RELATIONSHIP BETWEEN BOARD INDEPENDENCE AND OPERATIONAL PERFORMANCE OF THE CONSTRUCTION AND ALLIED FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE, KENYA

BY

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DECLARATION

This research project is my original work and it has never been presented in any other university for the award of any degree.

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This research project has been prepared and submitted for examination with my approval as the University Supervisor

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DEDICATION

I dedicate this research project to my dear wife Hafsa Omar and my entire family for their endless support throughout the entire period.

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I thank Allah for giving me grace to complete this research project.

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LIST OF ABBREVIATIONS AND ACRONYMS

CEO   Chief Executive Officer

CMA   Capital Market Authority

E. A.   East Africa

EAC   East African Community

GDP   Gross Domestic Product

GLS   General Least Square

IPO   Initial Public Offering

KCB   Kenya Commercial Bank

KNBS   Kenya National Bureau of Statistics

NSE   Nairobi Securities Exchange

ROA   Return on Assets

ROE   Return on Equity

SACCOs   Savings and Credit Cooperatives

SPSS   Statistical Package for Social Sciences

ABSTRACT

The study sought to establish relationship between board independence and operational performance of the construction and allied firms listed at the Nairobi Securities Exchange, Kenya. The independent variable was board independence while operational performance was the dependent variable with firm size and leverage as the control; variables. The study adopted the descriptive survey design. The study target 5 construction and allied firms listed at the NSE, Kenya and census was used. Data was collected from auxiliary sources covering a ten year period (2010-2019). Once the data had been collected from the field, it underwent cleaning through editing to remove inconsistencies. Thereafter, it was exported to excel where a summary of means and standard deviations were generated. For the sake of drawing relevant inferences, the study adopted regression analysis. Normality test was conducted using PP Plots, multicollinearity using variance of inflation factors, autocorrelation using Durbin Watson Statistics and heteroscedasticity test using scatter plot. The study established that whereas the relationship between board independence and operational performance was significant, firm size and leverage did not significantly moderate this relationship. The study concluded that board independence has significant effect on operational performance. The study recommends that senior managers of the construction and allied firms listed at the NSE in Kenya should ensure there is equal representation of the independent board members across all the existing board committees. The policy makers covering the Capital Market Authority (CMA) should establish clear policies and regulation to guide board independence of the construction and allied firms listed at the NSE in Kenya. The study was limited by a small sample of 5 construction and allied firms listed at the NSE in Kenya. Further studies are recommended covering a relatively larger sample for instance the entire listed firms in Kenya.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Operational performance relates with costs against revenues generated by an enterprise and it is one of the goals of the enterprise. Firms exist to minimization of costs and maximization of the revenues generated from their operations (Rashid, 2018). The separation of ownership from management is associated with an increment in the agency costs that may have an impact on operational performance of the firm. However, to check these agency costs, board independence comes in to provide an oversight role to the management of the organization and this may enhance the operational performance of the firm (Hamdan & Al-Mubarak, 2017). It is therefore hoped that existance of independent directors in the board would enhance the oversight role that would increase operational performance. Thus, empirically, a postive relationship is predicted amongst board independence and operational performance of the firm.

Three theories guided this study which comprised of the agency theory, the stewardship theory and the tradeoff theory. The agency theory argues that there exist conflicting interests between parties in the firm (the management and shareholders) (Jensen & Meckling, 1976). The conflicting interests between these parties are due to the fact that the parties are opportunistic (Fama & Jensen, 1983). Thus, presence of outsider directors on the board strives to reduce this conflict of interest between parties in the firm. Therefore, on the basis of the agency theory, a positive association is predicted amongst board independence and operational performance of the firm (Boyd, 1995). Unlike the agency views, the stewardship theory is premised on the fact that individuals in the firm arguing that the management of the firm is not necessarily driven by their

personal and self-interested goals. Rather, the management is motivated to work in line with the interests of their principals (Donaldson, 1990). The theory contends that a firm can exercise an optimal stewardship role in the event that the board has been given full authority and power (Donaldson & Davis, 1991). Hence, on the basis of the stewardship views, independent directors in the firm are not necessary since the agents (managers) are self-motivated to meet the principals needs who are the shareholders in the firm (Luan & Tang, 2007). Based on the stewardship theory, board independence is seen to have an insignificant effect on operational performance of the firm.

Developed by Megginson (1997), on the basis of the Modigliani and Miller (MM) (1958) theorem, the tradeoff theory argues that an organization can have an optimum capital structure by establishing a balance amongst the benefits that accrue from use of debts (leverage) with the associated financial costs and the agency issues (conflict of interest). It is only when a balance between the benefits and costs of having debts (leverage) has been established that the capital structure of the firm will be optimized and thus operational performance (Mutmainnah, 2013). Thus, the tradeoff theory does not affect operational performance of the firm in isolation but in close interaction with the agency theory. The tradeoff theory also provides the link between leverage and size which will be used as control variables in the present study. As noted by Titman and Wessel (1988), there exists a postive link between size and leverage of the entity. The possible explanation for this postive relationship between size and leverage is that larger enterprises have relatively smaller bankruptcy costs which enable them to have huge debts in their capital structure (leverage) (Titman & Wessel, 1988). Thus, the trade-off theory will

explain how size and leverage control the link amongst board independence and operational performance of the firm.

1.1.1 Board Independence

Board independence is among the various components of corporate governance of the firm that establishes the association amongst the board, the management and the shareholders in the entity (Ibrahim, Ouma & Koshal, 2019). Board independence describes the proportion of directors who are outsiders in the firm within the board. Independent directors do not have any material or financial interests in the firm and they are free to make decisions and share opinions that are not biased for the success of the firm. Independent directors do not hold any executive position in the organization and they can bring new expertise from different industries and sectors to the firm. Johari, Saleh, Jaffar and Hassan (2008) provide that an efficient board should have at least a third of its directors as independent. Being independent will mean that the director will make a decision without biasness so as to safeguard shareholder's interests.

There are different proxies that can be used to represent board independence in the firm. Liu, Miletkov and Yang (2015) operationalized board independence through the number of outsider board members. Board independence can also be measured using a fraction of the independent directors against the total number of the directors. Ponnu and Karthigeyan (2010) measured board independence using the number of the non-executive directors in the board.

1.1.2 Operational Performance

Performance is a multi-dimensional concept that covers both financial and non-financial parameters (Cherotich & Obwogi, 2018). While financial indicators of performance focus more on the quantitative aspects for instance the level of profitability of the firm, the non-financial indicators of performance are largely qualitative in nature like customer satisfaction (Ibrahim, Ouma & Koshal, 2019). According to Azim, Shibbir and Helaluddin (2015), operational performance is simply the aspects of the firm that can be measured including the level of reliability and efficiency in processes. Huiming, Su, Chongwen and Ying (2020) viewed operational performance as strategic aspects of the firm required in the highly competitive environment and it covers indicators like delivery and flexibility. Munyao (2014) viewed operational performance as a measure pegged on established standards like efficiency and effectiveness and cycle time.

Terziovski, Feng and Samson (2007) defined operational performance in terms of the indicators like customer satisfaction and the quality of the products as well as the level of productivity. Mbuguab and Namada (2019) defined operational performance as the ability of the management of the entity to lower the costs. Therefore, costs are expenses are some of the components of operational performance of the firm. Besides the value of assets of the firm are also important when considering operational performance. In this study, operational performance was measured by the costs (expenses) against total assets generated by the firm. The information on these two indicators used to measure operational performance will be readily obtained from reports and publications of the firms including their statements of financial positions and the income statements.

1.1.3 Board Independence and Operational Performance

Theoretically, the link between board independence and operational performance is mixed. For instance, while the agency views hold a positive relationship, stewardship views indicate an insignificant relationship (Fama & Jensen, 1983). Ideally, independent directors on the board are usually external and they may bring in new skills and expertise that may enhance the level of operational performance of the firm. Independent directors are likely to strengthen the oversight role played by the board which translates to be better operational performance. Board independence is seen as a mechanism of balancing the power between the outsiders and the insiders of the firm and this is likely to improve on operational performance (Daily & Dalton, 1993).

Empirically, Qadorah and Fadzil (2018) documented that board independence and operational performance of the entity are significantly linked with each other. Cavaco, Challe, Crifo, Rebérioux and Roudaut (2016) documented an inverse but significant link amongst board independence and operational performance. Hamdan and Al-Mubarak (2017) noted an inverse link amongst board independence and performance. Rashid (2018) used evidence from Bangladesh and showed that board independence and performance are not significantly related. Fuzi, Halim and Julizaerma (2016) established mixed findings on board independence and its link with performance of the firm. Ponnu and Karthigeyan (2010) indicated that board independence does not positively predict performance of the entity. In China, Liu *et al*. (2015) noted that board independence and performance of the firm are positively related with each other. Therefore, the results from the empirical studies are not consistent on board independence and operational performance.

1.1.4 Construction and Allied Firms Listed at the Nairobi Securities Exchange, Kenya

The Nairobi Securities Exchange (NSE) was formed in 1954 as a body of stock brokers. Since then, NSE has undergone significant development coupled with a lot of innovations. There are about 66 firms operating under NSE platform. These firms are listed in different segments that were classified and established based on the nature of the products the firm deal in. These listed firms do operate in different sectors of the economy and they contribute towards the economy. All the listed firms at the NSE do operate under tough regulations established by the Capital Market Authority (CMA) (NSE, 2019).

There are 5 construction and allied firms that have been listed at the NSE in Kenya as indicated on appendix I (NSE, 2020). Some of these firms like Bamburi Cement do operate in the larger manufacturing sector and they are responsible for manufacture of cement. The listed construction and allied firms do contribute directly towards the growth of the economy through creation of jobs and complementing the other sectors of the economy like infrastructure projects. The construction and allied firms do manufacture products that are not only demanded from within Kenya but beyond the borders including the East African Community (EAC) countries and this earns foreign income to the country.

The construction and allied firms are one of the pillars of the big four agenda (manufacturing, health, agriculture and housing) that have received attention by the national government in Kenya. The firms contribute directly towards job creation and the overall gross domestic product (GDP). Cement manufacturing firms operate in the larger manufacturing sector in Kenya. Some examples of these cement manufacturing firms in Kenya include Athi River Mining, Bamburi

Cement Ltd and E.A. Portland Cement Ltd. However, some of these firms like the E.A. Portland Cement Ltd and Athi River Mining are currently facing challenges as it regards their performance.   In the recent past, Athi River Cement for instance was placed under an administration for shielding it against the creditors. The cement manufacturing firms are facing challenges as seen by a drop in demand for cement from construction and housing sectors. For instance, there was a drop in demand for cement from 11.5% in 2015 to 5.3% in 2016 (KNBS, 2017).   Being the key pillar of big 4 agenda in Kenya and given their dismal operational performance, there is need for attention to reverse this trend. Without this, it would not be possible for the government to meet the ambitious big 4 agenda.   Therefore, the motivation of this study was to assess the current board independence of these firms and determine whether it has an effect on their operational performance.

1.2 Research Problem

Board independence can minimize the agency costs that arise from the separation of control and ownership of the firm from its management (Fama & Jensen, 1983). Boards that are exclusively dominated by executive and insider directors will not effectively carry outs its oversight role as the Chief Executive Officer (CEO) is likely to manipulate the members easily (Daily & Dalton, 1993). This is contrary to a board whose proportion of the directors is independent as these have no interests in the firm aside from the directorship. Such outsider directors are likely to provide independent judgment of the situations in the firm while effectively questioning the actions of the CEO in the firm (Fama & Jensen, 1983). Independent board members being outsiders can bring in new knowledge and skills that effectively enhance the oversight role of the board and thus better operational performance of the firm (Williams & Shapiro, 1979).

The listed construction and allied firms operate in the manufacturing sector in Kenya (NSE, 2020). These firms are regarded as the pillar of big four agenda (manufacturing, food-security, health and housing) and by the national government of Kenya. This means that realization of the big four agenda in Kenya is partly pegged on these listed construction and allied firms (Presidential Delivery Unit, 2018). However, some of these firms are currently facing challenges with regard to their operational performance. Some of these firms like E. A. Portland Cement Ltd have been recording poor performance with its creditors like the Kenyan Commercial Bank threatening to place it under receivership (KCB, 2019). Although the government of Kenya has made some efforts to bail out some of these listed construction and allied firms currently facing financial challenges, these efforts have not yielded much as these firms have continued to perform dismally. Therefore, there is need to address these issues faced by the listed construction and allied firms in Kenya if the government wish to realize big 4 agenda. If this is not done, it will not be possible for the government to realize these ambitious agenda.

Global studies conducted include Qadorah and Fadzil (2018) who used evidence from Jordan to examine the link amongst the independence of the board and performance of the entity. A positive and significant link was noted. A study conducted in France by Cavaco *et al.* (2016) who focused on independence of the board and operating performance revealing an inverse and significant relationship. Relying on evidence from Saudi Arabia, Hamdanand Al-Mubarak (2017) conducted an inquiry into board independence and the role it plays as far as accounting based performance is concerned; where an inverse relationship was established. Local studies conducted in Kenya include Mandu (2010) looked at the independence of the board and performance of Kenyan banks and noted the composition of the board positively predicts the

ability of the firm to perform. Mkabane, Okello and Juma (2020) looked at the independence of the directors in the board and the link with growth of SACCOs in Western Kenya where a direct and significant relationship was noted. Ibrahim, Ouma and Koshal (2019) conducted an inquiry into the independence of the audit committee and its link with financial performance focusing on Kenyan insurance firms and a positive and significant link was noted.

According to the aforementioned studies, most of them are seen to have been done in other counties such as Jordan and France and not in Kenya. The studies conducted in Kenya covered other contexts like insurance firms, commercial banks and SACCOs and not specifically on manufacturing firms. Most of the studies looked at financial performance in general and not specifically operational performance. This created gap which the current study aimed on addressing through responding to the research question: What is the relationship between board independence and operational performance of the construction and allied firms listed at the NSE, Kenya?

1.3 Research Objective

The study sought to establish the relationship between board independence and operational performance of the construction and allied firms listed at the NSE, Kenya

1.4 Value of the Study

The Capital Markets Authority (CMA) would formulate relevant policies and guidelines concerning boards of the respective listed firms. The regulations formulated by CMA would promote a well-functioning capital and money market system in Kenya. The policy makers at

NSE would rely on the findings of this study to establish effective mechanisms to strengthen the boards of the respective firms.

The managers of the respective construction and allied firms may be able to establish well-functioning boards by relying on the findings of this study. These construction and allied firms may be able to understand the need to increase the proportion of outsider directors in the board. This may promote the overall operational performance of these firms as they contribute to the general growth of the economy.

The various practitioners including the directors and professional auditors may be able to understand the role that their independence on boards will promote the operation performance. The knowledge and literature available on board independence and operational performance may get to be enhanced by this inquiry. Scholars carrying out similar studies in future may be able to review the literature of this study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter is endeavored to reviewing the theories that informed the variables as well as the past empirical studies. The gaps from the reviewed studies are also presented. The conceptual framework is presented showing the study variables and their interaction with each other.

2.2 Theoretical Review

A review of literature on the theories that will guide the study is provided in this section. More specifically, the study will be guided by the agency theory, the stewardship theory and the tradeoff theory.

2.2.1 Agency Theory

This theory which was pioneered by Jensen and Meckling (1976) and suggested that managers are agents who are mandated by the shareholders who are the principal to work towards attaining the principal's objectives. It emphasizes the current interaction between the agents and the principles in the entity. This theory considers the agents to be the leaders and managers who are engaged in daily operations of an organization the owner's behalf. If the agent decides on behalf of the management to assume the responsibility for managing a particular operation, the agent ought to give input to the principal concerned. Consequently, it is the mandate of the agent to oversee that principals needs and objectives are met as the principal requires of them. The value of agency theory can be defined as an essential element in the organization's performance, as the strategies of an agent affect those of the principal (Panda & Leepsa, 2017).

There should be an effective partnership between the administrations and their shareholders so as to work geared to a common objective, and the agent will try to build a positive atmosphere that will help motivate the workers under them so that everyone can work as planned (Pouryousefi & Frooman, 2017). The task of the agent is to ensure that the intended techniques are applied within the organization so as to achieve greater efficiency. If the agent fails to perform as anticipated, however, the loss of the agency may result in an increase. The role of the agent is to support all the employees in order for them to better their performance and assist in realizing a competitive advantage for the organization. However, this theory has been criticized by the advocates of the stewardship theory like Donaldson and Davis (1991), where the company's management is not seen as driven by egocentric desires. Rather than managers trying to achieve their personal interests, thus conflict of interest as suggested by the agency theory, the critics claim that there are certain managers who are motivated by the organization's willingness to succeed so that they are taken to the firm as stewards.

2.2.2 Stewardship Theory

It was Davis and Donaldson (1991) who advanced this theory to explain the connection between the managers of an entity and its real owners. It works under the premise that company administrators are stewards with a view to achieving the principal's objectives. The theory proposed to managers a specific (non-financial) motivational type that would help drive the business performance. The stewardship theory lets the company be effective stewards in representing managers (Qiao, Fung, Miao & Fung, 2017). Based on the company's conventional view being a distinct legal body from its directors, where the directors are an advisory function of the shareholders that re the owners, according to this theory they opined that managers are

primarily acting as stewards to help in ensuring that shareholders' interests are well cared for in order to maximize shareholder wealth.

 In addition to simple self-interest, there are several factors which motivates managers and they include, achievement, social status, work ethics, recognition and responsibility. Consequently, removing power from the firm's ownership does not lead in conflicts of interest and priorities amongst the firm's management and its shareholders. This results into the growth of the managerial career. The theory works under the premise that company administrators are leaders with a view to achieving the principal's objectives (Martin & Butler, 2017). The theory proposed to managers a specific (non-financial) motivational type that would help drive the company results.

This theory further argues that businesses need frameworks that help bring harmony hence managers' performance (Krzeminska & Zeyen, 2017). This theory is statistical, and thus measures the managerial relationship one by one. It further suggests that there is no conflict of interest amongst a corporation's owners and managers. The theory suggests, therefore, that governance ought to develop mechanism of managing activities of the firms and operate effectively.

2.2.3 Trade-off Theory

The MM theorem in 1958 provided the foundation of this trade off theory which argues that an entity can optimize its capital structure by balancing the benefits of leverage. The primary goal of the management of the firm is to make sure that the wealth of its shareholders has been maximized hence operational performance. Maximization of the wealth of the owners of the firm

and thus operational performance require an optimal the capital structure that is optimal which requires management to balance the means of financing (including use of debts and equities) (Modigliani & Miller, 1963). To finance the debts, the management should be committed to repayment of the interest amount that would be accruing. Contrary, the use of equity in financing is relatively less risky although it may have some effect on earnings, control and dilution of ownership especially when there are new share issues in the firm (López-Gracia & Sogorb-Mira, 2008).

Hence, the major decision for finance managers in the firm is on whether to use debts or equity in financing investments that would improve operational performance (Leary & Roberts, 2010). Unlike equity, the use of debts provides an interest tax shield that maximizes the value of the firm since it is deductible expense (Miller, 1977). However, debt financing increases the costs of being bankrupt by the entity (in the event that the firm fails to repay the debt). Aside from the bankruptcy costs, it is also assumed that there exists conflicting views between the firmn managers and the owners hence increasing agency related expenses (Jensen & Meckling, 1976) that may have an effect on financing of the enterprise. Hence, an optimal capital structure (better operational performance) is established when the interest tax shield arising from leverage is balanced with the bankruptcy costs and the agency costs (Stiglitz, 1969).

2.3 Empirical Review

An inquiry by Qadorah and Fadzil (2018) amined to bring out the linkage amongst the independence of the board and the meetings with ability of Jordanian firms to perform. The frequency which the meetings of the board are held and the independence of the board were analyzed in relation to the ability of the entity to perform. The inquiry constrained itself to listed entities in Jordan. In total, 64 entities were covered where data gathered was cross sectional in nature. ROA was a proxy for the ability of the entity to perform. Some hypotheses were formulated and tested regresionally. A direct and significant link was noted amongst the independence of the board and the firm's ability of performing. On the contrary, the frequency which the meetings of the board are held and the firms performing capacity were not interlinked with each other in significant terms.

Another inquiry covering Jordanian entities was done by Alaryan (2017) determine the interrelation amongst the attributes of the board and their linkage with the capacity of listed entities to perform in financial terms. The particular focus of the inquiry was on bringing out the connection between the attributes of the board like its size, the structure of its leadership and composition in relation to firm financial performance capacity. The period of focus of the inquiry was from 2011 all through to 2016. The inquiry documented mixed views of the attributes of the board and their link with the ability of the entity to perform.

Kajola Sunday, Onaolapo Adekunle and Adelowotan Michael (2017) focused on Nigerian context to bring out the link between the size of the board and its connection with the capacity of listed entities performing financially. The focus of the inquiry was on non-financial firms and in

total, 35 of them were covered. The inquiry focused on a period from 2002 all through to 2014. It was noted that the size of the board is directly and significantly linked with returns the firms generates on the basis of the assets and equities in place. In order for listed entities to enhance their ability to perform, the study recommended an adequate size of 9 directors to the board.

Rashid (2018) did an inquiry in Bangladesh focusing on the independence of the board and its connection with firm capacity to perform. In total, 135 entities were covered and involved in the inquiry. It was shown that the independence of the board and ability of the firm to perform are not linked with each other in significant terms. Furthermore, the size of the board was seen to be significantly linked with the level of independence. With a focus on initial public firms in Italian context, Zattoni, Witt, Judge, Talaulicar, Chen, Lewellyn and Shukla (2017) did an inquiry into the independence of the board and its link with financial performance. A weak bur significant link was noted between independence within the boards and the degree which an entity performs in financial terms.

Locally in Kenya, Mwangangi (2015) focused on listed entities at the NSE to bring out the profile of their boards and how they are linked with ability to financially perform. The adopted design was descriptive and information from auxiliary sources was collected over a time frame from 2008 all through to 2014. The link between the study constructs was explored regressionally. A direct but insignificant link was noted between the size of the board and the ability of the entity to financially perform. The recommendation noted by the inquiry was the need to come up with relevant policies that would strengthen corporate governance mechanisms.

Kiptum (2013) looked at the composition of the board and its link with the ability which entities perform in financial terms. The focus of the inquiry was listed entities at the NSE. Descriptive design was leveraged on to meet the study objectives. All the NSE listed entities were covered from 2008 all through to 2012 as the time horizon. The evaluation of the compassion of the board was done using such proxies as the gender, ethnicity and the independence of the member and all these were seen to be linked with entities ability to perform financially in significant terms. Kasyoki (2016) focused on the features of the board and their connection with firm performance capacity. The particular focus of the inquiry was on service and commercial listed entities at the NSE. Relying on information obtained from auxiliary sources, it was shown that the size and independence of the board have a direct connection with firm performance capacity. The recommendation raised by the inquiry was the need to establish a balanced board for proper performance of the entity.

Ongore, Peter, Ogutu and Bosire (2015) did an inquiry into the constitution of the board and its role as far as connection with firm financial performance capacity is concerned. The study pointed out that the constitution of the board and the capability of the entity to perform are negligibly related with each other. The firms' capacity to perform was represented by proxies like ROA and ROE. The study by Cherotich and Obwogi (2018) focused on the composition of the board and the role it executes with regards to capacity firms financial performance. The precise focus of the inquiry was on listed entities on the NSE. The inquiry covered a time horizon from 2010 all through to 2017. In total, 55 listed entities were targeted by the inquiry. The size of the board and the ability of the entity to perform were seen to be inversely linked with each other although in non-significant terms.

2.4 Summary of Literature and Gaps

Although focused on board elements, Mwangangi (2015) linked this with financial performance instead of operational performance creating conceptual gap. Similarly, the study by Kiptum (2013) although conducted on the constitution of board, it linked this with financial performance instead of operational performance. Related studies on issues of the board but relating them financial performance include Ongore et al. (2015) and Cherotich and Obwogi (2018) and all of them result into conceptual gaps. The present study will address these conceptual gaps by linking the aspects of the board with operational performance. Furthermore, some of these local studies merely cover all the listed firms on the NSE which create contextual gap that the current study will aim on filling by covering only the listed construction and allied firms.

Studies conducted by Qadorah and Fadzil (2018) and Alaryan (2017) focused on firms operating in Jordan. The study done by Kajola *et al.* (2017) focused on listed entities in Nigeria. The study conducted by Rashid (2018) focused on Bangladesh. Zattoni *et al.* (2017) focused on board independence with financial performance but covering Italian firms. Although all these studies were conducted on the aspects of the boards, they were done in different countries away from Kenya and thus creating contextual gaps. Other studies adopted different methodologies including the use of Structured Equation modeling (SEM) and panel data which create methodological gaps unlike the present study that will merely use ordinary regression modeling.

2.5 Conceptual Framework

Consider Figure 2.1.
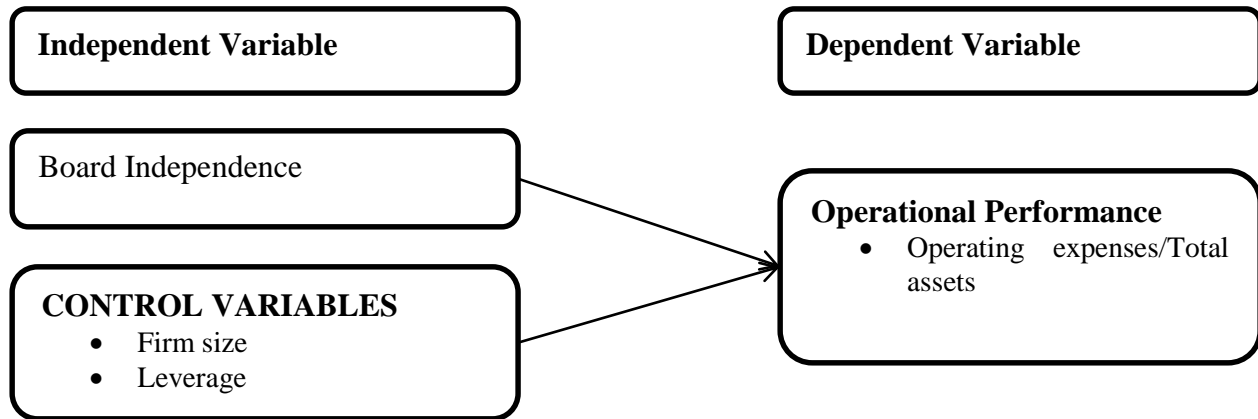
Figure 2.1: Conceptual Framework
Source: Author (2020)

The board independence was the independent variable while operational performance was the dependent one.   Operating expenses as a ratio of asset base was a proxy of operational performance. The link between board independence and operational performance was controlled by firm size and leverage.

2.6 Research Hypotheses

The study will be guided by the following null hypotheses:

H_{01}: Board independence has no significant relationship with operational performance of construction and allied firms listed at the Nairobi Securities Exchange, Kenya.

H_{02}: Firm size and leverage do not significantly control the relationship between board independence and operational performance of construction and allied firms listed at the Nairobi Securities Exchange, Kenya.

CHAPTER THREE: RESEARCH METHODS

3.1 Introduction

The methods for realization of the stated objectives of the study are indicated in this chapter. These cover the adopted design of the inquiry, targeted respondents, gathering as well as analysis of the data.

3.1 Research Design

The study assumed the descriptive survey design. The descriptive design helped on reporting the current status of board independence and performance in operational terms. The use of survey ensured that all firms were covered and included in the study.

3.3 Population of the Study

The study target 5 construction and allied firms listed at the NSE, Kenya (appendix I). Because of the population of the current study being comparatively small, census was used. Hence, all the 5 NSE listed firms were included in the study.

3.4 Data Collection

Data was gathered from auxiliary sources covering a ten-year period (2010-2019). The use of auxiliary data was justified on ground that it was readily available in public domain now that the study focused on listed firms. Annual data was collected on number of independent directors, total board members, total assets, total debts, total equity, operating expenses and total revenue.

This data was collected from reports and publications by NSE, CMA and the financial statements published by the respective firms that were available on their websites.

3.5 Data Analysis

Once the data had been obtained from the ground, it underwent cleaning through editing to remove inconsistencies. Thereafter, it was exported to excel where a summary of means and standard deviations were generated. For the sake of drawing relevant inferences, the study adopted regression analysis.

3.5.1 Model Specification

The study model is as specified below:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Where:

Y = Operational Performance (operating expenses/total assets) collected annually

β_0 = constant

$\beta_0, \beta_1, \beta_2, \beta$ = beta coefficients

X_1 = Board independence (No. of Independent Directors/Total Number of Board members) collected annually

X_2 = Firm Size (Natural Logarithm of Assets) collected annually

X_3 = Leverage (Debts/Equity) collected annually

ε = Error term

The results were exhibited in graphs and tables for trend analysis on the variables.

3.5.2 Diagnostic Tests

Normality test was conducted using PP Plots, multicollinearity using VIF, autocorrelation using Durbin Watson Statistics and heteroscedasticity test using scatter plot. The results from these tests were appropriately interpreted.

CHAPTER FOUR: DATA ANALYSIS AND DISCUSSION

4.1 Introduction

This section is aimed to present the findings of the analysis as informed by the specific objectives. Data of the study was obtained from secondary sources and the analysis was done using SPSS tool. The analysis start by presenting the findings of descriptive statistics followed by correlational results, diagnostic tests and regression findings.

4.2 Descriptive Statistics on the Variables

This section is set out to the findings of the descriptive statistics entailing the means and standard deviation on the study variables as illustrated in Table 4.1.

Table 4.1: Descriptive Statistics on the Variables

	N	Min	Max	Mean	Std. Dev
Operating Performance (%)	50	.02	.39	.1364	.08728
Board Independence %)	50	.20	.56	.3330	.06875
Firm Size (Kshs.)	50	4.98	5.89	5.3312	.19589
Leverage	50	3.21	7.17	5.2394	.96387

Source: Field Data (2020)

According in Table 4.1, the studied firms recorded the highest change in operating performance of 39% with the least change recorded being equal to 2% and an average change of 13.64% in their operational performance across the period of consideration. It was also noted that the studied firms had the least proportion of their independent members in the board as 20% with the highest proportion being equal to 56% and the average proportion of independent board members on the board being equivalent to 33.3% of their across the study period. On average,

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the studied firms had an asset base of Kshs. 5.3312 billion with the minimum value as Kshs 4.98 billion and the maximum value being equivalent to Kshs. 5.89 billion. The study noted that the studied firms had an average value of leverage as 5.2394 with the highest value recorded being 7.17 and the least value being 3.21. This means that the studied firms had debts as well as equity in their capital structure although in varying proportions.

The values of standard deviations were generated to establish the degree of variation in the variables across the period of consideration. From the results, leverage had the highest value of standard deviation being equal to .96387 followed by firm size at .19589, operating performance at .08728 and lastly board independence at .06875. The implication of these findings is that all the variables registered the value of standard deviation of less than 1, which could be an indication that there was no huge variation in these variables across the entire period of consideration.

4.3 Trend Analysis

Trend analysis was utilized to show the movement of the variables across the period of consideration of the study (2010-2019) as illustrated in subsequent sections.

4.3.1 Operating Performance

Figure 4.1 is a summary of the trend on operating performance as a dependent variable of the study. In this study, operating performance was established as the value of operating expenses against the total value of assets.
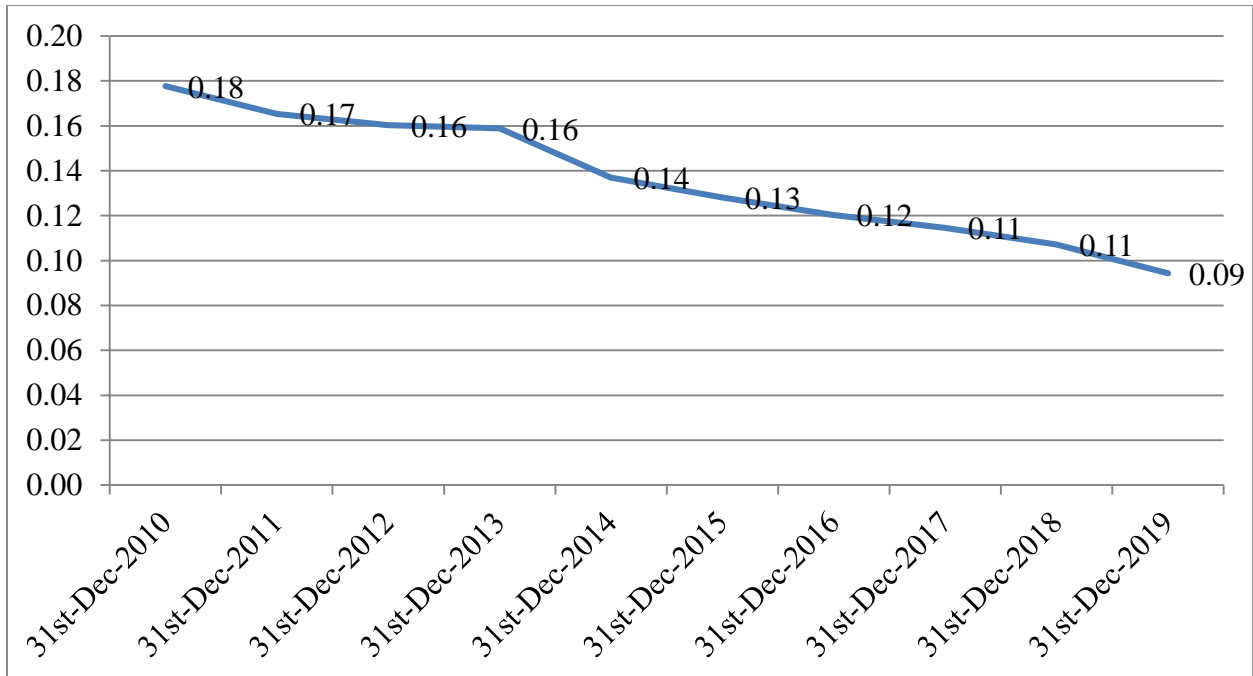
Figure 4.1: Trend Analysis of Operating Performance
Source: Field Data (2020)

From Figure 4.1, the studied firms recorded their highest level of operating performance in 2010 with the least being recorded in 2019. The deduction drawn from Figure 4.1 is that there was a general decline in operating performance of the studied firms across the period of consideration. It is against this backdrop of declining operational performance of these firms that the motivation of this study emerged to establish whether board independence contributes towards this trend.

4.3.2 Board Independence

The independent variable of the study was board independence determined as independent directors as a proportion of the total board members. The results of the trend analysis of board independence as the variable of the study are indicated in Figure 4.2.
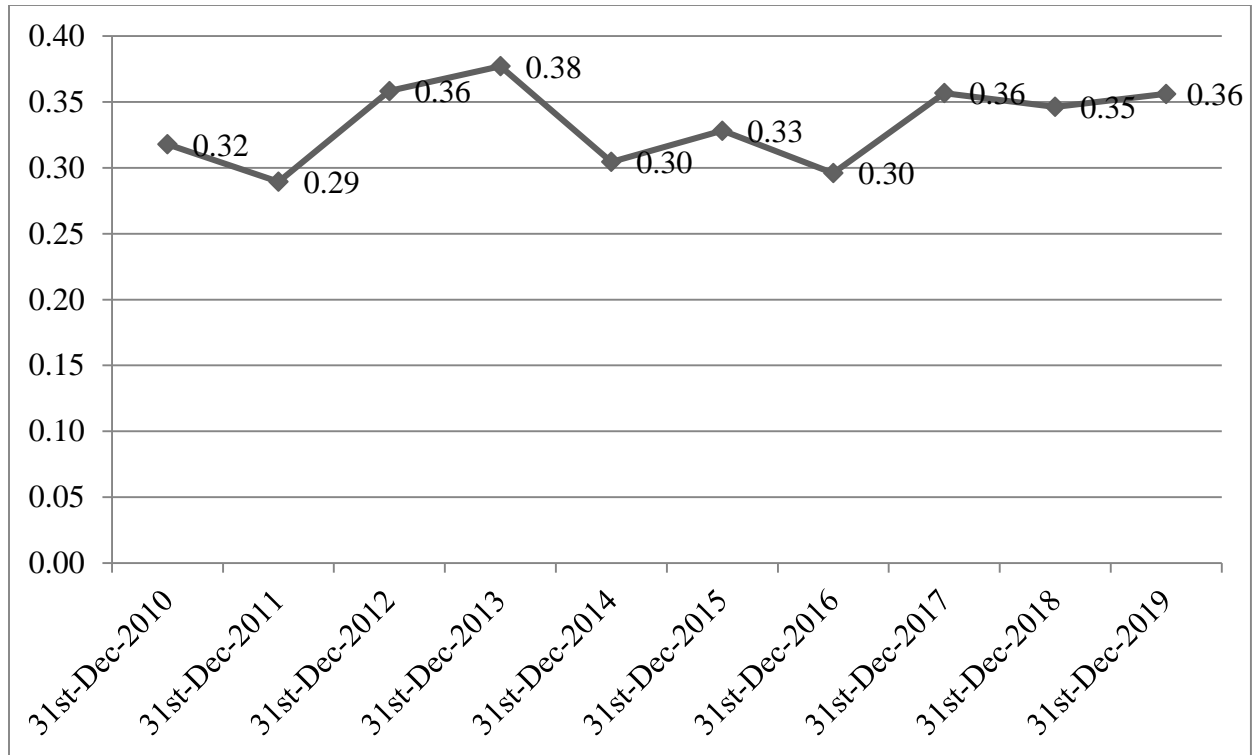
Figure 4.2: Board Independence
Source: Field Data (2020)

The outcomes in Figure 4.2 point out that the highest level of board independence among the studied firms across the period of consideration was 2013 with the least level of board independence being in 2014 and 2016. The deduction drawn from the findings is that there was stability in board independence among the studied firms.

4.3.3 Firm Size

Firm size was one of the control variables used in the study and it was operationalized as the logarithm of the overall value of assets of the studied firms. The findings of trend analysis on firm size as study variables are presented in Figure 4.3.
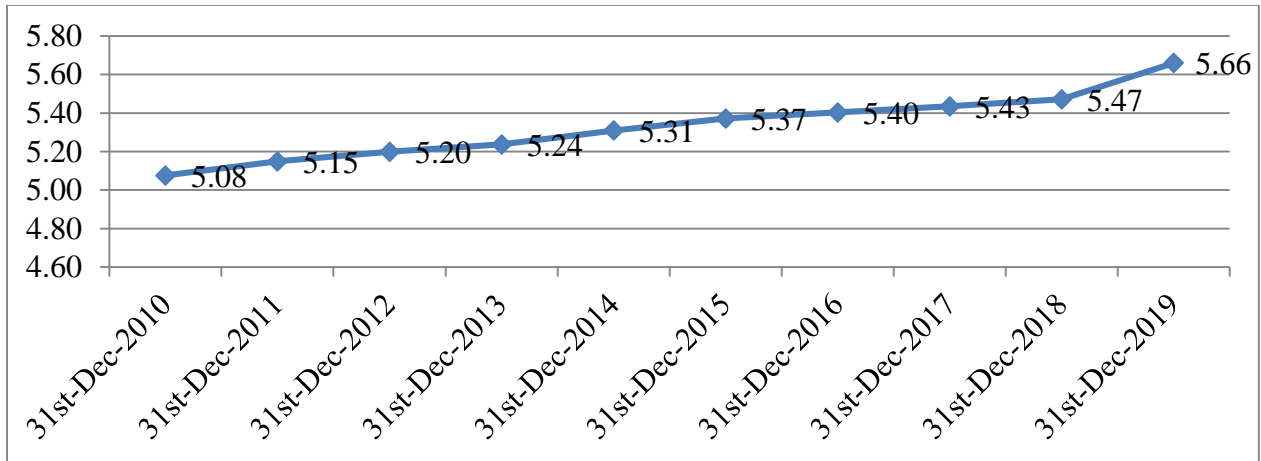
Figure 4.3: Trend Analysis of Firm Size
Source: Field Data (2020)

The findings in Figure 4.3 point out that the least amount of firm size was recorded in 2010 with

the highest value being recorded in 2019. On average, there was a general increase in firm size

across the period of consideration.

4.3.4 Leverage

Leverage was another control variable used in the study determined as using equity as proportion

of debts. Figure 4.4 gives the results of trend analysis.
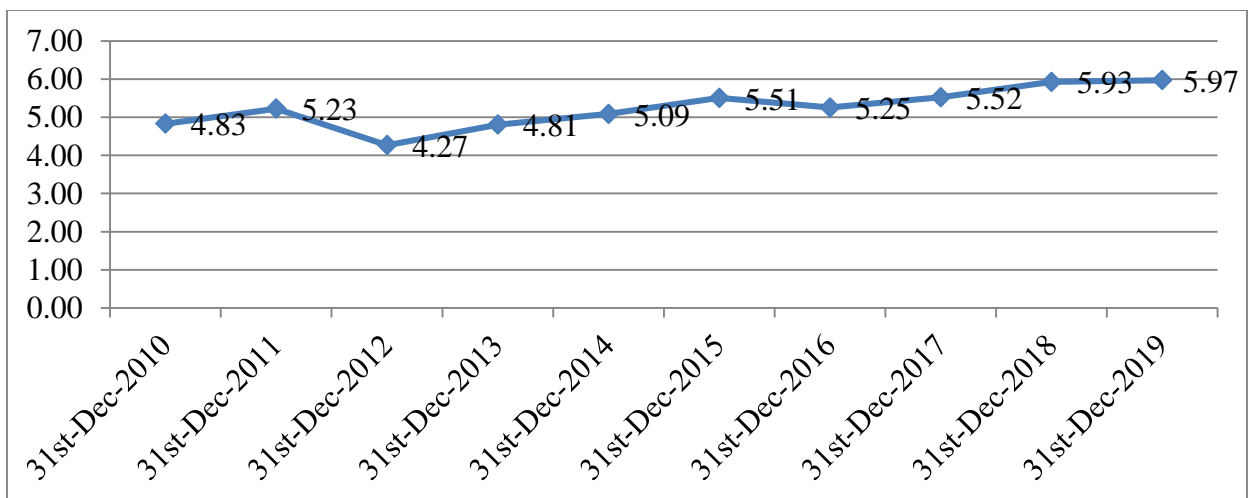
Figure 4. 4: Trend Analysis of Leverage
Source: Field Data (2020)

The outcomes in Figure 4.4 point out the highest value of leverage in 2019 with the least one being in 2012. On overall, it can be inferred that there was stability in leverage as a control variable used in the study.

4.4 Correlation Analysis

For the purpose of establishing the association amongst board independence and operational performance under the control of firm size and leverage, correlation analysis was used. The outcomes are as indicated in Table 4.2.

Table 4.2: Correlation Analysis

		Operating Performance	Board Independence	Firm Size	Leverage
Operating Performance	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	50			
Board Independence	Pearson Correlation	.805**	1		
	Sig. (2-tailed)	.000			
	N	50	50		
Firm Size	Pearson Correlation	.548**	.719**	1	
	Sig. (2-tailed)	.000	.000		
	N	50	50	50	
Leverage	Pearson Correlation	-.224	-.406**	.380**	1
	Sig. (2-tailed)	.119	.003	.006	
	N	50	50	50	50

**. Correlation is significant at the 0.01 level (2-tailed).
Source: Field Data (2020)

Table 4.2 indicate the value of Pearson coefficient correlation amongst board independence and operational performance as r=0.805. This means that board independence has a strong and direct

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link with operational performance of the studied firms. The study also noted the Pearson coefficient association amongst firm size and operational performance was r=0.584. This is interpreted to mean that firm size has a strong and direct association with operational performance. Leverage was seen to have r=-0.224, which means that there exists a weak and inverse association amongst leverage and operational performance of the firm.

4.5 Diagnostic Tests

Diagnostic tests were conducted to establish whether the data set was suitable for carrying out regression analysis. They were meant for testing regression analysis assumptions. The detailed diagnostic tests that were done in this study include autocorrelation, multicollinearity test, normality test and heteroscedasticity test.

4.5.1 Autocorrelation Test

The study conducted autocorrelation test using Durbin Watson with the results as presented in Table 4.3.

Table 4.3: Autocorrelation Test

Model	Durbin-Watson
1	1.788[a]

a. Predictors: (Constant), Leverage, Board Independence, Firm Size
b. Dependent Variable: Operating Performance
Source: Field Data (2020)

The outcomes in Table 4.3 shows the value of Durbin Watson as 1.788, which is taken roughly as 2. As the value of Durbin Watson was 2, this means no autocorrelation was present in the data.

4.5.2 Normality Test

In establishing if the studied data was normally distributed it was important for a normality test to be undertaken. This was done using the normal PP plot graph as indicated in Figure 4.5.
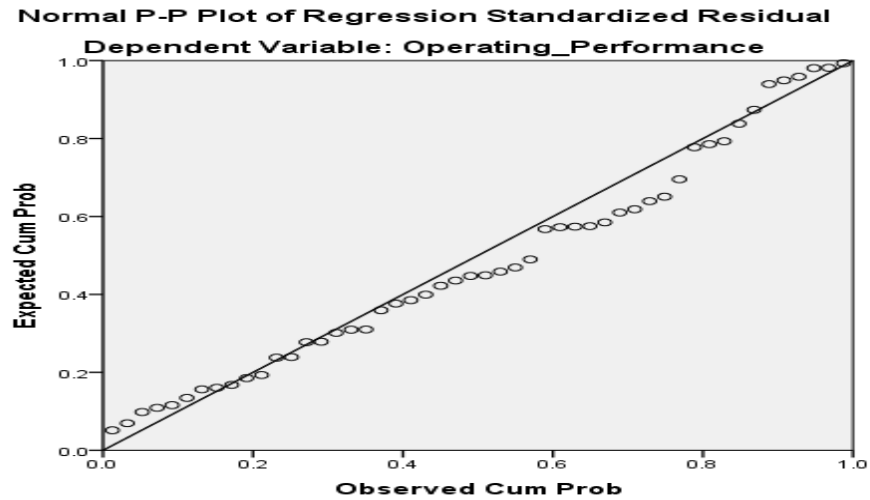
Figure 4. 5: Normal PP Plot
Source: Field Data (2020)

As illustrated in in Figure 4.5, majority of the data points are seen to be falling along the normal PP line. The implication of this finding is that the data used in the study was normally distributed.

4.5.3 Multicollinearity Test

Multicollinearity was meant to test whether any of the independent and control variables were correlated with each other. This should not be the case as it is a violation of the assumptions of regression analysis.

Table 4.4: Multicollinearity Test

	Collinearity Statistics	
	Tolerance	**VIF**
Board Independence	.462	2.163
Firm Size	.473	2.112
Leverage	.819	1.221

a. Dependent Variable: Operating Performance
Source: Field Data (2020)

The VIF values as shown in Table 4.4 were between 1 and 2.2. Usually, the VIF values falls in there range of 1-10 and this means that there is no multicollinearity in the data. Therefore, because the VIF values were above 1 it can be interpreted to mean no multicollinearity present in this study data.

4.5.4 Heteroscedasticity Test

Heteroscedasticity test was c onducted using scatter plot with the findings as presented in Figure 4.6.
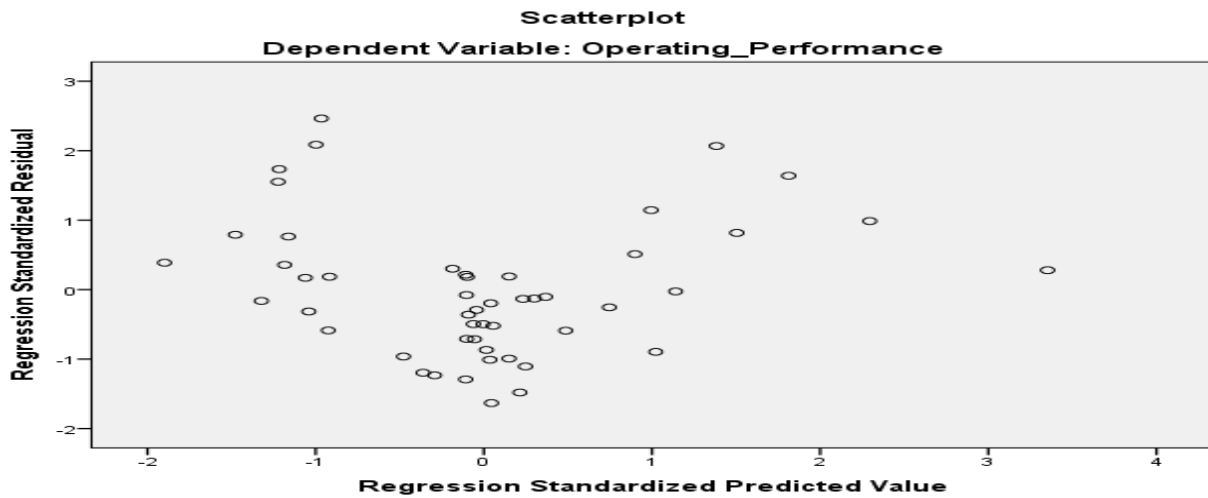
Figure 4. 6: Scatter Plot
Source: Field Data (2020)

As indicated in Figure 4.6, most variables are widely distributed without a clearly described pattern. This may be an indicator that heteroscedasticity was not present in the data used in the analysis.

4.6 Regression Results and Hypotheses Testing

So as to establish the effect of board independence and operational performance with firm size and leverage as control variables, the study conducted stepwise regression covering two models. The first model entailed determining the link amongst board independence and operational performance. In the second model, the control variables are introduced to see the changes.

4.6.2 Model Summary

Table 4.5 shows the outcomes of the regression model summary.

Table 4.5: Model Summary

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	.805ª	.648	.640	.05235	.648	88.210	1	48	.000
2	.813ᵇ	.661	.639	.05244	.014	.919	2	46	.406

a. Predictors: (Constant), Board Independence
b. Predictors: (Constant), Board Independence, Leverage, Firm Size
Source: Field Data (2020)

The outcomes in Model 1 exhibit the value of R square as 0.648, this means that 64.8% change in operational performance of construction and allied listed firms in Kenya is explained by their board independence. In model 2, the introduction of the control variables (firm size and leverage) resulted into an R square value of 0.639 and a change in the value of R square of 0.014. It is this change in R square that represents the controlling effect of leverage and size in the link between

board independence and operational performance of the construction and allied firms listed in Kenya.

4.6.2 Analysis of Variance

Analysis of Variance was conducted with 0.05 or 5% as the significance level. Table 4.6 summarizes the findings.

Table 4.6: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.242	1	.242	88.210	.000[b]
	Residual	.132	48	.003		
	Total	.373	49			
2	Regression	.247	3	.082	29.916	.000[c]
	Residual	.126	46	.003		
	Total	.373	49			

a. Dependent Variable: Operating Performance
b. Predictors: (Constant), Board Independence
c. Predictors: (Constant), Board Independence, Leverage, Firm Size
Source: Field Data (2020)

Model 1 had the value of F calculated as 88.210 while that of model 2 was 29.916. The respective p-values of models 1 and 2 were 0.000 and 0.000 respectively. The implication of these findings is that the two regression models used in the study were significant.

4.6.3 Regression Beta Coefficients and Significance

The beta coefficients and significance of the individual variables used in the study were determined and presented as exhibited in Table 4.7.

Table 4.7: Regression Beta Coefficients and Significance

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.204	.037		5.513	.000
	Board Independence	1.022	.109	.805	9.392	.000
2	(Constant)	-.394	.333		-1.182	.243
	Board Independence	1.122	.160	.883	6.998	.000
	Firm Size	.019	.056	.042	.339	.736
	Leverage	.011	.009	.119	1.252	.217

a. Dependent Variable: Operating Performance

Source: Field Data (2020)

Table 4.7 shows the outcomes of the two models. From the findings of model 1, the study revealed in case all the variables were to be constant, operational performance of construction listed firms in Kenya would be at 0.204. When board independence changes with a unit and all other variables are unchanged it would translate to 1.022 unit increment in operational performance of the construction listed firms. The p-value is taken as 0.000, which is less than 0.05. This leads to a deduction that board independence was a significant variable. Thus, the first hypothesis H_{01} is rejected and the study the study infers that board independence had significant effect on operational performance.

After controlling for firm size and leverage in model 2 board size was still significant ($p<0.05$). However, firm size ($p>0.05$) and leverage ($p>0.05$) were not significant. Thus, it can be inferred that although firm size and leverage control the link between board independence and

operational performance, this controlling effect however is not significant. Thus, the study fails to reject hypothesis H_{02}.

4.7 Discussion

The study was set out to determine the effect of board independence on operational performance. Correlation analysis indicated that board independence has a strong and direct link with operational performance of the firm. The result is consistent with Qadorah and Fadzil (2018) who noted direct and significant link between the independence of the board and the ability of the firm to perform. Alaryan (2017) documented mixed views of the attributes of the board and their link with the ability of the entity to perform. Kajola Sunday, Onaolapo Adekunle and Adelowotan Michael (2017) noted that the size of the board is directly and significantly linked with returns the firms generates on the basis of the assets and equities in place.

The results of the regression model summary indicated that a significant variation in operational performance of the firm is individually explained by board independence of the firm. The ANOVA findings indicated that the overall model for predicting the link between board independence and operational performance was significant. The study further established that board independence had a p-value below 0.05. Thus, the first hypothesis H_{01} formulated by the study was rejected. The results are supported by Mwangangi (2015) who noted a direct but insignificant between the size of the board and the ability of the entity to financially perform. Kasyoki (2016) showed that the size and independence of the board have a direct connection with the capacity of a firm to perform. Ongore, Peter, Ogutu and Bosire (2015) pointed out that the constitution of the board and the capability of the entity to perform are negligibly interconnected. The firm's capacity to perform was represented by proxies like ROA and ROE.

Cherotich and Obwogi (2018) shared that the size of the board and the ability of the entity to perform were seen to be inversely linked with each other although in non-significant terms. Rashid (2018) revealed that the size of the board is significantly linked with the level of independence. With a focus on initial public firms in Italian context, Zattoni, Witt, Judge, Talaulicar, Chen, Lewellyn and Shukla (2017) established a weak but significant link was noted between independence within the boards and the degree which an entity performs in financial terms.

The study aimed to establish the controlling effect of firm size and leverage in the association amongst board independence and operational performance. From the outcomes of descriptive statistics, it was shown that the studied firms had both debts and equity in their capital structures although in varying proportions. The findings of correlation analysis indicated that while firm size had a strong and direct link with operational performance, leverage had an inverse and weak correlation with operational performance. Regression analysis indicated a change in R square after introduction of the control variables in the model. It was this change in R square that signified the controlling effect of firm size and leverage in the link amongst board independence and operational performance. The study noted that firm size ($p > 0.05$) and leverage ($p > 0.05$) were not significant. Thus, the study fails to reject the second hypothesis H_{02}. The finding contradicts Titman and Wessel (1988) who noted that there exists a positive link between size and leverage of the entity. The possible explanation for this positive association amongst size and leverage is that larger enterprises have relatively smaller bankruptcy costs which enable them to have huge debts in their capital structure (leverage) (Titman & Wessel, 1988).

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary, conclusion, and recommendations in line with the study objectives. Recommendations for further research and limitations of the study are also presented in this chapter.

5.2 Summary of the Findings

The study was set out to establish the effect of board independence on operational performance. The results of descriptive statistics indicate that the studied firms had at least a third of the members on their board as independent. The study noted that there was stability in board independence among the studied firms across the period of consideration. Correlation analysis indicated that board independence has a strong and direct link with operational performance of the firm. The results of the regression model summary indicated that a significant variation in operational performance of the firm is individually explained by board independence of the firm. The ANOVA findings indicated that the overall model for predicting the link between board independence and operational performance was significant. The study further established that board independence had a p-value below 0.05. Thus, the first hypothesis H_{01} formulated by the study was rejected.

The study aimed on establishing the controlling effect of firm size and leverage in the association amongst board independence and operational performance. From the outcomes of descriptive statistics, it was shown that the studied firms had both debts and equity in their capital structures although in varying proportions. The study further noted that the studied firms had huge asset

base that determined their size. The outcomes of the study further pointed out that there was a general increase in firm size across the period of consideration. The study established that there was stability in leverage as a control variable used in the study. The findings of correlation analysis indicated that while firm size had a strong and direct link with operational performance, leverage had an inverse and weak correlation with operational performance. Regression analysis indicated a change in R square after introduction of the control variables in the model. It was this change in R square that signified the controlling effect of firm size and leverage in the link between board independence and operational performance. The ANOVA outcomes showed that the overall model of the study was significant. The study noted that firm size ($p>0.05$) and leverage ($p>0.05$) were not significant. Thus, the study fails to reject the second hypothesis H_{02}.

5.3 Conclusion

The first hypothesis of the study H_{01} was that board independence has no significant effect on operational performance of the construction and allied firms listed at the NSE. From the results, the study noted that board independence had a p-value of below 0.05 hence being significant. Thus, the study rejected the first hypothesis H_{01} and concludes that board independence has significant effect on operational performance of the construction and allied firms listed at the NSE This conclusion is theoretically informed by the agency theory, where the independent directors are seen to provide an oversight to the actions undertaken by the management of the firm. However, the conclusion contradict the stewardship theory where board independence is seen to play a non-significant role in the firm since the management are not driven by selfish interests but they operate as stewards. Therefore, with or without board independence, the management will act in the best interest of the firm of enhancing operational performance.

The second hypothesis of the study H_{02} was that firm size and leverage do not significantly control the relationship between board independence has no significant effect on operational performance of the construction and allied firms listed at the NSE. From the findings, the study documented that firm size and leverage had p-values above 0.05 hence they were not significant. Thus, the study failed to reject hypothesis H_{02}. Thus, the study conclude that firm size and leverage have insignificant controlling effect in the association amongst board independence and operational performance of construction and allied firms listed at the NSE. However, the conclusion contradicts the tradeoff theory that argues for the need of the firm to use debts apart from equities in their capital structure (leverage) so as to enhance on performance.

5.4 Recommendations for Policy and Practice

It has emerged from the analysis that independence within the boards is an important factor that significantly drives operational performance of the firm. On average, it was shown majority of the firms had at least a third of their board members being independent. The study recommends that the shareholders of the construction and allied firms listed at the Nairobi Securities Exchange in Kenya should ensure there is equal representation of the independent board members across all the existing board committees. The policy makers covering the Capital Market Authority (CMA) should establish clear policies and regulation to guide board independence of the construction and allied firms listed at the NSE in Kenya.

The finance managers of the respective construction and allied firms listed at the NSE should strike a balance between equities and debts in their capital structure which is key aspects of leverage. The various practitioners in the area of corporate governance working in the construction and allied firms listed should establish clear guidelines on how to strengthen the

boards including the need to enhance the level of independence. In the long run, this will have a significant influence on operational performance of their firms.

5.5 Limitations of the Study

The study was limited by a small sample of 5 construction and allied firms listed at the NSE in Kenya. Such a small sample limits the generation of the findings to the rest of the sectors in the economy. The study was further limited to secondary data that was collected on a period of 2010 to 2019 which represented a ten year period. The period was large enough in reference to the 5 firms that were covered so as to give at least 30 data points that would support regression analysis.

Conceptually, the study was limited to board independence and operational performance with firm size and leverage as the control variables. While board independence acted as the independent variable, operational performance was the dependent variable of the study. Board independence was represented by the independent directors as a proportion of the total number of directors in this firm. On the other hand, the natural logarithm of assets in place was used as a proxy of the firm size. The ratio of debts against equity was used to measure leverage.

5.6 Areas for Further Research

In response to the limitations of the study, further studies are recommended covering a relatively larger sample. Such future studies should for instance focus on the entire listed firms in Kenya. This will give room for generation of the findings. Further studies should adopt the use of primary as well as secondary data so as to permit triangulation. Further studies should explore

board independence with other constructs like financial performance or profitability aside from operational performance.

There is need for further studies to incorporate more advanced methodologies during analysis. This calls for adoption of panel data methods which is well suited for time series data. The use of panel data methods will require the use of Hausman test to test and specify on whether to use fixed or random effect models. These models would give more rigor to the analyzed findings as compared to the present use of simple regression analysis.

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APPENDICES

Appendix I: Construction and Allied

1. Athi River Mining
2. Bamburi Cement Ltd
3. Crown Paints Kenya PLC.
4. E. A. Cables Ltd
5. E. A. Portland Cement Ltd

Source: NSE (2020)

Appendix II: Data Collection Sheet

Name of Organization..						
Year	No. of Independent Directors	Total Board Members	Total Assets	Total Debts	Total equity	Operating Expenses
2010						
2011						
2012						
2013						
2014						
2015						
2016						
2017						
2018						
2019						

Appendix III: Raw Data

Year	Operating Performance	Board Independence	Firm Size	Leverage
2010	0.129	0.333	5.213	4.317
2010	0.389	0.400	4.979	3.586
2010	0.157	0.250	5.093	6.045
2010	0.140	0.273	5.093	3.210
2010	0.074	0.333	5.002	6.986
2011	0.118	0.300	5.323	4.833
2011	0.351	0.333	5.086	4.616
2011	0.157	0.333	5.154	6.091
2011	0.139	0.231	5.094	3.595
2011	0.061	0.250	5.088	6.992
2012	0.110	0.250	5.349	4.401
2012	0.351	0.333	5.147	3.323
2012	0.162	0.400	5.210	4.203
2012	0.125	0.444	5.140	3.881
2012	0.054	0.364	5.148	5.544
2013	0.113	0.333	5.375	4.454
2013	0.343	0.300	5.200	4.243
2013	0.176	0.556	5.242	4.749
2013	0.111	0.333	5.179	5.778
2013	0.052	0.364	5.190	4.807

2014	0.106	0.333	5.442	4.759
2014	0.286	0.273	5.307	5.647
2014	0.151	0.333	5.341	4.619
2014	0.092	0.333	5.248	5.357
2014	0.051	0.250	5.209	5.046
2015	0.095	0.333	5.541	6.509
2015	0.267	0.250	5.375	6.154
2015	0.139	0.308	5.426	4.705
2015	0.092	0.333	5.276	5.437
2015	0.048	0.417	5.242	4.726
2016	0.096	0.364	5.587	5.028
2016	0.227	0.333	5.443	6.463
2016	0.146	0.200	5.410	4.392
2016	0.086	0.250	5.298	5.598
2016	0.046	0.333	5.281	4.782
2017	0.095	0.333	5.644	6.203
2017	0.216	0.400	5.475	6.045
2017	0.140	0.444	5.456	4.409
2017	0.081	0.273	5.270	5.548
2017	0.040	0.333	5.329	5.400
2018	0.094	0.250	5.677	5.623
2018	0.197	0.400	5.533	7.165

2018	0.141	0.364	5.482	5.602
2018	0.071	0.385	5.316	6.104
2018	0.034	0.333	5.349	5.136
2019	0.070	0.250	5.889	5.914
2019	0.175	0.333	5.644	6.764
2019	0.131	0.364	5.606	5.343
2019	0.073	0.333	5.528	5.783
2019	0.022	0.500	5.633	6.055