	21	0.68	24.11	0.90	0.16
2013	Kenya Power & Lighting Co. Ltd.	91	92,213	184,213	137,063	47,150	28	0.74	25.94	1.96	0.16
2013	Centum Investment Co. Ltd.	46	3,906	18,962	5,319	13,643	22	0.28	23.67	1.66	1.18
2013	Home Africa Ltd.	12	758	3,064	2,725	339	2	0.89	21.84	0.70	0.43
2013	TransCentury Ltd.	16	11,809	23,840	10,622	13,218	8	0.45	23.89	1.20	0.69
2013	Car and General (K) Ltd	77	7,056	6,901	4,397	2,504	1	1	22.65	1.89	0.17
2013	Safaricom PLC	13	124,486	128,856	48,591	80,265	434	0	25.58	1.11	0.24
2013	Britam Holdings Ltd	48	15,130	46,903	32,150	14,752	29	0.69	24.57	1.68	1.23

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2013	CIC Insurance Group Ltd	45	10,887	17,036	10,349	6,687	13	0.61	23.56	1.65	0.60
2013	Jubilee Holdings Ltd	76	18,043	61,159	49,560	11,600	17	0.81	24.84	1.88	1.09
2013	Kenya Re Insurance	42	11,662	27,628	10,635	16,993	11	0.39	24.04	1.62	0.80
2013	Liberty Kenya Holdings Ltd	49	7,379	31,452	25,987	5,465	8	0.83	24.17	1.69	0.93
2013	Sanlam Kenya Plc	67	8,542	21,158	17,820	3,338	9	0.84	23.78	1.83	1.12
2014	BOC Kenya	74	1	2,300	553	1,747	2,441	1.30	21.56	1.87	0.88
2014	BAT	107	21	18,254	10,127	8,127	90,800	5.53	23.63	2.03	0.16
2014	Carbacid	53	1	2,533	376	2,157	5,543	2.34	21.65	1.72	0.47
2014	EABL	92	61	62,866	53,765	9,101	243,559	4.73	24.86	1.96	0.01
2014	Mumias	43	14	23,563	12,921	10,642	2,984	0.67	23.88	1.63	0.55

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2014	Unga	106	17	8,027	3,339	4,687	3,009	0.79	22.81	2.03	0.68
2014	Barclays	98	31,626	225,845	187,659	38,186	90,707	1.23	26.14	1.99	0.89
2014	Cooperative Bank	49	40,280	285,396	242,519	42,877	97,786	1.19	26.38	1.69	0.89
2014	Diamond Trust Bank	69	24,544	211,539	179,276	32,264	56,896	1.12	26.08	1.84	0.54
2014	Equity Bank	30	53,841	344,572	280,796	63,776	185,139	1.35	26.57	1.48	1.07
2014	Housing Finance	49	7,217	60,962	54,403	6,559	10,786	1.07	24.83	1.69	0.36
2014	I & M Bank	40	18,808	154,163	131,739	22,425	48,261	1.17	25.76	1.60	0.55
2014	Kenya Commercial Bank	118	69,477	490,338	414,707	75,631	170,101	1.19	26.92	2.07	1.05
2014	National Bank	46	13,839	123,092	110,868	12,224	6,930	0.96	25.54	1.66	0.73
2014	NIC Bank	55	17,284	145,305	123,070	22,235	36,797	1.10	25.70	1.74	0.72

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2014	Stanbic Bank	56	19,775	180,999	144,104	36,895	49,020	1.07	25.92	1.75	1.01
2014	Stanchart Bank	103	30,739	222,496	181,838	40,658	103,568	1.28	26.13	2.01	0.90
2014	Kakuzi	108	2	4	1	3	4	1.14	15.17	2.03	1.16
2014	Kapchorua	42	1	2	1	1	1	0.56	14.47	1.62	0.06
2014	Sasini	62	3	15	3	12	3	0.38	16.52	1.79	1.08
2014	Williamson Tea	145	4	9	2	7	2	0.48	15.96	2.16	0.24
2014	Bamburi Cement Ltd.	63	36,378	40,991	11,872	29,119	50	0.29	24.44	1.80	0.32
2014	Crown Paints Kenya PLC.	56	6,183	3,853	2,505	1,347	3	0.65	22.07	1.75	0.69
2014	Sameer Africa PLC.	45	3,864	3,857	1,321	2,536	2	0.34	22.07	1.65	0.29
2014	KenGen Ltd.	60	18,491	250,206	173,496	76,710	23	0.69	26.25	1.78	0.26
2014	Total Kenya.	59	171,222	32,542	16,116	16,425	4	0.50	24.21	1.77	0.02

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2014	Umeme Ltd.	16	33,544	40,398	23,605	16,793	34	0.59	24.42	0.95	0.15
2014	Kenya Power & Lighting Co. Ltd.	92	110,414	220,927	166,183	54,744	28	0.75	26.12	1.96	0.19
2014	Centum Investment Co. Ltd.	47	4,883	29,597	9,324	20,273	41	0.32	24.11	1.67	1.17
2014	Home Africa Ltd.	13	693	3,719	3,370	348	2	0.91	22.04	0.78	0.05
2014	TransCentury Ltd.	17	10,535	19,464	7,982	11,482	5	0.41	23.69	1.23	0.75
2014	Car and General (K) Ltd	78	8,299	8,153	5,320	2,832	2	1	22.82	1.89	0.19
2014	Safaricom PLC	14	144,799	134,601	43,365	91,236	563	0	25.63	1.15	0.21
2014	Britam Holdings Ltd	49	20,692	72,450	51,011	21,440	58	0.70	25.01	1.69	1.16
2014	CIC Insurance Group Ltd	46	14,520	23,690	16,483	7,207	25	0.70	23.89	1.66	0.58

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2014	Jubilee Holdings Ltd	77	24,376	74,505	58,026	16,479	27	0.78	25.03	1.89	0.94
2014	Kenya Re Insurance	43	14,037	32,174	12,183	19,991	12	0.38	24.19	1.63	0.82
2014	Liberty Kenya Holdings Ltd	50	8,303	33,194	27,037	6,157	12	0.81	24.23	1.70	0.90
2014	Sanlam Kenya Plc	68	7,975	24,599	20,821	3,778	12	0.85	23.93	1.83	1.00
2015	BOC Kenya	75	1	2,321	607	1,714	1,992	1.12	21.57	1.88	0.88
2015	BAT	108	22	18,681	9,828	8,853	78,500	4.73	23.65	2.03	0.19
2015	Carbacid	54	1	2,969	492	2,477	4,154	1.56	21.81	1.73	0.51
2015	EABL	93	65	66,940	53,587	13,353	215,881	4.03	24.93	1.97	0.01
2015	Flame Tree	26	2	1,372	745	628	1,133	1.37	21.04	1.41	0.01
2015	Mumias	44	6	20,573	14,501	6,072	2,448	0.82	23.75	1.64	0.76

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2015	Unga	107	19	8,635	3,317	5,319	2,555	0.68	22.88	2.03	0.72
2015	Barclays	99	34,337	240,877	201,161	39,716	73,869	1.14	26.21	2.00	0.86
2015	Cooperative Bank	50	50,016	342,500	293,197	49,303	88,008	1.11	26.56	1.70	0.94
2015	Diamond Trust Bank	70	30,523	271,609	233,303	38,305	45,275	1.03	26.33	1.85	0.55
2015	Equity Bank	31	65,394	428,063	355,926	72,136	150,947	1.18	26.78	1.49	1.04
2015	Housing Finance	50	9,352	71,659	61,037	10,623	7,841	0.96	25.00	1.70	0.43
2015	I & M Bank	41	17,239	191,724	158,002	33,721	39,236	1.03	25.98	1.61	0.76
2015	Kenya Commercial Bank	119	79,764	558,094	476,841	81,254	132,353	1.09	27.05	2.08	1.00
2015	National Bank	47	15,406	121,250	114,365	6,885	4,851	0.98	25.52	1.67	0.68
2015	NIC Bank	56	21,046	165,779	139,442	26,337	27,678	1.01	25.83	1.75	0.68

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2015	Stanbic Bank	57	22,070	208,452	170,087	38,365	32,614	0.97	26.06	1.76	0.89
2015	Stanchart Bank	104	30,207	233,965	192,714	41,252	60,286	1.08	26.18	2.02	0.78
2015	Kakuzi	109	3	4	1	3	6	1.64	15.31	2.04	1.00
2015	Kapchorua	43	1	2	1	1	1	0.67	14.50	1.63	0.12
2015	Sasini	63	4	13	1	11	4	0.47	16.35	1.80	1.36
2015	Williamson Tea	146	3	9	2	7	3	0.62	15.96	2.16	0.31
2015	Bamburi Cement Ltd.	64	39,574	42,030	12,324	29,706	63,518	1.80	24.46	1.81	0.27
2015	Crown Paints Kenya PLC.	57	6,971	4,539	3,186	1,353	4,342	1.66	22.24	1.76	0.80
2015	Kenya Airways Ltd.	37	106,832	148,657	120,428	28,229	13	0.81	25.72	1.57	0.60
2015	Standard Group Ltd.	112	4,844	4,102	1,894	2,208	3	0.46	22.13	2.05	0.61
2015	Nation Media Ltd.	55	13,351	11,944	3,176	8,768	50	0.27	23.20	1.74	0.76

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2015	Scan group Ltd.	18	17,154	13,284	4,741	8,543	17	0.36	23.31	1.26	0.08
2015	TPS Eastern Africa (Serena) Ltd.	17	6,626	15,939	5,527	10,412	7	0.35	23.49	1.23	0.19
2015	Uchumi Supermarket Ltd.	39	14,947	6,919	3,582	3,337	3	0.52	22.66	1.59	1.11
2015	Longhorn Publishers Ltd.	49	1,402	753	318	434	2	0.43	20.44	1.69	0.03
2015	KenGen Ltd.	61	26,586	342,520	200,926	141,594	15,608	0.63	26.56	1.79	0.18
2015	Total Kenya.	60	138,920	34,225	16,625	17,600	3,194	0.58	24.26	1.78	0.04
2015	Umeme Ltd.	10	39,783	59,162	42,370	16,793	36,131	1.33	24.80	1.00	0.14
2015	Kenya Power & Lighting Co. Ltd.	93	114,550	272,286	214,316	57,970	25,759	0.88	26.33	1.97	0.28

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2015	Centum Investment Co. Ltd.	48	11,789	72,231	33,677	38,555	30,943	0.89	25.00	1.68	1.20
2015	Olympia Capital Holdings Ltd.	47	535	1,531	363	1,169	192	0.36	21.15	1.67	0.38
2015	TransCentury Ltd.	18	11,885	21,818	18,272	3,546	2,312	0.94	23.81	1.26	0.72
2015	Car and General (K) Ltd	79	9,929	8,988	5,967	3,021	1,584	1	22.92	1.90	0.14
2015	Safaricom PLC	15	163,940	156,958	52,681	104,277	653,066	4	25.78	1.18	0.22
2015	Britam Holdings Ltd	50	20,131	77,632	59,958	17,674	25,199	1.10	25.08	1.70	0.80
2015	CIC Insurance Group Ltd	47	13,827	24,920	17,090	7,830	16,216	1.34	23.94	1.67	0.80
2015	Jubilee Holdings Ltd	78	21,698	82,378	61,997	20,381	31,888	1.14	25.13	1.89	0.82

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2015	Kenya Re Insurance	44	16,411	35,954	14,021	21,933	14,699	0.80	24.31	1.64	0.84
2015	Liberty Kenya Holdings Ltd	51	8,272	34,534	28,301	6,233	10,446	1.12	24.27	1.71	0.89
2015	Sanlam Kenya Plc	69	7,237	27,109	23,307	3,802	8,640	1.18	24.02	1.84	0.90
2016	BOC Kenya	76	1	2,224	534	1,689	1,601	0.96	21.52	1.88	0.73
2016	BAT	109	20	18,500	9,703	8,797	90,900	5.44	23.64	2.04	0.29
2016	Carbacid	55	1	3,082	408	2,674	3,415	1.24	21.85	1.74	0.63
2016	EABL	94	65	65,684	54,816	10,867	192,949	3.77	24.91	1.97	0.03
2016	Flame Tree	27	3	1,515	796	719	826	1.07	21.14	1.43	0.02
2016	Mumias	45	6	15,986	8,426	7,560	1,989	0.65	23.49	1.65	0.59
2016	Unga	108	19	9,200	3,503	5,697	2,612	0.66	22.94	2.03	0.71

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2016	Barclays	100	37,471	259,692	217,304	42,388	49,427	1.03	26.28	2.00	0.85
2016	Cooperative Bank	51	55,269	351,829	291,208	60,620	64,539	1.01	26.59	1.71	0.95
2016	Diamond Trust Bank	71	38,809	328,045	282,168	45,877	31,426	0.96	26.52	1.85	0.49
2016	Equity Bank	32	74,059	473,713	391,736	81,977	113,210	1.07	26.88	1.51	0.98
2016	Housing Finance	51	9,381	71,930	60,641	11,289	4,934	0.91	25.00	1.71	0.29
2016	I & M Bank	42	25,787	182,157	150,071	32,087	35,313	1.02	25.93	1.62	0.55
2016	Kenya Commercial Bank	120	85,950	595,240	498,674	96,566	88,149	0.99	27.11	2.08	0.84
2016	National Bank	48	14,958	112,086	105,176	6,910	2,218	0.96	25.44	1.68	0.67
2016	NIC Bank	57	23,040	169,459	139,114	30,345	16,639	0.92	25.86	1.76	0.64
2016	Stanbic Bank	58	26,656	214,683	174,542	40,141	27,870	0.94	26.09	1.76	0.78

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2016	Stanchart Bank	105	34,543	250,482	205,878	44,604	64,923	1.08	26.25	2.02	0.77
2016	Kakuzi	110	3	5	1	4	6	1.44	15.44	2.04	1.04
2016	Kapchorua	44	1	2	1	2	1	0.57	14.58	1.64	0.13
2016	Sasini	64	4	13	2	11	4	0.47	16.39	1.81	1.24
2016	Williamson Tea	147	4	9	2	7	3	0.60	16.01	2.17	0.37
2016	Bamburi Cement Ltd.	65	38,673	40,811	10,992	29,819	58,073	1.69	24.43	1.81	0.42
2016	Athi River Mining Ltd.	42	12,854	51,059	23,264	27,795	24,478	0.94	24.66	1.62	0.02
2016	E.A. Cables Ltd.	50	3,658	7,548	4,992	2,556	1,506	0.86	22.74	1.70	0.01
2016	Crown Paints Kenya PLC.	58	7,608	5,079	3,517	1,562	2,990	1.28	22.35	1.76	0.82
2016	Sameer Africa PLC.	47	3,009	3,291	1,456	1,835	779	0.68	21.91	1.67	0.42
2016	KenGen Ltd.	62	39,166	367,249	194,506	172,743	36,214	0.63	26.63	1.79	0.74

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2016	Total Kenya.	61	111,709	36,185	16,836	19,349	2,975	0.55	24.31	1.79	0.06
2016	Umeme Ltd.	11	45,510	74,202	53,393	20,809	21,922	1.02	25.03	1.04	0.03
2016	Kenya Power & Lighting Co. Ltd.	94	116,810	272,286	214,316	57,970	15,904	0.85	26.33	1.97	0.29
2016	Centum Investment Co. Ltd.	49	18,746	78,054	34,795	43,258	24,621	0.76	25.08	1.69	1.24
2016	Olympia Capital Holdings Ltd.	48	583	1,607	380	1,226	114	0.31	21.20	1.68	0.53
2016	TransCentury Ltd.	19	10,242	18,912	15,082	3,830	1,914	0.90	23.66	1.28	1.04
2016	Stanlib Fahari I-REIT	10	475	3,715	129	3,586	2,108	0.60	22.04	0.48	0.91
2016	Car and General (K) Ltd	80	9,736	9,705	6,467	3,239	1,083	1	23.00	1.90	0.14

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$,
2016	Safaricom PLC	16	195,917	159,183	42,444	116,739	767,253	5	25.79	1.20	0.38
2016	Britam Holdings Ltd	51	22,360	83,643	65,765	17,878	19,384	1.02	25.15	1.71	0.83
2016	CIC Insurance Group Ltd	48	13,017	26,827	19,347	7,479	9,939	1.09	24.01	1.68	0.84
2016	Jubilee Holdings Ltd	79	24,980	90,568	69,146	21,422	32,283	1.12	25.23	1.90	0.86
2016	Kenya Re Insurance	45	17,031	38,494	14,361	24,133	15,749	0.78	24.37	1.65	0.79
2016	Liberty Kenya Holdings Ltd	52	9,025	34,920	28,167	6,754	7,045	1.01	24.28	1.72	0.90
2016	Sanlam Kenya Plc	70	7,154	28,442	24,510	3,932	3,960	1.00	24.07	1.85	0.85
2017	BOC Kenya	77	1	2,229	618	1,611	2,089	1.21	21.52	1.89	0.94
2017	BAT	110	19	17,806	9,965	7,840	76,000	4.83	23.60	2.04	0.26
2017	Carbacid	56	1	3,307	383	2,924	3,096	1.05	21.92	1.75	0.69

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2017	EABL	95	70	66,666	54,678	11,988	188,204	3.64	24.92	1.98	0.01
2017	Flame Tree	28	2	1,351	619	731	810	1.06	21.02	1.45	0.05
2017	Mumias	46	2	24,091	23,335	757	1,683	1.04	23.91	1.66	0.72
2017	Unga	109	20	10,267	4,789	5,479	2,196	0.68	23.05	2.04	0.70
2017	Barclays	101	35,628	271,177	227,078	44,099	52,143	1.03	26.33	2.00	0.79
2017	Cooperative Bank	52	53,941	386,858	317,045	69,813	93,875	1.06	26.68	1.72	0.95
2017	Diamond Trust Bank	72	39,754	363,303	309,684	53,620	53,684	1.00	26.62	1.86	0.50
2017	Equity Bank	33	76,002	524,466	431,323	93,143	150,004	1.11	26.99	1.52	1.11
2017	Housing Finance	52	8,479	67,541	56,092	11,450	3,665	0.88	24.94	1.72	0.44
2017	I & M Bank	43	26,091	202,645	166,776	35,869	52,502	1.08	26.03	1.63	0.58

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$,
2017	Kenya Commercial Bank	121	87,130	646,668	540,703	105,965	131,074	1.04	27.20	2.08	0.82
2017	National Bank	49	12,391	109,873	102,639	7,234	3,168	0.96	25.42	1.69	0.68
2017	NIC Bank	58	22,580	206,172	171,456	34,716	21,598	0.94	26.05	1.76	0.66
2017	Stanbic Bank	59	25,430	248,739	205,783	42,956	32,021	0.96	26.24	1.77	0.90
2017	Stanchart Bank	106	35,224	285,724	240,060	45,665	71,450	1.09	26.38	2.03	0.77
2017	Kakuzi	111	3	5	1	4	6	1.41	15.45	2.05	1.05
2017	Kapchorua	45	1	2	1	1	1	0.56	14.52	1.65	0.05
2017	Sasini	65	4	13	2	11	7	0.65	16.40	1.81	1.08
2017	Williamson Tea	148	4	8	2	6	3	0.60	15.94	2.17	0.24
2017	Bamburi Cement Ltd.	66	36,164	47,203	14,003	33,200	65,333	1.68	24.58	1.82	0.38

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2017	Athi River Mining Ltd.	43	8,727	42,699	21,884	20,816	12,479	0.80	24.48	1.63	0.02
2017	E.A. Cables Ltd.	51	2,354	7,038	5,160	1,879	1,380	0.93	22.67	1.71	0.02
2017	Crown Paints Kenya PLC.	59	7,738	5,872	4,114	1,758	5,694	1.67	22.49	1.77	0.83
2017	E.A. Portland Cement Ltd	84	6,950	27,357	10,466	16,891	2,430	0.47	24.03	1.92	0.02
2017	Express Ltd.	36	65	380	356	23	126	1.27	19.75	1.56	0.13
2017	Standard Group Ltd.	114	4,914	4,405	2,329	2,076	1,349	0.83	22.21	2.06	0.60
2017	Nation Media Ltd.	57	11,633	12,174	3,471	8,703	17,534	1.73	23.22	1.76	0.86
2017	Scan group Ltd.	20	16,736	13,486	4,678	8,809	6,876	0.86	23.32	1.30	0.12
2017	TPS Eastern Africa (Serena) Ltd.	19	6,881	16,785	7,417	9,368	3,735	0.66	23.54	1.28	0.25
2017	Deacons (East Africa) PLC.	58	2,309	2,282	1,109	1,173	748	0.81	21.55	1.76	0.68

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2017	Longhorn Publishers Ltd.	51	1,507	1,867	919	948	1,776	1.44	21.35	1.71	0.02
2017	KenGen Ltd.	63	36,682	377,197	194,034	183,163	56,388	0.66	26.66	1.80	0.66
2017	Total Kenya.	62	138,519	38,012	16,595	21,417	4,114	0.54	24.36	1.79	0.06
2017	Umeme Ltd.	12	49,507	78,314	57,725	20,589	21,760	1.01	25.08	1.08	0.04
2017	Kenya Power & Lighting Co. Ltd.	95	128,918	341,653	271,691	69,962	17,758	0.85	26.56	1.98	0.24
2017	New Gold Issuer (RP) Ltd	13	1,210	265,168	265,144	24	506	1.00	26.30	1.11	1.02
2017	Centum Investment Co. Ltd.	50	20,822	88,386	38,911	49,474	29,113	0.77	25.20	1.70	1.18
2017	Olympia Capital Holdings Ltd.	49	558	1,557	291	1,266	140	0.28	21.17	1.69	0.44

Year	Company	Age	Total Income	Total Assets	Total Liabilities	Total Equity	Market Capitalization	Performance (Tobin's Q=Market value of Equity + Book value of Liabilities / Book value of Equity + Book value of Liabilities)	Company Size (Natural logarithm of value of total assets)	Company Age (Logarithm of the years since its founding)	Product diversification (Entropy measure= $\sum_{i=1}^{N} P_i \ln(\frac{1}{P_i})$.
2017	Stanlib Fahari I-REIT	11	372	3,762	95	3,666	1,936	0.54	22.05	0.60	0.86
2017	Car and General (K) Ltd	81	9,635	9,400	6,042	3,358	842	1	22.96	1.91	0.13
2017	Safaricom PLC	17	215,396	161,687	54,198	107,489	1,071,750	7	25.81	1.23	0.24
2017	Britam Holdings Ltd	52	27,837	99,025	76,355	22,670	28,871	1.06	25.32	1.72	0.89
2017	CIC Insurance Group Ltd	49	15,600	30,505	22,868	7,637	14,647	1.23	24.14	1.69	0.81
2017	Jubilee Holdings Ltd	80	31,273	104,968	79,737	25,231	36,164	1.10	25.38	1.90	1.07
2017	Kenya Re Insurance	46	18,190	42,733	15,528	27,205	12,669	0.66	24.48	1.66	0.79
2017	Liberty Kenya Holdings Ltd	53	9,686	37,119	29,690	7,429	6,536	0.98	24.34	1.72	0.94
2017	Sanlam Kenya Plc	71	7,375	29,829	25,777	4,052	3,996	1.00	24.12	1.85	0.94

Source: NSE (2019)

APPENDIX VII: SU ETHICAL APPROAVAL LETTER

Strathmore UNIVERSITY

18th April 2019

MUCHIRI STEPHEN
P.O BOX 3672 00100
Nairobi.
Email: smuchiri09@gmail.com

Dear Stephen,

REF Protocol ID: SU-IERC0400/19

AN EXAMINATION OF THE EFFECT OF PRODUCT DIVERSIFICATION ON PERFORMANCE OF COMPANIES LISTED IN NAIROBI SECURITIES EXCHANGE: THE MODERATING INFLUENCE OF FIRM CHARACTERISTICS.

We acknowledge receipt of your application documents to the Strathmore University Institutional Ethics Review Committee (SU-IERC) which includes:

1. Study Protocol submitted 12th April 2019
2. Cover letter listing all submitted documents 12th April 2019
3. Proposal declaration Page signed by supervisors 12th April 2019

The committee has reviewed your application, and your study "*An examination of the effect of product diversification on performance of companies listed in Nairobi securities exchange: the moderating influence of firm characteristics.*" has been granted **approval.**

This approval is valid for one year beginning **18th April 2019** until **17th April 2020**

In case the study extends beyond one year, you are required to seek an extension of the Ethics approval prior to its expiry. You are required to submit any proposed changes to this proposal to SU-IERC for review and approval prior to implementation of any change.

SU-IERC should be notified when your study is complete.

Thank you

Sincerely,

STRATHMORE UNIVERSITY INSTITUTIONAL ETHICS REVIEW COMMITTEE (SU-IERC) 2019 TEL: +254 (0)703 034 000 P. O. Box 59857 - 00200 NAIROBI - KENYA

pp

Prof. Florence Oloo
Secretary
Strathmore University Institutional Ethics Review Committee

APPENDIX VIII: NACOSTI RESEARCH PERMIT

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 789686

Date of Issue: 15/November/2019

RESEARCH LICENSE

This is to Certify that Mr., Stephen Muchiri of Strathmore University, has been licensed to conduct research in Nairobi on the topic: An examination of the effect of product diversification on the performance of companies listed in Nairobi Securities Exchange: the moderating influence of firm characteristics for the period ending : 15/November/2020.

License No: NACOSTI/P/19/2785

789686

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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National Commission for Science, Technology and Innovation
off Waiyaki Way, Upper Kabete,
P. O. Box 30623, 00100 Nairobi, KENYA
Land line: 020 4007000, 020 2241349, 020 3310571, 020 8001077
Mobile: 0713 788 787 / 0735 404 245
E-mail: dg@nacosti.go.ke / registry@nacosti go ke
Website: www nacosti go ke