ENTERPRISE RISK MANAGEMENT PRACTICES, INTELLECTUAL CAPITAL AND ORGANIZATIONAL PERFORMANCE OF KENYAN STATE CORPORATIONS

BY

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DECLARATION

Declaration by the Candidate

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DEDICATION

This thesis is dedicated to my parents; Japheth Kakiya and Chester Everia and my siblings; Moses, Florah, Eliza and Annruth for their understanding, support and encouragement during the studies. In addition, this work is dedicated to my employer and colleagues for giving time and opportunity to carry out this study.

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ABSTRACT

Successful economic performance and value creation are considered as the major drivers for an organization in a dynamic business environment. Performance of State Corporations in Kenya is of interest since they play a critical in enhancing economic and national development. Enterprise risks pose threats to the ability of an organization to execute business processes and create value. This research sought to examine the moderating effect of intellectual capital on the relationship between enterprise risk management ERM practices and organizational performance of state corporations in Kenya. The specific objectives of the study were: to determine the influence of risk structure practices on organizational performance of state corporations in Kenya, to establish the influence of risk governance practices on organizational performance of state corporations in Kenya, to examine the influence of risk management process practices on organizational performance of state corporations in Kenya, and to establish the moderating effect of intellectual capital on the relationship between ERM practices and organizational performance of state corporations in Kenya. This study adopted a positivist approach and was guided by agency theory and resource based theories in explaining the different perspectives in which intellectual capital and ERM practices affect organizational performance. The study used explanatory research design. Primary data on ERM practices, intellectual capital and organizational performance was collected using structured questionnaires. A survey was carried out on 218 state corporations in Kenya. Data collected was analyzed by use of descriptive and inferential statistics. The research hypotheses were tested using hierarchical multiple regression analysis. The results revealed that ERM structure practices had a positive and significant effect ($\beta = 0.27$, $p<0.05$) on organizational performance. ERM governance practices were found to positively and significantly ($\beta=0.33$, $p<0.05$) influence organizational performance. In addition, ERM process practices had a positive and significant effect ($\beta=0.21$, $p< 0.05$) on organizational performance. Furthermore, the study found that intellectual capital had an enhancing and significant moderation effect on the relationship between ERM Structure practice ($\beta =.314$, $\rho< .05$, $\Delta R^2=.010$), ERM governance practices ($\beta =.550$, $\rho< .05$, $\Delta R^2=.019$) and ERM process practices performance ($\beta = .419$, $\rho< .05$, $\Delta R^2=.015$) and organizational performance. In conclusion, ERM structure, governance and risk management process practices enhances organizational performance. In addition, intellectual capital enhances the relationship between ERM practices and organizational performance of SCs in Kenya. The study recommends to policy makers that enterprise risk management needs to be considered as a strategic objective in SCs. Therefore, it is necessary to integrate risk management practices across all functions. Further, the study supports agency theory by focusing on ERM as a hedging tool to avoid principal -agency conflict. It also supports, resource based theories by centering intellectual capital as a resource deployed to enhance competitive advantage. Lastly, the study contributes to knowledge on organizational performance by providing the empirical evidence on the moderating effect of intellectual capital on the relationship between ERM practices and organizational performance.

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ABBREVIATIONS

BSC	Balance Score Card
CGD	Centre for Governance & Development
CMA	Capital Market Authority
COSO	Committee of Sponsoring Organizations of Treadway Commission
CRO	Chief Risk Officer
DCT	Dynamic Capabilities Theory
DEA	Data envelopment analysis
ERM	Enterprise Risk Management
GDP	Gross Domestic Product
IC	Intellectual Capital
IFC	International Finance Corporation
KCB	Kenya Commercial Bank
KIPPRA	Kenya Institute for Public Policy Research and Analysis
KNBS	Kenya National Bureau Statistics
RBT	Resource Based Theory
ROA	Return on Assets
ROE	Return on Equity
S&P	Standard and Poor Risk Management rating
SBSC	Sustainable Balance Score Card
SC	State Corporations
SCAC	State Corporations Advisory Committee
SMEs	Small and Medium Enterprises
TBL	Triple Bottom Line
TRM	Traditional Risk Management

USA	United States of America
VAIC	Value Added Intellectual Coefficient
VaR	Value at Risk

OPERATIONAL DEFINITION OF TERMS

Enterprise risk management is defined as an end to end approach that covers all aspects of the organization in identification and management of risks as well as exploiting opportunities, in line with the organization's business objectives and overall risk appetite (Cahallan & Soileau, 2017).

ERM governance practices is defined as activities that results to accountability, participation and transparency in establishment of policies and structures so as to make and implement risk-related decisions by the board and management of an organization (IFC, 2015). Risk governance practices were assessed by an organization having an integrated ERM strategy, demonstration of accountability, enhanced compliance mechanisms and risk reduction measures.

ERM risk management process – are actions that enables the organization to integrate business strategies to achieve the desired objectives through risk identification, risk analysis, risk evaluation, risk treatment and risk monitoring (ISO 31000:2009).

ERM structure practices are defined as the existence of an organizational structure, reporting relationships and authorities concerned with ERM, including policies and procedures documents. The study assessed ERM

	structure practices in terms of outlined objectives, culture, key risk indicators and key performance indicators (Lai & Shad, 2015).
Intellectual Capital	refers to the possession of knowledge, applied experience, organizational technology, customer relationships and professional skills that provide an organization with a competitive edge in the market (Bontis & Cabrita, 2008). This study assessed intellectual capital in terms of human, structural and relational capital.
Organizational Performance	refers to the actual production or results of an entity measured against its intended output for objectives and target (Ongeti, 2014). This study will measure organizational performance using both financial (capital profitability, operational and financial efficiency) and non-financial (stakeholder satisfaction) measures of performance.
State Corporation	State Corporations Act (2012) Chapter 446 of the laws of Kenya defines a state corporation as a government owned entity formed to provide strategic and essential services to Kenyans. It can be fully or partially government owned or a controlled entity.

Value creation is when a business earns revenue (or a return on capital) that exceeds expenses or the cost of capital (Bertinetti, Cavezzali & Gardenal, 2015).

CHAPTER ONE

INTRODUCTION

1.0 Overview

This chapter provides a background to the study and the research gap which the researcher seeks to address in the problem statement. Further, the chapter contains specific research objectives, the hypotheses that were tested, the significance and scope of the study.

1.1 Background of the Study

Organizational performance is of interest to all entities including public, private, profit and not for profit. It involves the actual production or results of an entity measured against its intended output for objectives and target (Ongeti, 2014). Mkalama, (2014) opines that the key reason for variation in performance is the indicators used to measure organizational performance. These indicators vary and largely depend on the core business of the organization and rationale for its existence. Thus organizations measure performance dissimilarly depending on the different sectors of the economy thus resulting to variations in performance.

Another explanation could be the manner in which organizations configure and apply their internal resources and capabilities (Wernerfelt, 1984; Penrose, 1959) and how well they can create a fit within existing business environment. Further, the measurement of how well enterprises are accomplishing their mandates has become a key element in modern public sector governance (Verbeeten & Boons, 2009). Therefore, in order for organizations to properly measure their performance, there is need to redesign their measurement systems to ensure that they reflect their current environment and strategies.

Traditionally, organizational performance was measured using financial indicators. These indicators include; return on assets, return on investment, earnings per share, market share, revenue growth and current ratio (March & Sutton, 2007). However, the use of financial indicators for performance measurements has been criticized for encouraging short run and local optimization while neglecting the long run improvement of an entity's strategy. In addition, financial measures of performance tend to ignore competitor information (Kaplan, 2010). Besides, intellectual capital comprises all non-financial assets which are not reflected in the balance sheet of any entity. The trouble in measuring and reporting intellectual capital hails from the accounting standards based on traditional accounting practices. International accounting of standard (IASB, 2004), on intangible assets, discloses that it is not easy to specify and measure elements of intellectual capital in entities through practices of traditional accounting that leaves a gap between the firm's book and market values (Rahman, 2012). This study will measure organizational performance using both financial and non-financial indicators; capital profitability, operational and financial efficiency and stakeholder satisfaction.

Scholarly works in finance and accounting over the years have shown that organizational success rarely depends on a single factor. Organizations run in a dynamic and competitive environment, therefore managers have to develop strategies that give their organizations an advantage above their competitors. Consequently, Enterprise Risk Management Practices is one of the key variables that has been used to explain performance. ERM supports value creation mechanisms by assisting management to assess future events, and take action in a manner that reduces the likelihood of outcomes leading to performance erosion (Hoyt & Liebenberg, 2011).

Consequently, ERM practices are likely to promote greater accountability, responsibility, and ownership of internal controls within the organization.

A comprehensive program for managing business risks provides an important foundation for sustaining competitive advantage (Economist Intelligence Unit, 2007). In reaction, many entities firmly believe that risk management is of most importance to business enterprises (Mikes, 2005). Firms engage in some levels of risk while carrying out their business operations with an aim of improving their performance in a dynamic and competitive environment. This view is supported by (Waweru & Kisaka, 2013) who asserts that in business, there is no way of avoiding risk without giving up the opportunity to gain profits.

Yazid, Hussin and Duad, (2011) posit that organizations have changed the manner in which they look at risk management; from a silo-based point of view which focused on individual business units to a holistic view being referred to as enterprise risk management (ERM). ERM is an approach used to appraise and manage all complex risks despite of their sources and nature while protecting an organization from possible dangers or crisis. This view is in agreement with Golshan & Rasid, (2012) who opines that ERM has gained prominence in literature in providing insights of how it enhances firm performance, and thus resulting to maximization of shareholders value, (Pagach & Warr, 2007; Committee of Sponsoring Organizations of the Treadway Commission (COSO), 2004; Gordon, Loeb, & Tseng, 2009).

According to Hoyt and Liebenberg (2011) , ERM constitutes part of the overall business strategy and is intended to contribute in protecting and enhancing organizational performance. Ching and Colombo (2014) states that the need for ERM is as a result of external forces such as economic turmoil, political disruptions and

natural disasters, all combined with progressing globalization and rapid technology advancement, creating a new era of risk for businesses that affects firms' performance. The main thrust of ERM practices according to Obalola, Thomas & Olfuemi, (2014) is grounded on three aspects namely; strategy, process and culture. The authors opine that strategy sees ERM as a discipline by which an organization accesses control, exploit finances and monitors risks for the reason of creating value. Further, process involves various strata of an organization as defined by COSO 2004. Lastly, is the cultural approach which guides an organization to take opportunities and reduce uncertainty.

Bozkus (2014) posit that, while various companies have been engaging in some phases of ERM, studies show that only a few have a well-developed ERM infrastructure. The study aimed at giving recommendations on best practices to be applied when implementing a successful ERM framework based on practical issues and technical approaches within the business environment. The author classifies best practices into three components; ERM structure, process and compliance. On the other hand, Ching and Colombo (2014) classifies ERM practices into three dimensions, internal environment, risk assessment and ERM process. Lastly, Shad and Lai, (2015) opines that ERM implementation model comprises three dimensions: Structure, Governance and Process. These dimensions are expected to be associated to organizational performance. This study adopted ERM practices presented by (Shad & Lai, 2015) . The same practices were used by (Lai & Azizan, 2010).

First, an effectual ERM model should have a structure that enables management to comprehend and communicate the risk factors. A good risk management program in an organization is very essential in handling operational challenges (Beasley, Clune &

Hermson, 2005). ERM structure practices within organizations facilitate identification of uncertainties through a structure that aggregates the risk management events in a holistic framework (Hoyt & Liebenber, 2011). ERM structure establishes the policies, processes, competencies, reporting, technology, and a set of standards for risk management. Pagach and Warr, (2010) opines that assessment of organization's ERM structures enables firms to address all of their risks, set common terminologies and expectations. That is, which risk the entity can take and which to avoid.

Secondly, in view of risk governance practices, one of the core mandates of boards is risk oversight. Good boards hold all their members responsible for risk oversight. They interact directly with management on risk matters; ensure the ERM organizational model is optimized for each risk by reporting, evaluating and deciding the appropriate risk response. COSO, (2004) refers ERM as a top-down approach. Therefore, it is pre-requisite for board members and senior management to buy-in risk governance practices for meaningful ERM implementation and success. The author further states that, without support from the top-level, efforts made to identify, measure and control risks will fail to link up with business decision making, resulting to minimal impact on strategic planning and organizational performance. Consequently, risk governance practices ensure that an organization has developed procedures and internal controls which are essential in order to avoid loss, maintain security and enhance profitability. It also includes an infrastructure that enables everybody to improve transparency and know their responsibility (Lai, Azizan & Samad, 2010). In other words, it supports internal flow of information which is necessary for making relevant and timely decisions. Further, it allows the organization to flourish and survive in the market.

Lastly, ERM process enables the organization to integrate business strategies so as to achieve the desired objectives. Risk management process practices assists firms to identify risks, accept or avoid them and then successfully quantify and measure the identified risk. ERM frameworks and standards provide different approaches to identifying, analyzing, responding, and monitoring internal and external threats to an organization. Management of risk is important and can be made possible through ERM frameworks. A variety of global regulatory frameworks have contributed to the development and improvement of ERM processes (Risk Management Society, 2011).

ERM process comprises several practices depending on the type of framework adopted by an organization. Yazid, Hussin and Duad, (2011) asserts that there are a number of ERM frameworks presently being used which include: The Combined Code and Turnbull Guidance, King II Report and a Risk Management Standard by the Federation of European Risk Management (FERMA). Additionally, there exists Australia/New Zealand Standard 4360-Risk Management, COSO's ERM-Integrated Framework and the Institute of Management Accountants' (IMA) frameworks. Finally, organizations have used "A Global Perspective on Assessing Internal Control over ``Financing Reporting" (ICoFR), Basel II, the Standard and Poor's, International Organization for Standardization ISO 31000:2009 and ERM framework.

This study adopted ERM process practices as guided by ISO 31000:2009 which comprise of 5 steps namely: risk identification, risk analysis, risk assessment, risk mitigation and risk monitoring. The process aspect of ERM provides the way for aligning the risk management strategies with corporate strategic planning. Risk management process facilitates decision making and selection of alternative responses, which assists in reduction of enterprise operational losses and errors,

identification and exploitation of opportunities and enhancing allocation of capital (Demidenko & McNutt, 2010). The application of ERM process may not function identically in every entity depending on the framework adopted.

Survival of organizations in a dynamic environment can be ascribed to their use of intellectual assets. Intellectual capital (IC) is the group of knowledge assets that are ascribed to an organization and most expressively contribute to an improved competitive position of the organization by adding value to defined key stakeholders (Marr & Schiuma, 2001). Hussinki *et. al*, (2016) expands this definition and states that IC focuses on all the intangible resources that a firm can use to achieve competitive advantage. In addition, IC comprise of three aspects: human capital which refers to an organization's employees and their knowledge, capabilities, education, skills and characteristics; secondly, structural/organizational capital which refers to IC that are owned and remains in the organization even when people leave work; and lastly, relational/social capital is the value embedded in and derived from relationships with customers, suppliers, partners, institutions, and other comparable stakeholders. According to Khan and Ali, (2017) valuable intellectual assets in an organization may resolve issues relating to risk management in respect to risk policy, oversight of internal controls, accountability, board strategy and monitoring of management functions. Consequently, organizations with higher IC are likely to withstand effects of unanticipated changes in the market. Studies by (Melani & Kusuma, 2020; Khan &Ali, 2018; Nemimo, 2018) have used intellectual capital as a moderating variable for explaining the relationship between different predictor variables and organizational performance. Therefore, this study adopted intellectual capital as a moderating variable.

Studies by Kamukama, Ahiauzi & Ntayi, (2011) show that organizations have assets which boosts their competitive advantage and performance. Porter (1999) opines that the crucial requirement for an organization's success in a competitive environment is to employ resources that are unique and specific to the firm. Further, Hitt *et al*. (2001) argued that intellectual capital resources are more likely than tangible resources to breed competitive advantage, which translates into superior performance. Consequently, organizations with higher intellectual capital are likely to withstand the effects of unanticipated changes in markets. In addition, (Sofian *et al.,* 2014) opines that such organizations can effectively anticipate their risk exposure and handle them in a better way. Therefore, this study investigated the moderating role of intellectual capital on the relationship between ERM and organizational performance.

State corporations in Kenya are institutions fully or partially owned by the government, as a majority shareholder, to meet both social and commercial needs while some exist to correct for market failures according to sessional paper no. 10 of 1965. These entities are crucial for promoting and accelerating national growth and development through creation of employment opportunities as well as social economic transformation (Kenya National Bureau of Statitics, 2015). Further, Kenya Vision 2030 aims at achieving an average Gross Domestic Product (GDP) growth rate of ten (10) per cent per annum.

The performance of SCs has been worrying over decades. The Centre for Governance & Development (CGD), (2010) did a review of audited accounts of state corporations from 1993 to 2002 and found that the extent of government contribution to the economy through state corporations matched by performance is not equal to expectations and volumes of investments made in these ventures. The review further

opines that though state corporations sector share of Gross Domestic Product (GDP) was 11% between 1986 and 1990; many SCs were net consumers of exchequer and that the Government of Kenya has had to recurrently bail out SCs which were making losses. KNBS, (2015) economic survey report indicated that firms in the private sector were reporting successes while state corporations were reporting failures, missed opportunities and a few successes in the history of Kenya.

The Government through Treasury Circular number 3/2009 directed all chief executives of state corporations to develop and implement institutional risk management policy framework as a strategic measure for managing risk in order to remain competitive and therefore enhance performance within the changing external environment. The adoption of risk management strategies in state-owned corporations in Kenya, was aimed at incorporating and aligning SCs performance to Vision 2030. However, this has so far not achieved the required traction (Republic of Kenya, 2013)

SCs operate in various sectors and they are expected to manage risk within the changing external environment. According to Republic of Kenya (2013) on performance of SCs, GDP in nominal terms increased from 9.54% in 2008/2009 to 11.64% in 2010/2011, based on internally generated income. The report further states that, the pattern of stock of publicly guaranteed debt to SCs declined in 2007 from 2006. However, there has been an upward trend since then, due to infrastructural development. Lastly, 95.6% of the accruing government guaranteed debt in 2011/12 has been linked to two SCs, pointing a significant default in payments. This led to a number of corporations closing or being placed under receiverships. This implies that SCs adopted ERM practices either as proactive (strategic) or reactive (compliance with regulations) measures. This study assessed the influence of ERM practices

employed by SCs on organizational performance because SCs are of great interest to the government, general public and other stakeholders.

1.2 Statement of the Problem

Performance of SCs has been worrying over a period with the global reporting of high profile corporate failure (Enron, Worldcom), Global Financial Crisis (2008) and the reporting of corporate scandals within organizations in Kenya. Consolidated financial statements for all SCs for the period ending 30th June 2016 prepared by National Treasury indicate that there was a decline in surplus by fifty-nine per cent (59%) from an aggregate of Kshs 246 million reported in 2014/15 to Kshs 100 million in 2015/2016. An annex to the consolidated financial statement shows that forty-three per cent (43%) of the all the SCs reported losses in 2015/16. The poor performance has even extended to some major state corporations engaged in profit making activities. For instance, Kenyatta National Hospital, the oldest and largest public hospital in Kenya reported a deficit of Kshs 681 million.

In the Ministry of Agriculture, all the four sugar companies reported significant losses including Muhoroni Sugar Company Ltd which has been placed under receivership for poor performance reported a deficit of Kshs 257 million. Other SCs with huge losses include Kenya Agricultural and Livestock Research organization with a loss of Kshs 696 million, National Bank of Kenya – Kshs 1.17 billion, Kenya Post Office and Savings Bank- Kshs 1.2 billion while Postal Corporation of Kenya had a shortfall of Kshs 837 million just to mention but few, even as Treasury paints a gloomy outlook in the future. Performance of SCs is critical role in enabling the government achieves her constitutional obligation of bringing about social economic development in the country by the provision of efficient services to the citizens (CGD, 2010).

There have been great discussions on the causes of variations in performance of organizations. Ombaka *et al.*,(2015) posit that explaining why firms in the same industry and markets differ in their performance remains a fundamental question within management circles. ERM has partly been used to explain performance differences among organizations. However, studies done on ERM and organizational performance have focused on different study variables such as determinants of ERM adoption, characteristics of firms that adopt ERM, in addition to identifying ERM practices within an organization.

Secondly, there is no consensus on the benefits of ERM initiatives. Cormican, (2014) argues that organization engage in ERM either for compliance with regulations or performance grounds. Studies by (Hoyt & Liebenberg,2011; Smithson & Simkins, 2005) found that ERM has a positive impact on performance. Contrary, McShane, Nair & Rustambekov, (2011) indicated that ERM frequently fails to realize the intended benefits. Therefore, there is a gap in determining whether the cost of investing in ERM would pay off at the end. Further, performance in the various studies has been measured using several financial indicators; standard & poor rating (McShane, Nair & Rustambekov, 2011), excessive stock returns (Gordon et al., 2009), Tobin's Q (Waweru & Kisaka, 2013), cost and revenue efficiency, (Grace, Leverty, Phillips, & Shimpi, 2010), ERM indices (Beasley, Clune and Hermson, 2005) and other key financial variables like earnings and stock price volatility, financial leverage and ROA. This study explored the use of both financial and non-financial measures of organizational performance rather than financial indicators only.

Additionally, effective management of intellectual capital alongside physical capital has been considered to be essential in providing an organization with sustainable

competitive advantage thus creation of value. More so, organizations with higher intellectual capital are more likely to endure effects of unforeseen changes within the market (Sofian *et al.,* 2014). Therefore, disentangling the influence of intellectual capital on organizational performance is of importance to SCs because they rely on intangible resources and capabilities to a great extent.

Lastly, research posit that despite ERM being a concept accepted worldwide, it is always implemented and interpreted in local ways (Tekathen & Dechow, 2013). There is a gap believed to be in the wider social, institutional and organizational context in which ERM operates, rather than just focusing on the technical aspects of risk management (Soin & Collier, 2013). That is, examining the operations of ERM within the actual organization settings. The context of SCs in Kenya is of interest because they were established to provide essential services as well as improve service delivery to the public and enhance efficiency. Therefore, their performance is of keen interest to government, general public and other stakeholders. In addition, Bhimani, (2009) posits that risk management is ultimately a social construct shaped by the contexts they inhabit.

Further, there are limited studies done on ERM practices and organizational performance of SCs. Therefore, this study sought to join this debate by investigating the moderating role of intellectual capital on the influence of ERM practices relating to structure, governance and risk management process on organizational performance.

1.3 Research Objective

1.3.1 General Objective

The general objective of the study was to examine the influence of enterprise risk management practices on organizational performance; the moderating role of intellectual capital in Kenyan state corporations.

1.3.2 Specific Objectives

The specific objectives of the study were:

i. To determine the influence of enterprise risk structure practices on organizational performance of state corporations in Kenya

ii. To establish the influence of enterprise risk governance practices on organizational performance of state corporations in Kenya

iii. To examine the influence of enterprise risk management process practices on organizational performance of state corporations in Kenya

iv. a) To evaluate the moderating effect of intellectual capital on the relationship between enterprise risk structure practices and organizational performance of state corporations in Kenya.

b) To determine the moderating effect of intellectual capital on the relationship between enterprise risk governance practices and organizational performance of state corporations in Kenya.

c) To examine the moderating effect of intellectual capital on the relationship between enterprise risk management process practices and organizational performance of state corporations in Kenya.

1.4 Research Hypotheses

This research was guided by the following hypotheses: -

H_{01}: There is no significant influence between enterprise risk structure practices and organizational performance of state corporations in Kenya

H_{02}: There is no significant influence between enterprise risk governance practices and organizational performance of state corporations in Kenya

H_{03}: There is no significant influence between enterprise risk management process practices and organizational performance of state corporations in Kenya

H_{04a}: There is no significant moderating effect of intellectual capital on the relationship between enterprise risk structure practices and organizational performance of state corporations in Kenya

H_{04b}: There is no significant moderating effect of intellectual capital on the relationship between enterprise risk governance practices and organizational performance of state corporations in Kenya

H_{04c}: There is no significant moderating effect of intellectual capital on the relationship between enterprise risk management process practices and organizational performance of state corporations in Kenya

1.5 Significance of the Study

This study contributed to theory, policy and managerial practice. First, the study contributes to the existing body of knowledge on ERM by providing a better understanding of the moderating effect of intellectual capital on the relationship

between ERM practices and organizational performance. Thereafter, the results of this study forms a basis for further empirical studies.

In addition, the study contributes to policy relating to administration of SCs. Information from this study will help policy makers in understanding ERM practices on structure, governance and risk management process that are applicable to SCs and those that can be applied to other categories of government owned entities; Devolved function and Agencies. Further, this study provides guidance to the government and other policy makers in making clear policies regarding intellectual capital and relevant ERM practices required for improved performance.

Management practice in organizations especially SCs will benefit from this study. Managers can make use of the study to make informed decisions on ERM practices to be adopted and thus safeguard their interests as well as those of their stakeholders. Also, the study enlightens firms, market participants and academicians on how ERM practices affect organizational performance.

1.6 Scope and Delimitation of the Study

In undertaking this study, the focus was to examine the moderating effect of intellectual capital on the relationship between ERM practices and organizational performance of SCs in Kenya. Secondary data on objective measures of organizational performance (financial indicators) of SCs was collected for a period of five years (2015-2019). The study also collected primary data on ERM practices, intellectual capital and organizational performance by use of a structured questionnaire. ERM Practices were studied based on structure, governance and process dimensions. This is similar to studies done by (Shad & Lai, 2015). Organizational Performance was measured using both objective and subjective

measures of financial indicators (capital profitability, solvency and liquidity levels). Non-financial indicators of organizational performance were measured by stakeholder satisfaction. This is similar to studies done by (Marqués & Simón, 2006: Calandro & Lane, 2006). Lastly, Intellectual capital was measured based on human, structural and relational capital. This is similar to studies done by (Bontis & Cabrita, 2008: Bontis *et al.,* 2008). Data on the three variables was collected from two hundred and eighteen (218) SCs spread across eighteen (18) government ministries (Republic of Kenya, 2017). The list of all the SCs is attached as Appendix I. Data for the study was collected during the months of May to July 2019.

The empirical investigations for this study did not focus on organizations in the private sector, different regions and countries. Therefore, generalizations of the findings may be limited to government owned entities such as Ministries, Semi-Autonomous Government Agencies and Public Funds in Kenya. Secondly, subjective measures of ERM practices, intellectual capital and organizational performance have been used to conduct the analysis. Consequently, book and market values for ERM and intellectual were not taken into consideration.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter presents conceptual theoretical, and empirical literature along the key constructs (organizational performance, ERM practices and intellectual capital). First, the study constructs are discussed individually, followed the theoretical foundations of the study. The next section presents by pair wise review of empirical literature along the hypothesized relationships and a summary of selected empirical studies on the study variables identifying specific knowledge gaps. Lastly, the chapter presents the conceptual framework used to address the knowledge gaps.

2.1 Organizational Performance

Studies by March and Sutton, (2007) put forward that most studies of organizational performance have defined performance as a dependent variable and seek to identify variables that explain differences in performance. According to Mkalama, (2014) academic scholars and practitioners have for a number of years attempted to learn why some organizations achieve high levels of performance than others within the same industry. This is similar to (Porter, 1991: Ombaka, Machuki and Mahasi, (2015) who opine that organizational performance has been fundamental in research for decades and the central precept has been why entities differ in performance.

Further, performance can be considered at a disaggregated level or the efficiency in performing a particular task. According to Hofer, (2003) performance is a contextual concept linked to the occurrence being studied. Organizational performance has diverse definitions according to Barney, (2002). Organizational performance involves the actual production or results of an entity measured against its intended output for

objectives and target (Ongeti, 2014). This encompasses three specific areas of firm outcomes; financial performance (profit, ROA, ROI), product market performance (sales, market share) and shareholders' returns (total shareholder returns, economic value added). Similarly, Daft, (2010) defined organizational performance as the ability of an entity to attain its goals using available resources in an efficient and effective way. (McCann, 2004: Ombaka *et al*., 2015) views organizational performance as the efficiency and effectiveness of the firm.

Performance measurement indicators differ and mostly depend on the organizations mandate and principles for its existence. Thus, organizations in different economic sectors measure performance differently resulting to organizational performance differences. The measurement of how successful organizations are in achieving their mandates has become a key element in modern public sector governance (Verbteen & Boons, 2009). The relevance of performance indicators to the organization and being able to relate findings of a study to past empirical works, in addition to the whole organization are key factors to be considered while deciding performance measurements.

Kotane and Kuzmina-merlino, (2012), cited that organizational performance can be appraised by financial indicators such as; sales growth, profits, returns on investment, organization effectiveness, and business performance. Besides, Delaney and Huselid, (2006) posit that organizations that focus on satisfying customers, quality service and products, market performance and service innovations can appraise their organizational performance by evaluating return on investment, sales margin, capacity utilization, customer satisfaction and product quality. On the other hand, Ho, (2008)

indicated that performance can be evaluated by efficiency and effectiveness of aim attainment.

Financial performance can be measured by assessing an entity's profitability, financial solvency and liquidity. The profitability component looks at the level to which an organization generates profit from its factors of production. Financial performance can be measured by examining the revenues vis a vis expenses and making comparisons between the level of profits relative to the size of investment in an organization using profitability ratios such as return on assets or return on equity. Financial solvency, focuses on the ability of an organization to pay its long term debts and have cash to pay for future needs. It demonstrates an organization ability to continue with its operations into the foreseeable future. There are three main ratios used to measure solvency: the solvency ratio, the net worth ratio, and the leverage ratio. The solvency ratio divides total liabilities by total assets and determines the amount of debt per Kshs of assets. The net worth ratio, which is the ratio of total equity to total asset uses the owner's equity in the business to indicate future solvency owned and the leverage ratio compares debts to equity.

Lastly, liquidity measures the ease with which an organization can meet its financial obligations with the liquid assets available to it. That is, the ability to pay off debts as they come due. Liquidity can be measured using current ratio, acid test ratio or cash ratio. Current ratio measures current assets (those that can reasonably be converted to cash in one year) against current liabilities while acid test ratio excludes inventory from current assets. Lastly, cash ratio focuses strictly on as cash or cash equivalents.

Financial performance is one of the most commonly used indicators of a firm's financial health over a given period. Financial indicators focus on attaining

quantifiable performance objectives such as profits, sales and market growth, and return on assets. These measures of organizational performance have been criticized for encouraging conservatism rather than having an external focus- regard for competitors or customers. In addition, financial indicators rarely present sufficient information in dynamic and highly competitive markets (Kotane & Kuzmina-merlino, 2012). According to Kaplan, (2010) the use of financial indicators only is insufficient, and recommended that organizations should take into account other factors such as competence, knowledge and customer focus. Consequently, for all-inclusive assessments, organizations choose to utilize both financial and non-financial performance measures.

Non-financial indicators have been perceived as better forecasters of an entity's long-run performance. Chow and Van Der Stede, (2006) opine that, as much non-financial performance metrics could have lower dimensions of accuracy, they emphasis on components that directly relate to operations that are within the control of the management. Calandro & Lane, (2006) indicate that firm failures such as Enron reveal situations where quantitative analyses (financial data) either failed to identify increasing risk levels and/or failed to convince executives of the need for drastic risk management changes. Due to the increasing interest in performance of firms by social and environmental activities, aspects of performance measurement such as balanced score card (BSC) (Kaplan, 2010), triple bottom line (TBL) (Elkington, 1997) and the sustainable balanced score card (SBSC) by (Mikes, 2005) are presently being used to measure performance.

Intellectual capital as moderating variable is an intangible asset which cannot be accurately measured. Therefore, Frykman and Tolleryd (2010) states that the

intellectual capital includes all non-financial assets which don't appear in the balance sheet of any entity. Therefore, this study expounded on organizational performance by focusing on both financial and non- financial performance indicators. Marqués & Simón (2006) measured organizational performance by looking at financial apects in terms of capital profitability, growth, operational and financial efficiency while non-financial aspects were measured using stakeholder satisfaction and competitive position.

Nyamita, (2014) posit that the objective of an entity's performance measurement is to promote an effective, efficient, and accountable public sector. It involves setting explicit and measurable pre-set performance targets that guide public servants' efforts towards achievement of their organizations' objectives (Verbeeten & Boons, 2009). According to Hughes, (2013) performance management in the conventional public administration model was insufficient in management of individual and organizational performance. However, the new public management model; performance contracting, requires SCs to develop performance indicators that assist in showing progress of each entity towards achieving its declared objectives. In addition, the public performance management has embraced performance appraisal technique that measures the performance of individual staff, even to the extent of defining the key contributions expected over a period and then compared with the actual achievement at the end of the period.

This study measured performance of SCs using both financial and non-financial measures of performance. The financial aspect focused on profitability, operational and financial efficiency in terms of financial solvency and liquidity. The non-financial aspects looked at stakeholder satisfaction in terms of image of the

organization's customer satisfaction. The same measures of organizational performance have been used in studies done by (Marqués & Simón, 2006; Ping & Muthuveloo, 2017; Calandro & Lane, 2006).

Consequently, performance remains multifaceted in definition, practice and operationalization. Thus, how and what to measure as performance remains a non-resolved issue. The general consensus in literature is that an organization's performance cannot be explained by a single factor. This study advances the argument that performance is influenced by a host of factors, key among them being ERM practices, however, the influence could be affected by intellectual capital.

2.2 Concept of Risk Management

Risk management is categorized into two broad perspectives; traditional risk management and enterprise risk management.

2.2.1 Traditional Risk Management

Traditional Risk Management (TRM) focused more on financial risk management. It is viewed as a special function rather than a part of decision making. According to TRM, risk is managed implicitly or in "silo/stovepipe" approach which means that risks are often managed in isolation (Beasley, Clune and Hermson, 2005). TRM is centered on two risk management activities – Insurance and hedging (Hoyt & Lienberg, 2008). That is, it focuses more on safety and security rather than value creation. This approach has been criticized as being limited in scope and application as noted by (Kleffner, Lee & McGannon, 2003). Particularly, it lacks total integration of the firm's activities because risk exposures are being managed in silos hence the incompleteness of this approach. As a result of these shortcomings, there has been an emergence of an all-encompassing risk management concept called Enterprise Risk

Management (ERM). Consequently, top management in a number of entities recognize that a "silo/stovepipe" approach is no longer an effective way to manage the myriad forms of risks they face (Walker, Shenkir & Barton, 2006).

2.2.2 Enterprise Risk Management

According Kleffner *et al*, (2003) ERM is the management of operational and financial risks concurrently in order to maximize the cost effectiveness of risk management within the constraints of the organization's tolerance for risk. This definition has been criticized, for failing to appreciate that entities are exposed to other risks like strategic and reputational risks. In addition, it fails to identify persons responsible for risk management in organization. Further, the definition fails to show the link between risk management and organization's objectives. COSO (2004) on the other hand defines ERM as "a process, effected by an entity's board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity's objectives".

From the different definitions of ERM, the underlying principles of ERM seem to be an integrated approach to risk management across silos, backed by corporate risk philosophy or strategy with the aim of maximizing organization value. Though the implementation of risk management is gaining prominence globally, according to (Kleffner *et al*, 2003; Hoyt and Liebenberg, 2011; Beasley *et al*, 2005), theoretical views indicate that implementation of ERM do not have any value addition to companies (Pagach & Warr, 2010; McShane *et al*., 2011).

Contrary, profit maximizing firms consider adopting ERM programs with an expectation of increasing shareholders' wealth. Supporters of ERM argue that, incorporating decision making across all risk classes aids companies to avoid replication of risk management expenditure. As a result, firms know the aggregate risk inherent in diverse business activities better. Consequently, firms are provided with a more focused basis of resource allocation which improves capital efficiency and return on equity. Besides that, ERM provides a structure that integrates all risk management activities into one framework that helps to identify potential interdependencies between risks across activities.

2.2.3 Enterprise Risk Structure Practices

Risk structure practices provide the hierarchical framework, which takes into consideration the way in which ERM roles and responsibilities are allocated among persons and groups. It further gives the organizational structure, reporting relationships and authorities concerned with ERM. Lastly, it includes policies and procedures documents that cover ERM. Risk structure of an organization has been regarded as a key factor in the adoption of ERM because it establishes how risk management is organized in the institution (Aksel, 2009; Mehta, 2010). Therefore, ERM structure enables management to understand, communicate the risk factors and handle the challenges in their operations. Thus, it is expected that good working risk structure practices will enhance organizational performance.

2.2.4 Enterprise Risk Governance Practices

Risk governance is the activity executed by the board and management of an organization in controlling risks and designing internal control systems for the identification, measurement and management of risk (Cavezzali & Gardenal, 2015).

Further, the board is responsible for risk governance oversight, while senior management is in charge of policies and procedures implementation. Similarly, Viscelli, Beasley and Hermanson (2016) looks at risk governance as the sound corporate governance mechanism that facilitates board of directors to align corporate objectives with risk management in order to satisfy all stakeholders. IFC, (2015) defines risk governance as the principles of good governance applied to the identification, management and communication of risk. It includes values of accountability, participation and transparency in establishment of policies and structures so as to make and implement risk-related decisions. Similarly, Shad and Lai, (2015) opines that risk governance principles are: transparency, responsibility, fairness and accountability.

Organization can benefit from ERM if the board and senior management show commitment to risk governance responsibilities, which sequentially influence the organization's risk culture. As much as all employees have a role to play in risk management, the oversight role and establishment of a risk framework for good governance lies squarely with the board. A sound risk governance framework upholds clarity and understanding of the organizations risk appetite and means of executing assigned responsibilities by individuals. Therefore, International Finance Corporation, (2015) posit that effective risk governance is essential in embedding the right risk culture because it clarifies the roles and responsibilities of each person. Althonayan, Killackey and Keith, (2012) posit that risk culture refers to values, norms and behaviors shared by all members of an organization, which influence how they act towards the enterprise risks.

2.2.5 Enterprise Risk Management Process Practices

Yazid *et al.,* (2011) asserts that ERM process practices among organizations are guided by different ERM frameworks. According to Obalola, Thomas and Olfuemi, (2014) the ERM frameworks are different in name; applied to different industries and regions. Further, they front diverse approaches with some leaning towards financial reporting and internal control, others management, corporate governance and accountability. However, he alludes to the fact that all frameworks share a common theme: the identification, prioritization and quantification of risks in order to help corporations effectively manage their risk exposure. ISO 31000's states risk management is an integral part of organizational processes to create value.

This study used the ERM process practices described by ISO 31000:2009. This is because principles and guidelines of ISO 31000:2009 have been considered to be precise, clear and flexible in assisting organizations to manage their risk (Risk Management Society, 2011). In addition, they are not specific to any one industry, type or size of organization. Thus, ISO 31000:2009 practices are appropriate and applicable to all SCs. The risk management process (ISO 31000, 2009) consists of the risk identification, risk evaluation, risk analysis, risk treatment and risk monitoring. Practices under risk management process enable the organization to integrate business strategies to achieve the desired objectives.

2.3 Intellectual Capital

IC focuses on the use of all the intangible resources by an organization to achieve competitive advantage. The intellectual capital has three dimensions depending on the perspective through which it is viewed. These dimensions are: human capital which focuses on human resources; structural capital which relies the on organization and;

lastly, relational capital which aims at coordinating the relations between an organization and its surrounding environment (Hamdan, 2018). IC can be considered as a lever for creating improved performance and value addition in organizations (Marr *et al.,* 2004).

Human Capital is a dominant component of IC, which signifies what each employee brings into the value adding processes and includes professional competence, social competence, employee motivation, and leadership ability (Halim, 2010). This view is supported by Bontis (2002) who opines that human capital characterizes the human factor in the organization. That is; combined intelligence, skills and expertise that employees take with them when they leave an organization. As much as employees are seen as the most valuable corporate assets, departure of an employee can result to loss of institutional memory, which becomes a threat to an organization, Another, school of thought argues that the departure of some employees may be good since it forces an organization to consider new perspectives. Therefore, human capital is an essential source of innovation and strategic renewal (Bontis, 1999).

Structural capital comprises of all non-human stock of knowledge owned by an organization which includes process manuals, strategies, routines, databases and organizational charts. Halim (2010) describes structural capital as "what remains in the organization when employees go home". If an organization has poor systems and processes for tracking its actions, then the overall IC will not reach its full potential. An organization with strong structural capital supports a culture that allows individuals to try new things, learn and even fail (Bontis *et al*., 2001). Structural capital is an important link that allows IC to be measured at the organizational level. Lastly, relational capital focuses on developing, maintaining and nurturing high -

quality relationships with any organization, individuals or group that influences or impacts your business (Welbourne, 2008). Studies by Bontis and Mention (2013), indicate that the three intellectual capital elements are interrelated and operate in interactive or collaborative way to form a strong intellectual capital base which creates or influences the organization's performance.

IC has been measured using several methods such as market value/ book value ratio and methods calculating intangible assets value. The market value/ book value ratio focuses on the difference between the book value of a firm and its market value (Stewart, 2002). This method assumes that the market price of shares reflects the real value of a company and accidental factors have no impact on it. This measure has been criticized for under/over estimation of a firm's value. Secondly, Tobin's Q ratio has also been use d to measure IC where Q is equal to the market value of a business divided by the cost of business renewal assets. The ratio must be greater than 1, however, when the ratio is smaller than 1, it implies that business has not given a value to intellectual capital. This method has been criticized for focusing on financial figures only (Hamdan, 2018).

Further, IC has been measured by use of Value Added Intellectual Coefficient (VAIC). This model measures the amount and efficiency of intellectual capital, and the value created due to the use of capital based on three main components of IC. The added value is compared to the involved physical capital identified with the net accounting value of assets. The index of physical capital is calculated by dividing the added value by net assets. Lastly, scorecard method is based on the identification of different elements of intangible assets or the intellectual capital and acquired indicators and measures regarding the scorecards. This method measures an

organization's performance through indicators covering four major focus perspectives: (1) financial perspective; (2) customer perspective; (3) internal process perspective; and (4) learning perspective. This measurement framework postulates that financial vision is the same as financial capital, the customer vision is the same as customer capital, internal processes vision is the same as structural capital and growth and learning vision is the same as human capital. Bontis, *et al*., (2000) opines that the scorecard measurement has powerful logic; clear correlation between IC indicators and financial performance as well as consistency with literature.

2.4 Theoretical Perspectives

Firms continue to operate in a dynamic environment with an aim of improving their performance. In a business environment, firms are exposed to risks for which they have to incur opportunity costs in order to obtain profits and remain sustainable. Therefore, for firms to remain competitive, they must learn how to manage risk intelligently. Theories such as agency theory, stewardship theory, rational choice theory, modern portfolio theory and contingency theory attempt to explain different perspectives held by managers and stakeholders on how ERM practices affects organizational performance.

This study focused on Agency Theory, Resource Based Theory, and Dynamic Capabilities Theory to provide an all-encompassing explanation to ERM practices, intellectual capital and their influence on organizational performance.

2.4.1 Agency Theory

Jensen and Meckling (1976) argued that firms can be regarded as a nexus for a set of contracting relationships among individuals, whereas classical economics regard firms as single-product entities with the purpose of maximizing profit. Learmount

(2004) suggested that firms can be explained as contracts that are repeatedly negotiated by different individuals wishing to maximize their own profit. Agency relationship is a kind of contract between the principal (shareholders) and agent (managers), where both parties work for their self-interest leading to agency conflict. This theory generally assume that the principals are risk-neutral while the agents are risk averse. The principal invests capital and takes the risk to acquire the economic benefits, whereas the agents, who manage the firm are risk averse and concerned with maximizing their private benefits. Both the principal and agent have opposite risk preferences and their problem in risk-sharing creates the agency conflict. Jensen and Meckling (1976) portrayed the firm as a black box, which operates to maximize its value and profitability. The maximization of the wealth can be achieved through a proper coordination and teamwork among the parties involved in the firm.

Since the interests of the parties differs, conflict of interest emerges, and can only be relegated through managerial ownership and control. Agency theory supports hedging as a remedy to the growing gap between management rewards and shareholder desires. Based on risk management theories and agency theory, the application of hedging tools to alleviate exposures are essential in enhancing shareholder worth. ERM tools have been considered to give security upon prevailing risks that will probably show up in future upon resources invested by the principal persons. The existence of ERM implies that an agent has guidance to the implementation of impending company's tasks. Hence, advancement of ERM may impact on the enhancement of an organization's financial performance (Muslih, 2018). ERM is recommended as an arrangement adopted by the entity’s Board of Directors to address issues, which rotate around agency and information asymmetries inside the firm. Because of these imperfections, a firm may participate in formal risk management

even when external frictions are not present, or fail to utilize risk management when external frictions are imminent. Consequently, this theory supplements the conventional corporate risk management theory, which emphases on removing the outcomes of frictions that are present outside the entity for example taxes, or contracting issues between the entity and other market participants (Froot, Scharfstein, & Stein, 1993; Smith & Stulz, 1985).

Klimczak, (2007) indicates that as a result of the agency conflict, defining the risk management and hedging policies can have important influence on organizational performance. COSO (2004) asserts that strategic initiative of adopting ERM is intended to increase efficiency and effectiveness in SCs and therefore improve the organizational performance. This view is supported by Nocco and Stulz, (2006) who posit that ERM is value adding to firms by enabling objective resource allocation as a result of risk-return tradeoff assessments, as well as by mitigating financial risks and exploiting business risks which in turn leads to gaining and/or maintaining competitive advantage. Therefore, agency theory explains the relationship between enterprise risk management practices and organizational performance. However, agency theory does not address how internal resources owned by an organization can be applied to enhance performance and therefore, there was need to apply resource based theory in this study.

2.4.2 Resource Based Theory

The Resource Based theory (RBT) proposes that resources owned by the firm positively influence its performance (Barney, 2002). RBT considers internal resources and capabilities that an organization owns and evaluates the value potential of those resources in creating its worth. This aids the organization in defining its strategy so as

to attain value maximization in a sustainable way. Therefore, RBT supposes that resources and capabilities are fundamental for superior performance. It assumes that there is a heterogeneity of resource endowments between organizations and explains the (sustained) competitive advantage of an organization through the possession of resources with certain characteristics. An organization should possess resources that are valuable (V), rare (R), inimitable (I) and non-substitutable (N) so as to achieve a sustainable competitive advantage. Grant (1991) opines that resources can be tangible or intangible assets that are important inputs in production and delivery of products and services. This study sought to apply the VRIN criteria as the basic pillars of holistic ERM. This is because ERM seeks to manage all risks in harmony within a coordinated and strategic framework rather than to manage risks independently (Nocco & Stulz, 2006).

Studies by Bromiley & Rau (2016) indicate that resources cannot be productive by themselves. Therefore, managers should be able to deploy those resources in an effective and efficient manner. Further, an organization's strategy should be synchronized to its environment of business operation. As defined by COSO (2004), ERM is part of an organization's strategy for enhancing performance. Thus, for an entity to achieve competitive advantage over others, its managers need to identify ERM practices that are critical for the firm and explore them into full capacity.RBT uses a strategic choice such as ERM to enable the organization identify, develop and deploy key resources so as to maximize its returns (Fahy, 2000).

In addition, organizations invest in processes and routines underlying their dynamic capabilities so as to manage risks. The resource-based view provides a framework that helps to set priorities in risk management. Due to environmental complexity,

organizations are subjected to an unlimited amount of potential risks (Bromiley & Rau, 2016, Burisch & Wohlgemuth, 2016; Luhmann, 1995). Management may not handle all of them once and need to identify and focus on potential threats with the greatest impact on the firm. Applying the resource-based view clarifies which risks the firm should focus on. Resource based theory focus on the predicted risks and allocation of resources to mitigate them. However, the theory fails to indicate how an organization can recover from unpredicted events. This led to the use of dynamic capabilities theory which addresses that gap.

2.4.3 Dynamic Capabilities Theory

Dynamic Capabilities Theory (DCT) is an extension of the RBT. DCT advances that organizational capabilities are the main source of a firm's performance advantages (Grant, 1991). Capability is the ability of an organization to perform a coordinated set of tasks, utilizing organizational resources, for the purpose of achieving a particular end result (Helfat & Peteraf, 2003). RBT is enhanced by the dynamic capabilities theory that argues that firms should continuously reconfigure and redeploy these resources to be firm specific if they have to earn a sustainable competitive advantage (Teece *et al.* 1997). This view can be facilitated if an organization encourages knowledge creation among its employees as proposed by the Knowledge Based Theory. Secondly, the dynamic capability perspective indicates how firms can cope with unforeseen events. A lot of risk-management theory and practice focuses on the *ex ante* identification of risks. Nevertheless, there are always going to be circumstances that firms cannot foresee. Possessing dynamic capabilities provides firms with routines and processes that allow the firm to recover from those events quickly. Thus, applying a dynamic capability perspective supports ERM to move beyond an *ex ante* prediction of risky events by providing managers with the tools to

recover from risky events that may occur. Therefore, dynamic capabilities goes beyond forecasting of risks to making organizations resilient to risk (Wohlgemuth & Bogodistov, 2017).

Organizations develop risk-management capability for top tier management in order to sustain competitive position in dynamic environments. Strategic risk resilience can be enhanced by making deliberate investments in fundamental routines and processes which would result in dynamic managerial capabilities. For instance, Adner and Helfat (2003) opines that managerial human capital can be construed to be part of dynamic managerial capabilities. Stewart (1997) posit that there are assets referred to as "invisible assets" which in real sense is intellectual capital. Therefore, Intellectual capital encompasses resources and capabilities that are valuable, uncommon, poorly imitable and non-substitutable, which present a lasting competitive advantage and superior performance to the firm. Proponents of resource-based view and dynamic capabilities theory consider both ERM and intellectual capital as the prestigious resources of an organization. This research agrees with this view by proposing that the combined effect of ERM and intellectual capital can improve organizational performance.

2.5 Empirical Literature review

ERM model comprises three aspects: Structure, Governance and Process (Shad & Lai, 2015). These aspects have incorporated practices which are expected to have an impact on organizational performance.

2.5.1 Risk Structure Practices and Organizational Performance

Acharyya, (2009) did a study on the influence of ERM structure practices on insurer's stock market performance. Performance was measured in terms of risk adjusted

returns while ERM Structure was measured in terms of risk management culture, risk controls, emerging risk management and strategic risk management as a holistic model to drive a value of insurer. Data was collected from 21 members of the professional risk management forum for the period 2000 to 2008. The study used standard and poor to measure strength of insurers' ERM into five categories; excellent, strong, adequate with positive trend, adequate and weak. Data was analyzed using regression model. The study found inconsistency between the insurers' stock market performance during the 2008 financial crisis since some insurers demonstrated superior performance while others were severely affected by the financial meltdown. The study concluded that insurers' stock market performance depends on the characteristics of industry events rather than the performance of their ERM structure practices.

Similarly, Quon, Zeghal, & Maingot, (2012) examined the relationship between ERM and firm performance for 156 non-financial companies listed in Toronto Stock Exchange. Performance was measured using changes in sales, earnings before interest and taxes margin and changes in Tobin's Q for 2006-2009 using content analysis of the companies' annual reports. ERM was measured based on ERM structure practices of fourteen types of risks with each being measured for the risks reported, the level of exposure to risk, consequences of such risk and identified strategies for managing those risks. The study observed that the financial crisis had an immediate effect on financial market performance and a delayed effect on operational and accounting performance. Further, companies with such different performances did not report average levels of economic or market risk exposure or consequences that are statistically significantly different. The study concluded that ERM structure practices did not have a significant effect on organizational performance.

Contrary, Laisasikorn, (2014), studied the relationship between a successful enterprise risk management system, performance measurement system and the financial performance of all companies listed on Thailand Stock Exchange. Enterprise risk management system was measured as risk culture, process, clear responsibilities, and infrastructure using a five point likert scale questionnaire. Performance measurement system was measured using clear objectives, performance indicators and performance drivers using a five point likert scale questionnaire. On the other hand, financial performance was measured using Return on Assets, Return on Equity, and Earnings per Share obtained from Thailand Stock Exchange online database. Data was analyzed by applying the structural equation modeling (SEM) technique. The study found that relationship between enterprise risk management system (i.e. ERM structure practices), performance measurement system and a company's financial performance was not statistically significant.

To further this argument, Kpodo and Agyekum, (2015) did a study on risk culture and organizational performance of selected financial institutions in Ghana after the global financial crisis of 2008. Risk culture was studied as one the constructs under ERM structure practices. Risk culture was measured using Financial Stability Board's (FSB) risk culture model, due to its comprehensive coverage of all factors contributing to an effective risk management in an organization as well as its simplicity. On the other hand, organizational performance was examined using both financial and non-financial measures. The two variables were measured using five point likert scale and analyzed using descriptive statistical measures. The data was collected from nineteen (19) banks listed on the Ghana Club 100 using questionnaires and interviews. The study found that there were no significant differences among the banks in terms of the risk culture determinants and organizational performance

measures. However, the study found a positive correlation between risk culture and organizational performance in the Banking Industry in Ghana.

Wood and Lewis (2018) evaluated the impact of risk culture development on Caribbean Development Bank. The study opines that risk culture is a balance between qualitative behavioral traits and quantitative control structures. Implying that, risk culture is an aggregate of the organization's strategy, processes, systems and people; articulated by how people think and behave in view of risk and its management. The study collected primary data through structured interview of Chief Risk Officer during the month of August 2015. Risk culture as part of ERM structure components was assessed using five attributes namely; policies and limits, strategies and goals, risk management structure, risk control processes, people and competence. The study found that communication, awareness, accountability as strong indicators of Caribbean Development Bank's risk culture which contributed to improved uniformity of risk management knowledge, coordinated collation of risk data and better appreciation of risk management issues. Consequently, risk management practices were enhanced within Caribbean Development Bank.

Further, Olayinka *et al.,* (2017) did studies to examine the impact of ERM on financial performance of Nigerian financial sector. The study collected panel data from the annual reports obtained from the company's website and African financials website. Data was obtained from 40 companies for the period between 2012 and 2016. The study used ROA to measure financial performance while Value at Risk (VaR) was used as a proxy measure of ERM structure practices. VaR measures the organization's total risk component as a composite value; where a lower VaR implied that the organization is able to control its risk appetite thus a positive effect on

financial performance while a higher VaR suggests negative influence on financial performance. Data was analyzed by use of fixed effect panel regression model while controlling for leverage, board size, firm size, institutional ownership and size of risk management committee. The study found that ERM structure practices had a positive and significant effect on financial performance on firms listed in the Nigerian financial sector.

Studies by Florio and Giulia (2016) investigated whether there exists a relationship between the extent of implementation of ERM systems and performance of Italian listed companies. ERM systems were measured using proxies of appointment of a CRO, in addition to presence and reporting frequency of an internal control and risk committee. Further, ERM operating mechanisms were assessed based on frequency, depth and methodology of risk assessment. Conversely, performance was measured using ROA and Tobin's Q. Secondary data was collected from non-financial companies listed on Milan Stock Exchange for the period starting from 2011 to 2013 and analyzed using multivariate Ordinary Least Square regression models. The study found that firms with advanced levels of ERM implementation had higher performance, in term of financial performance and market valuation. In addition, the tests carried out validated the expectation that effective ERM systems result to greater performance by way of reduced risk exposure.

ERM practices within the risk structure combine risk management events in a holistic framework to facilitate identification of uncertainties (Hoyt, & Liebenberg, 2011). ERM structure establishes the policies, processes, competencies, reporting, technology, and a set of standards for risk management. Shad and Lai, (2015) developed a conceptual framework for ERM performance measure through Economic

Value Added. The framework hypothesizes that ERM structure practices have a significant impact on performance measured as operating margin. Further, ERM structure practices need to be assessed using four indicators: (i) provision of a common understanding of the objectives of each ERM initiative (ii) provision of common terminology and set of standards of risk management (iii) identifying key risk indicators (KRIs) and (iv) integration of risk with key performance indicators (KPIs). The study was based on review of literature and recommends that empirical studies should be done to test the hypothesis. This study sought to test the hypothesis using similar risk structure practices measures developed by (Shad & Lai, 2015). The same measure was used by (Laisasikorn, 2014).

2.5.2 Risk Governance Practices and Organizational Performance

Nahar, Jubb and Azim, (2016) investigated the association between risk governance and bank performance in a developing country where disclosure of risk information is virtually voluntary. Data was collected for the period 2006-2012 using 210 bank-year observations. Risk governance practices were measured in terms of risk disclosure, number of risk committees and existence of a risk management unit while controlling for other corporate governance variables. Financial performance was measured by use of return on equity and return on assets while market-based performance was measured by use of Tobin's Q and buy-and-hold returns. Data was analyzed using regression analysis to test whether a significant relationship exists between risk governance and banks' accounting- and market-based performance. The results showed that there is a significant relationship between risk governance and bank performance.

Erin, Asiriuwa, Olojede and Usman (2018) investigated the influence of risk governance on performance of money deposit banks in Nigeria. Panel data was collected from a sample of eleven listed Nigeria banks for the period of 2012 to 2016. Bank performance was measured using ROA while risk governance was measured by use of proxy variables such as presence of Chief Risk Officer (CRO), Centrality of CRO, independence of the Board Risk Committee, Activism of Board Risk Committee, Board's independence and ERM score. Secondary data on the study variables were collected from annual reports of the selected banks. The study controlled for firm size, audit committee independence, board size, cost to income ratio and loan. The study used descriptive statistics, correlation and fixed effect regression model to analyze the data. The study found that all the risk governance variables except Centrality of CRO had a positive and significant impact on the performance of listed banks in Nigeria. The results of this study are consistent with those of (Nahar *et al*., 2016; Mollah et al., 2014).

Similarly, Ping and Muthuveloo, (2017) did a study on the impact of ERM on firm performance of public listed companies in Bursa Malaysia. The study also investigated the moderating role of Board of Directors' monitoring, firm complexity and firm size of the implementation of ERM on firm performance. Data on ERM implementation was collected was by using a five point likert questionnaire. The yardstick for firm complexity was the number of business segments and firm size was measured using the number of employees. Board of Directors' monitoring was measured using a likert scale while performance was measured using financial and non-financial indicators. The data collected form 103 companies were analyzed by using Partial Least Squares and Structural Equation Modeling Tool. The study found that implementation of ERM has a significant influence on firm performance. In

addition, monitoring by Board of Directors', firm size and firm complexity were found to significantly influence the relationship between ERM implementation and firm performance.

Further, Salaudeen, Atoyebi, and Oyegbile, (2018) evaluated the relationship between ERM and performance of twenty (20) consumer goods companies listed in Nigeria Stock exchange. Performance was measured using return on assets while ERM was measured using ERM governance practices indicators like risk management committee, existence of financial expertise, existence of audit committee, existence of chief risk officer and board size. Data was sourced from annual reports and accounts the selected consumer goods companies. Data was analyzed using descriptive statistics and generalized least square. The study found a significant positive relationship between the existence of risk management committee, financial expertise, board size and performance. In addition, there was a significant negative effect on the relationship between audit committee and performance. Lastly, the existence of a chief risk officer had no significant effect on performance.

Likewise, Hutchinson (2011), conducted a study to determine whether firms with greater risk monitoring and levels of incentives are associated with better firm performance. Secondary data was obtained from annual reports of 500 Australian companies for the year 1998 on firms' financial characteristics, executives remuneration and executive directors' share ownership. Firm performance was measured using return on equity (ROE) while risk monitoring was measured by the proportion of non-executive directors and level of incentives measured using executive remuneration and inclusion of shares in executives' compensation contracts. The data was analyzed using regression analysis. The study found that the negative

relationship between firm performance and risk. Firm performance is weakened by a higher proportion of non-executive directors on the board, higher levels of executive remuneration and the inclusion of shares in executives' compensation contracts.

Cavezzali and Garddenal (2015) examined the influence of risk governance on firm performance as evidenced by Italian listed banks. The study obtained data from twenty-one banks listed at *Borsa Italiana* for the period starting from 2005 to 2013. Secondary data was obtained from published reports on; financials, corporate governance and remuneration from the company websites and *Borsa Italiana* webpage. Firm performance was measured using both ROE and ROA while risk governance was measured by proxy using CRO presence, board of directors' independence, risk committee activism, CRO centrality and experience by risk committee. The study controlled for bank profitability, bank size, operating efficiency (cost to income ratio.) and capital structure. The data was analyzed using fixed effects regression model. The study obtained mixed results on the influence of risk governance on firm performance. CRO presence and CRO centrality were not statistically significant while Risk Committee experience and its activism level had a negative effect on ROE and ROA. Further, board independence was not significant. However, experience by risk committee representing their professional background could help lower the overall level of risk.

Genrikh, (2015) researched on the impact of ERM in Small and Medium Enterprises (SMEs). The study used data from FAME database that provided financial information on firms based in UK and Northern Ireland. Financial information sourced relates to dates of incorporation, cash flow reports, and profit and loss statements to determine performance of SMEs in terms of cash flow volatility and

return on assets. On the other hand, ERM was measured by the amount of auditors' fee, quality score, the proportion male/female board of directors and board structure to explain performance. 208 SMEs were selected according to different assumptions and analyzed. Seemingly unrelated regression was chosen as a method to allow for simultaneous correlation between errors in the 2 regression models. The results obtained drew various conclusions (i.e. number of executive directors has positive impact on performance, but also raises the level of cash flow volatility). However, no significant relation was found between cash flow and ROA.

Contrary Aebi, Sabato, and Schmid, (2012) did an investigation on whether risk management-related corporate governance mechanisms such as presence of a chief risk officer (CRO) in a bank's executive board and whether the CRO reports to the CEO or directly to the board of directors, are associated with a better bank performance during the financial crisis of 2007/2008. Bank performance was measured using buy-and-hold returns and ROE. The study controlled for standard corporate governance variables such as CEO ownership, board size, and board independence. Data was collected the year 2006 and time series regression used to analyze the data. The results indicated in banks which the CRO directly reports to the board of directors and not to the CEO (or other corporate entities) stock returns and ROE were significantly higher (i.e., less negative) stock returns during the crisis. On the contrary, most standard corporate governance variables were insignificant or even negatively related to the banks' performance during the crisis.

Similarly, Battaglia and Gallo (2015), studied the effect of risk governance on Asian bank performance during financial crisis. The paper investigated whether boards of directors and risk management mechanisms related to corporate governance are

associated with better bank performance during the financial crisis of 2007/2008. The study focused on banks listed in China and India. Bank performance was measured using Tobin's Q, ROA, return on equity (ROE) and price–earnings ratio (P/E). The study had mixed results on the relationship between risk governance and bank performance. Banks with larger risk committee had better performance in terms of profitability (ROE and ROA) for the period 2007–2011. Contrary, market valuation and expected market growth rate (Tobin's Q and P/E) was higher for banks with smaller risk committee. This implies that market valuation is negatively related with the size of the risk committee and positively related with the number of the risk committee' meetings. This seems to suggest that the market, discounts as favorable the information related to "strong" risk governance.

Ponnu (2008), examined the effect of corporate governance structures, particularly board structure and CEO duality, on the performance of Malaysian public listed companies. Data was collected from 100 Bursa Malaysia companies for the period 1999 to 2005. Firm performance as measured by return on assets and return on equity. Mann Whitney U Test was used to analyze the data. The study found that that there is no significant relationship between corporate governance structures and company performance.

Abdullah & Shukor (2017), conducted a study to establish the comparative moderating effects of two separate risk governance mechanisms on the relationship between voluntary risk management disclosure and firm performance. Data was obtained from 395 non-financial companies listed on the Main Market of Bursa Malaysia during 2011.The study used content analysis method to collect data on voluntary risk management disclosure while firm performance was measured Tobin's

Q. Data was analyzed using regression models and the study found that the presence of Risk Management Committee enhanced the relationship between voluntary risk management disclosure and firm performance. Conversely, the appointment and quality of the audit committee which were measure by proxy variables; size, independence, education and number of meetings, did not have significant moderating effect on the association between voluntary risk management disclosure and firm performance. The results imply that risk governance mechanisms are important to investors while evaluating risk management information.

Previous empirical studies on the relationship between risk governance and firm performance are mixed and inconclusive (Bauer, Frijns, Otten, & Tourani-rad, 2008). Studies by (Nahar *et al* , 2016; Ping & Muthuveloo, 2017; Genrikh, 2015;) have found positive relationships, while (Salaudeen et al., 2018 ; Cavezzali & Garddenal, 2015; Battaglia & Gallo, 2015; Aebi *et al*., 2012) found a mixed relationship. More so, (Ponnu, 2008; Hutchinson 2011) observed no association between risk governance and firms' performance. The possible reason for these inconclusive results could be institutional differences in countries' studied. In addition, ERM governance has been measured using different indicators. This study will explore the use of ERM governance dimensions as conceptualized by (Shad & Lai, 2015) which uses the following four elements to examine governance; (i) ERM provides enterprise-wide information about risk (ii) Enables everyone to understand his/her accountability (iii) Reduces risk of non-compliance and (iv) Enables tracking costs of compliance.

2.5.3 Risk Management Process Practices and Organizational Performance

Roa (2007) did studies to evaluate the status of ERM in business organizations in Dubai. Primary data was obtained by interviewing 92 managers and business

executives who belonged to several industry sectors through a survey carried out in February- March 2006. ERM was assessed through structured questions comprising of business control environment, risk assessment, control activities, information and communication, and monitoring obtained from the COSO frame work. Data was analyzed using logit model to identify statistically significant factors. The study found that businesses in Dubai were still implementing some aspects of ERM and more awareness was required to be done through an integrated strategic ERM process. Further, the study outlined a five - step systematic process to help businesses in Dubai make informed decisions when handling enterprise risks. The process entailed to; differentiate risks, classify and prioritize the risks, model the risk, assess the impact on key performance indicators and lastly, manage the resultant change. This implies that practices under ERM process are vital decision making.

Ping and Muthuveloo, (2017) examined the relationship of ERM process practices to firm performance, the mediating role of strategic agility and moderating role of quality of internal audit function among Malaysian public listed companies. ERM process practices were conceptualized with the elements in COSO, (2004) ERM integrated framework, while firm performance was measured using financial and non-financial indicators. Data was collected from 137companies through questionnaire. Data was analyzed using structural equation modeling (SEM) approach and partial least square (PLS) algorithm. The study found that ERM process practices had a significant relationship to firm performance and strategic agility significantly mediated the relationship. However, the quality of internal audit function did not significantly moderate the relationship between ERM process practices and firm performance.

Likewise, Callahan and Soileau (2017), conducted a study to evaluate the influence of the ERM process maturity stage on operating performance. Data for the period 2006 to 2008 was obtained from Internal Audit Function management through web-based survey of U.S. based publicly traded firms. The survey responses were thereafter harmonized with data from financial statements obtained from Compustat database. Operational performance was measured using the industry median-adjusted ROA and ROE while ERM process maturity was measured using the four objectives of COSO-ERM frame work namely; strategy, operations, reporting and compliance. Data was analyzed using regression model while controlling for board governance and effects of firm characteristics. The study found a significant positive relationship between ERM process maturity and industry-adjusted operating performance (ROA and ROE) in the industry sample. This implies that firms that embrace higher levels of ERM process maturity are bound to experience higher operating performance than their peers in industry.

In addition, Kisaka and Musomi (2015) examined the effect of risk management on performance of investment firms in Kenya by exploring the use systems theory other than the conventional finance theories. Data was collected from 26 CROs of investment firms listed at Nairobi Stock Exchange for the period 2010 to 2014. Performance was measured using Net Asset Value while ERM was measured using ERM process practices of risk identification, risk analysis, risk assessment, risk monitoring, risk management and risk management tools. Data was analyzed using multiple regression model. The study found that risk identification, risk analysis, risk assessment and risk management tools have a significant positive influence on firm's performance. However, risk prioritization had a significant negative influence on

firm's performance. On the whole, ERM process practices had a statistically significant relationship with financial performance.

Kiage and Namusonge, (2016) established the effect of monitoring, evaluation and risk management practice of CSR project activities on the firm performance of Kenyan telecommunication sector. Performance was measured using market share growth and increased annual profit. A five point Likert scale questionnaire was used to measure risk practices. Data was collected from 14 telecommunication companies whose headquarters were located in Nairobi. Data was thereafter analyzed using descriptive statistics and inferential statistics. The study found that involvement of project manager in risk analysis, risk identification and risk analysis influences firm performance. In addition, monitoring and evaluation had a strong positive correlation with firm performance. Overall conclusion was that, firm performance of companies in the telecommunication sector was significantly influenced by risk management practices, followed by evaluation practices and lastly, monitoring practices.

Contrary, Alawattegama, (2018) explored the effect of ERM on performance of diversified industry of Sri Lanka. ERM was measured using COSO (2004) framework which has eight practices and return on equity was used as a proxy for firm performance. Data on ERM was collected using a five point likert scale questionnaire while performance data was gathered from published annual reports. Data was analyzed using regression model. The study found that ERM process practices on internal environment, risk-aligned objective setting, event identifications, and risk response had a positive impact on firm performance. However, none of those impacts were statistically significant. Contrary, risk assessment and control activities had negative impact on the firm performance. Information & communication functions

indicate a significant impact on firm performance. However, monitoring function had a negative impact on the firm performance.

Another study has been done by Nyagah, (2014) to determine the level of ERM implementation by pension fund management and assess the effect of ERM on financial performance of pension fund management in Kenya. The study focused on 19 pension fund firms registered by July 2014. Both primary and secondary data was collected. The data was analyzed using both descriptive statistics and linear regression analysis. The study found that event identification, risk assessment, objective setting and communication of information to have negative effects on financial performance of pension funds while risk response, internal environment and control activities had a positive effect.

Most of the studies conducted on ERM have focused on the COSO –ERM frame work. This study has explored and used of ISO 31000:2009 frame work because it is specific, clear and flexible when used to manage their risk. Further, empirical studies on the relationship between risk process and organizational performance are mixed and inconclusive (Alawattegama, 2018; Nyagah, 2014). However, studies by (Callahan & Soileau, 2017: Kisaka & Musomi, 2015: Ping & Muthuveloo, 2017) have found positive relationships on the association between ERM process and firms' performance. The possible reason for these inconclusive results could be the type of ERM framework adopted and the level of ERM implementation in the different organizations.

2.5.4 Moderating Role of Intellectual Capital on the Relationship between Enterprise Risk Management Practice and Organizational Performance

Bontis, Keow and Richardson (2000) investigated the elements of IC (human, structural and customer capital) and their inter-relationships within two industry sectors (service and non-service industries) in Malaysia. Primary data was collected using a psychometrically validated questionnaire developed by Bontis (1998). Data was analyzed using partial least squares because it was suitable for handling small data samples. The results of the study indicate that all the elements of IC have a positive and significant influence on business performance irrespective of the industry.

Bontis and Mention (2013) investigated the effects of intellectual capital on business performance in banks within Luxembourg and Belgium in May 2010. Primary data was collected using survey questionnaires developed by Bontis (1998) and modified by Cabrita and Bontis (2008). Intellectual capital was assessed in terms of human, structural and relational capital using the scorecard method. Data was analyzed by use of structural equation modeling. The study found that human capital contributes to business performance both directly and indirectly in the banking sector. In addition, structural and relational capital were positively associated to business performance, however, the effect was not statistically significant. This study applied same methodology as Bontis *et.al.*, (2000) in a different region and obtained similar results.

Ting and Lean (2009), obtained data from the annual reports of 20 financial institutions listed in the finance sector of Bursa Malaysia for the period 1999 to 2007 to examine the association between IC and financial performance. Financial performance was measured using RAO while IC was measured using VAIC. Data

was analyzed using linear multiple regression analysis. The results of this study indicated that there is a significant positive relationship between VAIC and ROA.

On the contrary, Mondal and Ghosh (2012) investigated the relationship between IC and financial performance of 65 Indian banks during the period 1999 to 2008. The study applied similar methodology like Ting and Lean (2009) to an Indian context by measuring IC using VAIC and analyzing data using multiple regression models. In addition, the study expanded performance measures to include ROE. The study controlled for firm characteristics such as leverage, firm size and assets turnover ratio. The study found that the relationships between performance of bank's IC, and financial performance indicators to be varied. The human capital efficiency and banks profitability (ROA) was positively significant except for the years 2000, 2003 and 2008, when it was positive but not significant. In respect to ROE, the effect human capital efficiency on bank performance was not significant in 1999 and 2006. Further, structural capital efficiency was not significantly associated to ROA and ROE in almost all of the entire period of study.

Hamdan (2018), conducted a study on 198 firms from two Gulf Cooperation Council countries: Kingdom of Saudi Arabia and Kingdom of Bahrain for the period 2014–2016 on the relationship between IC and firm performance. The study explored the use of traditional measures of performance ROA and Tobin's Q and IC was measured using VAIC model. The data was analyzed using random effects regression. The study found that IC has a significant positive impact on ROA on firms in Saudi Arabia. However, the same not evident for firms in Bahrain. In respect to Tobin's Q, all the VAIC constituents were not statistically significant.

Lastly, Britto *et. al*. (2014) conducted research to verify whether value created by real estate companies can be assessed better using elements of IC; human, structural and physical assets or return on invested capital and profit margins. VAIC model was used as a proxy variable of IC. Data was obtained from 31 Brazilian real estate companies over a five-year period, 2007 to 2011. Ordinary least square regression model was used to analyze the data. The study found IC is significant and negatively correlated when explaining value creation of real estate companies. Therefore, greater IC points to a lower market value in real estate companies.

Literature on IC and organizational performance have found a positive relation in several economies of developed and developing countries (Bontis *et al.,* 2000; Ting & Lean, 2009; Bontis & Mention 2013). However, studies by Celenza & Rozzi (2014) did not find significant relationship between constituents of IC, financial performance and market value in Italian firms. On the other hand, studies by (Mondal & Ghosh, 2012; Hamdan, 2018) had mixed results. The study by Hamdan (2018) found evidences that support the relationship between IC and accounting-based performance, but negates any relationship between IC and market-based performance. In addition, the study found different results between firms in two Countries - Saudi Arabia's and those of Bahrain. Lastly, Britto *et al*., (2014) found a negative relation between IC and performance of real estate's firms in Brazil. This study adopted the scorecard measurement of IC similar to (Kamukama *et al.,* 2011: Bontis & Mention 2013).

2.6 Other Empirical Studies

Advocates of ERM argue that integration of all risk classes enables firms to avoid replication of risk management expenditure by taking advantage of natural hedges

(Hoyt & Liebenberg, 2011). Adoption of ERM practices might lead to a decrease in projected regulatory scrutiny and monitoring costs as well as external capital costs due to improved risk profile information regarding a firm. Firms that employ ERM practices have a better perception of aggregate risks inherent in their activities, thus providing them with an objective basis for resource allocation which results to improved capital efficiency and return on equity. In addition, ERM creates value by promoting a reduction of a company's tax burden and smoothening cash flow volatility. This view is supported by (Nocco and Stulz, 2006) who posit that ERM is value adding to firms by enabling objective capital allocation as a result of risk-return tradeoff assessments, as well as by mitigating financial risks and exploiting business risks which in turn leads to gaining and/or maintaining competitive advantage.

Studies indicate that implementation of an ERM program will lead to tangible and intangible benefits to a firm. These benefits may include outcomes like; optimization of a company's risk- return profile, reduction of earnings volatility, strengthening of management's confidence in business operations and risk monitoring, creation of smooth governance procedures, inspire corporate reputation, improves simplicity of decision making and chain of command, encourage corporate entrepreneurship and boost the entity's profitability. Whereas, there are theoretical reasons why ERM may increase or decrease shareholder value, Beasley *et al*, (2006) posit that these reasons can depend on an individual firm characteristics; meaning that it not possible to make a definite statement on the benefits or costs of ERM. Studies by Miccolis and Shah, (2000) found the benefits of ERM include; increased return on equity, growth, decline in earnings and stock-price volatility, reduction in external capital costs, increased capital efficiency and creation of synergies between diverse risk management activities. However, ERM drives value creation not only in terms of financial aspects,

but also in non-financial aspects. For instance, better operational and strategic decisions can be made by increasing the risk awareness.

In assessing the relationship between ERM and firm performance, Gordon *et al.*, (2009) states that the relationship is contingent upon an appropriate match between a firm's ERM system and key specific factors, namely environmental uncertainty, industry competition, size, complexity, and the monitoring of the board of directors. Data was collected from 112 firms in the USA Security and Exchange Commission's database to determine the impact of ERM on firm performance. Analysis was done by first deriving the respective firm's ERM index by using the COSO framework of strategy, operations, compliance and reporting. Secondly, deriving the relation between the ERM indices for the highest performing firms (excess returns) and the five firm-specific factors mentioned above by use of linear regression analysis. The study found a positive relation between ERM and firm performance.

Soliman and Adam (2017) investigated how ERM program implementation affects the performance of firms in the banking sector. Data was obtained from ten listed commercial banks in Nigeria. ERM implementation was measured using an integrated model that measures ERM index while performance was measured using three variables with Return on Average Equity, Share Price Return and Firm Value. Data was analyzed using multiple linear regression model. The results of the study indicate that there was a significant positive association between ERM implementation and performance of Nigerian banks. The findings of this study imply that firms that adopt ERM programs perform better than those that have not adopted ERM.

Grace *et al*., (2010) evaluated the value of investing in ERM and focused on cost efficiency and revenue efficiency as a proxy for performance and a direct analysis of

the cash flow implication of adopting ERM, while controlling for firm specific factors. A survey was conducted by Tillinghast to obtain data from 532 worldwide insurance clients in 2004 and 2006. Data envelopment analysis (DEA), was applied as a benchmark of "best practice" to measure the distance of the company's individual efficiency to this benchmark. The ERM activities derived from the survey included; a risk management function (CRO or similar), the underlying economic capital model, financial metrics (market value based or not), reporting relationships, executive compensation, and the firm's decision making process. The study found a significant increase in cost efficiency and it resulted to revenue efficiency; life insurers did benefit from the use of economic capital models which resulted in increase in ROA.

Pagach and Warr, (2010) studied the effect of ERM implementation on firms' long term performance by focusing on how risk, financial, asset and market characteristics change around the time of ERM implementation. Data was collected from 106 publicly traded companies in US with announcements of senior risk officer appointments from 1992-2004. The data was analyzed using earnings and stock price volatility, leverage, financial slack, opacity and growth. It was found that there was significant decline in volatility of stock return for firms with CRO. However, there was no significant change in earnings volatility, no leverage increase and no increase in size on ERM implementation. Therefore, the results failed to support the proposition that ERM is value creating.

Hoyt and Liebenberg, (2011) collected data from 117 publicly traded USA insurers for the period 1998-2005 and measured the extent to which specific firms have implemented ERM programs and the value implications of these programs. Value creation was measured using Tobin's Q which is calculated as the market value of

equity plus the book value of liabilities divided by the book value of assets. Despite the change of variables used to measure value creation from excess returns to Tobin's Q. The study found a positive and highly significant impact of ERM on their insurance sample, which resulted in a higher shareholder value of approximately 17% to 20%. The study supported the argument of (Beasley *et al*, 2006) that there is no specific link between ERM theories and value creation.

Other studies that support the argument that ERM does not have a specific link to value creation include, McShane *et al* , (2011) who investigates the relationship between the degree of ERM implementation and firm performance using Standard and Poor's risk management rating and Tobin's Q who find a significant positive relationship with shareholder value, but only in the case of an increasing level of traditional risk management, whereas moving from a traditional to an ERM does not additionally increase shareholder value. Tahir and Razali, (2010) investigated the relation between ERM and firm value in Malaysian public listed companies. When descriptive statistics were tested on 29.7% of ERM-users; the research showed that ERM had no impact on firm value. However, regression results found that ERM is positive but not significant with firm value.

Angote, Malenya and Musiega, (2015) did studies on the effect of enterprise financial risk management on performance of Kenya Commercial Bank (KCB) in Western Region. The study aimed at determining how financial leverage, diversified products and credit policy affects performance in KCB. Primary and Secondary data was collected from 30 branches and analyzed by use of Pearson's correlation and regression analysis. The study found that there is a significant relationship between enterprise financial risk management and performance of KCB.

Odoyo and Omwono, (2014) did analyze the role of internal audit in ERM by providing empirical evidence on State Corporation in Kenya. The study examined the impact of internal auditors' involvement in ERM and their willingness to report a breakdown in risk procedures and whether a strong relationship with audit committee affects willingness to report. A cross sectional survey was carried out from 99 respondents in 9 state corporations. The study found that management of SCs need to create an environment that will harness commitment and support to internal audit to perform its responsibility of giving assurance that organizational risks are managed effectively.

Waweru and Kisaka, (2013) did a study on the effect of ERM implementation on the value of companies listed in the Nairobi Stock Exchange. The study also sought to test the significance of factors affecting the level of ERM implementation. Data was collected from 22 companies listed in Nairobi Stock Exchange for the period ending December 2009 and the effect of ERM on value of companies measured using Tobin's Q. The study found no significant relationship between the level of ERM implementation and variables like; industry operation, level of board independence, size of firm and a firm's growth rate. However, there was a significant relationship between ERM implementation and the company's value.

Mwangi and Angima, (2016) performed a study to establish, through review of literature, the factors that moderate the relationship between actuarial risk management practices and financial performance of property and casualty insurance underwriters. The study found that various firm specific characteristics moderate this relationship. They comprise of growth rate, size, and age of the firms, and in addition soundness of company management. The moderating factors were identified based on

literature review. Therefore, there is need for empirical studies to demonstrate the various sets of relationships between organizational performance and ERM by considering various firm characteristics that control this relationship.

2.7 Control Variables

To distinctly indicate the relationship between ERM and organizational performance, there was need to control for factors that could influence organizational performance (Beasley *et al.*, 2005; Hoyt and Liebenberg, 2008; Waweru and Kisaka, 2013). Studies by (Gates, Nicolas, & Walker, 2012; Waweru & Kisaka, 2013) show that firm size, ERM stage, industry differences and organization's growth rate can affect organizational performance.

Beasley *et al.,* (2005) opines that as organization's growth rate increases, the range of events threatening it are likely to vary in nature, timing, and extent. Consequently, the sooner a company grows, the more likely it embraced ERM. Contrary, studies by (Hoyt *et al.,* 2008) found no significant relationship between the rate of growth of a company and its level of ERM implementation.

Further, SC operate within existing industries in the economy. Consequently, regulators in each industry came up with different regulations pushing organizations in their industry to be at the forefront in implementing risk management. For example, Basel II and Central Bank of Kenya risk management regulations govern SCs which are financial institutions among other regulators. Beasley et al., (2005) opines that banking, education, and insurance industries have implemented ERM more extensively when compared to other industries.

Lastly, firm size refers to the amount and variety of production capacity and ability an organization possesses or the amount and variety of services an organization can provide concurrently to its customers (Niresh & Velnampy, 2014). Firm size determines the profitability of an organization due to the concept known as economies of scale which can be found in the traditional neo classical view of the firm. On the contrary, alternative theories of the firms posit that larger firms come under control of managers pursuing self-interested goals and therefore managerial utility maximization function may substitute profit maximization of the firms' objective function.

This study controlled for firm size, industry differences and growth rate of the organization while carrying out the study so as to get better and more reliable inferences. The control variables used in this study are similar to those used by Gates *et al.,* (2012).

2.8 Summary of Knowledge Gaps

A review of literature indicates that the concepts in this study have been used in various other studies. However, there are still unanswered issues which constitute conceptual, contextual and methodological knowledge gaps. Notably, several variables seem to have been studied over time, but contradictions exist on some of the relationships while other relationships are yet to be tested empirically. Conceptual gaps include those regarding how the variables have conceptually related in previous studies. Contextual gaps include gaps in studies done on Kenyan SCs while methodological gaps are gaps unearthed on previous study designs, choice of population, sampling, analysis and interpretation of findings. Table 2.1 has summarized these previous studies, highlighting their findings and knowledge gaps as well as indicating how the current study addressed them.

Studies carried out on ERM have focused on different study variables. There are studies that have looked at the determinants of ERM on performance (Hoyt & Lienberg, 2008; Pagach & Warr, 2010; Gordon *et al.*, 2009), while others have studied characteristics of firms which adopted ERM (Hoyt & Lienberg, 2008; Pagach & Warr, 2010). Moreover, studies have been done on the influence of ERM on firm's performance and the other aspects of the business (Hoyt & Liebenberg, 2011; McShane *et al*, 2011). Further, studies have been done on the roles of the key function on ERM (Beasley *et al*, 2005; Muralidhar, 2010) and lastly, ERM practices within ERM organizations (Ching & Colombo, 2014; Shad & Lai, 2015). This study examined the link between ERM practices (structure, governance, and risk management process) on performance of SC in Kenya.

Regarding the methodology and the underlying data on ERM - performance studies, Beasley *et al*, (2006) used linear regression model to investigate the impact of an ERM implementation on shareholder value, which is approximated by equity market reactions after the hiring of a CRO, where the dependent variable is the cumulative abnormal return after the announcement. Whereas Hoyt and Liebenberg, (2011), used a maximum likelihood (ML) model to assess the impact of ERM on shareholder value using CRO and ERM key words. Further, Ping and Muthuveloo, (2017) used partial least squares and structural equation modeling tool to examine the impact of ERM on firm performance. This study adopted multiple regression model to analyze the relationship between ERM practices (structure, governance and process) on organizational performance. Additionally, hierarchical regression was used analyze the moderating effect of intellectual capital.

The reviewed studies show diversity in terms of methodology of evaluating the impact of ERM on performance. Performance has been measured using excess stock returns according to (Gordon *et al*., 2009), cost and revenue efficiency including return on assets (ROA) Grace *et al*., (2010) and Pagach & Warr, (2010) differs from the other works by studying firm's key financial variables which comprise earnings and stock price volatility, financial leverage, return on equity (ROE), financial slack, assets' opacity, growth opportunities, and research and development expense for a period of two years before and after the appointment of a CRO. Performance has been measured using financial indicators only in most of the studies. This study explored the use of both financial and non-financial indicators of performance as suggested by Marques & Simon (2006).

Lastly, the findings of studies done have mixed conclusions, some studies indicate improved performance arising from ERM Hoyt and Liebenberg, (2011) while others show that there is no significant effect of ERM programs (McShane *et al* , 2011). Besides, Beasley *et al,* (2006) states that the benefits of ERM are firm specific and ERM framework of one firm cannot be prescribed to another. As a result of the inconclusive results in regard to ERM programs and organizational performance, this study joined the discussion on the influence between ERM practices on performance of SCs in Kenya, while moderating for intellectual capital.

Table 2.1:Various Studies and Knowledge Gaps

Researcher (s)	Focus	Methodology	Findings	Knowledge gap	How the study addresses Gaps
Gordon , Loeb & Tseng (2009)	The relationship between ERM and firm performance	Survey, regression analysis, ERM measured using COSO ERM index and performance measured using excess returns	There is a positive relationship between ERM and firm performance	Non-financial indicators of performance indicators are neglected in the study.	This study explored the use of both financial and non-financial indicators of performance.
Pagach & Warr (2010)	The effect of ERM implementation on the firms long term performance	Longitudinal study (1992-2004), secondary data	The study found no significant change in earnings volatility, no leverage increase and no growth. Thus the results do not support value creation	The study focused on the activity announcing of a CRO to signify ERM implementation	This study addressed a wider scope of ERM by focusing on practices relating to structure, governance and process dimensions of ERM
Sekerci (2012)	Does ERM create value for firms? Evidence form Nordic countries	Unique dataset-survey. ERM is measured based on level of implementation Control for 5 firm characteristics Value is measured using Tobin's Q	ERM does not support value creation	The study focuses on the value creation in Nordic countries	This study looked at the impact of ERM practices on performance. The context is SCs in Kenya
Bertinetti , Cavezzalli & Gardenal (2015)	Investigate the effect of ERM implementation on Firm Value of European Companies	Regression analysis Secondary data Value is measured using Tobin's Q Determinants of ERM adoption in terms of size, leverage, opacity & financial slack,	ERM adoption creates firm value	The study focused on the financial drivers of ERM adoption	This study examined ERM practices in three dimensions of structure, governance and process

Researcher (s)	Focus	Methodology	Findings	Knowledge gap	How the study addresses Gaps
Ching & Colombo (2014)	ERM good practices and proposal of conceptual framework' Brazil	Multiple case study, descriptive, use of secondary & primary data Longitudinal studies	The study developed a conceptual ERM framework covering the cycle of risk management	The ERM practices framework has not been linked to performance	This study linked practices in the ERM framework with performance of SCs in Kenya
Kanhai & Ganesh, (2014)	Factors influencing the adoption of ERM practices by banks in Zimbabwe. with focus to risk governance structure, quality of organizational culture, intensity of regulatory environment and size of bank	Survey; multiple regression Mixed method research design	They found that implementation of ERM is determined by risk governance structure, quality of organizational culture, intensity of regulatory environment and size of bank	The study focused on ERM risk governance practices	The study incorporated practices under the ERM process and structure. In addition, evaluate their influence on performance of SCs
Angote, Malenya & Musiega (2015)	Effect of Enterprise financial risk management on performance of KCB, Western region	Regression analysis	There is a positive relationship between EFRM and performance	The study focuses on financial risk attributes leverage, credit policy and diversification of products The study also looks at the banking sector.	This study focused on an integrated approach to risk instead of a silo approach to risk management In addition, the context was enhanced by focusing on SCs, which incorporates all industries.

Researcher (s)	Focus	Methodology	Findings	Knowledge gap	How the study addresses Gaps
Nyagah (2014)	The effect of ERM on financial performance of pension fund management firms in Kenya	Linear Regression analysis	ERM the financial performance of pension fund management firms	The study focuses of risk management process practices based on COSO (2004)	This study examined risk management practices based on ISO 30001:2009 framework because it can be applied in all organizations
Bozkus (2014)	ERM at work: The recommendations for Best Practice	Desktop review of literature	The author cites ERM structure, process and compliance as key dimensions of ERM best practices	This study identifies ERM practices based on literature review	This study carried out an empirical test on practices under risk structure and risk management process
Waweru & Kisaka (2013)	The effect of ERM implementation on the value of companies listed in Nairobi Stock exchange	Regression Value was measured by use of Tobins Q	The study found that an increase in the level of ERM implementation had a positive contribution to the value of the companies	The studies focus on the determinants and level ERM implementation	This study was focus on ERM practices and performance
Mwangi & Angima (2016)	To establish factors that moderate the relationship between actual risk management practices and financial performance	Review of literature	The study found firm characteristics such size, age of the firm and company management as possible moderating variables	The study focused on identifying moderating variables	This study conducted empirical tests to explore the influence of intellectual capital as moderating variable while controlling for firm characteristics.

Source: (Researcher, 2019)

2.9 Conceptual Framework

Conceptual framework is a system of variable relationships that is logically designed to present the systematic view of the research problem. ERM practices as the independent variable was measured using three dimensions namely; structure, governance and risk management process practices. The study determined the relationship between ERM practices and organizational performance which is the dependent variable. This study controlled for firm size, industry differences and growth rate of the organization while carrying out the study so as to get better and more reliable inferences. The diagrammatic relationship between the independent, dependent and moderating variables is summarized in the figure 2.1.

Independent Variable **Moderating variable** **Dependent Variable**

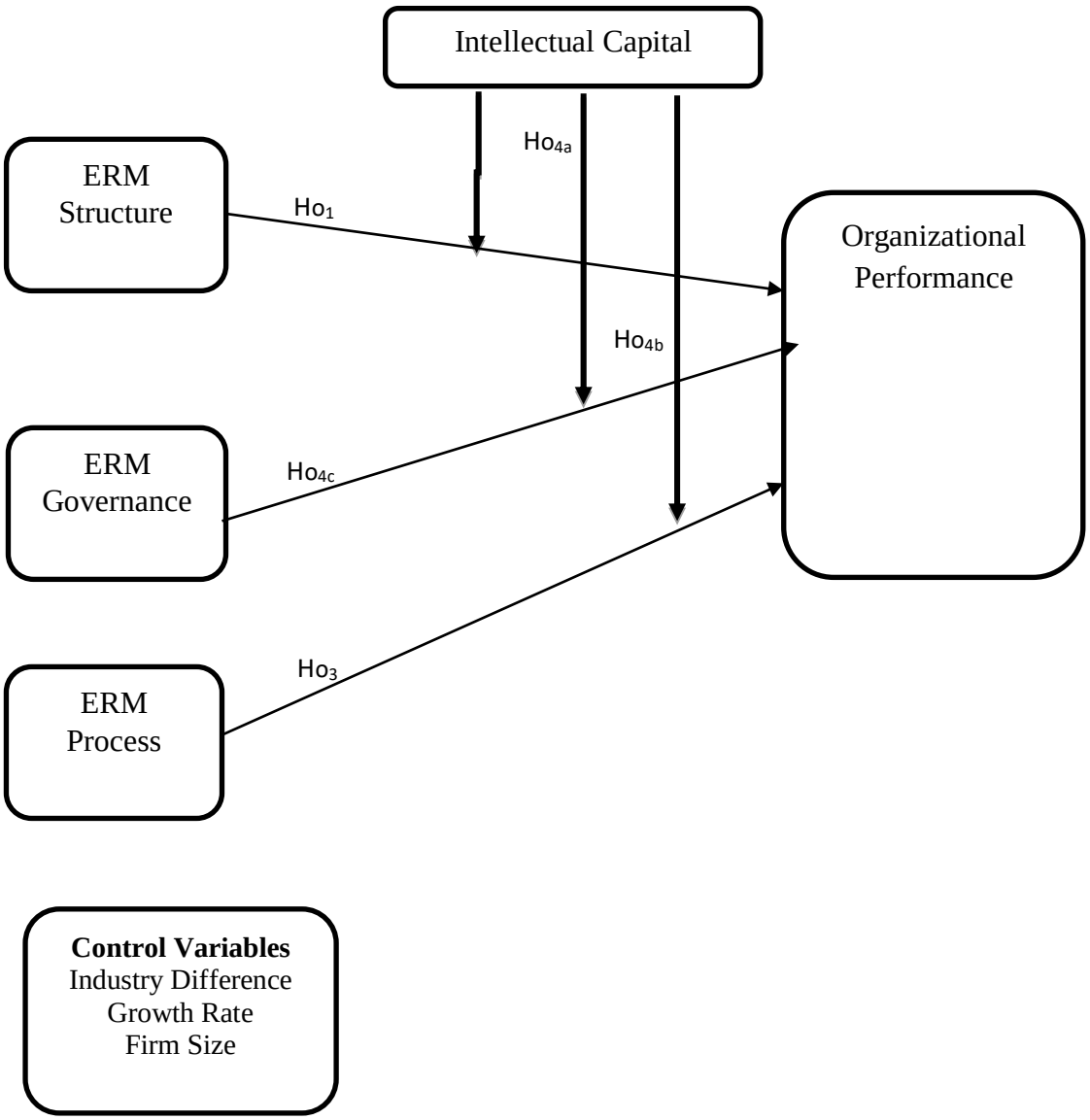

Figure 2.1: Conceptual Framework

Source: (Researcher, 2019).

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The chapter discusses the research philosophy, research approaches, research design, study area and target population. It also discusses the type and sources of data and data collection procedures. Further, reliability and validity of the research instruments, data analysis techniques and ethical considerations are discussed. Finally, the chapter presents the procedure used for data analysis.

3.1 Research Philosophy

Research Philosophy refers to the assumptions and beliefs that govern the way we view the world (Saunders, Lewis, & Thornhill, 2009). It underpins the general approach and direction that the researcher chooses to take about the whole research. Creswell, (2014) identifies four research philosophies; positivist, constructivist, transformative and pragmatist.

According to Creswell, (2014) Positivism is an epistemological position based on the assumption that the observer is independent of what is being observed and that its properties should be measured through an objective criteria rather than being inferred subjectively. The belief of the positivists is that the phenomena can be scientifically measured and validly be referred to as knowledge. Positivism assumes that the research is based on real facts, neutrality, impartiality, consistency, measurements and validity of results. It is further assumed that the approach is methodologically quantitative and value free Zikmund, (2003). Also, it involves complete separation of the researcher and the phenomenon being investigated.

This study adopted positivist approach because the research is anchored on theory from which hypotheses are drawn. The study is an empirical analysis of the effect of intellectual capital on the relationship between ERM practices and organizational performance of Kenyan State Corporations that was guided by agency theory, resource based theory and dynamic capabilities theory. The theories used in the study were to explain what informed the choice of study variables. In addition, quantitative data was collected from State Corporations and analyzed. Hypotheses were tested empirically with the aim of either rejecting or failing to reject the hypotheses. Further, the researcher was independent of the study and did not influence the outcomes. Rather, the outcomes were determined by empirical testing of the variables.

Positivists hold a deterministic philosophy in which causes (probably) determines effects or outcome. The problems studied by positivists reflect the need to identify and assess causes that influence outcomes. The knowledge that develops through positivists lens is based on careful observation and measurement of the objective reality that exists in the world. Positivists believe that there are laws or theories that govern the world, which can be measured and are known, and therefore they are more likely to use quantitative methods to measure this reality.

3.2 Research Approach

Quantitative research is an approach for testing objective theories by examining the relationship among variables. The main emphasis of quantitative research is on deductive reasoning which tends to move from the general to the specific. It usually involves collecting and converting data into numerical form so that statistical calculations can be made and conclusions drawn. The study took a quantitative approach because all the variables being considered in this research were measured,

typically on instruments, so that numerical data was analyzed using statistical procedures. In addition, quantitative research aims at addressing predictions about possible relationships between variables being investigated. Therefore, quantitative approach is applicable to this research because the researcher determined the effect of intellectual capital (moderating variable) on relationship between ERM practices (an independent variable) on organizational performance (a dependent variable) of State Corporations in Kenya. This approach aims to answer questions about the 'how many' or ‘how much' of a phenomenon rather than the 'what', 'how', or 'why' which are answered by qualitative approach.

3.3 Research Design

Research design is a plan that specifies the methods and procedures for data collection and analysis for purposes of answering a research question. It provides a framework for collection, measurement and analysis of data. There are several research designs that one can use depending on the purpose of the study, method of data collection and time horizon. This can range from exploratory design, descriptive design, explanatory design, correlation design, cross-sectional design, longitudinal design, survey, case study design or experiments.

This study adopted explanatory design because the data collected was quantitative in nature and statistical techniques are used to establish the validity of the relationships between variables. According to Saunders et al., (2009), explanatory research design is an appropriate design for studies that tests causal effect between study variables. In addition, explanatory studies are characterized by research hypotheses that specify the nature and direction of the relationships between or among variables being studied. This study aimed to establish the moderating effect of IC on the relationship between

ERM practices on performance of SCs in Kenya guided by six hypotheses. Therefore, the researcher sought to explain the causal effects. In explanatory design, a survey of either the entire population or a subset thereof is selected, and from these individuals' data is collected to help answer the research question of interest. The quantitative data was obtained by use of primary data collected by through a structured questionnaire. Therefore, explanatory research design was suitable because the study is mainly concerned with quantifying a relationship purposely to identify a cause-effect relationship.

3.4 Study Area

The study was conducted in Kenya with focus on State corporations. The reason for choosing SCs is because they play a critical role in enabling the government achieves her constitutional obligation of bringing about social economic development in the country by the provision of efficient services to the citizens (CGD, 2010). First, SCs are vital in promoting or speeding up economic growth and development. Therefore, the status of their performance is crucial. Secondly, they are critical for building capability and technical capacity of a country in promoting national development. Lastly, they have been variously applied to the creation of good and widespread employment opportunities in various jurisdictions thus creation a wealth of intellectual assets. Lastly, ERM is mandatory in SCs since anchored Public Finance Management regulations (2015), Mwongozo Code of Conduct and relevant government circulars dating as far back as 2009. Therefore, SCs are good research site for examining effect of IC on ERM practices and organizational performance.

3.5 Target Population

The total population of State Corporation was 264. The target population of the study was two hundred and eighteen (218) SCs which are spread within 18 ministries in Kenya according to Republic of Kenya (2017). The study considered SCs as at 2019 that were in existence in the last five years. This is because the government had a restructuring plan to drop, merge or dissolve forty- six (46) of the SCs with since 2013. Further, newly established SCs were not be taken into consideration because they are yet to fully develop systems and structures of operation. Therefore, a survey was conducted on the two hundred and eighteen (218) SCs.

Table 3.1: Categories of State Corporations

Sno.	Ministry	Number of SCs
1	Agriculture, Livestock& Fisheries	28
2	Defence	1
3	Devolution & Planning	13
4	East African Affairs, Commerce & Tourism	13
5	Education, Science & Technology	50
6	Energy & Petroleum	9
7	Environment, Water & Natural Resources	21
8	Executive Office of the Presidency	1
9	Health	11
10	Industrialization & Enterprise Development	18
11	Information, Communication & Technology	6
12	Interior & Coordination Of National Government	1
13	Labour, & Social Security Services	4
14	Lands Housing & Urban Development	2
15	National Treasury	19
16	Office Of The Attorney General & Department Of Justice	4
17	Sports, Culture & The Arts Technology	6
18	Transport & Infrastructure	11
		218

Source: Republic of Kenya (2019)

3.6 Data Collection

There are two types of data namely; primary and secondary data. The study used primary data which was collected using a structured questionnaire. Hair *et al.,* (2006) opines that primary data is robust for empirical studies. Further, secondary data on financial indicators of organizational performance was collected from the National Treasury and individual SCs' websites.

3.6.1 Data Collection Instrument

Primary data on organizational performance, ERM practices and intellectual capital was obtained through structured questionnaires (Appendix III). The questionnaire comprised of structured questions adopted from previous empirical studies and modified questions aligned to the variables based on the context of the study. The questionnaire was designed on a five point Likert -type scale ranging from (1) - strongly disagree to (5) – strongly agree. Likert scale is the most frequently used variation of the summated rating scale. It consists of statements that express either a favorable or unfavorable attitude towards the object of interest. Using the Likert scale, the respondent is asked to agree or disagree with each statement (Cooper & Schindler, 2006).

The questionnaire is divided into six sections; Section A captures general information of the company while the rest of the sections focused on each of the research variables. Section B covered data on ERM structure practices, section C on governance practices, section D on risk management process practices, Section E on intellectual capital and section F on organizational performance. The questionnaire was first presented for expert review by supervisors and other stakeholders (finance scholars and practitioners) prior to deployment for pilot testing and thereafter it was

revised as appropriate and used to collect the required data based on the objectives of the study.

Secondary data allows access to large amounts of information, coverage of broad range of individuals and topics (Vartanian, 2011). A data analysis guide (Appendix IV) was used to capture information on financial performance SCs for the period 2015 to 2019. According to Oso and Onen (2009) document analysis guide is an instrument for collecting secondary information/data. The study was obtained information by analyzing the content of audited financial reports of each SC for a period of five years.

3.6.2 Data Collection Procedures

The researcher obtained an introduction letter from Moi University so as to apply for a research permit from National Commission for Science, Technology and Innovation (NACOSTI). The two documents are attached to this thesis document as Appendices V and VI respectively. Once the research permit was granted, questionnaires were self-administered. This was done by the researcher and three research assistants. The research assistants were selected based on their academic qualifications and availability during data collection period. Those bearing Bachelor's degree in business management were selected, and further trained on effective data collection techniques. This is consistent with Sharma and Yetton,(2009) who opined that personally administering questionnaires enhances the response rate and enables the researcher to get credible responses.

The unit of analysis was SCs and the target respondents were finance managers in SCs because they are best placed to answer the research questions. Collier *et al*. (2007) asserts that finance managers play a critical role in risk management. In

addition, they are considered to be knowledgeable and define the direction of the organization in matters relating to risk management. Studies by (Soltanizadel *et al.*, 2006: Rasid *et al.*, 2014) used similar kind of respondents. Further, finance managers are deemed to be able to provide credible responses. A single respondent from each SC filled the questionnaire to avoid information duplication that may arise from multiple responses from a single unit. Primary data was also collected on firm size, industry differences and growth rate which are the control variables.

3.7 Measurement of Study Variables

Measurement of study variables facilitates the reduction of abstract notions of constructs into observable characteristics that can be measured and facilitates the testing of the relationships among the variables in the theoretical model (Sekaran, 2006). It defines variables into measurable factors. The study has ERM practices as the independent variable, intellectual capital as the moderating variable, organizational performance is the dependent variable while controlling for firm size, industry differences and growth rate.

3.7.1 Dependent Variables (Organizational Performance)

Organizational performance has been measured using different indicators. Quon, Zeghal & Maingoit (2012) measured organizational performance using changes in sales, earnings before interest, tax margin and changes in Tobin's Q. Studies by (Laisasikorn, 2014; Nahar, Jubb & Azim, 2016; Ponnu, 2008) have measured organizational performance by return on assets, return on equity and earnings per share. Conversely, Kpodo & Agyekum (2015) measured organizational performance using both financial and non-financial indicators. This was done by use of a 5 point Likert scale where financial indicators focused on financial profitability, efficiency,

cost, market share, return on equity and return on assets. Non-financial indicators were customer perception, internal processes, innovation, staff morale, learning and development.

According to Calandro & Lane, (2006) organizational performance was measured using BSC by (Kaplan, 2010). This measure comprises of financials, customers' perspective, internal business process, learning and growth. Ping & Muthuveloo (2017) measured performance using both financial and non-financial indicators using a 7-point Likert scale ranging from "1 = declined greatly" to "7 = improved greatly. The questionnaire had 6 items of the financial indicator which were adopted from (Calandro & Lane, 2006; Marques & Simon, 2006); and 6 items of non-financial indicators were adapted from Calandro & Lane (2006), Glaister, *et al*. (2007).

This study measured performance of SCs using both financial and non-financial measures of performance. The financial aspect focused on profitability, operational efficency (solvency ratio) and financial efficiency (liquidity ratio) based on the respondents' opinion for the past five years. The non-financial aspects looked at stakeholder satisfaction in respect to organization image and customer satisfaction for the past five years. The same measures of organizational performance have been used in studies done by (Marqués & Simón, 2006; Ping & Muthuveloo, 2017). In addition, secondary data collected for financial performance were measured using Return on Assets (surplus/ assets), net operating revenue return, solvency (long term liabilities/ assets) and liquidity ratio was measured by dividing Current assets by Current liability.

In respect to subjective measure of organizational performance, the study used modified and validated questions on organizational performance developed by (Ping

& Muthuveloo, 2017; Marqués & Simón, 2006). Each indicator was scored and a raw score derived. The raw scores were combined to generate a composite score for organizational performance for each SC in Kenya. This is similar to (Marqués & Simón, 2006) who prepared a 5 point likert scale for the items measured. The composite score generated is what was used to measure organizational performance in this study and applied for further analysis.

Studies by (Vij and Bedi, 2015; Singh, Darwish and Potocnik, 2016) have justified and supported the use subjective measures in place of objective measures to successfully assess organizational performance. Vij and Bedi (2015), operationalized subjective measures of business performance and assessed their justification for use in place of objective measures of business performance. The study was based on a survey of 171 companies listed in Bombay Stock exchange in India. The study found it justified to use subjective measures of business performance in place of objective measures. This view was supported by Singh, Darwish and Potocnik (2016) who found that subjective measures can be successfully employed to assess organizational performance. Therefore, this study adopted the use of subjective measures of organizational performance to do further analysis.

3.7.2 Independent Variables (ERM Practices)

ERM practices as the independent variable for this study was operationalized based on risk structure, risk governance and risk management process as conceptualized by (Shad & Lai, 2015). First, ERM structure was measured using four items which are: outlined objectives, culture, key risk indicators (KRIs) and integrating risks to key performance indicators (KPIs). Secondly, ERM governance was measured by four elements which are; integrated ERM strategy, accountability, enhanced compliance

and risk reduction. Lastly, ERM process was measured based on ISO 31000 (2009) ERM framework. ERM process is classified into five components; risk identification, risk analysis, risk evaluation, risk treatment, risk monitoring and review. This study adopted the measures of ERM practices as conceptualized by (Shad & Lai, 2015). The same measurements were also used by (Lai & Shad, 2010). The constructs for each ERM aspect were measured using a 5 point Likert scale. Joshi *et al.*, (2015) posits that in a Likert scale, respondents are asked to respond to each of the statement in terms of several degrees, usually five degrees of agreement or disagreement with each statement in the instrument. The technique assigns a scale value to each of the five responses indicating its favorableness or unfavourableness. The raw scores were combined to generate a composite score which will measure the respondent's attitude for this variable (Joshi *et al.*, 2015).

3.7.3 Moderating Variables (Intellectual Capital)

IC as the moderating variable for this study and was operationalized using human capital, structural capital and relational capital, indicators as identified by (Bontis, 1998). Hamdan (2018) measured IC using Value added intellectual coefficient (VAIC) with a focus on Human Capital Efficiency: the ratio of value added divided by Human capital of company (i), in the period (t), Structural Capital Efficiency: the ratio of structural capital divided by value added, for the company (i), in the period (t) and Capital Employed Efficiency: the ratio of value added divided by capital employed, for the company (i), in the period (t). Studies by (Nimtrakoon, 2015; Iazzollino & Laise, 2013) also used VAIC to measure IC.

Hussinki *et al*., (2017) measured IC using 22 items representing seven different dimensions namely internal relational capital, external relational capital, structural

capital, human capital, renewal capital, trust capital and entrepreneurial capital. The measures were based on a five-point Likert scale (1-strongly disagree, 5-strongly agree) and respondents were asked to assess how the different statements on IC dimensions were applied in the organization they represented.

This study measured IC using three elements: human capital, structural capital and relational capital. This is similar to (Bontis & Mention, 2013; Hamdan, 2018). The dimensions were assessed using 22 items that measure the respondent's perception of that variable. This was carried out using 5 point likert scale questionnaire. This study used slightly amended version of the original survey questions developed by Bontis (1998) and modified by Cabrita and Bontis (2008). Each indicator was scored and a raw score derived. The raw scores were combined to generate a composite score for IC for each SC. This measurement was also used by (Cabrita & Bontis, 2008; Bontis, Keow & Richardson, 2000).

3.7.4 Control Variables

To distinctly indicate the relationship between ERM and organizational performance, this study controlled for growth rate, firm size and industry differences. Growth rate has been measured using the ratio of research & development expenditure to sales, or capital expenditure to assets (Allayannis & Weston, 2001). Pagach & Warr, (2007) measured growth rate using the ratio of market – book value of Equity and the ratio of Research & Development expenditure to total assets. Hoyt *et al*., (2008) used historical (one-year) sales growth as a proxy for future growth opportunities. This study measured growth rate by using the percentage increase in the organization's revenue. This measure was also used by Beasley *et al,* (2005) and Waweru and Kisaka, (2013). Data on the growth rate was collected from the questionnaire.

Industry differences have been measured using a variable to represent each industry (Beasley et al., 2005; Waweru & Kisaka, 2015). This study measured industry differences using market segmentations identified by Waweru & Kisaka (2015) representing each industry of operation. 1- Finance and investments, 2-Commercial and Services, 3 – Industrial and allied, 4 - Agricultural. The study gave a reverse ordering of the market segmentation so as to capture the most regulated SCs as 5 while the least at 2 while 0 represents SCs that are not regulated. This is in agreement with Economist Intelligence Unit (2007) which examined industries on ERM implementation. The author concluded that the financial services and utilities industries were more likely to be using ERM as their risk management strategy. Data on industry of operation was obtained from the questionnaire.

Lastly, firm size has been measured using different indicators. Yegon *et al.*, (2014) posit that firm size can be measured in terms of capital structure and asset value. Capital structure gives the percentage of individual ownership to the percentage institutional ownership. Therefore, it represents the proportion of long term debt to equity capital. On the other hand, net assets value refers to the amount by which total assets exceeds total liability. The value of net assets is determined by summing up the amount of fixed assets with current assets, then deducting the value of current liabilities. Studies by (Hoyt and Liebenberg, 2011; Carter and Rogers, 2006; Waweru and Kisaka, 2013) have calculated firm size as the natural logarithm of total assets. This study adopted the same measurement of firm size. The natural logarithm of total assets was done to correct for the effect of different sizes and reduces the effect of skewness in the distribution. The respondents were required to provide the value of total assets held by the organizations in Kenya Shillings. The values obtained were

transformed into natural logarithm to enable data comparability. The transformed data was then categorized into intervals.

Table 3.2: Summary of Measurement of Study Variables

Variable/Nature	Operational Indicators	Measure	Supporting Literature
Organizational Performance	Objective measures- Financial indicators (ROA, Net operating revenue return, solvency ratio and Current ratio	Ratio scale	Marques & Simon (2006)
	Subjective measures -capital profitability, operational and financial efficiency and non-financial - stakeholder satisfaction)	5- point likert scale type questions	Ping & Mutheveloo (2017) Marques & Simon (2006)
ERM structure practices	outlined objectives, culture, key risk indicators (KRIs) and key performance indicators (KPIs)	5- point likert scale type questions	Lai &Shad (2015) Bozkus (2014)
ERM Governance Practices	integrated ERM strategy, accountability, compliance and risk reduction	5- point likert scale type questions	Lai & Shad (2015) Bozkus (2014)
ERM Process practices	Risk identification, risk analysis, risk evaluation, risk treatment, risk monitoring and review	5- point likert scale type questions	ISO 31000 (2009)
Intellectual Capital	Human capital, structural capital, relational capital	5- point likert scale type questions	Cabrita & Bontis (2008) Bontis *et al.*, (2000)
Firm Size	Measured as natural logarithm of total assets	Interval scale	Beasley *et al*., (2008) Hoyt & Leibenberg, (2008)
Growth rate	Percentage increase in revenue of the organization	Ratio scale	Beasley *et al*. (2005)
Industry differences	5- Finance and investments, 4- Commercial and Services, 3 – Industrial and allied, 2 - Agricultural.	Ordinal scale	Waweru & Kisaka, (2013)

Source: (Researcher, 2019)

3.8 Pilot Study

In order to determine whether information collected from the questionnaires represents the phenomenon under study, a pilot study was carried out to pretest and validate the research instrument. The size of the sample to be used for pilot testing varies depending on time, costs and practicality but the same would tend to be at least 10% of the target population (Johanson & Brooks, 2010). Questionnaires for pilot study were administered to 22 Semi-Autonomous Government Agencies (SAGAs) because they have similar characteristics with SCs. The 22 SAGAs did not form part of the sample of the study. This study adopted stratified sampling while administering questionnaires for pilot study so as to come up with the appropriate sample for the pilot study. Stratified sampling involves selecting a sample from a population divided into sub-groups (strata) using common characteristic (Saunders et al., 2009). This sampling technique is relevant for pilot study because SAGAs are divided to serve different ministries.

Thereafter, results from the pilot study were used to test for any vagueness in the questions, establish the usefulness of the content, identify questions that would make respondents feel uncomfortable and detect any tendency for respondent's interest being lost at certain times. Preliminary analysis using the pilot test data was carried out to ensure that the data collected enables the questions to be answered. The number of filled and returned questionnaires were recorded for the purposes of determining the willingness of the respondent to participate in the study. The filled questionnaires were reviewed and analysed by the researcher and information obtained shared with Supervisors, to get insights and suggestions on how to further improve the research instrument where necessary. Each completed pilot questionnaire was assessed to

ensure that respondents have had no problems understanding or answering questions and have followed all instructions correctly (Saunders *et al.,* 2009).

Further, factor analysis of the constructs was carried out, in order to identify usable items for each study construct. SPSS statistical tool was used to extract factors according to their Eigen values, this is the column sum of squared loadings for a factor. Responses from the pilot study gave indications of reliability and suitability of the questions. The researcher's experiences in the field while conducting the pilot study and the supervisor's remarks, were taken into consideration while formulating the final research questionnaire.

3.8.1 Validity of Data Collection Instrument

Validity aims at establishing the extent to which the research instrument is able to gather the required information. Validity can be categorized as internal validity, external validity as well as validity of the measurement instrument itself, which looks at the ability to collect the concept being studied. This is further subdivided into; content validity, face validity, criterion-related validity and construct validity (Creswell, 2005; Pallant, 2011). Internal validity refers to the amount of credit that can be attributed to the relationship between variables that is true while external validity refers to how generalizable are the findings. The study enhanced external validity by using SCs as a representation of stated owned entities. Further, in Chapter 5 of this study, it is recommended that other scholars can extend the same to other settings.

Internal validity is the extent to which observed changes in a dependent variable could be attributed to changes in an independent variable (Tayler & Asmundson, 2008). This is in agreement with Saunders *et al*., (2009) who states that internal validity is

the extent to which findings of a study can be attributed to the interventions rather than any flaws in the research design. Tayler & Asmundson (2008) indicates that there are various threats to internal validity such as: maturation, history, selection, testing, instrumentation, statistical regression, attrition and mortality, among others, depending on the type of research being conducted. Data was collected within a period of three months (May to July 2019). Consequently, the study was not adversely affected by most of the threats to internal validity such as maturation, history, selection, instrumentation, attrition and mortality. In order to increase internal validity, the study controlled for variables which have been theorized to affect performance; growth rate, industry differences and firm size.

Content validity measures the extent to which the research instrument provides adequate coverage of the investigative questions guiding the study. Content validity is also known as logical validity and refers to the extent to which a measure represents all facets of a given social construct. The measurement questions were derived from adequate literature coverage and were subjected to expert judgment from the research supervisors, lecturers of Moi University School of Business and Economics, research experts and colleagues in the doctoral class as recommended by Saunders *et al.* (2009).

Content validity can be grouped into face validity and logic validity according to Mohajan (2017). Face validity refers to the degree to which an instrument appears to measure what it claims to measure. In other words, it examines the appearance of the questionnaire in terms of feasibility, readability, consistency of style and formatting, and the clarity of the language used. This study enhanced face validity by segregating the questionnaire sections for each of the five constructs (ERM structure,

governance and process practices, intellectual capital and organizational performance).

Construct validity measures the degree to which data obtained from an instrument meaningfully and accurately reflects or represents a theoretical concept (Cooper & Schindler, 2006). Therefore, to assess construct validity, there must be existence of a theoretical framework regarding concepts to be measured. Further, the measurements must conform to the theoretical expectations. This was achieved by pretesting the questionnaire prior to the actual study following identical procedures to those to be employed during actual data collection and questions reviewed as necessary. This study assessed construct validity using factor analysis. Principal components analysis (PCA) was used to assess the underlying factor structure of the given variables and also to reduce items in the case of complex variables as recommended by (Tabachnick & Fidell, 2013).

Criterion- related validity deals with the relationship between scale scores, and some specific measurable criterion. Burns *et al.* (2017), states that criterion – related validity correlates the results with another criterion of interest. On other words, it tests how the scale differentiates individuals on a criterion it is expected to predict (Pallant, 2011). Criterion validity has two aspects; concurrent validity and predictive validity. Concurrent validity refers to degree to which the scores on a test are related to the scores of another already established as valid, designed to measure the same construct, test administered at the same time or to some other valid criterion available at the same time. The study has enhanced concurrent validity by using measurements and tests that have been validated in previous empirical studies. Predictive validity indicates the ability of the measuring instrument to differentiate among individuals

with reference to a future criterion. In this study, criterion related validity was assessed using correlation tests and outcome accordingly. Mahajan (2017) opines that the higher the correlation between the criterion and the predictor indicates the greater the predictive validity.

3.8.2 Reliability of Data Collection Instrument

Reliability refers to the extent to which a measuring instrument is able to yield consistent results each time it is applied (Boit, Serem & Wanyama, 2013). Reliability is therefore an indication of stability and consistency with which the instruments measures a concept and therefore help to measure reliability of information collected. Sekeran (2003) simplifies the concept and argues that reliability indicates the extent to which a measuring instrument is without bias (error free) and hence ensures consistent measurement across time and the various items. There are threats to reliability which include; subject or participant error, subject or participant bias, observer error and observer bias (Saunders *et. al*, 2009). These were minimized through use of a structured data collection tool to be administered within the same period.

Reliability of an instrument is expressed as a coefficient which varies between values of 0.0 – no internal consistency to 1.0- complete internal consistency. The higher the coefficient, the more reliable the measurements scale. In other words, Cronbach's alpha is a reliability coefficient that indicates how well items in a set are positively correlated to one another. Croasmun and Ostrom (2011) opines that when using Likert-type scales, reporting on Cronbach's alpha coefficient for internal consistency reliability is mandatory. The authors further states that Cronbach's alpha estimates the internal consistency reliability of an instrument by determining how all items in the

instrument relate to all other items and to the total instrument. This study adopted Cronbach's alpha coefficient to calculate the reliability coefficient.

Nunnally, (1978) suggests that a value of not less than 0.7 to be acceptable. He further states that that if values were too low, either few items were used or the items had little in common. Sekaran, (2006) posits that any values between 0.5 and 0.8 are adequate to accept internal consistency. Samuels, (2016) noted that acceptable values for Cronbach's alpha are between 0.7 and 0.9. For the purposes of this study, if Cronbach's alpha is above .70 the instrument was considered as reliable.

3.9 Data Analysis

Data analysis tool that was used in this study is SPSS version 23. Data was analyzed using descriptive and inferential statistics. Descriptive statistics enable a researcher to describe and compare variables numerically based on central tendency and dispersion parameters (Saunders *et. al*, 2009). Descriptive statistics such as mean and standard deviation were used to evaluate manifestation of the ERM practices, intellectual capital and organization performance within SCs. The mean assessed the general overview of responses collected on risk structure, governance and processes of the respondents while the standard deviation was used to assess the consistency of the responses. A higher mean depicted a higher appreciation for the particular variable while a higher standard deviation depicted higher inconsistency among the responses. Descriptive statistics focuses on characteristics of the data collected while inferential statistics tests whether relationships exist within the study variables hence enabling comparison of data that has been collected with theoretical expectations.

Inferential statistics are classified into two; parametric and non-parametric statistical tests. Parametric tests have been considered to be more superior than non-parametric

test based on the assumptions that the data is normally distributed, numerical (interval /ratio scales), has homogenous variance, and that the data cases selected for the sample are independent. Non –parametric test does not require assumptions on data to be analyzed and mainly uses nominal/ordinal data. (Saunders *et al*., 2009). This study used a structured questionnaire with Likert scale type of questions to collect data.

Sullivan & Artino (2013) posit that there have been academic debates, as to whether parametric or non-parametric inferential statistics should be used when analyzing ordinal data from Likert scales. Murray (2013) summarized previous literature on the subject matter into two views; those who opine that Likert data is ordinal hence should use non- parametric tests (Gardner and Martin, 2007; Jamieson, 2004). On the contrary, there are scholars who argue that parametric tests can be used to analyze Likert scale responses on condition that the scores are summed and data is of appropriate size and shape (Carifio and Perla, 2008; Norman, 2010; Pell, 2005). Both authors (Murray, 2013; Sullivan & Artino, 2013) reviewed the two views and concluded that parametric tests can be used on Likert type of data. This study used the parametric tests such as; Pearson's Moment Correlation Coefficient tests and multiple regression to test the relationships and hypotheses of the study.

Composite indices were computed to aid in regression analysis. Multiple regression models were used to evaluate ERM practices (structure, governance and process) on organizational performance of SCs. Lastly, hierarchical regression was used to determine how much the extra variable adds to the prediction of the dependent variable over and above the contribution of previously included independent variables. Baron and Kenny (1986) model was employed in the testing of the moderating role of intellectual capital. The regression analyses were used to test the

hypotheses at 95 percent level of confidence. Multiple regression analysis yields the coefficient of determination (R^2) which provides the proportion of variance in the independent variable accounted for by the combination of predictors. Based on the conceptual model employed in this study, ERM practices are conceptualized as the independent variables and intellectual capital as the moderating variable. The influence of the two variables on organizational performance of SCs was tested. Pearson (product moment) correlation coefficient (r) was used to establish the extent of correlation between study variables and the strength of the linear relationship (Cooper & Schindler, 2006). P-value and t- statistic were used to determine the individual significance of the coefficients while the F statistic was used to determine the overall model significance.

3.10 Model Specifications

The study used the following models as shown below: The first model tested the relationship between the control variables and the dependent variable.

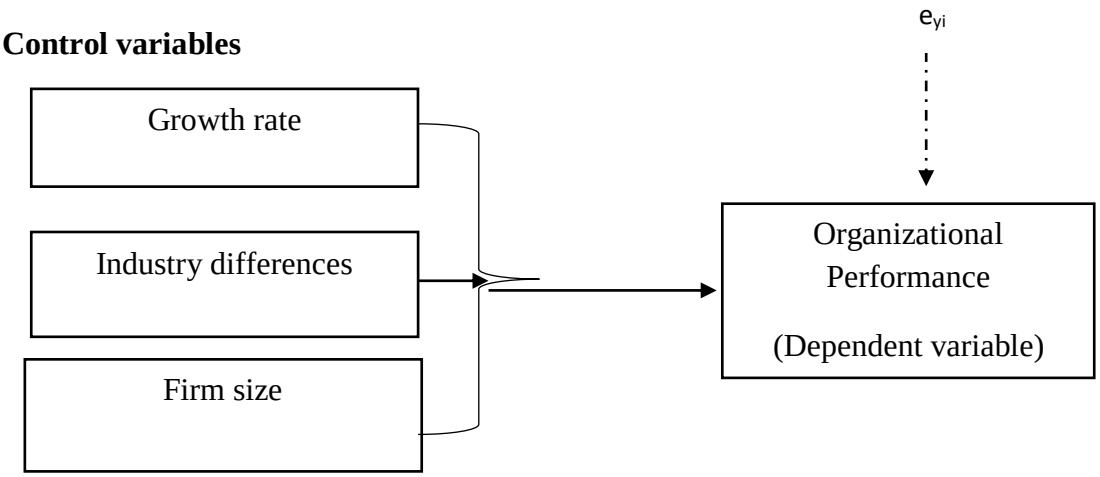

Figure 3.1: Analytical Model for testing effects of control variables on Organizational Performance

Source: Researcher, 2019

The second model outlined in Figure 3.2 was used to test the direct effects of each of the independent variables (ERM governance, ERM structure and ERM process) on the dependent variable. The direct effects are represented by b_1, and X represents X_1 (ERM structure), X_2 (ERM governance) and X_3 (ERM process). The tests were undertaken separately for each independent variable. In addition, the third model examined the unconditional effect of M on Y which is represented by b_2.

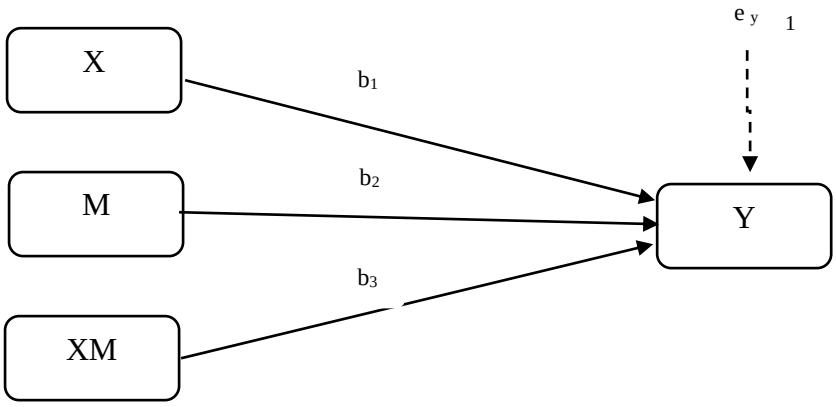

Figure 3.2: Analytical Model for Hypothesis H_{01}, H_{02}, H_{03}, and H_{04}

Source: Researcher 2019, based on Model 1, Hayes (2013)

The lastly, the conditional effect of X and M on Y is represented by (b_1+b_3M). It provides for the effect of X on Y when dependent on M. X is representing X_1 (ERM structure), X_2 (ERM governance) and X_3 (ERM process) and M is the moderating effect of IC. This model was appropriate to test for the overall objective of the study.

3.10.1 Hypothesis testing

To facilitate testing of the hypotheses of the study, multiple regression equations outlined below were utilized. In the equations:

C_i : Represents Firm Characteristics (Control variables); where C_1 (Firm size), C_2 (Growth rate) and C_3 (Industry differences).

X_i : Represents ERM Practices (Independent variables); where X_1 (ERM structure), X_2 (ERM governance) and X_3 (ERM Process).

M_i : Represent Intellectual Capital (Moderator variable).

Y_i : Represent Organizational Performance (Dependent variable)

Model 1 was used to test the effect of control variables on the dependent variable.

$Y = \beta_0 + \beta_1 C_1 + \beta_2 C_2 + \beta_3 C_3 + \varepsilon_1$ ..... Equation 1

Model 2 was used to test the direct effect of Xi on the dependent variable.

$Y = \beta_0 + \beta_1 C_1 + \beta_2 C_2 + \beta_3 C_3 + \beta_4 X_1 + \beta_5 X_2 + \beta_6 X_3 + \varepsilon_1$ ..... Equation 2

Model 3 was used to examine the unconditional effect of Mi on the dependent variable.

$Y = \beta_0 + \beta_1 C_1 + \beta_2 C_2 + \beta_3 C_3 + \beta_4 X_1 + \beta_5 X_2 + \beta_6 X_3 + \beta_7 M + \varepsilon_1$ ..... Equation 3

To test the moderating effect of intellectual capital on the relationship between ERM practices and organizational performance, the following models will be used

$Y = \beta_0 + \beta_1 C_1 + \beta_2 C_2 + \beta_3 C_3 + \beta_4 X_1 + \beta_5 X_2 + \beta_6 X_3 + \beta_7 M + \beta_8 M.X_1 + \varepsilon_1$ ..... Equation 4

$Y = \beta_0 + \beta_1 C_1 + \beta_2 C_2 + \beta_3 C_3 + \beta_4 X_1 + \beta_5 X_2 + \beta_6 X_3 + \beta_7 M + \beta_8 M.X_1 + \beta_9 M.X_2 + \varepsilon_1$ Equation 5

$Y = \beta_0 + \beta_1 C_1 + \beta_2 C_2 + \beta_3 C_3 + \beta_4 X_1 + \beta_5 X_2 + \beta_6 X_3 + \beta_7 M + \beta_8 M.X_1 + \beta_9 M.X_2 + \beta_{10} M.X_3 + \varepsilon_1$

..... Equation 6

3.11 Assumptions of Linear Regression

Statistical tests rely upon certain assumptions about the variables used in the analysis. When these assumptions are not met the results may not be valid (Osborne & Waters, 2002). This result to either type I or type II error, or over or under-estimation of significance or effect size(s). Thus, it was important to pretest for these assumptions for validity of their results. The following assumptions for linear regression were checked prior to data analysis; linearity, normality, multicollinearity and homoscedasticity.

3.11.1 Linearity

Linearity of data means that the values of the outcome variable for each increment of a predictor variable lie along a straight line (Hair *et al.*, 2010). Linearity is an important association between the dependent and the independent variables. In this study, linearity was tested using ANOVA test of linearity. Absence of a linear relationship between independent variables and the dependent variable leads to the results of the regression linear analysis to under-estimate the true relationship.

3.11.2 Normality

In statistics, normality tests are used to determine if a data set is well-modeled by a normal distribution and to compute how likely it is for a random variable underlying the data set to be normally distributed. Variables that are not normally distributed can distort relationships and significance tests. Additionally, when normality assumption is violated, interpretation and inferences may not be reliable or valid (Razali & Wah, 2011). This is because all regression analyses assume normal distributions. This study tested for normality by use of histograms and Kolmogorov-Smirnov. Results of

Shapiro- Wilk's test were also availed because as much as the test is appropriate for samples less than 50, it can handle samples up to 2,000.

3.11.3 Multicollinearity

Multicollinearity occurs when the independent variables are not independent from each other leading to unreliable and unstable estimates of regression coefficients. Multicollinearity test evaluates whether the independent variables are highly correlated. In order to test for multicollinearity, Variance Inflation Factor (VIF) and Tolerance (TOL) was computed using Statistical Package for Social Sciences (SPSS). While undertaking the test, the researcher expected the Variance Inflation Factor (VIF) values of collinearity diagnostic to lie between 1 and 10, for there to be no Multicollinearity. Also, as a rule of the thumb, TOL should be greater than 0.2 if there is no multicollinearity. VIF and TOL have an intimate connection in the sense that Tolerance is equal to the inverse of VIF. The closer is TOL to zero, the greater the degree of collinearity of that variable (O'Brien, 2007).

3.11.4 Homoscedasticity

Homoscedasticity is present when the variance of error terms is similar across the values of the independent variables. Homoscedasticity was tested using Levene test within SPSS, with the focus being on the significance value of the statistic which was expected to be greater than 0.05 (non-significant) to avoid violation of the assumption, otherwise heteroscedasticity would have been implied.

3.12 Ethical Considerations

The study took into consideration ethical procedures required while conducting the research. Approvals from the University and National Council of Science and Technology were sought as shown in appendices VI and VII in order to collect data

from each of the state corporation listed in appendix I. First, an introductory letter (Appendix II) was enclosed to each research questionnaire. The letter stipulated the general objective of the study. Further, the researcher sought consent from respondents before administering questionnaires. In addition, information on voluntary participation in answering the questionnaire was communicated to the respondents. The respondents were informed of their right not to take part in the survey. Furthermore, the researcher ensured confidentiality of information by ensuring anonymity of the name of the organization and respondent. Also, the researcher did not use the information collected for any other purpose rather than conducting this research. Lastly, the researcher has acknowledged and cited the works of other authors whether published or unpublished (Boit *et al.,* 2013).

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.0 Introduction

This chapter presents the empirical findings and interpretations of the research. The study focused on the moderating effect of intellectual capital on the relationship between enterprise risk management practices and organizational performance of Kenya state corporations. The chapter is organized into five sections mainly 1) Descriptive analysis 2) Test of statistical assumptions 3) Factor analysis 4) Hypothesis testing and 5) Summary of results. Statistical Package for Social Scientists (SPSS) version 23 was used for data analyses.

4.1 Data Screening and Cleaning

The data screening and cleaning process normally involves an inspection of the collected data and correction (or removal) of any errors that potentially can cause substantial impacts on the analysis results (Osborne, 2013). It often includes an examination of missing values, identification of substantial errors, management of raw data for an appropriate use of the analysis and assessment of normality and outliers (Tabachnick & Fidell, 2013)

4.1.1 Examination of Missing Data

Missing data is refers to unavailability of suitable value on one or more variables for data analysis (Hair *et al*, 2010). In view of the negative consequences of missing data in the analysis, the researcher skimmed through the questionnaires obtained from the field. A preliminary descriptive statistics was then conducted to find out whether there was missing data or not. The descriptive statistics result shows that there were few missing values recorded. Hair *et al*. (2010) asserts that any case with more than 50%

missing value should be deleted as long as there is adequate sample. Therefore, questionnaires that were incomplete with more than 50% of the values not being filled were dropped while those that were returned as blank were not taken into consideration. Similarly, Tabachnick & Fidell (2013) and Babbie (2005) observed that missing values in any variable could be replaced with a single value that is thought to best represent the mechanism of the missing data. Therefore, for questionnaires with one or two missing values, the researcher replaced the values using mean substitution estimation.

4.1.2 Analysis of Outliers

An outlier is a point that is far from observing other observations and may affect normality of data which is a key assumption for regression models as adopted in the study. Outlier may be due to variation in the measurement and can perhaps show an experimental error (Churchill Jr. and Iacobucci, 2004). Scrutinizing outliers is an important step because skipping initial examination of outliers can distort statistical tests if there happens to be problematic outliers (Hair et al., 2010). In particular, it distorts statistics and may lead to results that do not generalize to certain sample except one with the same type of outliers (Tabachnick and Fidell, 2013).

Screening of study variables was done to check for presence of outliers. Boxplots were used for identifying univariate outliers. Simple outliers were transformed, by allocating and changing their values to the next highest or lowest non-outlier item number. Thereafter, to determine cases with extreme values in respect to multivariate outliers, Mahalanobis distance test was utilized. This is line with the recommendation of Tabachnick and Fidell (2013) who used Mahalanobis D2 measure to identify and deal with multivariate outliers. Hence, Mahalanobis D2 were calculated using linear

regression methods in SPSS, followed by the computation of the Chi-square value. According to Tabachnick & Fidell (2013) any case with a probability Mahalanobis D2 value of less than 0.001 is a multivariate outlier and should be removed. Therefore, 15 cases with a value of less than 0.001 were excluded from further analysis.

4.2 Response rate

The study intended to collect data from 218 respondents. However, data was successfully collected from 197 respondents as shown in table 4.1. This represents a response rate of 90.4 percent of the target population, which falls within the confines of a large sample size (n ≥30). This provides a smaller margin of error and good precision (Draugalis, Coons &Plaza, 2008).

Table 4.1: Response Rate

	State Corporations	
Sample size	Number	Percent
Total sample size	218	100.00
Unusable	15	6.88
Total usable responses	197	90.40
Description of unusable questionnaires		
Returned blank	9	4.13
Incomplete questionnaire	6	2.75

Source: Research Data (2019)

4.3 Sample characteristics

The sample characteristics has been analyzed in terms of the rate of revenue growth, size of the corporations' which was examined in terms of the natural log of its total assets and implementation of the enterprise risk management framework in the state corporations. As indicated in table 4.2, 49.7% of the respondents were of the opinion that the SCs have realized an income growth below 5% while 27.9% of them were of the opinion that the SCs have elicited an income growth ranging from 6 to 10%. The findings indicate that only 3.6% of the respondents confirmed that their SC had

realized an income growth of over 20%. Evidently, most of the SCs have exhibited dismal performance as evidenced by the income growth.

Regarding firm size, which was examined in respect to the value of the organization's total assets, the study found that 43.7% of the respondents noted that their SC's size is large, which ranged between the natural log of 22 to 24 while 10.7% of the SCs are small in size. Further, the study found that only 9.1% of the respondents have an asset value ranging from 25 to 27 indicating a very large firm size. The implementation of ERM framework was also ascertained by the study. Evidently, most (43.7%) of the respondents stated that ERM has been implemented though there is need for further improvement while 15.7% had robustly implemented ERM. On the contrary, the results show that the rest of the respondents comprise those who have adhoc implementation of ERM (18.8%), plan to introduce ERM (17.3%) while 4.6% of the SCs have not implemented ERM at all.

Table 4.2: Sample Characteristics

Variable	Categories	Frequency	Percent
Rate of Revenue (Income) Growth	Below 5%	98	49.7
	6-10%	55	27.9
	11-15%	19	9.6
	16-20%	18	9.1
	Over 20%	7	3.6
	Total	**197**	**100**
Value of Organization's Total Assets	16-18	21	10.7
	19-21	72	36.5
	22-24	86	43.7
	25-27	18	9.1
	Total	**197**	**100**
Implemented ERM	Not at all	9	4.6
	Plan to Introduce ERM	34	17.3
	Adhoc Implementation	37	18.8
	Implemented but Improvements needed	86	43.7
	Robustly implemented	31	15.7
	Total	**197**	**100**

Source: Research Data (2019)

4.4 Descriptive Statistics

In order to establish responses made to the research items, the mean, standard deviation, skewness and kurtosis of the study variables were determined. The mean gave indications on the average direction of the variables for each construct, while the standard deviation provided information on the level of dispersion from the mean. A low standard deviation meant that most of the responses group around the mean. In addition, kurtosis and skewness was used to establish the measures of the shape of the distribution. Kurtosis measured the "peakedness" or "flatness" of a sample distribution, while skewness measured the extent to which a distribution of values deviates from symmetry around the mean.

4.4.1 Organizational Performance

Performance of State Corporations is of dynamic significance for economic development, stakeholders, and investors. The government expects high returns on its investment in SCs and well-organized SCs could bring long-term benefits for its stakeholders. Organizations with higher financial performance and profitability may have better environmental friendly production units, bring better quality products for its clients and enhance the income of employees (Mirza and Javed, 2013). The study analyzed secondary data on objective measures of organizational performance of State Corporation. This was obtained from return on asset (ROA) = surplus/total asset; net operating revenue return = surplus/total revenue; solvency ratio= Long term liabilities/Non-Current Assets; and current ratio=current asset/current liabilities for the years 2015-2019. The findings are presented in Table 4.3. The findings showed that return on asset had mean 0.33 with max of 0.96 and min of -2.09. This implies that despite of some SCs having a positive return on asset, there are some which reported negative returns. Further, SCs reported a net operating revenue return of

0.13 over the period. The findings imply that net operating income of State Corporation was low; being the probable reasons why many SCs are not performing well. The results also revealed that solvency ratio had a mean of 0.55 which in an indicator that a reasonable number of SCs are able to settle their long term debts. However, the findings are cognizant of highly indebted SCs shown by the high solvency ratio of 21.82. This may lead to receivership of such SCs. The values for skewness and kurtosis for all the statements with regard to organizational performance were within the acceptable value of < 3 for skewness and value of < 10 for kurtosis (Kline, 2011) as shown in Table 4.3

Table 4.3: Organizational Performance using Objective measures

	Min	Max	Mean	SD	Skewness	Kurtosis
ROA	-2.09	0.96	0.33	0.26	0.73	-2.60
Net operating revenue return	-6.60	1.05	0.13	0.61	-0.11	-1.93
Solvency ratio	0.00	21.82	0.55	0.64	0.40	2.03
Current ratio	0.72	1.04	0.85	0.13	0.62	-1.12

Research Data (2019)

4.4.2 Trends for the Objective Measures of Organizational Performance

The study also analyzed organizational performance trend across the five years. Basing on the findings in Table 4.4, return on asset was highest in 2018 (M=.421) while it was lowest in 2015 (M=0.280). The trend difference was statistically significance across the five years (F=3.99, Prob>F =.0079). Further, the solvency ratio improved between 2015 to 2019 and the difference was statistically significant F=178.68, Prob>F =.00). Moreover, there was a statistically significant difference in current ratio and net operating revenue return of state corporation across the five years (F= 30.16, ρ=0.00<0.05 and F= 12.37, ρ=0.00<0.05) respectively.

Table 4.4: Trend of Objective Measures of Organizational Performance

	ROA	Net operating revenue return	Solvency ratio	Current ratio
2015	0.280	0.109	0.518	0.705
2016	0.308	0.076	0.512	0.715
2017	0.374	0.097	0.501	0.867
2018	0.421	0.126	0.498	0.885
2019	0.388	0.108	0.515	0.746
ANOVA				
F	3.99	12.37	178.68	30.16
Prob > F	0.0079	0.000	0.000	0.000

Research Data (2019)

The study found it necessary to analyze the subjective measures of organizational performance of SCs. Table 4.5 illustrates the results. As evidenced in the table, average economic profitability slightly improved (mean =3.36, SD = 1.09), organization experienced an increase in total revenue collected (mean = 3.42, SD = 1.07) and the market share improved slightly (mean =3.36, SD =1.07). Also, the organizations observed had improved solvency ratios (mean = 3.38, SD = 1.29) and financial liquidity levels (mean = 3.64, SD =0.87). However, there are gaps as to whether there is an increase average financial profitability (mean = 3.28, SD = 1.03).

Further, the study found that SCs have been able to attract and retain their customers (mean = 3.65, SD = 0.87). Besides, there are a range of customized products/services for customers (mean = 3.64, SD = 0.96). Moreover, staff productivity has improved (mean = 3.75, SD = 0.84) and the brand/image of the organization has improved (mean = 3.77, SD = 0.94). However, the feedback from the customer satisfaction survey was not highly positive (mean = 3.52, SD = 0.97). From the findings of the study, organizational performance had an overall mean of 3.48. This shows that majority of the respondents were in agreement with the statements that were used to measure organizational performance. The standard deviation was 0.78 implying that

there was consistency in the responses made. A skewness of - 0.39 and kurtosis of -0.27 indicates that the data is normally distributed.

Table 4.5: Organizational performance using subjective measures

N=197 **Items**	**Mean**	**Std. Dev**	**Skewness**	**Kurtosis**
Average economic profitability (ROA)	3.36	1.09	-0.39	-0.39
Average financial profitability (Net operating revenue return)	3.28	1.03	-0.37	-0.05
The organization has experienced an increase in total revenue collected	3.42	1.07	-0.43	-0.45
The organization market share has increased	3.36	1.07	-0.42	-0.40
Financial leverage/ solvency ratio has increased	3.38	1.29	-0.57	-0.77
Financial liquidity ratios/ level has improved	3.64	0.87	-0.46	0.25
The cost of service/ product delivery has improved	3.49	0.93	-0.39	-0.20
Financial performance	**3.35**	**0.94**	**-0.38**	**-0.21**
The organization able to attract and retain its customers	3.65	0.87	-0.53	0.29
The organization has a range of customized products for its customers	3.64	0.96	-0.54	0.09
Feedback from customer satisfaction survey is positive	3.52	0.97	-0.48	0.09
Staff productivity has improved	3.79	0.98	-0.77	0.27
The brand/ image of the organization has improved	3.65	0.97	-0.57	0.01
Non-financial performance	**3.67**	**0.75**	**-0.51**	**0.14**
Performance	**3.48**	**0.78**	**-0.39**	**-0.27**

Source: Research Data (2019)

The study compared the results of obtained from the objective measures with those of the subjective measures and found that the outcomes were similar. Both results indicated that there was an improvement in profitability, liquidity and solvency ratios for SCs. The findings were consistent with those of (Vij and Bedi, 2015; Singh, Darwish and Potocnik, 2016). Subjective as well as objective measures have been used by researchers measuring performance. However subjective measures of performance are more commonly used (Kraus *et al.*, 2012; Santos and Brito, 2012).

Since the data obtained for the other variables was subjective in nature, it was deemed appropriate to use the subjective measures of performance to conduct further analysis. Subjective measures are generally relative whereas objective measures are absolute (Wall et al., 2004).

4.4.3 Risk Structure Practices

Risk structure practices are key in ensuring that risk management events are combined in a holistic manner to facilitate identification of uncertainties (Hoyt, & Liebenberg, 2011). Moreover, there is an established policy, process, reporting, technology and a set of standards for risk management. The study therefore deemed it essential to ascertain the risk structure practices in state corporations in Kenya. Table 4.6 indicates the findings on risk structure practices. From the findings, the organization has an ERM program in place (mean = 3.65, SD = 1.12). As such, the SCs focus on risk reduction approaches to gain superior performance. Besides that, the organizational objectives, policies and tolerance for risk are clearly communicated (mean = 3.57, SD = 1.02). Consequently, there is no information asymmetry with regard to policies and processes on risks management. There are however gaps in the integration of risk management across all functions and business units (mean = 3.30, SD = 1.04). Other than that, the study indicates that there is uncertainty to whether the overall risk appetite of the organization has been made known to all levels of the organization (mean = 3.26, SD = 1.02). It appears that there are gaps in the risks structure practices as there is no clear understanding of the SCs risk appetite and modalities for executing assigned responsibilities in the different business units.

Further, the organizational culture defines key areas of responsibility and establishes accountability (mean = 3.89, SD = 0.98). Further, the assignment of authority and

responsibility clearly establishes limits of authority (mean = 3.79, SD = 0.99) and the degree to which individuals and teams are authorized and encouraged to act to address issues, solve problems and take advantage of presented opportunities (mean = 3.72, SD = 0.93). In light of the foregoing, each employee is aware of their responsibility in ensuring that risks are managed effectively and the limits of their authority in pursuit of identification and management of risks. Besides, individuals know how their actions interrelate and contribute to achievement of the organization's objectives (mean = 3.65, SD = 0.97). However, it is uncertain if there are dedicated people who act as risk identification champions (mean = 3.42, SD = 1.12) and whether the organization conducts training on ERM to its employees (mean = 3.23, SD = 1.17). These comprises major gaps in the state corporations because employees are not adequately equipped with skills to manage risks such that there is no dedication among the employees with regards to risk identification.

In terms of key risk indicators, there is an approach to determine the root cause of risk (mean = 3.48, SD = 1.08). Also, each risk identified is classified using defined risk categories (mean = 3.45, SD = 1.09) though it is unclear if there is a register to record the frequency of risk occurrences (mean = 3.30, SD = 1.16). As such, the organizational key risk indicators are likely to enable firms to enhance their strategies for manage risk in an effective way. In addition, the management fully considers risks in determining the best course of action (mean = 3.46, SD = 0.99). However, it is undefined if the existence of risks and management’s recognition of the same is appropriately communicated to employees (mean = 3.29, SD = 0.94). The management are therefore strongly encouraged and advised to work towards ensuring that risks are defined within the SCs and communicated throughout the organization. This is likely to improve the firms’ value and performance. Finally, it is unclear if

performance measures are used to promote risk identification and prevention (mean = 3.32, SD = 1.02). From the findings of the study, ERM structure had an overall mean of 3.48. This shows that majority of the respondents were in agreement with the statements that were used to measure ERM structure. The standard deviation was 0.78 implying that there was consistency in the responses made. A skewness of - 0.44 and kurtosis of -0.10 indicates that the data is normally distributed.

Table 4.6: Risk Structure Practices

n=197 **Items**	**Mean**	**Std. Dev**	**Skewness**	**Kurtosis**
The organization has an ERM program (process) in place	3.65	1.12	-0.65	-0.36
Risk management is fully integrated across all functions and business units	3.30	1.04	-0.18	-0.59
Organizational objectives , policies and tolerance for risk are clearly communicated	3.57	1.02	-0.45	-0.31
The overall risk appetite of the organization has been made known to all levels of the organization	3.26	1.02	-0.31	-0.48
Outlined Objectives	**3.45**	**0.89**	**-0.49**	**-0.04**
The organization conducts training on ERM to its employees	3.23	1.17	-0.15	-0.96
The organizational structure defines key areas of responsibility and establishes accountability.	3.89	0.98	-0.75	0.04
Assignment of authority and responsibility clearly establishes the degree to which individuals and teams are authorized and encouraged to act to address issues, solve problems and take advantage of presented opportunities.	3.72	0.93	-0.55	0.00
The assignment of authority and responsibility clearly establishes limits of authority.	3.79	0.99	-0.77	0.27
Individuals know how their actions interrelate and contribute to achievement of the organization's objectives	3.65	0.97	-0.57	0.01
There are dedicated people who act as risk identification champions	3.42	1.12	-0.40	-0.59
Culture	**3.62**	**0.80**	**-0.55**	**0.30**
There is an approach to determine the root cause of risk	3.48	1.08	-0.42	-0.45
Each risk identified is classified using defined risk categories	3.45	1.09	-0.45	-0.42
There is a register to record the frequency of risk occurrences	3.30	1.16	-0.19	-0.83
Key Risk Indicators	**3.41**	**1.03**	**-0.36**	**-0.44**
Management fully considers risks in determining the best course of action.	3.46	0.99	-0.43	-0.19
The existence of risks and management's recognition of the same is appropriately communicated to employees.	3.29	0.94	-0.35	-0.10
Performance measures are used to promote risk identification and prevention	3.32	1.02	-0.44	-0.12
Key Performance Indicators	**3.36**	**0.88**	**-0.54**	**-0.07**
ERM structure	**3.48**	**0.78**	**-0.44**	**-0.10**

Source: Research Data (2019)

4.4.4 Risk Governance Practices

The risk governance practices encompass activities that promote accountability, participation and transparency in establishment of policies and structures to facilitate the implementation of risk-related decision by both the board and the management. Risk governance practices are geared towards enhancing the efficiency and effectiveness of state corporations with the help of proper supervision and control. The study therefore sought to establish the risk governance practices in SCs. Basing on the results in table 4.7, there is a board committee with responsibility for risk management oversight responsibilities (mean = 3.83, SD = 1.19). To further strengthen risk governance practices, the board has established a risk management philosophy (mean = 3.54, SD = 1.14). Particularly, there are shared beliefs and attitudes characterizing how the firms consider risk in all their endeavors. Moreover, risk management is a strategic objective of the organization (mean = 3.88, SD = 1.04). From the findings, the study indicates that the board is responsible for risk governance oversight.

Also, the results show that the organization has defined and documented strategies for managing risks (mean = 3.65, SD = 1.12). In addition, formal reports are submitted to board level at least annually on the current state of risk management (mean = 3.59, SD = 1.17). However, the study found that there are gaps in terms of the provision of adequate risks to achieve risk management goals (mean = 3.42, SD = 1.12). As such, the SCs needs to focus on availing sufficient resources towards the attainment of risk management. Regarding the compliance dimension, results indicate that risk management practices have helped the entity to meet its legislative requirements (mean = 3.90, SD = 0.84). Also, there is an agreed process for reporting, managing and analyzing risk (mean = 3.53, SD = 1.09). Consequently, the risk management

practices bring about investor confidence and enhance the efficiency of state corporations since there is adherence to legislative requirements and guidelines for reporting, managing and analyzing risk. It is however uncertain if regular risk audits are conducted at least quarterly (mean = 3.44, SD = 1.23). Finally, the results on risk reduction indicated that the total number of risks reported have declined (mean = 3.71, SD = 0.91). Moreover, there is a corrective action system in place for managing risks (mean = 3.64, SD = 0.87). Further, the status of each risk is monitored regularly at least quarterly (mean = 3.50, SD = 0.94). However, it is undefined if the risk management system is continuously monitored and reviewed (mean = 3.38, SD = 1.29). From the findings of the study, ERM governance had an overall mean of 3.56. This shows that majority of the respondents were in agreement with the statements that were used to measure ERM governance. The standard deviation was 0.71 implying that there was consistency in the responses made. A skewness of - 0.21 and kurtosis of -0.33 indicates that the data is normally distributed.

Table 4.7: Risk governance practices

n=197 **Items**	**Mean**	**Std. Dev**	**Skewness**	**Kurtosis**
There is a board committee with responsibility for risk management oversight responsibilities.	3.83	1.19	-0.83	-0.24
The Board has established a risk management philosophy (policy) (a set of shared beliefs and attitudes characterizing how the firm considers risk in everything it does and delineates the responsibility of management and the board)	3.54	1.14	-0.36	-0.67
Risk management is a strategic objective of the organization	3.88	1.04	-0.89	0.28
Strategy	**3.75**	**1.00**	**-0.69**	**0.18**
The organization has defined and documented strategies for managing risks	3.65	1.12	-0.76	0.02
Adequate resources are provided so as to achieve risk management goals	3.42	1.12	-0.37	-0.46
Formal reports are submitted to board level at least annually on the current state of risk and effectiveness of risk management	3.59	1.17	-0.58	-0.38
Accountability	**3.56**	**0.99**	**-0.54**	**-0.06**
There is an agreed process for reporting, managing and analyzing risk	3.53	1.09	-0.46	-0.32
Regular risk audits are conducted; at least quarterly	3.44	1.23	-0.38	-0.83
Risk management practices have helped the entity to meet its legislative requirements	3.90	0.84	-0.93	1.15
Compliance	**3.63**	**0.83**	**-0.32**	**-0.61**
Risk management system is continuously monitored and reviewed	3.38	1.29	-0.57	-0.77
There is a corrective action system in place for managing risks	3.64	0.87	-0.46	0.25
The status of each risk is monitored regularly; at least quarterly	3.50	0.94	-0.39	-0.20
The total number of risks reported have declined	3.71	0.91	-0.59	0.18
Risk Reduction	**3.55**	**0.68**	**-0.23**	**0.11**
ERM Governance	**3.56**	**0.70**	**-0.21**	**-0.33**

Source: Research Data (2019)

4.4.5 Risk management process

Risk management processes make it plausible for firms to integrate business strategies to attain the desired objectives through risk identification, risk evaluation, risk analysis, risk treatment and risk monitoring. The results on risk management process are highlighted in table 4.8. Evidently, the study found that changes in risks are recognized and identified when roles and responsibilities change in the organization (mean = 3.51, SD = 0.96). There is therefore a holistic framework which makes it

possible for state corporations to counter risks with changes in risks and responsibilities. Also, the organization has a record of identified risks for instance a risk register (mean = 3.54, SD = 1.12). Consequently, the findings indicate that records can be used to prove compliance and inform the decision of the state corporations. With strong record management, the potential for risk management is maximized. However, the study shows that SCs are yet to identify the main potential risk relating to each declared aims and objectives (mean = 3.44, SD = 1.01).

With regard to risk analysis, the study found that there are mechanisms in place for analyzing risks (mean = 3.51, SD = 1.09) and the organization can easily prioritize its main risks (mean = 3.58, SD = 1.11). The implication is that the organizations have a provision for risk analysis. Also, the findings show that risks are assessed to determine the probability of occurrence (mean = 3.48, SD = 1.06). Moreover, analysis is done to assess possible impacts of risks materializing (mean = 3.59, SD = 1.07). Evidently, results indicate that state corporations have the mechanisms to identify the potential risks they are likely to face. Subsequently, they can anticipate the risk in advance and institute measures to counter the challenges.

Further findings on risk evaluation indicated that the organization regularly assesses the overall risks that could affect achievement of its objectives (mean = 3.50, SD = 1.14). This is achieved through identifying and mitigating effects of risks before they occur. This saves the firm a lot of scarce resources that can be profitably invested elsewhere. Also, the study shows that the organizations know the strength and weakness of its risk management system (mean = 3.60, SD = 1.09). Besides, stakeholders are important when assessing risks facing the organization (mean = 3.62, SD = 1.11). The results imply that state organizations which engage in risk analysis

are able to better understand the aggregate risk inherent in organizational operations. Nonetheless, there is uncertainty as to whether the level of risks faced by the organization has reduced in the last five years (mean = 3.36, SD = 1.05).

Also, risk treatment was also assessed in the state corporations. The aim of risk treatment is to manage or eliminate identified risks and evaluate the effectiveness of mitigating factors engaged by the organization. The findings on risk treatment indicated that there are action plans for implementing decisions about identified risks (mean = 3.50, SD = 1.02). Also, there is an evaluation of the effectiveness of the existing controls and risk management responses (mean = 3.47, SD = 1.06). From the findings, it was observed that there are gaps on whether the organization collates risks for decision making on what actions to take (mean = 3.40, SD = 1.08). Similarly, there is doubt if there is an assessment of the costs and benefits of addressing risks (mean = 3.35, SD = 1.04). From the foregoing, there are gaps in the analysis of how risks affect the operations of state corporation. This is could be counterproductive to the risk management process. Lastly, monitoring of risks was assessed. The findings indicate that the organization routinely reviews the effectiveness of the controls in place to manage risks (mean = 3.43, SD = 1.10). Risk management process is regularly reviewed and improved; at least quarterly (mean = 3.37, SD = 1.09). Also, there was a formal feedback system is used to monitor the execution of risk mitigation actions (mean = 3.35, SD = 1.11). From the findings of the study, ERM process had an overall mean of 3.43. This shows that majority of the respondents were in agreement with the statements that were used to measure ERM process. The standard deviation was 0.83 implying that there was consistency in the responses made. A skewness of - 0.52 and kurtosis of 0.02 indicates that the data is normally distributed.

Table 4.8: Risk Management Process

n=197 **Items**	**Mean**	**Std. Dev**	**Skewness**	**Kurtosis**
Changes in risks are recognized and identified when roles and responsibilities change in the organization.	3.51	0.96	-0.41	-0.15
The main potential risks relating to each declared aims and objectives have been identified.	3.44	1.01	-0.45	-0.09
The organization has a record of identified risks e.g. risk register, risk database	3.54	1.12	-0.54	-0.34
Risk Identification	**3.50**	**0.86**	**-0.54**	**-0.01**
There are mechanisms in place for analysis risks	3.51	1.09	-0.51	-0.36
The organization can easily rank/prioritize it main risks	3.58	1.11	-0.63	-0.23
Risks are assessed to determine probability of occurrence	3.48	1.06	-0.46	-0.37
Analysis is done to assess possible impacts of risks materializing	3.59	1.07	-0.59	-0.29
Risk Analysis	**3.54**	**0.98**	**-0.62**	**0.03**
The organization regularly assesses the overall risks that could affect achievement of its objectives	3.50	1.14	-0.50	-0.44
The organizations knows the strength and weakness of its risk management system	3.60	1.09	-0.62	-0.18
Stakeholders are important when assessing risks facing the organization	3.62	1.11	-0.66	-0.17
The level of risks faced by the organization has reduced in the last five years	3.36	1.05	-0.37	-0.13
Risk Evaluation	**3.52**	**0.93**	**-0.66**	**0.28**
The organization collates risks for decision making on what actions to take	3.40	1.08	-0.52	-0.28
An evaluation of the effectiveness of the existing controls and risk management responses	3.47	1.06	-0.62	-0.17
Action plans for implementing decisions about identified risks	3.50	1.02	-0.58	0.08
An assessment of the costs and benefits of addressing risks	3.35	1.04	-0.35	-0.28
Prioritizing of risks that need active management	3.55	1.10	-0.51	-0.35
Risk Treatment	**3.45**	**0.95**	**-0.67**	**0.23**
The organization routinely reviews the effectiveness of the controls in place to manage risks	3.43	1.10	-0.67	-0.11
The risk management process is regularly reviewed and improved; at least quarterly	3.37	1.09	-0.42	-0.41
A formal feedback system is used to monitor the execution of risk mitigation actions	3.35	1.11	-0.44	-0.41
Monitoring	**3.38**	**1.02**	**-0.59**	**-0.01**
ERM Process	**3.43**	**0.83**	**-0.52**	**0.02**

Source: Research Data (2019)

4.4.6 Intellectual capital

Intellectual capital on firms comprises of knowledge, applied experience, organizational technology, customer relationships and professional skills that make it possible for firms to have a competitive edge over rivals. The study assessed intellectual capital in terms of human, structural and relational capital. Human capital refers to the employees' competence in creating both tangible and intangible assets by contributing in the continuous generation of knowledge and ideas. The results are as presented in table 4.9. Basing on the findings, employees' competences match their job requirements (mean = 3.70, SD = 0.98). Also, employees cooperate when assigned tasks in teams (mean = 3.83, SD = 0.74). Besides, new ideas by employees are allowed when handling issues (mean = 3.56, SD = 0.98). Other than that, the findings indicate that employees are expected to undergo trainings that upgrade their skills (mean = 3.77, SD = 0.97). As such, they have a lot of experience in their respective jobs (mean = 3.72, SD = 0.83). Further, employees give all their efforts and skills while carrying out their duties (mean = 3.77, SD = 0.84). As well, the employees do learn from each other (mean = 3.90, SD = 0.84). However, results show that succession training programme is yet to be implemented (mean = 3.15, SD = 1.10). From the analysis, it is clear that the employees possess the skills and experiences required to enhance the use of enterprise management ad in turn enhance firm performance. There is thus a likelihood of the summation of all knowledge and capabilities of every employee to enhance the performance of the state corporations.

In reference to structural capital, the organization supports and has implemented new ideas (mean = 3.64, SD = 0.87). Besides, the results indicate that the systems within the organization are efficient (mean = 3.50, SD = 0.94). Also, information in the organization's database can easily be accessed by the authorized persons (mean =

3.71, SD = 0.91). As well, procedures are in place that support innovation (mean = 3.51, SD = 0.96) and the system allows for information sharing (mean = 3.64, SD = 0.89). From the findings, it is clear that the state corporations have provided an environment for employees that are technology-savvy, more highly qualified, flexible and agile with skill sets that are now more comprehensive than previously. Nonetheless, it is unclear if there is high level of bureaucracy in operations (mean = 3.44, SD = 1.00).

Furthermore, the findings indicate that customers are generally satisfied (mean = 3.65, SD = 0.78) hence there are many loyal customers (mean = 3.74, SD = 0.86). Further, the organization has capitalized on customers' needs (mean = 3.70, SD = 0.85) and understands its target market (mean = 3.85, SD = 0.89). Besides, the study found that information on the organizations' products and services is usually disseminated to the customer (mean = 3.89, SD = 0.82). Moreover, the organization has scheduled activities for meeting with its customers (mean = 3.70, SD = 0.91). Finally, customers' feedback is highly valued (mean = 3.93, SD = 0.95). Thus, the state organizations possess strong structural capital which has been strengthened by a supportive culture that permits employees to try new things, to learn and to practice them. This has led to a better understanding of the customers which is evidenced by loyal customers. From the findings of the study, intellectual capital had an overall mean of 3.62. This shows that majority of the respondents were in agreement with the statements that were used to measure intellectual capital. The standard deviation was 0.61 implying that there was consistency in the responses made. A skewness of - 0.41 and kurtosis of 0.16 indicates that the data is normally distributed.

Table 4.9: Intellectual Capital

n=197 **Items**	**Mean**	**Std. Dev**	**Skewness**	**Kurtosis**
Employees competences match their job requirements	3.70	0.98	-0.77	0.44
Succession training programme has been implemented	3.15	1.10	-0.33	-0.66
Employees cooperate while assigned tasks in teams	3.83	0.74	-0.41	0.59
New ideas by employees are allowed when handling issues	3.56	0.98	-0.76	0.40
Employees are expected to undergo trainings that upgrade their skills	3.77	0.97	-0.70	0.30
Employees have a lot of experience in their respective jobs	3.72	0.83	-0.68	0.85
Employees give all their efforts and skills while carrying out their duties	3.77	0.84	-0.88	1.12
Individuals do learn from each other	3.90	0.84	-0.93	1.15
The activities of the organization was affected if certain individuals left	3.38	1.29	-0.57	-0.77
Human capital	**3.64**	**0.61**	**-0.45**	**0.81**
The organization supports and has implemented new ideas	3.64	0.87	-0.46	0.25
The systems within the organization are efficient.	3.50	0.94	-0.39	-0.20
Information in the organization's database can easily be accessed by the authorized persons	3.71	0.91	-0.59	0.18
Procedures are in place that support innovation	3.51	0.96	-0.41	-0.15
There is a high level of bureaucracy in operations	3.44	1.00	-0.42	-0.13
The system allows for information sharing	3.64	0.89	-0.38	0.06
Structural Capital	**3.57**	**0.66**	**-0.16**	**0.04**
Customers are generally satisfied	3.65	0.78	-0.56	0.35
The organization has many loyal customers	3.74	0.86	-0.59	0.30
The organization has capitalized on customers' needs	3.70	0.85	-0.65	0.61
The organization understands it target market/ clients	3.85	0.89	-0.95	1.17
Information on the organization's products and services is usually disseminated to the customer	3.89	0.82	-0.43	-0.25
The organization has scheduled activities for meeting with its customers	3.70	0.91	-0.64	0.38
Customers' feedback is highly valued	3.93	0.95	-0.76	0.22
Relational Capital	**3.78**	**0.70**	**-0.68**	**0.35**
Intellectual Capital	**3.62**	**0.61**	**-0.41**	**0.16**

Source: Research Data (2019)

4.5 Variables Against Growth

The relationship between the income growth and the study variables was ascertained by the study. The study used ANOVA to show the statistical differences between ERM practices and income growth among the state corporations in Kenya. The results are highlighted in table 4.10. From the results, firms that had income growth ranging from 11% to 15% exhibited more risk structure practices as opposed to those that had an income growth of over 20%. However, the relationship between ERM structure and income growth is not statistically significant ($F= 0.96$, $\rho=0.43>0.05$).

As well, the study found that there is no significant difference between risk governance practices and the income growth in state corporations ($F= 2.20$, $\rho=0.07>0.05$). As such, the rate of change in revenue is not associated with risk governance practices. However, the results show that there is a statistically significant difference between the risk management process and increase in the income growth ($F= 2.87$, $\rho=0.02<0.05$). Consequently, identification, prioritization and quantification of risks enables SCs to effectively manage their risk exposure and thereby increase growth in income.

With reference to intellectual capital, the highest mean was evident with an income growth ranging from 11% to 15% (mean = 3.98) and the lowest was that of SCs with an income growth of over 20% (mean = 3.40). The results of this study shows that the relationship between intellectual capital and income growth is statistically significant ($F= 3.67$, $\rho=0.01<0.05$). This implies that intellectual capital is associated with an increase in SCs income. Similarly, there was a statistically significant difference between performance and income growth among the state corporations as shown by F

value of 3.58, p value =0.01<0.05). The implication is that the performance of the SCs is associated with an income growth.

Table 4.10: Variables against Growth

			Descriptive			ANOVA	
Variables	**Categories**	**N**	**Mean**	**Std. Deviation**	**Std. Error**	**F**	**Sig.**
ERM Structure	Below 5%	98	3.43	0.71	0.07	0.96	0.43
	6-10%	55	3.54	0.74	0.10		
	11-15%	19	3.71	0.93	0.21		
	16-20%	18	3.42	0.91	0.21		
	Over 20%	7	3.14	1.20	0.45		
ERM Governance	Below 5%	98	3.45	0.64	0.06	2.20	0.07
	6-10%	55	3.74	0.63	0.08		
	11-15%	19	3.77	0.91	0.21		
	16-20%	18	3.51	0.88	0.21		
	Over 20%	7	3.31	0.79	0.30		
ERM Process	Below 5%	98	3.27	0.78	0.08	2.87	0.02
	6-10%	55	3.63	0.71	0.10		
	11-15%	19	3.76	0.96	0.22		
	16-20%	18	3.47	0.97	0.23		
	Over 20%	7	3.08	1.28	0.48		
Intellectual capital	Below 5%	98	3.51	0.55	0.06	3.67	0.01
	6-10%	55	3.75	0.53	0.07		
	11-15%	19	3.98	0.75	0.17		
	16-20%	18	3.52	0.77	0.18		
	Over 20%	7	3.40	0.73	0.28		
Performance	Below 5%	98	3.46	0.68	0.07	3.58	0.01
	6-10%	55	3.78	0.66	0.09		
	11-15%	19	3.99	0.77	0.18		
	16-20%	18	3.50	0.72	0.17		
	Over 20%	7	3.69	0.83	0.31		

Source: Research Data (2019)

4.6 Reliability Test of the Study Measures

The reliability of an instrument is determined by its ability to consistently measure the phenomenon it is designed to measure (Boit *et al*, 2013). The study performed reliability test so as to ensure that the data collection method and analytical techniques

produces consistent findings in the event that it is repeated on other occasions or replicated in subsequent researches (Golafshani, 2003). Cronbach's alpha is expressed as a number between 0 and 1 which expresses the extent to which all the items, in the test, measure the same construct and therefore shows the inter-relatedness of the items within the questionnaire.

The reliability of the questionnaire was therefore tested using Cronbach's alpha to assess internal consistency or homogeneity among the variables. The reliability coefficients (α) of each variable were as follows: ERM structure practices (0.910); ERM governance practices (0.839); ERM process practices (0.944); Intellectual Capital (0.883) and Organizational performance (0.877). The reliability coefficients of all the variables were above 0.70, which concurred with the suggestion made by Nunnally (1978). The internal consistency was therefore considered to be sufficient and adequate. As indicated in the table 4.11, Cronbach's alpha was computed separately for the study variables to enable assess the internal consistent among the study variable. The results are outlined in the table below: -.

Table 4.11: Cronbach's Alpha Reliability Test

Variable	**Cronbach's Alpha**	**Cronbach's Alpha Based on Standardized Items**	**N of Items**
ERM structure practices	.910	.913	16
ERM governance practices	.839	.835	13
ERM process practices	.944	.945	19
Intellectual Capital	.883	.885	22
Organizational Performance	.877	.884	12

Source: Research Data (2019)

4.7 Validity of the Research Instrument

Validity is the degree to which a variable actually measures what it has intended to measure (Zikmund et al, 2010). The study measures were tested for validity so as to ensure precision or correctness of the research finding (Lewis & Ritchie, 2003) so as to enhance generalizability. This study has examined two forms of validity; content validity and construct validity.

4.7.1 Content Validity

Content validity of this research was determined by using variables which have been defined and used in literature previously. The dimensions of variables were identified from the enterprise risk management practices literature. Further, opinions were sought from the research supervisors, lecturers of Moi University School of Business and Economics, research experts and colleagues in the doctoral class who provided relevant inputs in addition to what had been identified from the literature. An appraisal of content validity requires experts to attest to the content validity of each instrument (Sekaran, 2006). In order to ensure content validity, previously validated measures were used and the preliminary questionnaire was pretested on a pilot set of respondents so as to obtain comprehension, logic and relevance. Respondents in the pretest were drawn from twenty-two SAGAs which have similar characteristics as those in the actual study. All aspects of the questionnaire were pre-tested including question content, wording, sequence, form and layout, question difficulty and instructions. The feedback obtained was used to revise the questionnaire before administering it to the study respondents.

4.7.2 Construct Validity

Construct validity measures the degree to which data obtained from an instrument meaningfully and accurately reflects or represents a theoretical concept (Cooper & Schindler, 2006). This study assessed construct validity using factor analysis. Principal components analysis (PCA) was used to assess the underlying factor structure of the given variables and also to reduce items in the case of complex variables (Tabachnick & Fidell, 2013). A separate principal component analysis was conducted for each of the ERM practices scales. The Kaiser criterion of retaining factors with Eigenvalues greater than one was applied. To test data for suitability for PCA, the Kaiser-Meyer-Olkin measure of sampling adequacy and the Bartlett's test of sphericity were used. However, a value of 0.6 and above for the Kaiser-Meyer-Olkin statistic and a significance measure of spherecity were acceptable as suggested by Tabachnick and Fidell (2013). After factor extraction, the factors loadings were then rotated using varimax which was an orthogonal rotation. This rotation method was used because it does not permit factors to be correlated (Lee, 2010; Sinkkonnen, *et al*. 2007). Items that did not load were removed using a cut off value of 0.40 (Hair *et al*, 2006).

4.8 Factor Analysis

Principal Component Analysis (PCA) was used to reduce the number of variables and to detect structure in the relationships between variables. Factor extraction was done using varimax rotation to assess the factor loading of each variable. The Kaiser Criterion of retaining only factors with eigen value greater than 1 was applied. To check the adequacy of the data for extraction of principal components the study used, Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and the Bartlett's test of sphericity. Consequently, a value of 0.6 and above for the KMO statistic and a

significant measure of sphericity were acceptable as suggested by Tabachnick and Fidell (2013). PCA was conducted for each of the five scales; ERM structure, governance, risk management process, intellectual capital and organizational performance.

4.8.1 Factor analysis results of Organizational Performance

The results showed that 12 items for organizational performance were sorted and clustered into three components. The results of principal component analysis indicated that, there were three factors whose Eigenvalues exceeded 1.0. The Eigenvalue of a factor represented the amount of the total variance explained by that factor. For, the first factor had Eigenvalue of 5.579, the second factor had Eigenvalue of 1.492 and the organizational performance third factor had Eigenvalue of 1.146. The three factors identified in this study explained 68.475% of the total variance. The first factor explained 46.492% of the variance while second factor explained 12.431% of the variance. Similarly, the third factor explained 9.552% of the total variance.

Furthermore, results showed the extracted sum of square loading for the three factors. The values were calculated on the basis of the common variance, which was smaller than the total variance, incorporating 68.475% of variance. Rotated sum of square loadings depicts the distribution of the variance after varimax rotation. Varimax rotation tried to maximize the variance of each of the factors, so the total amount of variance accounted for was redistributed over the three extracted factors. Principal component analysis with varimax rotation was widely adopted as a reliable method of factor analysis (Lee, 2010; Sinkkonnen, et al. 2007 & Malhotra and Galleta, 1999).

The Kaiser-Meyer-Olkin (KMO) had a measure of 0.864, which was above the threshold of 0.5 (Field, 2005). The Bartlett‘s test was significant for organizational

performance with Chi-Square= 1299.434, (p-value< 0.05). Therefore, the KMO value of 0.864 and significance of Bartlett‘s statistic confirmed the appropriateness of the factor analysis for organizational performance. This implied that the sample size was adequate for the variables entered into analysis, factor analysis was appropriate for the study and there was relationship among variables. The results are presented in Table 4.12 below. All the items under organizational performance met the criteria of having a factor loading value of greater than 0.4 They distinctively load to one of the three components extracted indicating that that they significantly contributed to the construct.

Table 4.12: Organizational Performance Rotated Component Matrix

	Factor Loading		
Scale	1	2	3
Average economic profitability (ROA)	.851		
Average financial profitability (Net operating revenue return)	.802		
The organization has experienced increase in total revenue collected	.799		
The organization market share has increased	.848		
Financial leverage/ solvency ratio has increased			.411
Financial liquidity ratios/ level has improved		.783	
The cost of service/ product delivery has improved		.771	
The organization able to attract and retain its customers	.451	.695	
The organization has a range of customized products for its customers	.426	.733	
Feedback from customer satisfaction survey is positive	.407	.696	
Staff productivity has improved after training			.730
The brand/ image of the organization has improved			.862
Notes: Eigen values	5.579	1.492	1.146
Percentage of Variance	46.492	12.431	9.552
KMO Measure of Sampling adequacy		.864	
Bartlett's Test Approx. Chi-Square		1299.43	Sig. .000

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Source: Research Data (2019)

4.8.2 Factor Analysis Results of Enterprise Risk Management Structure Practices

Results showed that 16 items for ERM structure practices were sorted and clustered into two components. The results of principal component analysis indicated that, there were two factors whose Eigenvalues exceeded 1.0. The Eigenvalue of a factor represents the amount of the total variance explained by that factor. For ERM structure practices, the first factor had Eigenvalue of 9.100 and the second factor had Eigenvalue of 1.436. The two factors identified for the independent variable; ERM structure practices explained 65.846% of the total variance. The first factor explained 46.285% of this variance while the second factor explained 19.561% of the total variance. The factors extracted represents sub-components of the ERM structure; component 1 comprises of risk framework which comprises having outlined objectives, key risk indicators and key performance indicators while component 2 made of risk culture.

Results also showed the extracted sum of square loading for the two factors. The values were calculated on the basis of the common variance, which was smaller than the total variance, incorporating 65.846% of variance. Rotated sum of square loadings depicts the distribution of the variance after varimax rotation. Varimax rotation tried to maximize the variance of each of the factors, so the total amount of variance accounted for was redistributed over the two extracted factors. Principal component analysis with varimax rotation is widely adopted as a reliable method of factor analysis (Lee, 2010; Sinkkonnen, et al. 2007 & Malhotra and Galleta, 1999).

The Kaiser-Meyer-Olkin (KMO) had a measure of 0.932, which was above the threshold of 0.5 (Field, 2005). The Bartlett‘s test was significant for ERM structure

practices with Chi-Square= 2443.816, (p-value< 0.05). Therefore, the KMO value of 0.932 and a significance of Bartlett‘s statistic confirmed the appropriateness of the factor analysis for ERM structure practices. This implied that the sample size was adequate for the variables entered into analysis, factor analysis was appropriate for the study and there was relationship among variables, the results are presented in Table 4.13 below. All the items under ERM structure practices met the criteria of having a factor loading value of greater than 0.4 and were considered important in explaining ERM structure construct. They distinctively load to one of the two components extracted indicating that they significantly contributed to the construct.

Table 4.13: ERM Structure Practices Rotated Component Matrix

	Factor Loading	
Scale Item	1	2
There is a register to record the frequency of risk occurrences	.853	
Each risk identified is classified using defined risk categories	.826	
There is an approach to determine the root cause of risk	.812	
The organization has an ERM program (process) in place	.785	
There are dedicated people who act as risk identification champions	.739	
Risk management is fully integrated across all functions and business units	.717	
Organizational objectives , policies and tolerance for risk are clearly communicated	.704	
The overall risk appetite of the organization has been made known to all levels of the organization	.681	
Management fully considers risks in determining the best course of action.	.681	
Performance measures are used to promote risk identification and prevention	.679	.
The organization conducts training on ERM to its employees	.673	
The existence of risks and management's recognition of the same is appropriately communicated to employees.	.669	
The assignment of authority and responsibility clearly establishes limits of authority.		.826
Assignment of authority and responsibility clearly establishes the degree to which individuals and teams are authorized and encouraged to act to address issues, solve problems and take advantage of presented opportunities.		.818
The organizational structure defines key areas of responsibility and establishes accountability.		.788
Individuals know how their actions interrelate and contribute to achievement of the organization's objectives		.732
Notes: Eigen values	9.100	1.436
Percentage of Variance	46.801	19.561
KMO Measure of Sampling adequacy	.932	
Approx. Chi-Square	2443.816	Sig. .000

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]

Source: Research Data (2019)

4.8.3 Factor analysis results of Enterprise Risk Management Governance Practices

The results showed that 12 items for ERM governance practices are sorted and clustered into three components. The results of principal component analysis indicated that, there were three factors whose Eigenvalues exceed 1.0. The Eigenvalue of a factor represented the amount of the total variance explained by that factor. For ERM governance practices, the first factor had Eigenvalue of 5.963, while the second factor had Eigenvalue of 1.754. Lastly, the third factor had Eigenvalue of 1.024. The three factors identified in this study explained 67.231% of the total variance. The first factor explained 45.866% of this variance while the second factor explained 13.491% of the variance. Similarly, the third factor explained 7.873% of the total variance. Furthermore, results showed the extracted sum of square loading for the three factors. The values were calculated on the basis of the common variance, which was smaller than the total variance, incorporating 67.231% of variance. Rotated sum of square loadings depicts the distribution of the variance after varimax rotation. Varimax rotation tried to maximize the variance of each of the factors, so the total amount of variance accounted for was redistributed over the three extracted factors. Principal component analysis with varimax rotation was widely adopted as a reliable method of factor analysis (Lee, 2010; Sinkkonnen, et al. 2007 & Malhotra and Galleta, 1999).

The Kaiser-Meyer-Olkin (KMO) had a measure of 0.892, which was above the threshold of 0.5 (Field, 2005). The Bartlett‘s test was significant for ERM governance practices with Chi-Square= 1370.765, (p-value< 0.05). Therefore, the KMO value of 0.892 and significance of Bartlett‘s statistic confirmed the appropriateness of the factor analysis for ERM governance practices. This implied that the sample size was adequate for the variables entered into analysis, factor analysis was appropriate for the

study and there was relationship among variables. The results were presented in Table 4.14 below. All the items under ERM governance practices met the criteria of having a factor loading value of greater than 0.4. They distinctively load to one of the three components extracted indicating that that they significantly contributed to the construct.

Table 4.14: ERM Governance Practices Rotated Component Matrix

	Factor Loading		
Scale	1	2	3
There is an agreed process for reporting, managing and analyzing risk	.822		
Risk management is a strategic objective of the organization	.817		
The organization has defined and documented strategies for managing risks	.798		
Formal reports are submitted to board level at least annually on the current state of risk and effectiveness of risk management	.797		
The Board has established a risk management philosophy (policy) (a set of shared beliefs and attitudes characterizing how the firm considers risk in everything it does and delineates the responsibility of management and the board)	.796		
Adequate resources are provided so as to achieve risk management goals	.786		
Regular risk audits are conducted; at least quarterly	.762		
There is a board committee with responsibility for risk management oversight responsibilities.	.739		
There is a corrective action system in place for managing risks		.811	
The total number of risks reported have declined		.792	
The status of each risk is monitored regularly; at least quarterly		.784	
Risk management practices have helped the entity to meet its legislative requirements		.614	
Risk management system is continuously monitored and reviewed			.944
Notes: Eigen values	5.963	1.754	1.024
Percentage of Variance	45.866	13.491	7.873
KMO Measure of Sampling adequacy	0.892		
Approx. Chi-Square	1370.765	Sig.	.000

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]

Source: Research Data (2019)

4.8.4: Factor analysis results of Enterprise Risk Management Process Practices

The results showed that 19 items for ERM process practices were sorted and clustered into two components. The results of principal component analysis indicated that, there were two factors whose Eigenvalues exceeded 1.0. The Eigenvalue of a factor represented the amount of the total variance explained by that factor. For ERM process practices, the first factor had Eigenvalue of 12.278 and the second factor had Eigenvalue of 1.170. The two factors identified in this study explained 70.776% of the total variance. The first factor explained 45.529% of the variance while second factor explained 25.247% of the variance.

Furthermore, results showed the extracted sum of square loading for the three factors. The values were calculated on the basis of the common variance, which was smaller than the total variance, incorporating 70.776% of variance. Rotated sum of square loadings depicts the distribution of the variance after varimax rotation. Varimax rotation tried to maximize the variance of each of the factors, so the total amount of variance accounted for was redistributed over the two extracted factors. Principal component analysis with varimax rotation was widely adopted as a reliable method of factor analysis (Lee, 2010; Sinkkonnen, et al. 2007 & Malhotra and Galleta, 1999).

The Kaiser-Meyer-Olkin (KMO) had a measure of 0.958, which was above the threshold of 0.5 (Field, 2005). The Bartlett‘s test was significant for ERM governance practices with Chi-Square= 3672.941, (p-value< 0.05). Therefore, the KMO value of 0.958 and significance of Bartlett‘s statistic confirmed the appropriateness of the factor analysis for ERM process practices. This implied that the sample size was adequate for the variables entered into analysis, factor analysis was appropriate for the study and there was relationship among variables. The results are presented in Table

4.15 below. All the items under ERM process practices met the criteria of having a factor loading value of greater than 0.4. They distinctively load to one of the two components extracted indicating that that they significantly contributed to the construct.

Table 4.15: ERM Process Practices Rotated Component Matrix

	Factor Loading	
Scale	1	2
The organization can easily rank/prioritize it main risks	.805	
Analysis is done to assess possible impacts of risks materializing	.796	
There are mechanisms in place for analysis risks	.780	
Risks are assessed to determine probability of occurrence	.778	
The organization regularly assesses the overall risks that could affect achievement of its objectives	.764	
The organizations knows the strength and weakness of its risk management	.758	
The main potential risks relating to each declared aims and objectives have been identified.	.747	
The organization has a record of identified risks e.g. risk register	.747	
Stakeholders are important when assessing risks facing the organization	.607	
The level of risks faced by the organization has reduced in the last five years	.535	
Prioritizing of risks that need active management		.813
An assessment of the costs and benefits of addressing risks		.797
An evaluation of the effectiveness of the existing controls and risk management responses		.773
The organization routinely reviews the effectiveness of the controls in place to		.767
The risk management process is regularly reviewed and improved; at least		.763
The organization collates risks for decision making on what actions to take		.758
Action plans for implementing decisions about identified risks		.743
A formal feedback system is used to monitor the execution of risk mitigation		.726
Changes in risks are recognized and identified when roles and responsibilities change in the organization.		.483
Notes: Eigen values	12.278	1.170
Percentage of Variance	45.529	25.247
KMO Measure of Sampling adequacy	0.958	
Approx. Chi-Square	3672.941	Sig. .000

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.[a]

Source: Research Data (2019)

4.8.5 Factor analysis results of Intellectual Capital

The results showed that 21 items for intellectual capital were sorted and clustered into four components. The results of principal component analysis indicated that, there were four factors whose Eigenvalues exceeded 1.0. The Eigenvalue of a factor represented the amount of the total variance explained by that factor. For Intellectual Capital, the first factor had Eigenvalue of 9.909 and the second factor had Eigenvalue of 1.508. Similarly, the third factor had Eigenvalue of 1.306 and the fourth factor had Eigenvalue of 1.101. The four factors identified for the moderating variable; Intellectual Capital explained 65.826% of the total variance. The first factor explained 47.185% of this variance; the second factor explained 7.180% of the total variance. Similarly, the third factor explained 6.218% of the total variance and the fourth factor explained 5.243% of the total variance. Furthermore, results showed the extracted sum of square loading for the four factors. The values were calculated on the basis of the common variance, which was smaller than the total variance, incorporating 65.826% of variance. Rotated sum of square loadings depicts the distribution of the variance after varimax rotation. Varimax rotation tried to maximize the variance of each of the factors, so the total amount of variance accounted for was redistributed over the four extracted factors. Principal component analysis with varimax rotation was widely adopted as a reliable method of factor analysis (Lee, 2010; Sinkkonnen, et al. 2007 & Malhotra and Galleta, 1999). The Kaiser-Meyer-Olkin (KMO) had a measure of 0.921, which was above the threshold of 0.5 (Field, 2005). The Bartlett‘s test was significant for ERM governance practices with Chi-Square= 2566.075, (p-value< 0.05). Therefore, the KMO value of 0.921 and significance of Bartlett‘s statistic confirmed the appropriateness of the factor analysis for intellectual capital. This implied that the sample size was adequate for the variables entered into analysis,

factor analysis was appropriate for the study and there was relationship among variables. The results are presented in Table 4.16 below. All the items under intellectual capital met the criteria of having a factor loading value of greater than 0.4 other than one item which was dropped. They distinctively load to one of the four components extracted indicating that that they significantly contributed to the construct.

Table 4.16 Intellectual Capital Rotated Component Matrix

Scale	Factor Loading			
	1	2	3	4
New ideas by employees are allowed when handling issues	0.820			
Succession training programme has been implemented	0.755			
The organization supports and has implemented new ideas	0.664			
Employees cooperate while assigned tasks in teams	0.642			
Employees competences match their job requirements	0.617			
The systems within the organization are efficient.	0.610			
The system allows for information sharing	0.596			
Employees are expected to undergo trainings to upgrade their skills	0.551			
Procedures are in place that support innovation	0.548			
Information in the organization's database can easily be accessed	0.530			
Information on the organization's products and services is shared		0.800		
The organization has scheduled activities for meeting with its customers		0.800		
The organization understands it target market/ clients		0.780		
The organization has capitalized on customers' needs		0.740		
The organization has many loyal customers		0.730		
Customers' feedback is highly valued		0.590		
Customers are generally satisfied		0.580		
Employees give all their efforts and skills while carrying out their duties			0.840	
Individuals do learn from each other			0.800	
Employees have a lot of experience in their respective jobs			0.730	
There is a high level of bureaucracy in operations				0.920
The activities of the organization was affected if certain individuals	Dropped			
Notes: Eigen values	9.909	1.508	1.306	1.101
Percentage of Variance	47.185	7.180	6.218	5.243
KMO Measure of Sampling adequacy			. 921	
Approx. Chi-Square			2566.28,	Sig.000

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.[a]

Source: Research Data (2019)

4.9 Data Transformation

The study measured every construct for each variable in the questionnaire using multiple items. Therefore, the average score of the multi-items for each construct was computed and used for further analysis of the data. From Table 4.17, ERM structure has a mean score of 3.477 and standard deviation of 0.778. The normal curve is skewed to the left with a skewness of -0.435 and kurtosis measure of -0.097. The graph shows slight negative skewness and positively peaked curve. ERM governance has a mean score of 3.562 and standard deviation of 0.705. It has skewness of -0.207 making it skewed to the left side of the curve along with a kurtosis -0.339. ERM process has a mean score of 3.432, standard deviation of 0.833. The curve is moderately skewed to the left with a skewness of -0.517 and a kurtosis of 0.024. Intellectual Capital as the moderating variable in the study, accounts for a mean score of 3.618 and standard deviation of 0.611. The curve is negatively skewed to the left with a skewness of -0.409 and kurtosis of 0.156. Organizational performance as the dependent variable of the study, accounts for a mean of 3.484 and standard deviation 0.782. The curve is negatively skewed to the left with a skewness of -0.390 and kurtosis of -0.274.

Table 4.17: Descriptive Statistical Analysis of the Study Variables

n=197				Std.		
Variables	**Min**	**Max**	**Mean**	**Deviation**	**Skewness**	**Kurtosis**
ES	1	5	3.477	0.778	-0.435	-0.097
EG	1	5	3.562	0.705	-0.207	-0.339
EP	1	5	3.432	0.833	-0.517	0.024
IC	1	5	3.618	0.611	-0.409	0.156
PERF	1	5	3.484	0.782	-0.390	-0.274

ES= ERM Structure, EG=ERM Governance, EP=ERM Process, IC=Intellectual Capital and PERF= Organizational Performance
Source: Research Data (2019)

4.10 Test for statistical assumptions

To assess whether the models fulfills the underlying assumptions of multiple regression procedure, the several statistical tests were done. This includes goodness of fit test for normal distribution, linearity, multicollinearity and homoscedasticity.

4.10.1 Normality Test

Histograms and Kolmogorov-Smirnov test (K-S) one sample test were used in order to enable compare the shapes of the sample distribution to the shape of the normal curve and assumption of the normality of the population distribution. Table 4.18 explains results of normality in respect to ERM structure, governance and process practices, intellectual capital and organizational performance.

Table 4.18: One Sample Kolmogorov- Smirnov Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**
Unstandardized Residual	0.05	197.00	.200*	0.99	197.00	0.05
Standardized Residual	0.05	197.00	.200*	0.99	197.00	0.05

* This is a lower bound of the true significance.
a Lilliefors Significance Correction

4.10.2 Normality using growth as control

The normality tests are supplementary to the graphical assessment of normality. Kolmogorov-Smirnov test and Shapiro Wilk were used to test normality of the data. In addition, Normality was graphically further checked through histogram of the standardized residuals (Stevens, 2009). Histograms are bar graphs of the residual with superimposed normal were used as shown in Appendix in figures A1-A5. The test statistics are shown in table 4.19. The results of K-S tests for the key variables, namely; ERM structure, governance and process practices, intellectual capital and organizational performance as presented in Table 4.19, reveal that the data relating to the study variables are normally distributed. The fact that data on the key variables

did not deviate significantly from normal distribution can be translated to mean that it is safe to use statistical tests such as correlation and regression that assume normality of these variables.

Table 4.19: Normality using growth as control

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
Variables		Statistic	Df	Sig.	Statistic	df	Sig.
ES	Below 5%	.066	97	.200*	.987	97	.491
	6-10%	.117	56	.054	.963	56	.085
	11-15%	.140	21	.200*	.955	21	.417
	16-20%	.152	16	.200*	.951	16	.509
	Over 20%	.229	7	.200*	.872	7	.195
EG	Below 5%	.062	97	.200*	.989	97	.634
	6-10%	.086	56	.200*	.981	56	.528
	11-15%	.080	21	.200*	.964	21	.599
	16-20%	.215	16	.067	.922	16	.181
	Over 20%	.180	7	.200*	.965	7	.860
EP	Below 5%	.090	97	.061	.980	97	.148
	6-10%	.110	56	.091	.950	56	.061
	11-15%	.099	21	.200*	.950	21	.341
	16-20%	.130	16	.200*	.949	16	.472
	Over 20%	.337	7	.066	.806	7	.046
IC	Below 5%	.066	97	.200*	.991	97	.766
	6-10%	.167	56	.081	.911	56	.071
	11-15%	.134	21	.200*	.944	21	.259
	16-20%	.148	16	.200*	.938	16	.325
	Over 20%	.173	7	.200*	.923	7	.490
PERF	Below 5%	.077	97	.183	.981	97	.183
	6-10%	.106	56	.178	.950	56	.120
	11-15%	.116	21	.200*	.937	21	.191
	16-20%	.127	16	.200*	.969	16	.830
	Over 20%	.269	7	.136	.882	7	.237

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

ES= ERM Structure, EG=ERM Governance, EP=ERM Process, IC=Intellectual Capital and PERF= Organizational Performance

Source: Research Data (2019)

4.10.3 Linearity Test

Linearity is an important association between the dependent and the independent variables. In this study, linearity was tested using ANOVA test of linearity as summarized in the table 4.18 below. Table 4.20 explains results of linearity in respect to ERM structure, governance and process practices, intellectual capital and organizational performance. Based on the ANOVA output table, ERM structure had a sig. deviation from linearity of 0.84 while ERM governance had sig. deviation from linearity value of 0.75. In addition, ERM process had a sig. deviation from linearity of 0.65 while intellectual capital had sig. deviation from linearity value of 0.51. Since the value sig. deviation from linearity > 0.05 for all the study variables, it indicates that there is a linear relationship between the study variables. Where linear relationship exists, eta equals the correlation coefficient (Pearson's r). The findings in table 4.20 show that there was also linearity as showed by R squared which was more that 50% and eta squared more than 60% indicated that there was over 60% total variance in financial performance that is explained by each independent variables (ERM structure, ERM governance, ERM process) and intellectual capital.

Table 4.20: ANOVA Test of Linearity

		F	Sig.	R^2	Eta	Eta^2
PERF * ES	Linearity	228.11	0.00	0.55	0.81	0.66
	Deviation from Linearity	0.79	0.84			
PERF * EG	Linearity	237.81	0.00	0.56	0.82	0.67
	Deviation from Linearity	0.85	0.75			
PERF * EP	Linearity	319.43	0.00	0.54	0.89	0.79
	Deviation from Linearity	2.09	0.65			
PERF * IC	Linearity	390.00	0.00	0.61	0.89	0.79
	Deviation from Linearity	1.85	0.51			

Source: Research Data (2019)

4.10.4 Multicollinearity

The study also examined the variables for multicollinearity. Multicollinearity exists where there is a strong correlation between two or more exogenous variables in a regression model (Field, 2005). The study did test for multicollinearity using Variance Inflation Factor (VIF) and Tolerance (TOL). As a rule of thumb, if the VIF of a variable exceeds 10, which was happen if R exceeds 0.90, that variable is said be highly collinear (Lee, Remmenga, & Smith, 2012). On the other hand, if TOL is closer to 1, the greater the evidence that the variable is not collinear with the other regressors (O'Brien, 2007), the rule of thumb is that TOL should be greater than 0.2. The results of the study showed that all the variables (ERM structure, governance, process and intellectual capital) had VIF values ranging from 1.01 to 3.16 as shown in table 4.21. The VIF for all the estimated parameters were found to be less than 4, suggesting that there was no problem of multicollinearity and thus the variation contributed by each of the independent variables was significant and all the factors should be included in the regression model.

Table 4.21: Collinearity

	Collinearity Statistics	
Variables	**Tolerance**	**VIF**
ERM structure	0.32	3.16
ERM governance	0.35	2.88
ERM process	0.35	2.86
Industry differences	0.99	1.01
Growth rate	0.97	1.03
Firm size	0.99	1.01

Source: Research Data (2019)

4.10.5 Homoscedasticity

Homoscedasticity refers to the assumption that the dependent variable exhibits similar amounts of variance across the range of values for an independent variable. Homogeneity of variance ensures that the distributions of the outcomes in each

independent group are comparable and/or equal. The Levene statistic for equality of variances was used to test for the assumption of homoscedasticity. Non-violation of homoscedasticity of variance is confirmed if the Levene test statistic was found to be significant (alpha level of 0.05). In other words, in order to meet the assumption of homogeneity of variance, the *p*-value for Levene's Test should be above .05. If Levene's Test yields a *p*-value below .05, then the assumption of homogeneity of variance has been violated. Results presented in Table 4.22 reveal that none of the Levene statistics was significant. Therefore, the assumption of homoscedasticity of variance was supported.

Table 4.22: Homoscedasticity

Variables	Levene Statistic	df1	df2	Sig.
ES	2.214	4	192	.069
EG	1.796	4	192	.131
EP	1.921	4	192	.109
IC	1.077	4	192	.369
PERF	.626	4	192	.644

ES= ERM Structure, EG=ERM Governance, EP=ERM Process, IC=Intellectual Capital and PERF=Organizational Performance

Source: Research Data (2019)

4.11 Correlation Results

In this study, Pearson correlation analysis was conducted to examine the relationship between variables (Wong and Hiew, 2005). The relationships among the dimensions of ERM practices and their relationships with organizational performance were examined. According to (Cohen 1998: Wong and Hiew 2005), the correlation coefficient value (*r*) range of 0.10 to 0.299 is considered weak, 0.30 to 0.49 is considered medium and 0.50 to 1.0 is considered strong. However, Field (2005), suggests that correlation coefficient should not go beyond 0.8 to avoid multi-collinearity. The highest correlation coefficient in this research was 0.783 which is

less than 0.8, indicating there was no multi-collinearity problem. The results are displayed in Table 4.23.

All the hypothesized relationships developed were found to be statistically significant at level $p \leq 0.01$, suggesting satisfactory external validity of the measures. Subsequently, a significant and positive correlation exists between ERM structure and performance ($r = 0.744$, $p \leq 0.01$), ERM governance and firm performance ($r = 0.748$, $p \leq 0.01$), ERM process and SCs performance ($r = 0.735$, $p \leq 0.01$) as well as intellectual capital and performance ($r = 0.783$, $p \leq 0.01$). For the control variables, it is only growth rate that was positively correlated with SCs performance ($r = 0.142$, $p \leq 0.05$). Industry differences and firm size were not correlated with the organizational performance of state corporations in Kenya.

Table 4.23: Correlation Results

	PERF	ES	EG	EP	IC	IND	GWTH	SIZE
PERF	1							
ES	.744**	1						
EG	.748**	.773**	1					
EP	.735**	.765**	.742**	1				
IC	.783**	.671**	.700**	.674**	1			
IND	0.048	-0.026	-0.02	0.015	0.08	1		
GWTH	.142*	0.012	0.064	0.107	0.091	-0.058	1	
SIZE	-0.075	-0.028	-0.017	-0.046	-0.076	0.041	-0.054	1

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

ES= ERM Structure, EG=ERM Governance, EP=ERM Process, IC=Intellectual Capital PERF= Organizational Performance, IND=Industry Difference, GWTH= Growth rate
Source: Research Data (2019)

4.12 Testing Hypotheses

The study was based on the premise that ERM practices influence on organizational performance of state corporations however this influence is moderated by intellectual capital. Four hypotheses had been set to guide the study as underlined in the

conceptual framework in chapter two. In order to establish the statistical significance of the respective hypotheses, multiple linear regression was used to test direct relationships, while moderated multiple regression used to test the moderating effect of intellectual capital on the relationship. Analysis was conducted as appropriate at 95% confidence level (p = 0.05).

4.12.1 Control Effect of Industry differences, Growth rate and Firm Size

The first the study established the relationship between control variables and performance. The control variables; industry differences, growth rate and firm size, were selected and entered as independent variables in the SPSS analysis tool, and organizational performance was entered as a dependent variable as shown in table 4.24.

Table 4.24: Control Effect Industry, Growth and Firm Size

	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	3.58	0.27		13.51	0.00		
IND	0.02	0.02	0.06	0.82	0.41	1.00	1.01
GWTH	0.09	0.05	0.14	1.99	0.05	0.99	1.01
SIZE	-0.06	0.06	-0.07	-0.98	0.33	1.00	1.00
Model Summary							
R	.167a						
R Square	0.028						
Adjusted R Square	0.013						
F	1.851						
Sig.	.139b						

a Dependent Variable: PERF

IND = Industry differences, GWTH= Growth Rate, SIZE = Firm Size

Source: Research Data (2019)

Findings highlighted in table 4.24 revealed that 2.8% variation of the organizational performance is predicted by industry differences, growth rate and firm size. (R^2 = 0.028). Their joint prediction was insignificant as shown by F value of 1.851, ρ>0.05. The results indicated that none of the control variables exhibited a significant effect

on the organizational performance of state corporations in Kenya. However, these are only control variables and they need not be causal, and their coefficients generally do not have a causal interpretation.

4.12.2 Hypothesis Testing for Direct Effects

This study used regression models to determine the direct relationship between the independent variables (ERM structure, ERM governance and ERM process) on the dependent variable; organizational performance as indicated in table 4.25.

Table 4.25: Regression Model for Testing Direct Effect

	Unstandardized Coefficients		**Standardized Coefficients**			**Collinearity Statistics**	
	B	**Std. Error**	**Beta**	**T**	**Sig.**	**Tolerance**	**VIF**
(Constant)	0.71	0.22		3.28	0.00		
ERM structure	0.27	0.07	0.30	4.06	0.00	0.32	3.16
ERM governance	0.33	0.07	0.32	4.59	0.00	0.35	2.88
ERM process	0.21	0.06	0.25	3.57	0.00	0.35	2.86
Industry differences	0.02	0.01	0.07	1.56	0.12	0.99	1.01
Growth rate	0.06	0.03	0.09	2.17	0.03	0.97	1.03
Firm size	-0.04	0.04	-0.05	-1.12	0.26	0.99	1.01
Model Summary							
R		*0.82*					
R Square		*0.67*					
Adjusted R Square		*0.66*					
∆ R Square		*0.64*					
Std. Error of the Estimate		*0.41*					
Durbin-Watson		*2.00*					
ANOVA (F stat)		*64.46*					
ANOVA (F prob)		*0.00*					

Source: Research Data (2019)

The results obtained were used to test the first three hypotheses; H_{01}: There is no significant influence of risk structure practices of on organizational performance, H_{02}: Risk governance practices have no significant effect on organizational performance and H_{03}: There is no significant influence of risk structure practices of on organizational performance. The independent variables were introduced to the set of

control variables. The study found that two of the control variables (industry differences and firm size) had no significant effect on the organizational performance of state corporations while growth rate had a significant effect. Also, all the study test variables explained 67% variation of organizational performance of state corporations. This showed that considering the three study independent variables, there is a probability of predicting organizational performance (R^2= 0.67). Further, the coefficient of determination was significant as evidenced by F ratio of 64.46 with p value 0.000 <0.05 (level of significance). This was also supported by change in R square of 64.2% ($R^2\Delta$= .642) indicating that there is a significant relationship between ERM practices (structure, governance and process) and organizational performance by 64.2%.

The results of multiple regressions, as presented in Table 4.25 revealed that ERM structure has a positive and significant effect on the performance of state corporations in Kenya with a beta value of (β) = 0.27 (*p*-value = 0.000 which is less than *p* = 0.05). Therefore, the study rejects the null hypothesis H_{01} and it is observed that for each unit increase in ERM structure, there is 0.27 unit increase in the performance of state corporations. According to Hoyt, & Liebenberg, (2011) ERM structure establishes the policies, processes, competencies, reporting, technology, and a set of standards for risk management which improve performance.

In conformity with the findings of the study, Shad and Lai, (2015) indicated that ERM structure practices have a significant impact on performance measured as operating margin. To further support the above notion, Kpodo and Agyekum, (2015) found a positive correlation between risk culture and organizational performance in the Banking Industry in Ghana. Besides, Wood and Lewis (2018) found that

communication, awareness, accountability as strong indicators of Caribbean Development Bank's risk culture which contributed to improved uniformity of risk management knowledge, coordinated collation of risk data and better appreciation of risk management issues. Consequently, risk management practices were enhanced within Caribbean Development Bank. Moreso, Olayinka *et al.,* (2017) found that ERM structure practices had a positive a significant effect on financial performance on firms listed in the Nigerian financial sector. Lastly, Florio and Giulia (2016) observed that firms with advanced levels of ERM implementation had higher performance, in term of financial performance and market valuation.

However, a few of the extant literature points to no significance on the relationship between ERM structure and organizational performance. Laisasikorn, (2014) found no significant relationship between enterprise risk management structure practices and company's financial performance. Similarly, Quon, Zeghal, & Maingot, (2012) concluded that ERM structure practices did not have a significant effect on organizational performance. In a similar vein, Acharyya, (2009) concluded that insurers' stock market performance is dependent on the characteristics of the industry rather than on the performance of their ERM structure practices. Similarly, Quon, Zeghal, & Maingot, (2012) concluded that ERM structure practices did not have a significant effect on organizational performance.

In respect to ERM governance and organizational performance, the results showed that the standardized coefficient beta and *p* value of ERM governance were positive and significant ($\beta = 0.33$, $p < 0.05$). Thus, the null hypothesis H_{02} was rejected and the study accepts the alternative hypothesis that ERM governance has a positive and significant influence on the organizational performance of state corporations. This

indicates that, for each unit increase in ERM governance, there is 0.33 unit increase in organizational performance. ERM governance entails transparency, responsibility, fairness and accountability which improves firm performance (Shad and Lai, 2015). The findings in this study are supported by International Finance Corporation, (2015) report that effective risk governance is essential for organizational performance. The results also coincide with Nahar, Jubb and Azim, (2016) results that there is a significant relationship between risk governance and bank performance. In the same way, Ping and Muthuveloo, (2017) found that implementation of ERM governance has a significant influence on firm performance. In addition, monitoring by BODs, firm size and firm complexity were found to significantly influence the relationship between ERM implementation and firm performance. Likewise, Genrikh, (2015) found positive effect of ERM governance on performance of Small and Medium Enterprises. In addition, Erin *et al*. (2018) observed that the risk governance variables except Centrality of CRO had a positive and significant impact on the performance of listed banks in Nigeria.

Studies by Salaudeen, Atoyebi, and Oyegbile, (2018) had mixed results. The study found a significant positive relationship between the existence of risk management committee, financial expertise, board size and performance. In addition, there was a significant negative effect on the relationship between audit committee and performance. Lastly, the existence of a chief risk officer had no significant effect on performance. Studies conducted by (Cavezzali & Garddenal, 2015; Battaglia & Gallo, 2015; Aebi *et al*., 2012) did report mixed results on the effect of ERM governance on organizational performance.

Contrary to the findings in this study, Ponnu (2008) found no association between risk governance and firm performance. Further, Hutchinson (2011) found that the negative relationship between firm risk and firm performance is weakened by a higher proportion of non-executive directors on the board, higher levels of executive remuneration and the inclusion of shares in executives' compensation contracts. It appears therefore, that the relationship between risk governance practices and firm performance is inconclusive. The reason could be because the studies have been conducted in different insitutions and different localities hence the divergence in the findings.

Furthermore, in respect to ERM process and performance, p-value is significant ($p < 0.05$), and the beta value of ERM process was positive ($\beta = 0.21$). Therefore, the null hypothesis H_{03} was rejected and the alternative hypothesis accepted. The findings indicate that ERM process has a positive and significant effect on the organizational performance of state corporations. Consequently, for each unit increase in ERM process, there is 0.21 unit increase in organizational performance. Finally, the effect of ERM process is shown by the t value of 3.57 which implies that the effect of ERM process surpasses that of the error by over 3 times. The findings of this study are in agreement with those of Kisaka and Musomi (2015) who found that risk identification, risk analysis, risk assessment and risk management tools have a significant positive influence on the performance investment firms. In a similar vein, Kiage and Namusonge, (2016) established that involvement of project manager in risk analysis, risk identification and risk analysis influences the performance of Kenya firms in the telecommunication sector. In addition, Ping and Muthuveloo, (2017) elucidated that that there is a positive relationship between risk management process and firm performance. The results concurs with those of Gordon *et al*., (2009) which

indicated that ERM process increases firm performance. Grace *et al.*, (2010) also found a significant increase in cost efficiency and it resulted to revenue efficiency after implementation of ERM process.

The results of this study tend to contradict with those of Nyagah, (2014) which found that ERM process practices on internal environment, risk-aligned objective setting, event identifications, and risk response had a positive impact on firm performance while event identification, risk assessment, objective setting and communication of information have negative effects on financial performance of pension funds. Further contrast to the study findings, Alawattegama (2018) found that ERM process practices had mixed results. The results indicated that internal environment, risk-aligned objective setting, event identifications, and risk response had a positive impact on firm performance though none of those impacts was statistically significant. Further, risk assessment, monitoring and control activities had negative impact on the firm performance while information & communication functions had a positive significant impact on firm performance.

Hoyt and Liebenberg, (2011) indicated that there was no significant change in earnings volatility, no leverage increase and no increase in size on ERM implementation. The possible reason for the inconclusive results could be the type of ERM framework adopted and the level of ERM implementation in the different organizations. The study applied risk management process (ISO 31000, 2009) which consists of the risk identification, risk evaluation, risk analysis, risk treatment and risk monitoring. Practices under risk management process enable the organization to integrate business strategies to achieve the desired objectives.

4.13 Moderating Effect Intellectual Capital on ERM Practices and Organizational Performance

The fourth objective of the study was to establish the moderating effect of intellectual capital on the relationship between ERM practices and organizational performance of state corporations in Kenya. In order to confirm whether intellectual capital is making moderation effect on the relationship between ERM practices and organizational performance. The following steps were carried out; First, the study standardized all variables to make interpretations easier afterwards and to avoid multicollinearity. Second, the study fitted a regression model (model 3) predicting the outcome variable organizational performance (PERF) from the ERM practices (structure, governance and process). The effects as well as the model in general (R^2) should be significant. Third, the study added the interaction effect (IC*ERM) to the previous model (model 4, 5 and 6) and check for a significant R^2 change as well as a significant effect by the new interaction term. If both are significant, then moderation is occurring. If the predictor and moderator are not significant with the interaction term added, then complete moderation has occurred. If the predictor and moderator are significant with the interaction term added, then moderation has occurred (Marsh *et al*, 2013), however the main effects are also significant. The hierarchical regression results are presented in Model 1 to 6 in Table 4.26.

Table 4.26: Moderating effect intellectual capital on ERM practices and organizational performance

	Model 1 B(Se)	Model 2 B(Se)	Model 3 B(Se)	Model 4 B(Se)	Model 5 B(Se)	Model 6 B(Se)
(Constant)	0.002(.071)	0.001(.042)	0.006(.038)	0.006(.037)	(-0.012)(.036)	(-0.006)(.035)
Zscore(IND)	0.057(.071)	0.064(.042)	0.024(.038)	0.027(.038)	.036 (.037)	0.028(.036)
Zscore(GWTH)	0.14(.071)	0.093(.043)*	0.07(.039)	0.073(.038)	0.063(.037)	0.061(.036)
Zscore(SIZE)	(-0.07)(.071)	(-0.043)(.042)	(-0.021)(.038)	(-0.023)(.037)	(-0.018)(.036)	(-0.021)(.035)
Zscore(ES)		0.226(.057)**	0.151(.053)**	0.053(.063)	0.08(.062)	0.079(.06)
Zscore(EG)		0.352(.068)**	0.219(.065)**	0.181(.065)**	(-0.139)(.105)	0.05(.115)
Zscore(EP)		0.29(.067)**	0.197(.062)**	0.156(.063)*	0.155(.061)	(-0.081)(.089)
Zscore(IC)			0.38(.057)**	0.229(.080)**	0.039(.092)	(-0.031)(.091)
Zscore(ES_IC)				0.314(.118)**	0.214(.117)	0.22(.113)
Zscore(EG_IC)					0.550(.144)**	0.25(.164)
Zscore(EP_IC)						0.419(.118)**
Model Summary						
R	0.166	0.817	0.855	0.861	0.871	0.88
R Square	0.028	0.667	0.731	0.741	0.759	0.775
Adjusted R^2	0.012	0.656	0.721	0.73	0.748	0.763
Std. Error	0.994	0.587	0.528	0.520	0.502	0.488
Change Statistics						
$R^2\Delta$	0.028	0.639	0.064	0.010	0.019	0.015
F Δ	1.821	121.464	45.116	7.152	14.528	12.541
df1	3	3	1	1	1	1
df2	193.000	190.000	189.000	188.000	187.000	186.000
Sig. F Δ	0.145	0.000	0.000	0.008	0.000	0.001

a Dependent Variable: Zscore (PERF)

**p<.01, *p.05

IND= Industry Differences, GWTH = Growth rate, ES= ERM Structure, EG=ERM Governance, EP=ERM Process, IC=Intellectual Capital and PERF= Organizational Performance

Source: Research Data (2019)

H_{04a} specified that intellectual capital moderates the relationship between ERM structure practices and organizational performance (β =. 314, ρ< .05). So, the null hypothesis was rejected. This was also confirmed by $R^2\Delta$ of .010 which indicate that intellectual capital moderates the relationship between ERM structure practices and organizational performance by 1%. This implies that intellectual capital enhances the relationship between ERM structure practices and organizational performance. The implication is that, the inclusion of employees who are adequately equipped with skills to manage risks enhances the organization performance of state corporations.

H_{04b} predicted that intellectual capital does not moderate the relationship between ERM governance and organizational performance. However, the regression results showed a positive and significant moderating effect of intellectual capital on the relationship between ERM governance and organizational performance (β = .550, ρ< .05). Hence, the null hypothesis was rejected. This was also supported by change of R squared of 1.9% ($R^2\Delta$= .019) indicating that intellectual capital moderates the relationship between ERM governance and organizational performance by 1.9%. This implies that intellectual capital strengthens the relationship between ERM governance and organizational performance of state corporations. The implication is that the inclusion of human and structural capital ensures that there is proper supervision. In addition, controls geared towards the implementation of risk governance practices in turn enhances the performance.

H_{04c} stated that intellectual capital does not moderate the link between ERM process practices and organizational performance. However, the regression results showed that intellectual capital positively moderated the relationship between ERM process and organizational performance (β = 0.419, ρ< .05), rejecting the null hypothesis. The

moderating effect was also revealed by change in R squared ($R^2\Delta$ .015) and F change (F Δ =12.541). This suggests that intellectual capital facilitates the relationship between ERM process and organizational performance. Intellectual capital brings on board the skills and competences required to identify the potential risks that state corporations are likely to face and makes it plausible for them to aggregate the risks and action plans for implementing decisions about the identified risks. The resulting outcome is an improvement in the performance of state corporations.

4.14 Moderating Effect of IC using Mod Graphs

Moderation indicates that causal relationship between two variables changes as a function of the moderator variable. This implies that the statistical test of moderation must measure the differential effect of the exogenous variable on the endogenous variable as a function of the moderator. A moderation effect could be (a) Enhancing, where increasing the moderator would increase the effect of the predictor (IV) on the outcome (DV); (b) Buffering, where increasing the moderator would decrease the effect of the predictor on the outcome; or (c) Antagonistic, where increasing the moderator would reverse the effect of the predictor on the outcome (Hayes, 2013). Moderation is said to exist if the following three conditions are fulfilled. First, the amount of variance accounted for with interaction should be significantly more than the variance accounted for without the interaction. Secondly, the coefficient for the interaction term should be different from zero. This is the simple slope for the interaction which is the basis of the examination of the simple slopes in probing the nature of the interaction. Lastly, the overall models with and without the interaction should be significant (Hayes, 2013).

Previous scholars reiterated that the most optimal way to know the nature of the interaction effect of the moderator is to plot them in a graph (Jose, 2008; Aiken & West, 1991). Mod Graphs help to simplify the interpretation of the complex nature of interactions in the model. Thus, the results in Table 4.26 can be plotted on Mod Graphs to provide a logical interpretation of interaction effects of intellectual capital on the relationship between ERM practices and organizational performance of state corporations. The Mod Graphs are presented in Figures 4.1, 4.2 and 4.3 respectively. This was done by plotting the mean and standard deviation with unstandardized coefficients of the main effects (ERM structure practices, ERM governance and ERM process practices), moderator (intellectual capital) and the interaction effect on the Mod Graph. All were interpreted on low and high levels based on the main effects and the moderator (Jose, 2008). In addition, the rule of thumb is that for interaction effects to be significant, the graphs should not be parallel but have different slopes or gradient.

Figure 4.1 demonstrated that higher levels of intellectual capital within the state corporations showed a steeper slope between ERM structure practices and organizational performance, hence, the null hypothesis 4a was not supported. This implied that intellectual capital positively and significantly moderates the relationship between ERM structure practices and organizational performance. The findings in figure 4.1 indicate an enhancing moderation effect where increased levels of IC result to increased effect of ERM structure practices on organizational performance.

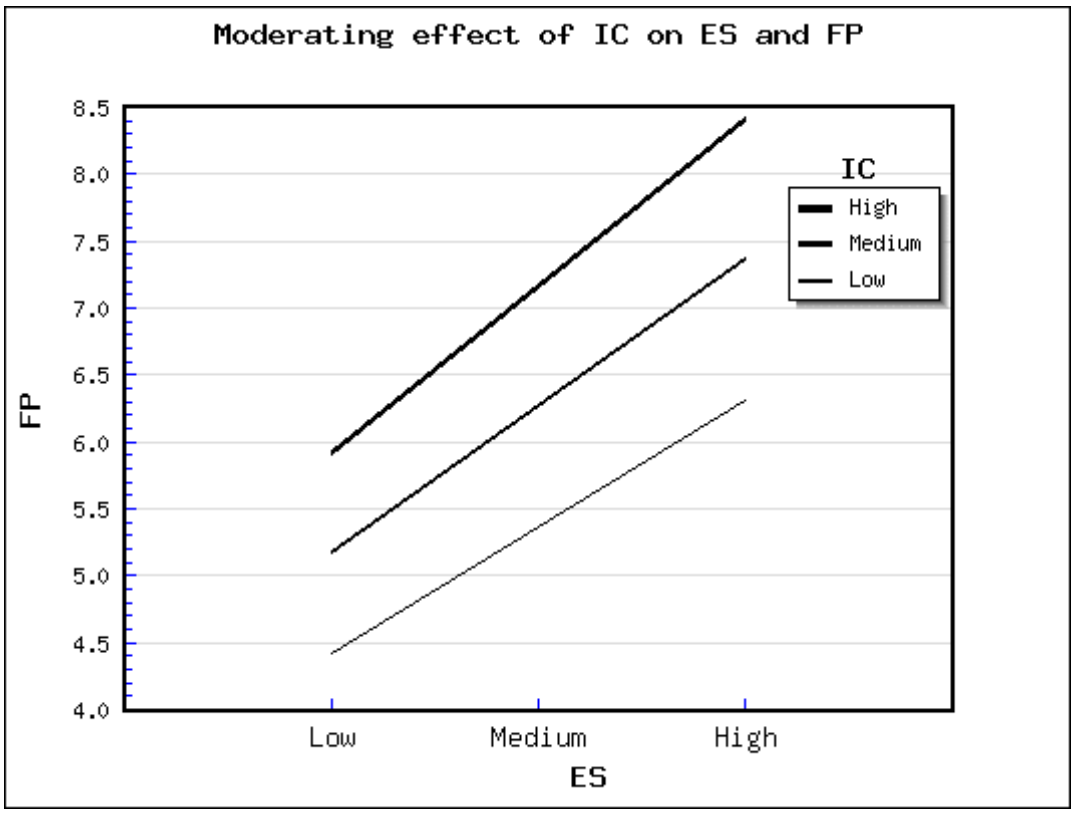

Figure 4.1: Moderated effect of intellectual capital on the relationship between ERM structure and organizational performance

The graph in Figure 4.2 revealed that when state corporations have high levels of intellectual capital, ERM governance contributes more to organizational performance compared to when there are low levels of intellectual capital, as shown by the steepness of the slope. So, the null hypothesis 4b was rejected. Thus, intellectual capital positively and significantly moderates the relationship between ERM governance and organizational performance. The findings in figure 4.2 indicate an enhancing moderation effect where increased levels of IC result to increased effect of ERM governance practices on organizational performance.

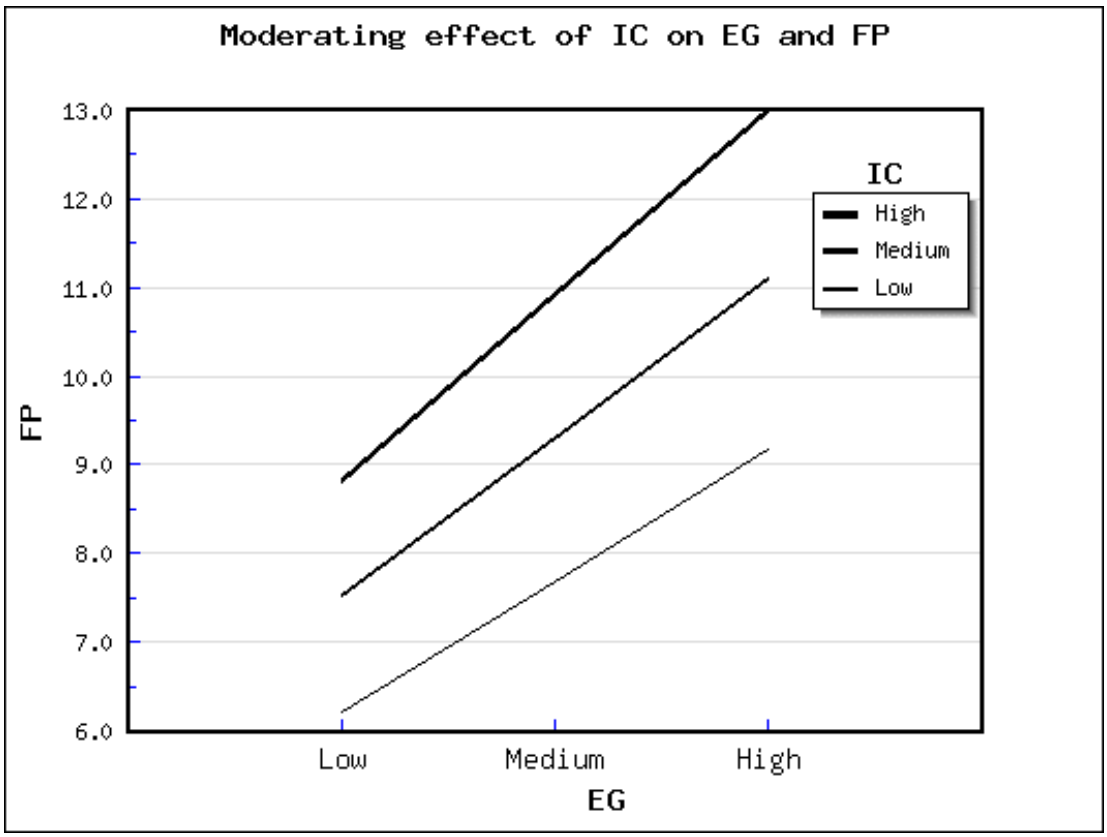

Figure 4.2: Moderated effect of intellectual capital on the relationship between ERM governance and organizational performance

The interaction plot in Figure 4.3 displays an enhancing effect that as intellectual capital increases in state corporations, the effect of ERM management process on organizational performance of state corporations increases as well, as depicted by the steepness of the slope. Hypothesis 4c was therefore rejected. This implies that in the presence of intellectual capital, the capacity of state corporations to identify and mitigate risk increases which in turn improves their overall performance. Thus, intellectual capital positively and significantly moderates the relationship between ERM management process and organizational performance of state corporations.

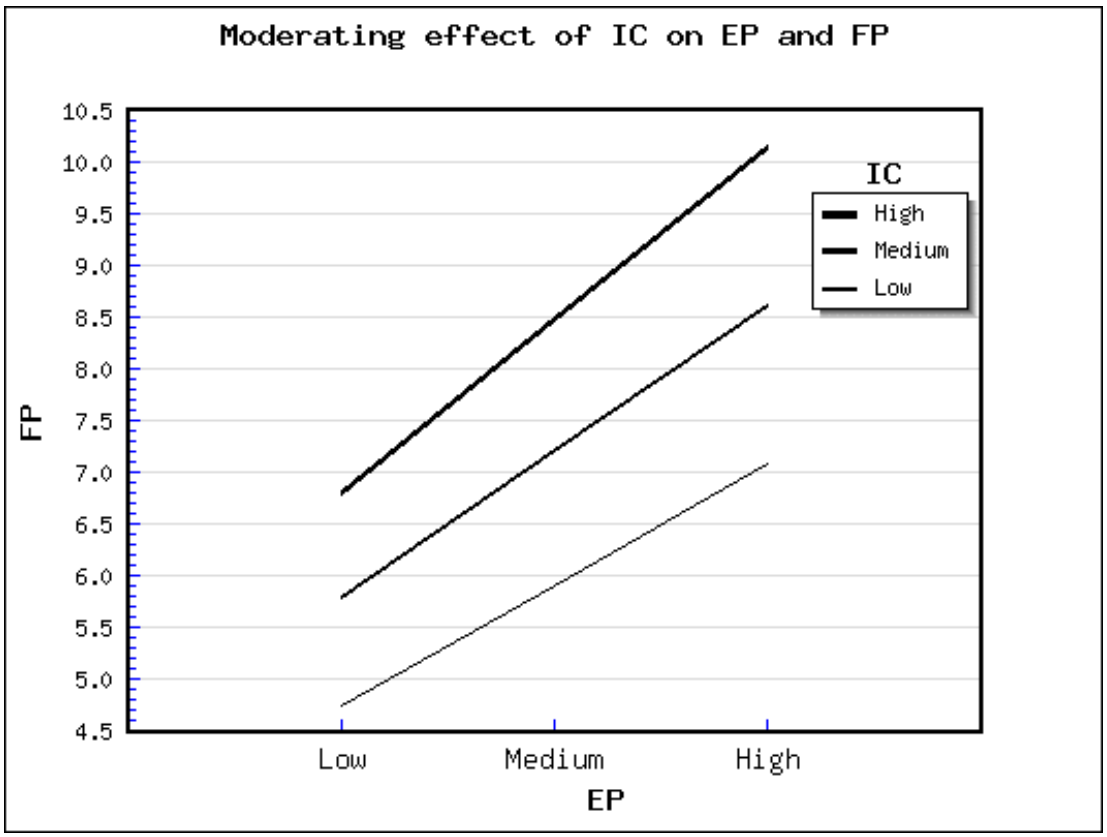

Figure 4.3: Moderated effect of intellectual capital on the relationship between ERM management process and organizational performance

Table 4.27 Summary of the Hypothesis Test

Hypothesis statement	Results
H_{01}: There is no significant effect between risk structure practices and organizational performance of state corporations in Kenya	Rejected H_0
H_{02}: There is no significant effect between risk governance practices and organizational performance of state corporations in Kenya	Rejected H_0
H_{03}: There is no significant effect between risk management process practices and organizational performance of state corporations in Kenya	Rejected H_0
H_{04a}: There is no significant moderating effect of intellectual capital on the relationship between risk structure practices and organizational performance of state corporations in Kenya	Rejected H_0
H_{04b}: There is no significant moderating effect of intellectual capital on the relationship between risk governance practices and organizational performance of state corporations in Kenya	Rejected H_0
H_{04c}: There is no significant moderating effect of intellectual capital on the relationship between risk management process practices and organizational performance of state corporations in Kenya	Rejected H_0

Source: Research Data (2019)

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings obtained in the previous chapter and how the results relate to both the theoretical underpinnings and empirical findings in the existing literature. This chapter also presents conclusion, theoretical and managerial implications, limitations of the study and areas suggested for further research. The summary covers what the study sought to do and the main findings of the study based on the quantitative analysis centered on both objectives of the study and tested hypothesis. The results are discussed in the context of relevant literature with a view of making concrete conclusions derived from the summary and hence form the basis of the recommendations.

5.2 Summary of Findings

The purpose of this study was to examine the relationship between ERM practices and organizational performance; the moderating role of intellectual capital in Kenya state corporations. The study also made inference on the research hypotheses that; risk structure practices, risk governance practices and risk management process have no significant influence on organizational performance of state corporations in Kenya. The study also sought to establish whether intellectual capital has a significant moderating effect on the relationship between ERM practices and organizational performance.

5.2.1 Effect of ERM Structure Practices on Organizational Performance

The first objective of the study was to determine the influence of risk structure practices on organizational performance of state corporations in Kenya. The study found that ERM structure has a positive and significant effect on the performance of

state corporations in Kenya with a beta value of (β) = 0.27 (*p*-value = 0.000 which is less than $p = 0.05$). The null hypothesis **(**H_{01}**)** that there is no significant influence between risk structure practices and organizational performance was rejected. There was overwhelming evidence from the study showing that there is an ERM strategy in place. Other than that, organizational objectives, policies and tolerance for risk are clearly communicated. Despite this, there were gaps in the integration of risk management across all functions and business units and uncertainty whether the overall risk appetite of the organization has been made known to all levels of the organization.

5.2.2 Effect of ERM governance practices on Organizational Performance

The second objective of this study was to establish the influence of risk governance practices on organizational performance of state corporations in Kenya. ERM governance were positive and significant ($\beta = 0.33$, $p < 0.05$). Thus, the null hypothesis H_{02} was rejected and the study accepts the alternative hypothesis. The results from regression showed that ERM governance positively and significantly influences performance The findings on risk governance practices indicated that there is a board committee with responsibility for risk management oversight responsibilities. To further strengthen risk governance practices, the board has established a risk management philosophy. Also, there are shared beliefs and attitudes characterizing how the firms consider risk in all their endeavors. Moreover, risk management is a strategic objective of the organization.

5.2.3 Effect of ERM Process Practices on Organizational Performance

The third objective of this study was to examine the effect of ERM process practices on organizational performance of state corporations in Kenya. ERM process was

positive and significant ($\beta = 0.21$, $p < 0.05$). Consequently, the null hypothesis H_{03} was rejected and the study accepts the alternative hypothesis. The study findings provide evidence of significant influence of ERM process on organizational performance of state corporations in Kenya. With reference to the risk management process, changes in risks are recognized and identified when roles and responsibilities change in the organization. Also, the organization has a record of identified risks for instance a risk register. However, the SCs are yet to identify the main potential risk relating to each declared aims and objectives. In respect to risk analysis, there are mechanisms in place for analyzing risks and the organization can easily prioritize its main risks. Also, risks are assessed to determine the probability of occurrence and assess possible impacts of risks materializing.

Further findings on risk evaluation indicated that the organization regularly assesses the overall risks that could affect achievement of its objectives. Also, the organizations know the strength and weakness of its risk management system. Besides, stakeholders are important when assessing risks facing the organization. Nonetheless, there is uncertainty as to whether the level of risks faced by the organization has reduced in the last five years.

The findings on risk treatment indicated that there are action plans for implementing decisions about identified risks. Also, there is an evaluation of the effectiveness of the existing controls and risk management responses. There are however gaps on whether the organization collates risks for decision making on what actions to take. Similarly, there is doubt if there is an assessment of the costs and benefits of addressing risks.

5.2.4 Moderating effect of Intellectual capital

The fourth objective was to establish the moderating effect of intellectual capital on the relationship between ERM practices and organizational performance of state corporations in Kenya. The moderating effects were found to be positive and significant by interpreting R-square change Ho4a: (Model 1 R^2=0.731, Model 2 R^2=0.741, R^2 Change= 1.0%, p< 0.05), Ho4b: (Model 1 R^2= 0.74, Model 2 R^2= 0.759, R^2 Change= 1.9%, p< 0.05), Ho4c: (Model 1 R^2= 0.76, Model 2 R^2= 0.775, R^2 Change= 1.5%, p< 0.05). The hypotheses were therefore rejected. The coefficient of ERM Structure practices (Beta value=0.226; p<0.05), ERM governance practices (Beta value=0.356; p<0.05), ERM process practices (Beta value=0.290; p<0.05), indicate that the independent variables were statistically significant. The results indicated on the overall intellectual capital affects the relationship between ERM practices and organizational performance. The positive effect of intellectual capital on the relationship between ERM practices and organizational performance may be attributed to employees' competences that match their job requirements. Also, employees cooperate when assigned tasks in teams and they come up with new ideas while handling issues. Other than that, employees are expected to undergo trainings that upgrade their skills. As such, they have a lot of experience in their respective jobs. Further, employees give all their efforts and skills while carrying out their duties. As well, the employees do learn from each other. However, succession training programme was yet to be implemented.

5.3 Conclusion

Based on the findings, ERM structure improves performance of State Corporations. With respect to the organization structure, key areas of responsibility have been defined and accountability established. Also, the assignment of authority and

responsibility clearly establishes limits of authority and the degree to which individuals and teams are authorized to act to address issues, solve problems and take advantage of presented opportunities. Besides, individuals know how their actions interrelate and contribute to achievement of the organization's objectives. However, the SCs are yet to have dedicated people who act as risk identification champions and have training on ERM to its employees.

The study is indicative of a positive and significant relationship between risk structure practices and organizational performance of state corporations. This study contradicts studies that have found no statistically significant link between the risk structure of organizations and their performance. The study therefore, offers new insights on the potential of risk structure practices making it plausible for the management in SCs to understand, communicate the risk factors as well as handle the challenges inherent in their operations. The eventual outcome is an improvement in their overall performance. The implication is that SCs with formal policies and ERM practices tend to have an edge over other firms that are yet to implement ERM practices.

ERM governance improves performance of State Corporations. The organization has defined and documented strategies for managing risks. In fact, there are formal reports submitted to the board at least annually on the current state of risk management. However, there are gaps in terms of the provision of adequate risks to achieve risk management goals. As such, the SCs needs to focus on availing sufficient resources towards the attainment of risk management. Regarding the compliance dimension, risk management practices have helped the entity to meet its legislative requirements. Also, there is an agreed process for reporting, managing and analyzing risk. It is however uncertain if regular risk audits are conducted at least quarterly. Finally, the

results on risk reduction indicated that the total number of risks reported have declined. Moreover, there is a corrective action system in place for managing risks. Also, the status of each risk is monitored regularly at least quarterly. However, it is undefined if the risk management system is continuously monitored and reviewed.

In terms of culture, there is an approach to determine the root cause of risk hence each risk identified is classified using defined risk categories. In addition, the management fully considers risks in determining the best course of action. However, it is unclear if there is a register to record the frequency of risk occurrences and if the existence of risks and management's recognition of the same is appropriately communicated to employees. Moreover, there is doubt if performance measures are used to promote risk identification and prevention.

Further, effective risk governance is key in embedding the right risk culture which is key in enhancing the organizational performance of state corporations. The reason for this is that risk governance is key in clarifying the roles and responsibilities across the different departments. This however require commitment to risk governance responsibilities from both the board and senior management. The fundamental contribution is that all the personnel in SCs have a role to play in risk management with the board tasked with the oversight role and the establishment of a risk framework for good governance.

In addition, risk management process is key in the attainment of improved performance of state corporations in Kenya. This has been made possible through identification, prioritization and quantification of risks in order to help corporations effectively manage their risk exposure. The challenge with the SCs is that they have not effectively established the costs and benefits of addressing risks. It therefore

becomes a challenge to dedicate resources towards the management of risks since there no measures in place to assess whether the SCs are benefiting from managing risks or incurring losses.

Lastly, the study intellectual capital significantly and positively enhances the effect of ERM practices on organizational performance. This may be attributed to employees' competences that match their job requirements. In addition, SC value feedback from their customers and do disseminate information on their products and services to their customers.

5.4 Recommendation of the study

There are several implications arising from the findings on this study which can be broadly grouped into managerial implications, policy implications, theoretical implications and finally recommendations for further research**.**

5.4.1 Managerial implication

Risk structure practices are key in reducing SCs exposure to risk, cost in operations thereby facilitating an improvement in their overall performance. Also, it is important for SCs to define the key areas of authority and the degree to which individuals and teams are authorized to act to address issues, solve problems and take advantage of presented opportunities. Moreover, the firms need to capitalize on personnel that act as risk identification champions and ensure that employees are trained on ERM. Further, SCs need to adopt an approach that is effective in determining the root cause of risk so that each risk is identified right from the onset and the best cause of action is determined.

Undoubtedly, risk governance practices are key in enhancing the organizational performance of state corporations. It is therefore important for SCs to have a board committee with responsibility for risk management oversight responsibilities. As well, the SCs need to define and document strategies for managing risks and ensure that sufficient resources are availed towards the attainment of risk management. Furthermore, there is need for an agreed process for reporting, managing and analyzing risk.

Finally, the risk management process is instrumental in enhancing the performance of state corporations. As a consequence, there is need for the changes in risks to be recognized and identified when roles and responsibilities change in the organization. There should also be a record such as a register within SCs for identifying risks. Moreover, SCs should have mechanisms for analyzing risks so as to prioritize on the major risks. It is also important for the SCs to have know-how on the strengths and weaknesses of its risk management system.

5.4.2 Policy implication

From a policy perspective, risk management needs to be considered as a strategic objective in SCs. Further, it is crucial for the SCs to assess the costs and benefits of addressing risks so as to establish if the risk management processes that are of significance to the organization. Lastly, it is utmost necessary to integrate risk management practices across all functions and business units for the purpose of addressing risks before they even occur. The results of this study support the policy implications of integrated risk management, encompassing all the activities that affect SCs risk profile.

5.4.3 Theoretical implications

The study contributed to literature on organizational performance by providing the empirical evidence on the moderating effect of intellectual capital on the relationship between ERM practices and organizational performance. The study also contributes to agency theory by examining ERM as a tool developed by the principal to mitigate agency conflicts that arise from information asymmetry and conflicting goals. Further, the study contributes to resource based theory and dynamic capabilities theory by examining the implication of intellectual capital on ERM practices to enhance performance. This is based on the view that intellectual capital is a capital resource deployed to enhance competitive advantage. In addition, the study supports the theory of Enterprise Risk Management (ERM) that emphasizes on holistic, company-wide approach in managing risks (Hoyt &Lienbenberg,2011).

5.4.4 Future Research Recommendations

The study focused on the moderating effects of IC thus there is possibilities of having mediating variables included. This study recommends that further research works should explore establishing the mediating effects of intellectual capital on the relationship between ERM practices and organizational performance. Also, the scope of the study was limited to SCs in Kenya. As a result, future research could be extended to other different regions and countries so as to provide data for comparison. Lastly, the methodology that has been chosen to achieve the research objectives was limited to questionnaires. As such, future research could build on this study by examining enterprise risk management practices in different sectors and industries using secondary data or mixed method approach.

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APPENDICES

Appendix I: List of State corporations

	Agriculture, Livestock & Fisheries		
1	Agricultural Development Corporation (ADC)	15	Kenya Wildlife Service
2	Agricultural Finance Corporation	16	National Cereals And Produce Board
3	Agro - Chemical and Food Company	17	National Irrigation Board
4	Chemilil Sugar Company Limited	18	New Kenya Cooperative Creameries Limited
5	Kenya Animal Genetic Resource Centre	19	Nyayo Tea Zones Development Corporation
6	Kenya Dairy Board	20	Nzoia Sugar Company Limited
7	Kenya Marine and Fisheries Research Institute	21	Pest Control Product Board
8	Kenya Meat Commission	22	South Nyanza Sugar Company
9	Kenya Plant Health Inspectorate Services	23	AFFA Pyrethrum and Other Crops Directorate
10	Kenya Seed Company Limited	24	Kenya Agricultural Research Livestock Organization
11	Simlaw Seeds Company Ltd -	25	Mwea Rice Millers LTD
12	Kenya Tsetse and Trypanosomiasis Eradication Council	26	Western Kenya Rice Mills LTD
13	Kenya Veterinary Board	27	Miwani Sugar Company
14	Kenya Veterinary Vaccines Production Institute	28	Muhoroni Sugar Company Limited
	Defence		
29	Kenya Ordinance Factories Corporation		
	Devolution & Planning		
30	Coast Development Authority	37	Kerio Valley Development Authority
31	Ewaso Ngiro North River Basin Development Authority	38	Lake Basin Development Authority
32	Ewaso Ngiro South Development Authority	39	State Corporations Appeals Tribunal
33	Kenya Institute of Public Policy Research Analysis	40	Women Enterprise Fund
34	Kenya National Bureau of Statistics	41	Nairobi Health Management Board
35	Kenya School of Government	42	Anti-Female Genital Mutilation (AFGM) Board
36	Kenya Vision 2030 Delivery Secretariat		

	East African Affairs, Commerce and Tourism		
43	Bomas of Kenya	50	Kenya Trade Network Agency
44	Brand Kenya Board	51	Kenya Utalii College
45	Golf Hotel Limited	52	Kenyatta International Conference Centre
46	Kabarnet Hotel	53	Mount Elgon Hotel
47	Kenya National Trading Corporation Ltd	54	Sunset Hotel Ltd
48	Kenya Safari Lodges & Hotel	55	Tourism Fund (Board of Trustees)
49	Kenya Tourism Board		
	Education, Science and Technology		
56	Agricultural and Cooperative Training & Consultancy Services	81	Kibabii University
57	Bukura Agricultural College	82	Kirinyaga University College
58	Centre for Mathematics Science & Technology	83	Kisii University
59	Chuka University	84	Laikipia University
60	Commission for University Education	85	Maasai Mara University
61	Cooperative University College of Kenya	86	Machakos University College of Kenya
62	Dedan Kimathi University of Technology	87	Maseno University
63	Egerton University	88	Masinde Muliro University of Science and Technology
64	Embu University College of Kenya	89	Meru University of Science and Technology
65	Garissa University College of Kenya	90	Moi University
66	Higher Education Loans Board (HELB)	91	Multimedia University of Kenya
67	Jaramogi Oginga Odinga University of Science and Technology	92	Muran'ga University College of Technology
68	Jomo Kenyatta Foundation	93	National Commission for Science Technology & Innovation
69	Jomo Kenyatta University of Agriculture & Technology Enterprise Services	94	Pwani University
70	Jomo Kenyatta University of Agriculture and Technology	95	Rongo University College of Kenya
71	University of Kabianga	96	School Equipment Production Unit
72	Karatina University	97	South Eastern Kenya University
73	Kenya Institute of Curriculum Development (KICD)	98	Taita Taveta University College

74	Kenya Institute of Special Education	99	Technical University of Kenya
75	Kenya Institute of Mass Communication	100	Technical University of Mombasa
76	Kenya Literature Bureau	101	University of Eldoret
77	Kenya National Examination Council	102	University of Nairobi
78	Kenya Universities and Colleges Central Placement Service	103	University of Nairobi Enterprise Services Limited
79	Kenya Technical Trainers College	104	University of Nairobi Press
80	Kenyatta University	105	Technical and Vocational Education & Training Authority (TVETA)
	Energy and Petroleum		
106	Energy Regulatory Commission	111	Kenya Pipeline Company
107	Geothermal Development Co. Limited	112	Kenya Power & Lighting Co Limited
108	Kenya Electricity Generating Company	113	National Oil Corporation of Kenya
109	Kenya Electricity Transmission Co Limited	114	Rural Electrification Authority
110	Kenya Nuclear Electricity Board		
	Environment, Water and Natural Resources		
115	Athi River Water Services Board	126	National Environmental Management Authority (NEEMA)
116	Coast Water Services Board	127	National Water Conservation & Pipeline Corporation
117	Kenya Forestry Research Institute (KEFRI)	128	Rift Valley Water Services Board
118	Kenya Forest Service	129	Tana and Athi Rivers Development Authority
119	Kenya Maritime Authority	130	Tana Water Services Board
120	Kenya Water Institute	131	Tanathi Water Services Board
121	Kenya Water Towers Agency	132	Water Resources Management Authority (WRMA)
122	Lake Victoria North Water Service Board	133	Water Services Trust Fund
123	Lake Victoria South Water Services Board	134	Water Services Regulatory Board (WASREB)
124	Lamu Water and Sewerage Company	135	Water Tower Conservation Fund
125	National Drought Management Authority		
	Health		
136	Kenya Medical Laboratory Technicians and Technologists Board (KLTTB)	142	Moi Teaching And Referral Hospital

137	Kenya Medical Research Institute	143	National Aids Control Council
138	Kenya Medical Supplies Agency (KEMSA)	144	National Hospital Insurance Fund (NHIF)
139	Kenya Medical Training College	145	National Quality Control Laboratory
140	Kenyatta National Hospital	146	Nursing Council Of Kenya
141	Medical Practitioners and Dentists Board		
	Industrialization & Enterprise Development		
147	Anti-Counterfeit Agency	156	Kenya Industrial Research & Development Institute (KIRDI)
148	Export Processing Zones Authority	157	Kenya Investment Authority
149	Export Promotion Council	158	Kenya Leather Development Council
150	Industrial Development Bank Capital Ltd	159	Micro and Small Enterprises Authority
151	Industrial and Commercial Development Corporation (ICDC)	160	National Biosafety Authority
152	Kenya National Accreditation Service	161	National Industrial Training Authority
153	Kenya Bureau of Standards	162	Numerical Machining Complex Ltd
154	Kenya Industrial Estates Limited	163	Rivatex EA LTD
155	Kenya Industrial Property Institute	164	East Africa Portland Cement Co Limited
	Information, Communications & Technology		
165	Communication Authority of Kenya	168	Konza Technopolis Development Authority
166	Kenya Broadcasting Corporation	169	Media Council of Kenya
167	Kenya Yearbook Editorial Board	170	Postal Corporation of Kenya
	Labour & Social Security Services		
171	Local Authority Provident Fund (LAP FUND)	173	National Social Security Fund
172	National Council for Person with Disabilities	174	National Social Security Assistance Authority
	Land, Housing & Urban Development		
175	National Construction Authority Board	176	National Housing Corporation
	Sports, Culture and Arts		
177	Kenya Cultural Center	180	Kenya National Library Services
178	Kenya Film Classification Board	181	National Museums of Kenya
179	Kenya Film Commission	182	Sports Kenya

	Transport & Infrastructure		
183	Engineers Board of Kenya	189	Kenya Ports Authority
184	Kenya Airports Authority	190	Kenya Railways Corporation
185	Kenya Civil Aviation Authority	191	Kenya Roads Board
186	Kenya Ferry Service	192	Kenya Rural Roads Authority
187	Kenya National Highways Authority	193	Kenya Urban Roads Authority
188	Kenya National Shipping Line Ltd		
	Office of the Attorney & General and Department of Justice		
194	National Crime Research Center	197	Kenya School of Law
195	Council of Legal Education	198	National Authority for the Campaign Against Drug Abuse
196	Kenya Copyright Board		
	National Treasury		
199	Capital Markets Authority	209	Kenya Post Office Savings Bank
200	Central Bank of Kenya	210	Kenya Reinsurance Corporation
201	Kenya School of Monetary Studies	211	Kenya Revenue Authority
202	Competition Authority of Kenya	212	National Bank of Kenya (Group)
203	Consolidated Bank of Kenya Limited	213	Privatization Commission
204	Development Bank of Kenya Ltd	214	Public Procurement Regulatory Authority
205	Insurance Regulatory Authority	215	Retirements Benefits Authority
206	Kenya Accountants and Secretaries National Examinations Board (KASNEB)	216	SACCO Societies Regulatory Authority
207	Kenya Deposit Insurance Corporation	217	Unclaimed Financial Assets Authority
208	Kenya National Assurance Company (2001) Ltd		
	The Presidency		
218	Youth Enterprise Development Fund (YEDF)		

Source: Republic of Kenya (2017)

Appendix II: Introductory Letter to Respondents

Grace Girangwa Kakiya,
REG. NO: SBE/D/108/13,
School of Business and Economics
Moi University,

Dear Sir/Madam

RE: ADMINISTRATION OF RESEARCH QUESTIONNAIRE IN YOUR INSTITUTION

I am a postgraduate student of Moi University pursuing a Doctorate degree in Business management, Finance option. I am carrying out a research on the *"Moderating Effect of Intellectual Capital on the Relationship Between Enterprise Risk Management Practices and Organizational Performance of Kenyan State Corporations".* The purpose of this questionnaire is to collect data from Kenyan State Corporations. The information provided from your institution is entirely for academic purposes and will be treated with a lot of confidentiality. Your participation in the study is highly appreciated.

Yours faithfully,

Grace Kakiya

Appendix III: Research Questionnaire

SECTION A: GENERAL INFORMATION

1. Name of Organization----------

2. Industry of operation----------

3. What is the rate of revenue growth in your organization? (Please **TICK** as appropriate)

Below 5%	[ ]	6 -10%	[ ]	11-15%	[ ]
16- 20%	[ ]	Over 20%	[ ]		

4. What is the value of your organization's total assets (in Kshs) ----------

Enterprise Risk Management (ERM) is "an end to end approach that covers all aspects of the organization in identification and management of risks, as well as exploiting opportunities, in line with the organization's business objectives and overall risk appetite"

5. To what extent has the organization implemented ERM according to the above definition?

Not at all	[ ]	Plans to introduce ERM	[ ]	Ad hoc implementation	[ ]
Implemented but improvements needed	[ ]	Robustly implemented	[ ]	Implemented ERM but according to other definitions	[ ]

SECTION B

ERM STRUCTURE

ERM structure establishes the policies, processes, competencies, reporting relationships, technology, and a set of standards for risk management.

6. Please indicate to what extent each of the following risk management dimensions are practiced in your organization. Use the key below and TICK as appropriate. Key: 1= Strongly Disagree; 2=Disagree; 3= Neutral; 4= Agree; 5=Strongly Agree

	1	2	3	4	5
Outlined objectives					
B1. The organization has an ERM program (process) in place					
B2. Risk management is fully integrated across all functions and business units					
B3. Organizational objectives , policies and tolerance for risk are clearly communicated					
B4. The overall risk appetite of the organization has been made known to all levels of the organization					
Culture					
B5. The organization conducts training on ERM to its employees					
B6. The organizational structure defines key areas of responsibility and establishes accountability.					
B7. Assignment of authority and responsibility clearly establishes the degree to which individuals and teams are authorized and encouraged to act to address issues, solve problems and take advantage of presented opportunities.					
B8. The assignment of authority and responsibility clearly establishes limits of authority.					
B9. Individuals know how their actions interrelate and contribute to achievement of the organization's objectives					
B10. There are dedicated people who act as risk identification champions					
Key Risk Indicators					
B11. There is an approach to determine the root cause of risk					
B12. Each risk identified is classified using defined risk categories					
B13. There is a register to record the frequency of risk occurrences					
Key Performance Indicators					
B14. Management fully considers risks in determining the best course of action.					
B15. The existence of risks and management’s recognition of the same is appropriately communicated to employees.					
B16. Performance measures are used to promote risk identification and prevention					

SECTION C

ERM GOVERNANCE

ERM governance ensures that an organization has developed internal control procedures which are crucial to avoid loss, safeguard security and enhance profitability.

7. Please indicate to what extent each of the following risk management dimensions are practiced in your organization. Use the key below and TICK as appropriate. Key: 1= Strongly Disagree; 2=Disagree; 3= Neutral; 4= Agree; 5=Strongly Agree

	1	**2**	**3**	**4**	**5**
ERM strategy					
C1. There is a board committee with responsibility for risk management oversight responsibilities.					
C2. The Board has established a risk management philosophy (policy) (a *set of shared beliefs and attitudes characterizing how the firm considers risk in everything it does and delineates the responsibility of management and the board*)					
C3. Risk management is a strategic objective of the organization					
Accountability					
C4. The organization has defined and documented strategies for managing risks					
C5.Adequate resources are provided so as to achieve risk management goals					
C6. Formal reports are submitted to board level at least annually on the current state of risk and effectiveness of risk management					
Compliance					
C7. There is an agreed process for reporting, managing and analyzing risk					
C8. Regular risk audits are conducted					
C9. Risk management practices have helped the entity to meet its legislative requirements					
Risk reduction					
C10. Risk management system is continuously monitored and reviewed					
C11. There is a corrective action system in place for managing risks					
C12. The status of each risk is monitored regularly					
C13.The total number of risks reported have declined					

SECTION D

ERM PROCESS

ERM process enables the firm to integrate business strategies to achieve the desired objectives.

8. Please answer the following questions about the firm's risk management practices. Use the key below and TICK as appropriate Key: 1= Strongly Disagree; 2=Disagree; 3= Neutral; 4= Agree; 5=Strongly Agree

Risk identification	**1**	**2**	**3**	**4**	**5**
D1. Changes in risks are recognized and identified when roles and responsibilities change in the organization.					
D2. The main potential risks relating to each declared aims and objectives have been identified.					
D3. The organization has a record of identified risks e.g. risk register, risk database					
Risk analysis					
D4. There are mechanisms in place for analysis risks					
D5. The organization can easily rank/prioritize it main risks					
D6. Risks are assessed to determined probability of occurrence					
D7. Analysis is done to assess possible impacts of risks materializing					
Risk evaluation					
D8. The organization regularly assesses the overall risks that could affect achievement of its objectives					
D9. The organizations knows the strength and weakness of its risk management system					
D10. Stakeholders are important when assessing risks facing the organization					
D11. The level of risks faced by the organization has reduced in the last five years					
Risk Treatment					
D12. The organization collates risks for decision making on what actions to take					
D13. The organization's response to risk comprises;-					
a)An evaluation of the effectiveness of the existing controls and risk management responses					
b) Action plans for implementing decisions about identified risks					
c) An assessment of the costs and benefits of addressing risks					
d) Prioritizing of risks that need active management					
Risk monitoring and review					
D14.The organization routinely reviews the effectiveness of the controls in place to manage risks					
D11.The risk management process is regularly reviewed					

and improved					
D12. A formal feedback system is used to monitor the execution of risk mitigation actions					

SECTION E

INTELLECTUAL CAPITAL

Intellectual Capital – is the possession of knowledge, applied experience, organizational technology, customer relationships and professional skills that provide an organization with a competitive edge in the market

9. Please indicate the extent to which the following statements describe intellectual capital in your organization. Use the key below and TICK as appropriate Key: 1= Not at all; 2=Small Extent; 3= Moderate Extent; 4= High Extent; 5=Very High Extent

	1	**2**	**3**	**4**	**5**
Human Capital					
E1. Employees competences match their job requirements					
E2. Succession training programme has been implemented					
E3. Employees cooperate while assigned tasks in teams					
E4. New ideas by employees are allowed when handling issues					
E5. Employees are expected to undergo trainings that upgrade their skills					
E6. Employees have a lot of experience in their respective jobs					
E7. Employees give all their efforts and skills while carrying out their duties					
E8. Individuals do learn from each other					
E9. The activities of the organization was affected if certain individuals left					
Structural Capital					
E10. The organization supports and has implemented new ideas					
E11. The systems within the organization are efficient.					
E12. Information in the organization's database can easily be accessed.					
E13. Procedures are in place that support innovation					
E14. There is a high level of bureaucracy in operations					
E15. The system allows for information sharing					
Relational Capital					
E16. Customers are generally satisfied					
E17. The organization has many loyal customers					
E18. The organization has capitalized on customers' wants					
E19. The organization understands it target market/ clients					
E20. Information on the organization's products and services is usually disseminated to the customer					
E21. The organization has scheduled activities for meeting					

with its customers					
E22. Customers' feedback is highly valued					

SECTION F

ORGANIZATIONAL PERFROMANCE

Organizational performance refers to efficiency, effectiveness, financial viability and relevance of an organization.

10. Please indicate the extent to which your organization has achieved the following organizational performance measures in the last five years. Use the key below and TICK as appropriate Key: 1= Not at all; 2=Small Extent; 3= Moderate Extent; 4= High Extent; 5=Very High Extent

Financial Perspectives	**1**	**2**	**3**	**4**	**5**
The organization's profitability has improved					
F1. Average economic profitability (ROA)					
F2. Average financial profitability (Net operating revenue return)					
F3.The organization has experienced an increase in its total revenue collected.					
F4. The organization market share has increased					
Operational and financial efficiency					
F5. Financial leverage/ solvency ratio has increased (long term debt/ assets)					
F6. Financial liquidity ratios/ level has improved (ratio current assets/current liabilities)					
F7. The cost of service/ product delivery has improved					
Non-financial Indicators					
F8.The organization able to attract and retain its customers					
F9. The organization has a range of customized products for its customers					
F10. Feedback from customer satisfaction survey is positive					
F11.Staff productivity has improved					
F12.The brand/ image of the organization has improved					

END

Thank you for participation in filling this research questionnaire

Appendix IV: Data Analysis Guide

		ROA					Net operating revenue return					Solvency ratio (Long term liability/ Assets)					liquidity-current ratio				
S No.	Entity Name	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
1																					
2																					
3																					
4																					
5																					
6																					
7																					
8																					
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15																					
16																					
17																					
18																					
19																					
20																					

Appendix V: Research authorization (Moi University)

MOI UNIVERSITY
SCHOOL OF BUSINESS AND ECONOMICS

Tel: (0321) 43620
Fax No: (0321) 43360
Telex No.35047 MOI VARSITY

Box 3900
Eldoret
KENYA

RE: SBE/D/108/13

DATE: 28th March, 2019

TO WHOM IT MAY CONCERN

RE: GRACE GIRANGWA KAKIYA – SBE/D/108/13

The above named is a bonafide student of Moi University School of Business and Economics, undertaking a Doctor of Philosophy in Business Management degree, specializing in Finance.

She has completed coursework, defended her proposal, and is proceeding to the field to collect data for her research titled: " *Moderating Effect of Intellectual Capital on The Relationship Between Enterprise Risk Management Practices and Organizational Performance of Kenyan State Corporations.*"

Any assistance accorded to her will be highly appreciated.

SCHOOL OF BUSINESS & ECONOMICS
MOI UNIVERSITY
P. O. Box 3900 ELDORET 30100

Yours Faithfully,

DR. JOEL K. TENAI
AG. DEAN, SCHOOL OF BUSINESS AND ECONOMICS

Appendix VI: Research authorization (NACOSTI)

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471, 2241349,3310571,2219420
Fax:+254-20-318245,318249
Email: dg@nacosti.go.ke
Website : www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/19/71769/29949**

Date: **25th April, 2019**

Grace Girangwa Kakiya
Moi University
P.O. Box 3900-30100
ELDORET.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Moderating effect of intellectual capital on the relationship between enterprise risk management practices and organizational performance of Kenyan State Corporations"*** I am pleased to inform you that you have been authorized to undertake research in **all Counties** for the period ending **25th April, 2020.**

You are advised to report to **the County Commissioners and the County Directors of Education, all Counties** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioners
All Counties.

The County Directors of Education
All Counties.

Appendix VII: Research Permit

THIS IS TO CERTIFY THAT:
MS. GRACE GIRANGWA KAKIYA
of MOI UNIVERSITY, 39-20107
NJORO,has been permitted to conduct
research in *All Counties*

on the topic: *MODERATING EFFECT OF INTELLECTUAL CAPITAL ON THE RELATIONSHIP BETWEEN ENTERPRISE RISK MANAGEMENT PRACTICES AND ORGANIZATIONAL PERFROMANCE OF KENYAN STATE CORPORATIONS*

for the period ending:
25th April,2020

Permit No : NACOSTI/P/19/71769/29949
Date Of Issue : 25th April,2019
Fee Recieved :Ksh 2000

.....
Applicant's Signature

.....
Director General
National Commission for Science, Technology & Innovation

THE SCIENCE, TECHNOLOGY AND INNOVATION ACT, 2013

The Grant of Research Licenses is guided by the Science, Technology and Innovation (Research Licensing) Regulations, 2014.

CONDITIONS

1. The License is valid for the proposed research, location and specified period.
2. The License and any rights thereunder are non-transferable.
3. The Licensee shall inform the County Governor before commencement of the research.
4. Excavation, filming and collection of specimens are subject to further necessary clearance from relevant Government Agencies.
5. The License does not give authority to transfer research materials.
6. NACOSTI may monitor and evaluate the licensed research project.
7. The Licensee shall submit one hard copy and upload a soft copy of their final report within one year of completion of the research.
8. NACOSTI reserves the right to modify the conditions of the License including cancellation without prior notice.

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TEL: 020 400 7000, 0713 788787, 0735 404245
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Website: www.nacosti.go.ke

REPUBLIC OF KENYA

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RESEARCH LICENSE

Serial No.A 24277

CONDITIONS: see back page

Appendix VIII: Results of inferential statistics on the relationship of the study variables

Table A1: Reliability analysis: Inter-Item Correlation matrix of ERM Structure practices measures

Measures:
KRI= Key Risk Indicators KPI= Key Performance Indicators

	Outlined objective	Culture	KRI	KPI
Outlined Objective	1.000	.698	.756	.743
Culture	.698	1.000	.719	.700
KRI	.756	.719	1.000	.732
KPI	.743	.700	.732	1.000

No of cases= 197
Reliability coefficients 4 items
Alpha= 0.910 Standardized item alpha= 0.913

Table A2: Reliability analysis: Inter-Item Correlation matrix of ERM Governance practices measures

	Strategy	Accountability	Compliance	Risk Reduction
Strategy	1.000	.756	.633	.372
Accountability	.756	1.000	.748	.411
Compliance	.633	.748	1.000	.430
Risk Reduction	.372	.411	.430	1.000

No of cases= 197
Reliability coefficients 4 items
Alpha= 0.839 Standardized item alpha= 0.835

Table A3: Reliability analysis: Inter-Item Correlation matrix of ERM Process practices measures

	Identification	Analysis	Evaluation	Treatment	Monitoring
Identification	1.000	.834	.773	.747	.713
Analysis	.834	1.000	.850	.770	.746
Evaluation	.773	.850	1.000	.780	.711
Treatment	.747	.770	.780	1.000	.824
Monitoring	.713	.746	.711	.824	1.000
No of cases= 197					
Reliability coefficients 5 items					
Alpha= 0.944 Standardized item alpha= 0.945					

Table A4: Reliability analysis: Inter-Item Correlation matrix of Intellectual Capital measures

	Human Capital	Social Capital	Relational Capital
Human Capital	1.000	.764	.687
Social Capital	.764	1.000	.705
Relational Capital	.687	.705	1.000
No of cases= 197			
Reliability coefficients 3 items			
Alpha= 0.883 Standardized item alpha= 0.885			

Table A5: Reliability analysis: Inter-Item Correlation matrix of Organizational Performance measures

	Financial indicator	Non-financial indicator
Financial indicator	1.000	.639
Non-financial indicator	.639	1.000
No of cases= 197		
Reliability coefficients 2 items		
Alpha= 0.877 Standardized item alpha= 0.884		

Table A6: ERM Structure Practices Total Explained Variance

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.100	56.874	56.874	9.100	46.285	46.285	6.839	42.745	42.745
2	1.436	8.972	65.846	1.436	19.561	65.846	3.696	23.101	65.846
3	.939	5.867	71.713						
4	.689	4.309	76.022						
5	.650	4.060	80.082						
6	.530	3.315	83.396						
7	.472	2.953	86.349						
8	.367	2.292	88.641						
9	.325	2.034	90.675						
10	.277	1.732	92.407						
11	.255	1.592	93.999						
12	.250	1.562	95.562						
13	.242	1.514	97.076						
14	.186	1.163	98.238						
15	.156	.974	99.212						
16	.126	.788	100.000						

Extraction Method: Principal Component Analysis.

Source: Research Data (2019)

Table A7: ERM Governance Practices Total Explained Variance

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.963	45.866	45.866	5.963	45.866	45.866	5.145	39.574	39.574
2	1.754	13.491	59.357	1.754	13.491	59.357	2.538	19.526	59.100
3	1.024	7.873	67.231	1.024	7.873	67.231	1.057	8.130	67.231
4	.767	5.900	73.131						
5	.747	5.745	78.875						
6	.527	4.055	82.930						
7	.484	3.719	86.650						
8	.389	2.994	89.643						
9	.348	2.675	92.319						
10	.321	2.471	94.790						
11	.255	1.958	96.748						
12	.239	1.841	98.589						
13	.183	1.411	100.000						

Extraction Method: Principal Component Analysis.

Source: Research Data (2019)

Table A8: ERM Process Practices Total Explained Variance

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.278	64.619	64.619	12.278	45.529	45.529	6.834	35.969	35.969
2	1.170	6.157	70.776	1.170	25.247	70.776	6.613	34.807	70.776
3	.801	4.215	74.991						
4	.744	3.914	78.905						
5	.558	2.938	81.843						
6	.485	2.551	84.394						
7	.430	2.264	86.658						
8	.339	1.783	88.441						
9	.311	1.635	90.077						
10	.288	1.515	91.592						
11	.262	1.378	92.970						
12	.239	1.257	94.227						
13	.228	1.199	95.426						
14	.191	1.003	96.429						
15	.172	.906	97.336						
16	.139	.729	98.065						
17	.132	.694	98.759						
18	.125	.660	99.419						
19	.110	.581	100.000						

Extraction Method: Principal Component Analysis.

Source: Research Data (2019)

Table A9: Intellectual Capital Total Explained Variance

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.909	47.185	47.185	9.909	47.185	47.185	4.951	23.577	23.577
2	1.508	7.180	54.365	1.508	7.180	54.365	4.686	22.313	45.890
3	1.306	6.218	60.583	1.306	6.218	60.583	3.014	14.352	60.242
4	1.101	5.243	65.826	1.101	5.243	65.826	1.173	5.584	65.826
5	.885	4.215	70.041						
6	.726	3.457	73.498						
7	.661	3.147	76.645						
8	.605	2.882	79.527						
9	.556	2.648	82.175						
10	.511	2.432	84.607						
11	.437	2.082	86.689						
12	.431	2.051	88.740						
13	.378	1.798	90.539						
14	.360	1.717	92.255						
15	.316	1.505	93.760						
16	.284	1.352	95.113						
17	.278	1.322	96.435						
18	.216	1.029	97.464						
19	.200	.950	98.414						
20	.174	.830	99.245						
21	.159	.755	100.000						

Extraction Method: Principal Component Analysis.

Source: Research Data (2019)

Table A10: Organizational Performance Total Explained Variance

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	5.579	46.492	46.492	5.579	46.492	46.492	3.430	28.587	28.587
2	1.492	12.431	58.923	1.492	12.431	58.923	3.174	26.452	55.039
3	1.146	9.552	68.475	1.146	9.552	68.475	1.612	13.436	68.475
4	.961	8.010	76.485						
5	.606	5.050	81.535						
6	.478	3.987	85.522						
7	.429	3.573	89.094						
8	.382	3.183	92.278						
9	.319	2.662	94.940						
10	.233	1.942	96.881						
11	.211	1.755	98.636						
12	.164	1.364	100.000						

Extraction Method: Principal Component Analysis.

Source: Research Data (2019)

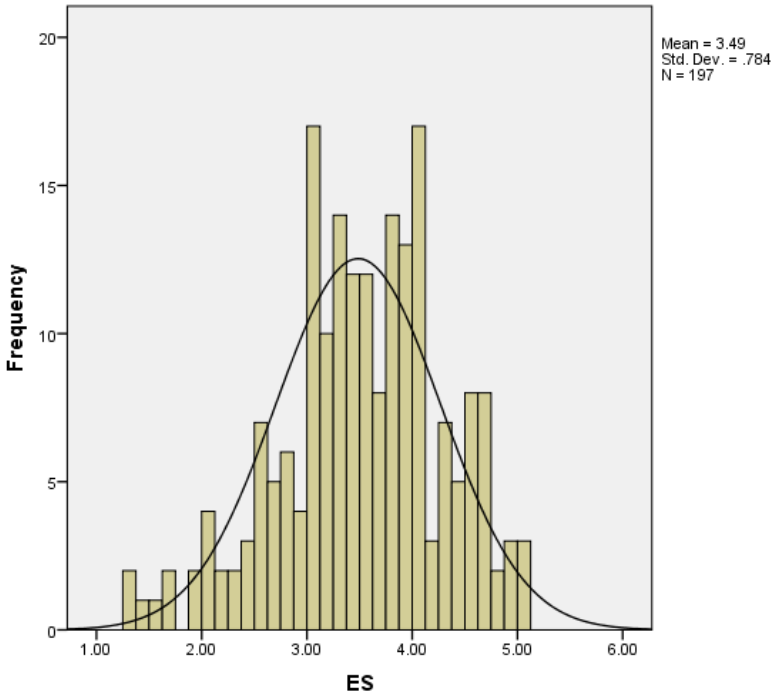


Figure A1: Normality of ERM Structure

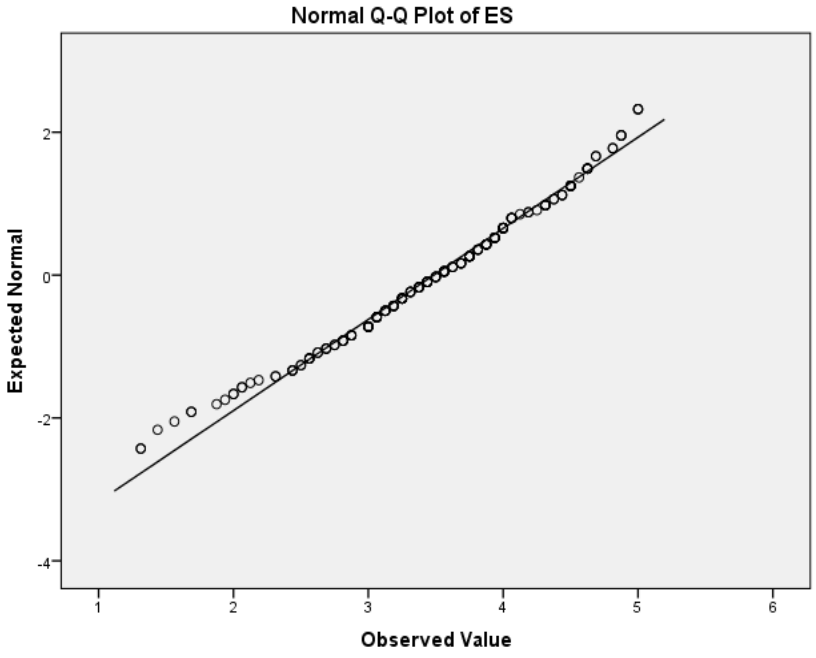
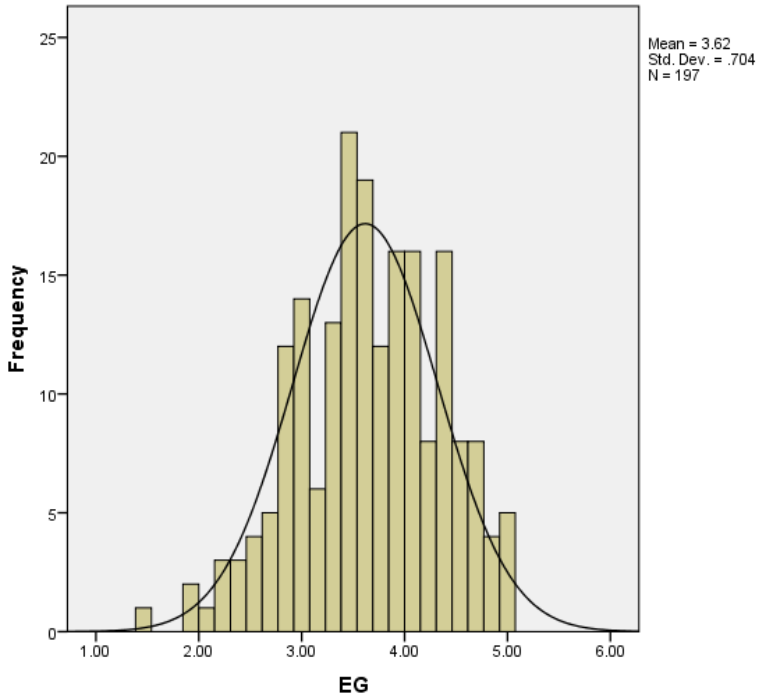


Figure A2: Normality of ERM Governance



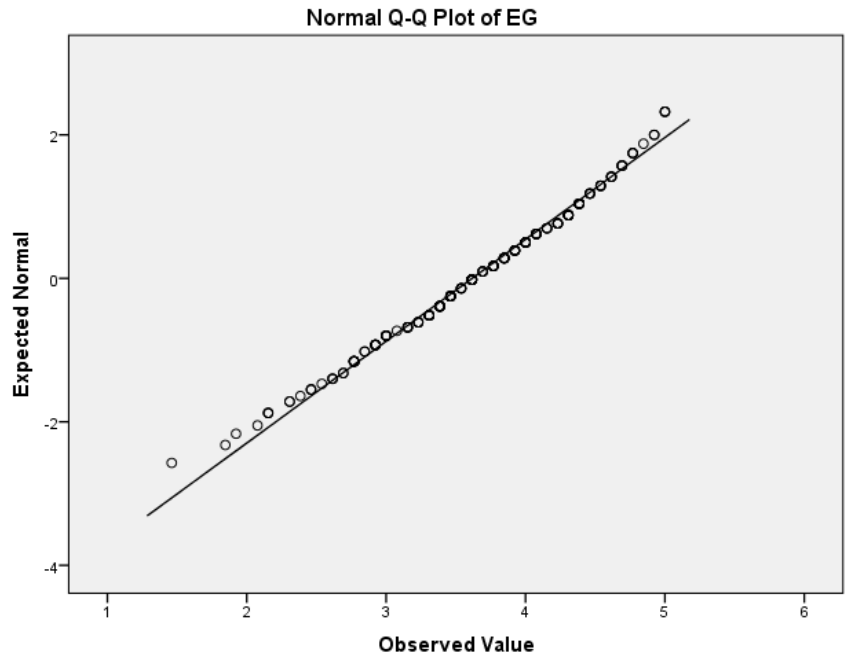
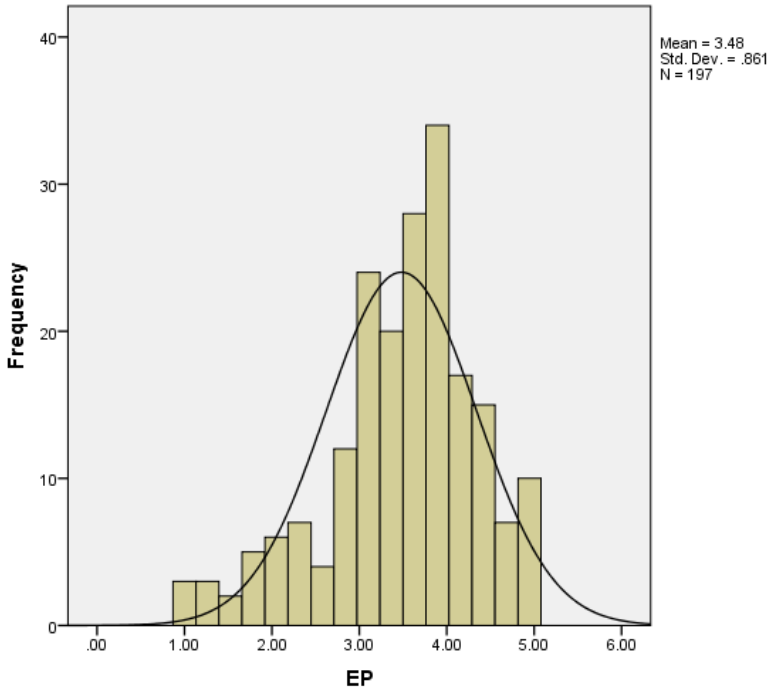


Figure A3: Normality of ERM Process



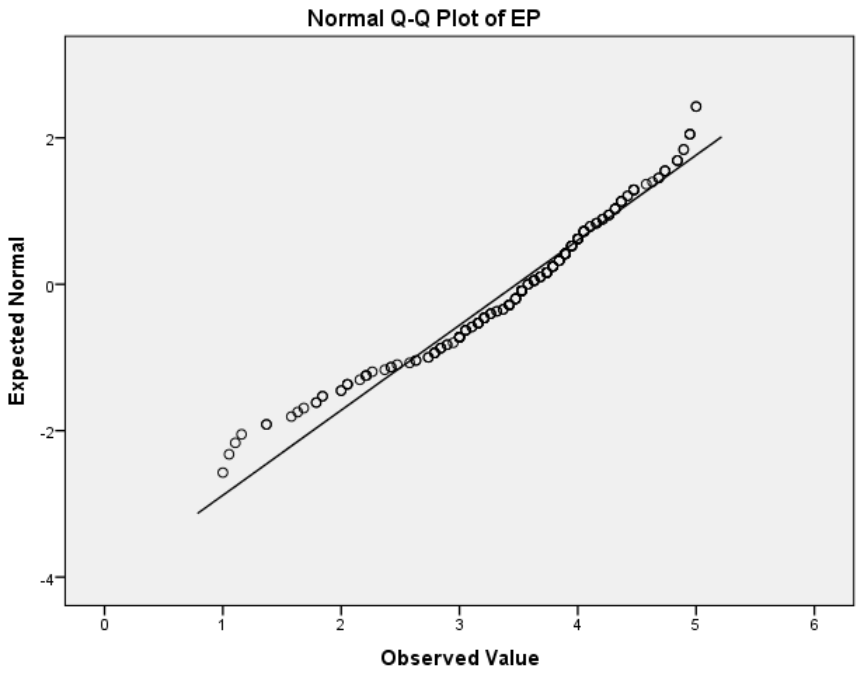
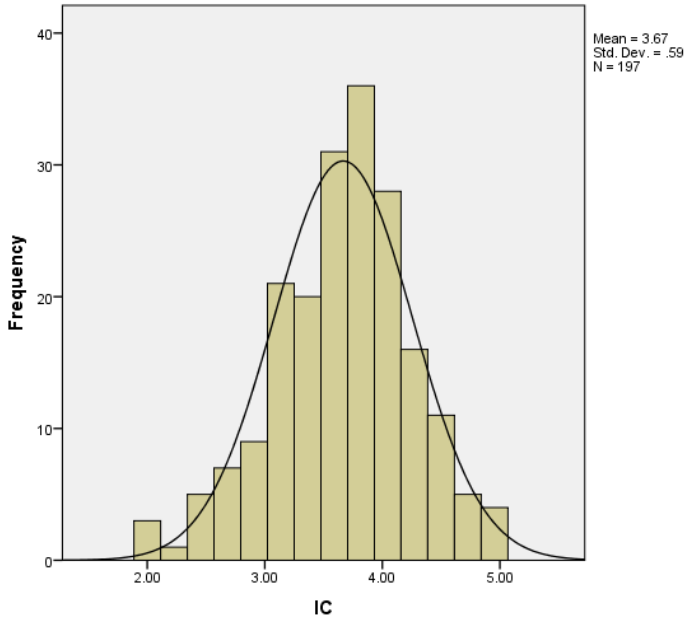


Figure A4: Normality of Intellectual Capital



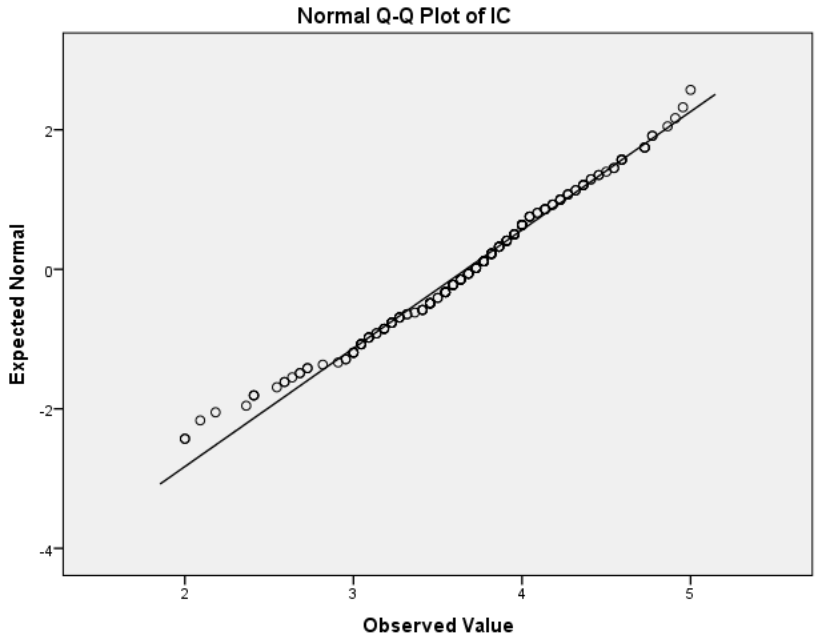
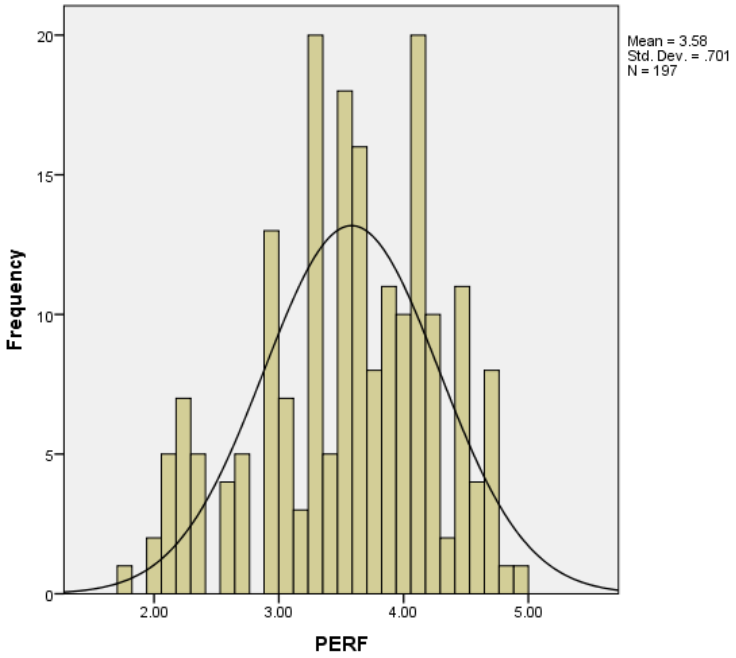
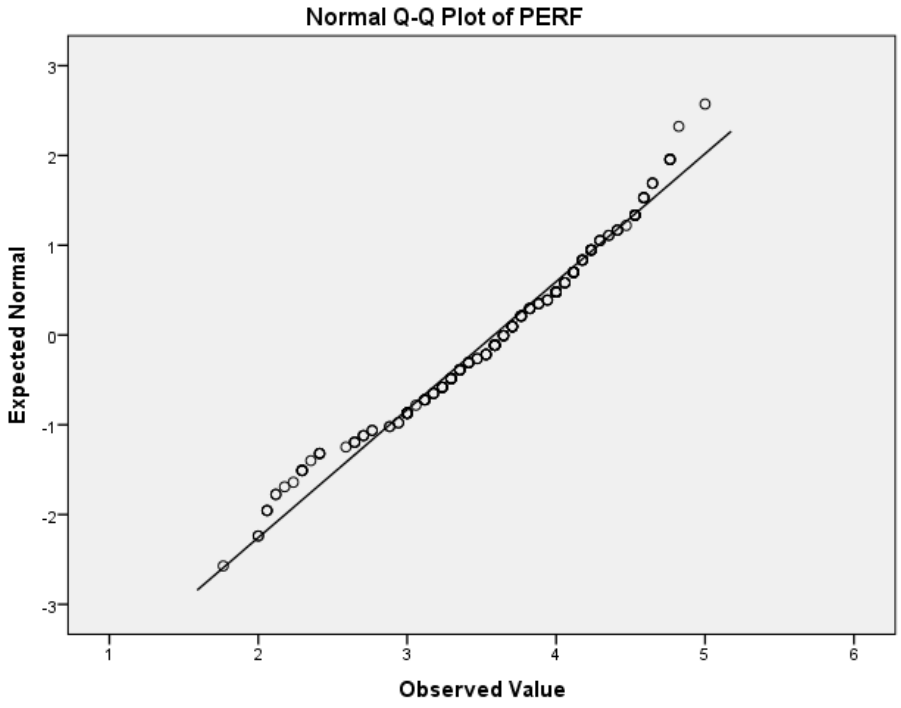


Figure A5: Normality of Organizational Performance


Mean = 3.58
Std. Dev. = .701
N = 197
Frequency
PERF
0
5
10
15
20
2.00
3.00
4.00
5.00


Normal Q-Q Plot of PERF
Expected Normal
Observed Value
3
2
1
0
-1
-2
-3
1
2
3
4
5
6

Appendix IX: Hierarchical Regression

Model Summary [g]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.166[a]	.028	.012	.99427905	.028	1.821	3	193	.145	
2	.817[b]	.667	.656	.58664973	.639	121.464	3	190	.000	
3	.855[c]	.731	.721	.52849407	.064	45.116	1	189	.000	
4	.861[d]	.741	.730	.52009739	.010	7.152	1	188	.008	
5	.871[e]	.759	.748	.50233726	.019	14.528	1	187	.000	
6	.880[f]	.775	.763	.48751863	.015	12.541	1	186	.001	1.840

a. Predictors: (Constant), Zscore(SIZE), Zscore(IND), Zscore(GWTH)

b. Predictors: (Constant), Zscore(SIZE), Zscore(IND), Zscore(GWTH), Zscore(ES), Zscore(EP), Zscore(EG)

c. Predictors: (Constant), Zscore(SIZE), Zscore(IND), Zscore(GWTH), Zscore(ES), Zscore(EP), Zscore(EG), Zscore(IC)

d. Predictors: (Constant), Zscore(SIZE), Zscore(IND), Zscore(GWTH), Zscore(ES), Zscore(EP), Zscore(EG), Zscore(IC), Zscore(ES_IC)

e. Predictors: (Constant), Zscore(SIZE), Zscore(IND), Zscore(GWTH), Zscore(ES), Zscore(EP), Zscore(EG), Zscore(IC), Zscore(ES_IC), Zscore(EG_IC)

f. Predictors: (Constant), Zscore(SIZE), Zscore(IND), Zscore(GWTH), Zscore(ES), Zscore(EP), Zscore(EG), Zscore(IC), Zscore(ES_IC), Zscore(EG_IC), Zscore(EP_IC)

g. Dependent Variable: Zscore(PERF)

ANOVA [a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	5.401	3	1.800	1.821	.145[b]
	Residual	190.798	193	.989		
	Total	196.199	196			
2	Regression	130.809	6	21.801	63.347	.000[c]
	Residual	65.390	190	.344		
	Total	196.199	196			
3	Regression	143.410	7	20.487	73.350	.000[d]
	Residual	52.789	189	.279		
	Total	196.199	196			
4	Regression	145.344	8	18.168	67.164	.000[e]
	Residual	50.854	188	.271		
	Total	196.199	196			
5	Regression	149.010	9	16.557	65.612	.000[f]
	Residual	47.188	187	.252		
	Total	196.199	196			
6	Regression	151.991	10	15.199	63.949	.000[g]
	Residual	44.207	186	.238		
	Total	196.199	196			

a. Dependent Variable: Zscore(PERF)

b. Predictors: (Constant), Zscore(SIZE), Zscore(IND), Zscore(GWTH)

c. Predictors: (Constant), Zscore(SIZE), Zscore(IND), Zscore(GWTH), Zscore(ES), Zscore(EP), Zscore(EG)

d. Predictors: (Constant), Zscore(SIZE), Zscore(IND), Zscore(GWTH), Zscore(ES), Zscore(EP), Zscore(EG), Zscore(IC)

e. Predictors: (Constant), Zscore(SIZE), Zscore(IND), Zscore(GWTH), Zscore(ES), Zscore(EP), Zscore(EG), Zscore(IC), Zscore(ES_IC)

f. Predictors: (Constant), Zscore(SIZE), Zscore(IND), Zscore(GWTH), Zscore(ES), Zscore(EP), Zscore(EG), Zscore(IC), Zscore(ES_IC), Zscore(EG_IC)

g. Predictors: (Constant), Zscore(SIZE), Zscore(IND), Zscore(GWTH), Zscore(ES), Zscore(EP), Zscore(EG), Zscore(IC), Zscore(ES_IC), Zscore(EG_IC), Zscore(EP_IC)

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.002	.071		.029	.977
	Zscore(IND)	.057	.071	.057	.805	.422
	Zscore(GWTH)	.140	.071	.139	1.959	.052
	Zscore(SIZE)	-.071	.071	-.071	-.994	.322
2	(Constant)	.000	.042		-.004	.997
	Zscore(IND)	.064	.042	.064	1.517	.131
	Zscore(GWTH)	.093	.043	.093	2.188	.030
	Zscore(SIZE)	-.043	.042	-.043	-1.021	.309
	Zscore(ES)	.226	.057	.250	3.960	.000
	Zscore(EG)	.352	.068	.352	5.146	.000
	Zscore(EP)	.290	.067	.289	4.326	.000
3	(Constant)	.006	.038		.148	.883
	Zscore(IND)	.024	.038	.024	.636	.525
	Zscore(GWTH)	.070	.039	.070	1.824	.070
	Zscore(SIZE)	-.021	.038	-.021	-.548	.584
	Zscore(ES)	.151	.053	.167	2.865	.005
	Zscore(EG)	.219	.065	.219	3.393	.001
	Zscore(EP)	.197	.062	.197	3.186	.002
	Zscore(IC)	.380	.057	.380	6.717	.000
4	(Constant)	.006	.037		.155	.877
	Zscore(IND)	.027	.038	.027	.724	.470
	Zscore(GWTH)	.073	.038	.073	1.910	.058
	Zscore(SIZE)	-.023	.037	-.023	-.607	.544
	Zscore(ES)	.053	.063	.059	.838	.403
	Zscore(EG)	.181	.065	.180	2.764	.006
	Zscore(EP)	.156	.063	.156	2.479	.014
	Zscore(IC)	.229	.080	.229	2.874	.005
	Zscore(ES_IC)	.314	.118	.314	2.674	.008
5	(Constant)	-.012	.036		-.344	.732
	Zscore(IND)	.036	.037	.036	.986	.325
	Zscore(GWTH)	.063	.037	.063	1.717	.088
	Zscore(SIZE)	-.018	.036	-.018	-.507	.613
	Zscore(ES)	.080	.062	.088	1.294	.197
	Zscore(EG)	-.139	.105	-.139	-1.327	.186
	Zscore(EP)	.155	.061	.155	2.558	.011
	Zscore(IC)	.039	.092	.039	.425	.671

	Zscore(ES_IC)	.214	.117	.214	1.840	.067
	Zscore(EG_IC)	.550	.144	.557	3.812	.000
6	(Constant)	-.006	.035		-.170	.865
	Zscore(IND)	.028	.036	.028	.796	.427
	Zscore(GWTH)	.061	.036	.061	1.706	.090
	Zscore(SIZE)	-.021	.035	-.021	-.605	.546
	Zscore(ES)	.079	.060	.088	1.328	.186
	Zscore(EG)	.050	.115	.050	.434	.665
	Zscore(EP)	-.081	.089	-.081	-.910	.364
	Zscore(IC)	-.031	.091	-.031	-.337	.737
	Zscore(ES_IC)	.220	.113	.220	1.941	.054
	Zscore(EG_IC)	.250	.164	.253	1.523	.129
	Zscore(EP_IC)	.419	.118	.422	3.541	.001

a. Dependent Variable: Zscore(PERF)

Residuals Statistics [a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-1.8768512	2.4754589	.0020305	.88060485	197
Residual	-1.74602222	1.30182683	.00000000	.47491912	197
Std. Predicted Value	-2.134	2.809	.000	1.000	197
Std. Residual	-3.581	2.670	.000	.974	197

a. Dependent Variable: Zscore(PERF)