

**THE RELATIONSHIP BETWEEN INTELLECTUAL CAPITAL AND
FINANCIAL PERFORMANCE OF COMPANIES LISTED IN THE NAIROBI
SECURITIES EXCHANGE**

**BY
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DECLARATION

I declare that the work contained in this research project is my original work and has not been presented for a degree in any other university or institution.

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This research project has been submitted for examination with my approval as University Supervisor.

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DEDICATION

I dedicate this to dear my parents Humphreys Mumia and Inviolata Mumia

And

My children Kevin and Kimberly

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ABSTRACT

Intellectual Capital is increasingly being recognized as an important component of organisational value. Thus, intellectual capital information is vital for decision making both within the organization and for external stakeholders. This study sought to determine the relationship between intellectual capital and financial performance of companies listed in the Nairobi Securities Exchange summarized into two objectives. To determine value of intellectual capital of firms listed in the Nairobi Securities Exchange and secondly to determine the effect of intellectual capital on financial performance. The research design was descriptive in nature. The population of the study constituted all the 64 companies listed on the Nairobi Securities Exchange. However only 48 companies were analysed as they contained all the variables of the model used in the study. A total of 239 observations were deduced from panel data for the period 2009 to 2013. Regression and correlation analyses were conducted to test the strength and direction of Intellectual capital and other variables that influence financial performance. Intellectual capital was measured by Tobin's q ratio of Market value to tangible assets. Financial performance was measured by Return on Equity (ROE). The study showed that intellectual capital, measured as the Tobin's q, had a negative and non-significant effect on ROE. The study therefore concludes that intellectual capital does not influence financial performance of listed firms in Kenya. The study recommends that firms should focus on other parameters that can improve their performance other than intellectual capital.

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LIST OF ACRONYMS AND ABBREVIATIONS

FSD	Financial Sector Deepening
IC	Intellectual Capital
IFRS	International Financial Reporting Standards
NSE	Nairobi Securities Exchange
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares
ROA	Return on Assets
ROE	Return on Equity
SME	Small and Medium Enterprises
VAIC	Value Added Intellectual Coefficient

CHAPTER ONE:INTRODUCTION

1.1 Background of the Study

The Business and economic world has over the years experienced tremendous transformations and is constantly being reshaped by a number of forces, including globalization, emerging technologies, changing customer demands and changes in political and economic structures(Guthrie and Petty,1999) such that there is the emergence of knowledge based organizations which according to Romer (1998) have been growing exponentially and so has the demand for knowledge based products and services (King and Ranft, 2001).

These broader socio-economic changes have implications for how organizations manage their resources and are causing a shift in organizational value drivers, with knowledge resources taking precedence over traditional physical resources in the pursuit of competitive advantage(Marr et al, 2004).However, despite the growing acknowledgement of the strategic significance of IC, there is limited understanding of how organizations manage, measure and report their knowledge resources (Guthrie, 2001; Fincham and Roslender, 2003).

1.1.1 Intellectual Capital

Edvinsson (1997) defines IC as knowledge that can be converted into value. Klein and Prusak (1994) define IC as intellectual material that has been formalized, captured and leveraged to produce a higher order asset. IC has also been defined in financial terms to mean the difference between market value and the shareholders capital (Abdolmohammadi, Greenlay and Poole, 2001).This can be supported by the fact that firms in the past have been acquired for amounts far in excess of market capitalization.

Granstrand (1999) defines IC as comprising all immaterial resources that could be considered as assets with some kind of assignable capitalized value. The term IC can also be said to be the knowledge assets of the organization which helps to achieve organizational goals (Brookings, 1996). He further states that it is therefore a set of intangible assets that include the internal knowledge of employees about the information processes, external and internal experts, products, customers and competitors.

All the above definitions have a convergence in the sense that they refer to assets that are important to the company but are not captured by the traditional accounting methods or techniques. They are therefore the total sum of “hidden assets” of an entity and these assets are not physical. They would therefore appear in some form of an ‘invisible balance sheet’ according to Sveiby (1997). One of the most workable definitions however is that offered by the Organization for Economic Co-operation and Development (OECD) (1999) which describes IC as “the economic value of two categories of intangible assets of a company: organizational capital; and human capital.

The growing interest in IC is driven by a broader range of socio-economic changes pertaining to increasingly sophisticated customers, the surge in service based industries, changing patterns of interpersonal activities and the emergence of the network society, being digital, virtual and interconnected (Petty and Guthrie, 2000; Ordóñez 2002; Fincham and Roslender 2003).

Yang et al. (2009) argued that traditional financial reporting cannot be used to calculate the real value of the firm because it measures only short-term financial and tangible assets. But in the recent years companies are interested in measurement of intellectual

capital for reporting to stakeholders and they seek to find a method for evaluating internal intangible assets. According to Edvinsson and Malone (1997) intellectual capital can be measured as the gap between book value and market value.

Because of the role of the intellectual capital in filling the gap between book value and market value, the nature of intellectual capital has been considered in many studies. A significant number of scholars identify three main components of intellectual capital: human capital, customer (relational) capital and structural capital (Wall, 2007; Ruta, 2009; Maditinos et. al, 2011). Human capital refers to knowledge, skills and experiences that employees take them with themselves when they leave the organization. Structural capital includes all non-human resources of knowledge in the organization which consists of databases, organizational charts, procedures and administrative processes, strategies and generally consist of everything that create higher value for the organization rather than its physical aspect , and the major issues of customer capital is knowledge that existing in marketing channels and relationship with customers and it is a determinant factor in converting intellectual capital to market value (Chen et. al, 2004).

1.1.2 Financial Performance

Performance is the ultimate dependent variable of interest for those concerned with just about any area of management: accounting is concerned with measuring performance; marketing with customer satisfaction and market share; operations management with productivity and cost of operations, organizational behaviour with employee satisfaction and structural efficiency; and finance with capital market response to all of the above. Performance encompasses three specific areas of firm outcomes namely financial performance (profits, return on assets, return on investment); market performance (sales,

market share); and shareholder return (total shareholder return, economic value added) (Devinney et al., 2008).

Tobin q has been used as another measure of financial performance. This is the ratio of company's market value to its replacement cost of assets. Tobin (1969) suggested that the combined market value of all the companies on the stock market should be equal to their replacement costs. The Tobin q ratio is theoretically defined as the market value of a company's assets divided by the replacement value of the company's assets. Then, when the assets are priced properly in the capital market, the Q ratio should be equal to one.

Another measure of performance is Return on Assets (ROA) which is an indicator of how profitable a company is relative to its total assets. It gives an idea as to how efficient management is at using its assets to generate earnings. Related to this measure is Return on Equity (ROE) which is the amount of net income as a percentage of shareholders equity. It measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested (Ngari et al., 2013).

1.1.3 Intellectual Capital and Financial Performance

Intellectual capital has long been recognized as a vital asset and value creator to companies. According to Roslender and Dyson (1992), value was seen in a broad sense as enhancing the performance of an organization. Swart (2006) refers to core competence, knowledge creation and innovation creating value over and above physical and financial resources. In the current business environment, human capital is regarded as a key source of competitive advantage. With the knowledge agenda, companies view

their employees as an important resource and invest heavily in them. But the value of human resources, or human capital, may not be adequately reported to stakeholders partly due to strict recognition criteria for intangible assets that do not allow human resources to be shown as an asset in the balance sheet (Tayles, et al., 2007). The pressures on companies to measure and report the value of intellectual capital is increasing and will eventually affect the firm's intellectual capital policies Marr, et al. (2003).

Empirical literature reveals that intellectual capital accounting encourages the business performance of organizations. Several studies have been carried out to indicate how intellectual capital influences Business performance. A study was conducted to measure the effect of intellectual capital on Jordan pharmaceutical industry and they explored that intellectual capital has a significant and positive impact on performance of Jordan pharmaceutical industry (Sharabati, et al., 2010).

The same argument is supported by (Bontis, et al., 2000) who examined the constituents of intellectual capital accounting (Human capital, Structural capital, Relational capital) and its impact on business performance of service and non-service sector of Malaysia and they concluded that Relational capital has positive effect on service sector while Human capital has positive impact on service sector performance.

1.1.4 Nairobi Securities Exchange

The Nairobi Securities Exchange (NSE) currently has 61 firms listed on it in 11 sectors (see Appendix 1) (NSE, 2014). The listed firms perform differently in terms of their profitability as well as share values. These companies have varied ownership structures. Some are foreign owned while others are purely domestic. Others have a mixture of both. There are some that are state owned with the Government of Kenya having majority

shares. These include Kenya Commercial Bank, Kenya Electricity Generating Company, National Bank of Kenya, Kenya Airways, Mumias Sugar Company, among others. According to Kimenyi and Kibe (2014), Kenya has the most advanced capital market in the region. In fact according to them the Nairobi securities exchange (NSE) is among the best in Africa.

The Kenyan companies listed at the Kenyan bourse are mainly driven among other things by Kenya's more advanced human capital base, its more diversified economy, and its role as a leader in the information communication revolution in the region. The Human capital component of Intellectual capital in Kenya is high considering the fact that the adult literacy rate in Kenya stands at 85.1% (African economist 2011) which is above the developing world average of 70 per cent (Encarta 2004).

The services sector contributes the highest percentage to the country's total GDP followed by the industrial sector reinforcing the study by Guthrie et al. (1999) on Australian firms on change of structure from traditional to knowledge based. Services sector is mainly characterized by Intellectual Capital.

According to Kimenyi and Kibe (2014) Kenya boasts a market-based economy that is the most liberal economic system with the private sector being hailed as the most vibrant and dynamic in East Africa. Kenyan companies and business enterprises are increasingly being faced by the same challenges as those in the developed world a factor that led to adoption of use of the International Financial Reporting Standards (IFRS).

1.2 Research Problem

Intellectual capital has been recognized as a key factor for maintenance of company's positions and improves its performance in both financial and non-financial dimension (Cheng et al 2010). Firms that measure, report and manage their intellectual capital effectively have a competitive advantage because they have identified all the assets at their disposal (tangible and intangible), and are thus in a position to operate at their full potential by making maximum use of their asset pool (Yang et.al, 2009).

Nowadays, many companies listed on the NSE provide IC reporting for shareholders and other users (Abeysekera, 2010). These reports provide more information about the company's internal situation for shareholders. Many experts believe that IC reporting is not harmful for companies but also increase the credibility of the organization and advantages this reporting for the internal dimension, to attract more skilled workers, and for the external dimension, create more initiative for corporate clients (Khanhossini, 2013).

A number of studies have been done on the impact of IC on financial performance. These include studies conducted outside Kenya such as Khanhossini (2013), Afroze (2011), Wang (2011) and Fathi et al. (2013). They also include a few studies done on Kenya such as Ngugi et al. (2012), Ngari et al. (2013) and Muganda (2013). While those studies that have been conducted outside Kenya do not reflect the IC issues in Kenya, those done on Kenya have not tackled the listed firms at the NSE. For instance, Ngari et al. (2013) focus on pharmaceutical firms while Muganda (2013) only focuses on listed commercial banks. On the other hand, Ngugi et al. (2012) focus on SMEs. Thus, no study has examined how

IC affects financial performance of listed firms in Kenya. This is a gap the present study seeks to bridge.

The study seeks to answer the following research questions:

1. What is the value of intellectual capital for firms listed at the Nairobi Securities Exchange?
2. How does intellectual capital affect the financial performance of firms listed at the Nairobi Securities Exchange?

1.3 Research Objectives

The objectives of this study are:

- i. To determine the value of intellectual capital of listed firms in Kenya.
- ii. To examine the relationship between intellectual capital and financial performance of listed firms in Kenya.

1.4 Value of the Study

Primarily this study will act as a bench mark for future studies on the subject in Kenya and even in other developing nations considering the fact that few studies have been conducted on the subject.

Secondly the study will provide an insight to local companies about the level of disclosure of IC among Kenya's leading firms and therefore may act as a bench mark to others. The study will also help companies in realizing the importance of IC so as to enable them adopt the best Intellectual Capital Management and Measurement methods that will help them meet their strategic goals.

Companies will also gain knowledge on the various types of IC which contribute immensely to the profitability of the company yet go unreported in the financial statements due to the inability of traditional accounting methods to capture such information. This will enable them gain insight on the weaknesses of current accounting regulations in the reporting of IC therefore the need to adopt performance measurement systems that report accurately on value creation.

Lastly the study will help the government and other relevant parties like the Capital Markets Authority, Institute of Certified Public Accountants of Kenya among others to participate more in the global debate about finding an acceptable standardized mode of Intellectual Capital Reporting and how it affects financial performance of firms.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In this chapter, the researcher will explore literature related to intellectual capital and planning on firm value. It will also consider the theoretical and empirical evidence on this subject. Finally, this chapter will provide an exposition of the research gap and the summary of the chapter in general.

2.2 Theoretical Review

In this section, the researcher will explore theoretical literature related to intellectual capital and planning on firm value

2.2.1 Human Capital Theory

The significance of the human capital theory is that it regards people as assets and stresses that investment by organizations in people will generate worthwhile returns. It proposes that sustainable competitive advantage is attained when the firm has a human resource pool that cannot be imitated or substituted by its rivals (Fombrun and Shanley, 1990). The concept views workers as key resource managers used to achieve competitive advantage for their companies Fombrun and Shanley (1990).

Flamholtz, as cited in Roos et al (2007), defined human resource/capital accounting as accounting for people as an organisational resource. It involves measuring the costs incurred by organizations to recruit, select, hire, train and develop human assets. It also involves measuring the economic value of people to the organization. Beer et al. (1984) added that there should be a long term perspective in managing people and urged that people should be considered assets rather than merely variable costs.

2.2.2 Resource Based View

Resource - based view gained attention of strategic thinkers only after the contribution by prominent authors such as Barney,(1986); Dierick and Cool in 1989.Dierick and Cool's paper is a fundamentally important literature in the theory of Resource-based view, because it clearly explains the kind of resources and capabilities that are of central concern.

The Resource-Based View links a firm's internal capability (what it does best) to its external industry environment (what market demands and what competitors offer).Capabilities have proven more difficult to delineate and are often termed as intangible assets (Hall, 1992) or intermediate goods (Amit and Schoemaker, 1993).Essentially capabilities refer to the firm's capacity to deploy resources, usually in combination using the skills of individuals or group as well as organizational routines and interactions to affect a desired end.

2.2.3 Stakeholder View

The stakeholder view maintains that firms have stakeholders rather than just shareholders to account for (Donaldson and Preston, 1995). The gospel of corporation having obligations only to stockholders, holders of the firm's equity, as espoused by the shareholder view is replaced by the notion that there are other groups to whom the firm is responsible in addition to the stockholders as espoused by the stakeholder group. The groups that have a "stake" in the firm include shareholders, employees, customers, suppliers, lenders, the government and society. This definition is known as the narrow sense of stakeholder, as it is limited to the groups on which the organization is dependent

for its continuous survival (Freeman and Reed, 1983). A wide sense of stakeholder would include any group that can affect the achievement of the firm's objectives, or that is affected by the achievement of a firm's objectives (such as public interest groups) (Freeman and Reed, 1983). Whatever the choice of the type of definition of stakeholder, a consensus arising from the stakeholder view is that the accounting profit is only a measure of the return to the shareholder, and that value added is a more accurate measure created by the stakeholders and then distributed to the same stakeholders (Meek and Gray, 1988).

Basically, value added is the increase in wealth generated by the productive use of the firm's resources prior to its allocation among shareholders, bondholders, workers and the government. To evaluate firm performance created and accrued to all stakeholders, a stakeholder view of the firm calls for the use of the value added (gross or net) as a measure of the total wealth created (Riahi-Belkaoui, 2002).

2.3 Determinants of Financial Performance of Listed Firms at NSE

The literature on firm performance has shown that it is influenced by a number of factors. These include firm size, capital structure, ownership structure, age of the firm, and asset tangibility, among other factors. In this section, these factors are reviewed on how they influence firm performance.

2.3.1 Size of the Firm

The nature of the relationship between firm size and firm value has received considerable attention in the literature and has provoked vigorous debate. Several arguments favour larger firm sizes in attaining higher firm value. Existing empirical evidence has not been unambiguous, lending support to both a positive and a negative impact of firm size on

performance. Yang and Chen (2009) compared the technical efficiency of SMEs with that of large firms and were inconclusive about the relationship when choosing different estimation methods. In a study on Portuguese companies Serrasqueiro and Nunes (2008) found that size is related positively to performance but only for the sample of SMEs and not for large firms. A similar finding by Diaz and Sanchez (2008) in the Spanish context suggested that SMEs were more efficient than large firms lending support to earlier studies that identified an inverse relationship between size and performance. These studies imply a relationship between firm size and performance that might not necessarily be linear, as illustrated in Barrett et al. (2010), Yoon (2004), and Risseeuw (1997), which conclude that company growth beyond optimal level can deteriorate performance.

A positive relationship between firm size and profitability was found by Vijayakumar and Tamizhselvan (2010). In their study, which was based on a simple semi-logarithmic specification of the model, the authors used different measures of size (sales and total assets) and profitability (profit margin and profit on total assets) while applying model on a sample of 15 companies operating in South India. Papadogonas (2007) conducted analysis on a sample of 3035 Greek manufacturing firms for the period 1995-1999. After dividing firms into four size classes he applied regression analysis which revealed that for all size classes, firms' profitability is positively influenced by firm size. Using a sample of 1020 Indian firms, Majumdar (1997) investigated the impact that firm size has on profitability and productivity of a firm. While controlling for other variables that can influence firm performance, he found evidence that larger firms are less productive but more profitable.

2.3.2 Capital Structure

Jensen (1986) considers that the debt should require executives to retain only profitable projects to avoid bankruptcy of the company. Indeed, debt financing would encourage leaders to be more efficient and effective in the positions occupied. However, most studies that have examined the relationship debt, ownership structure and performance, were based on U.S. and French data. This limits their general geographic (McGahan and Porter, 1997).

In addition, in connection with this, Driffield et al. (2007) explores a possible interaction between debt and firm performance using a system of simultaneous equations. They propose two alternative hypotheses for this inverse relationship. The first hypothesis focuses on the most successful companies. In the latter case the most successful companies reduce their debt levels to protect shareholder wealth in the risk of bankruptcy (Latrous, 2007). In the same context, Abdennadher (2006) shows the negative and significant effect of debt on performance in the Tunisian context for the study of twenty listed companies over the period 1996-2000.

2.3.3 Ownership Structure

Since Demsetz's (1983) work, numerous empirical studies investigating ownership structure and firm performance have been published. In a seminal study, Morck et al. (1988) proposed a non-linear relationship between insider ownership and firm performance. By examining Future 500 firms for the year 1980 and using piecewise linear regression, they find a positive relationship between Tobin's Q and ownership structure for the 0 per cent to 5 per cent board ownership range, a negative relationship in

the 5 per cent to 25 per cent range and a positive relationship for board ownership exceeding 25 per cent.

More recently, Villalonga and Amit (2004) examine the impact of family ownership, control and management on firm performance. They conclude that family ownership creates value only when it is combined with certain forms of control and management. Finally, in a study of Taiwan's electronics industry, Sheu and Yang (2005) find that insider ownership (executives, board members and large shareholders) has no influence on total factor productivity.

2.3.4 Age of the Firm

The relationship between firm age and survival has also been investigated by many researchers (Mata and Portugal, 2004; Bartelsman et al., 2005), but the results have not been clear-cut. An early contribution coined the term liability of newness to describe how young organizations face higher risks of failure (Stinchcombe, 1965). Authors have referred to the liability of adolescence (Fichman and Levinthal, 1991) to explain why firms face an initial 'honeymoon' period in which they are buffered from sudden exit by their initial stock of resources. Still others have identified liabilities of senescence and obsolescence (Barron et al., 2002) according to which older firms are expected to face higher exit hazards once other influences (such as firm size) are controlled for.

More recently, researchers have begun to take more interest in the role age plays in the performance of surviving firms. Some authors have investigated age effects by focusing specifically on samples of young firms (Stam and Wennberg, 2009). Some researchers

have focused on the functional form of the aggregate age distribution, showing that the empirical density is well approximated by an exponential distribution (Coad, 2010), while others have tracked the evolution of the FSD over time, for cohorts of ageing firms (Cirillo, 2010).

Other research has focused on differences in performance and behaviour across firms of different ages. For instance, it has been suggested that the age of a firm is positively related to its productivity levels (Haltiwanger et al., 1999). Brown and Medoff (2003) investigate whether older firms pay higher wages. Bartelsman et al. (2005) compare the post-entry growth rates of North American and European firms. Bellone et al. (2008) examine how pressures related to market selection (i.e. firm survival) change as firms age. Others have investigated how probability of innovation and productivity growth change across the firm age distribution (Huergo and Jaumandreu, 2004). Autio et al., (2000) observe that young international firms – born global firms – experience faster growth in international sales than their older counterparts. They interpret this finding as evidence that younger firms are better able to develop export capabilities because they are better able to learn how to succeed in uncertain environments.

2.4 Empirical Review

In this section, the researcher will explore empirical literature related to intellectual capital and their effects on financial and or business performance.

2.4.1 International Studies

Samiloglu et.al, (2006) examined the relationship between value added intellectual coefficient (VAIC) and the ratio of market value to book value in the Turkish banking sector. The study used correlation and regression analysis to examine the relationship. The results of their study indicated that there is significant correlation between the dependent variable (ratio of market value to book value) and the independent variable (VAIC) and its three components.

Tan et al., (2007) examined the relationship between intellectual capital and financial performance of companies listed in the Singapore stock exchange. For this purpose they used equity, earnings per share and annual return per share as indicators of financial performance and they used VAIC method for measuring intellectual capital. The results of their study indicated that there is a positive correlation between intellectual capital and the company's future performance. They also concluded that the growth rate of intellectual capital has a positive relationship with firm performance.

Muhammad and Ismail (2009) examined the relationship between intellectual capital and business performance. This study was carried out among the Malaysian financial sector. The study was carried out using panel data analysis on data from 2002 to 2006. The study found that intellectual capital has a positive relationship with firm performance (measured by ROA and profitability).

Ghosh and Mondal (2009) studied the relationship between intellectual capital and financial performance of Indian banking industry. The study focused on 70 Indian banks from 1999 to 2008. The analysis indicated that the relationships between the performance

of a bank's Intellectual Capital, and financial performance indicators namely, profitability, productivity are varied.

Wang (2011) examined the relationship between intellectual capital and firm performance. The study used a pooled data OLS from 2001 to 2007. The results showed that the relationship between structure capital and firm performance was insignificant. The rest were significant.

Afroze (2011) examined the effect of intellectual capital on financial performance. The focus was on 13 listed private commercial banks in Bangladesh. Data was gathered for the period 1998 – 2009. The results showed statistically significant correlation among the IC efficiency scores and financial performance indicators, in addition to the statistically significant influence of IC on the financial indicators.

Fathi et al., (2013) examined the impact of intellectual capital on financial performance of firms listed in Iran. The study collected secondary data for the period 2001 to 2010 from a panel of 49 companies and applied various regression models to analyze the data. The results showed that intellectual capital had a positive relationship with performance measures.

Khanhossini et al., (2013) investigated the relationship between intellectual capital and financial performance of a group of companies. This was therefore a case of one organization. Data was collected from annual reports of the company for the period 2008 to 2010 and the OLS method used to analyze data. The study found that there was a significant relationship between intellectual capital and two performance indicators (return on assets and basic earning power).

2.4.2 Local Studies

Ngugi et al., (2012) sought to determine the influence of intellectual capital on growth of SMEs in Kenya. Primary data was collected from 3100 SMEs in Nairobi County. The results showed that growth was influenced by management's innovativeness and the drive to entrepreneurship.

Ngari et al., (2013) examined the relationship between intellectual capital accounting and business performance. The study focused on pharmaceutical firms in Kenya. Primary data was therefore collected from 31 pharmaceutical companies. The results showed that intellectual capital accounting had positive relationship with business performance.

2.5 Summary of Literature Review

Three theories have been reviewed that explain intellectual capital in organizations. These are human capital theory, resource based view and stakeholder view. Of these, only the human capital theory has been studied by Ngugi et al., (2012) in Kenya while the rest of the theories have been neglected. This offers a gap that can be addressed by the present study.

The empirical review has shown a number of recent studies on intellectual capital relationship with financial performance. Most of these were done in other countries other than Kenya. The two studies on Kenya reviewed above did not focus on financial performance (Ngugi et al., 2012) and neither did any of them focus on all listed firms. Ngari et al., (2013) focused more on the listed commercial banks leaving out many other sectors listed on the NSE. This offers a gap that will be addressed in the present study.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the research design, population, sample, data collection and data analysis, which describes the firms and variables included in the study and applied statistical techniques in investigating the effect of intellectual capital on the financial performance of firms listed at the NSE.

3.2 Research Design

This study adopted a descriptive study design. Descriptive research design is a design that is used when the researcher wants to describe specific behaviour as it occurs in the environment (Greene, 2008). The aim of the study was to evaluate the effects intellectual capital on the financial performance of listed firms in Kenya. According to Mugenda and Mugenda (2003) the purpose of descriptive research is to determine and report the way things are and it helps in establishing the current status of the population under study. Borg et al. (1996) note that descriptive survey research is intended to produce statistical information about aspects of a study that is of interest to policy makers.

3.3 Population

The population of this study is the companies listed on the Nairobi Securities Exchange. Currently, there are 61 firms listed on the NSE in 11 different sectors as shown in Appendix 1 (NSE, 2014). Since the number of listed firms in Kenya is not so large and the present study sought to come up with a predictive model for how intellectual capital affects financial performance, all the 61 firms formed the sample. Thus, this was a census study of all the listed firms in Kenya.

3.4 Data Collection

Annual reports of the selected companies were the main source of data because they represent the corporate concern in comprehensive and compact manner. They are also reproduced periodically and therefore a good reference and summary of management's intentions for the period in question (Niemark, 1995). They were collected from the said companies and from the Nairobi Securities Exchange. The data was collected for the period 2009 to 2013.

3.5 Data Analysis

First, descriptive analysis was used to describe the data in terms of mean scores and standard deviations among other descriptive statistics. Secondly, to examine the level of intellectual capital and financial performance among the firms, the mean and median values were used to interpret the results. In order to examine the effect of intellectual capital on firm value, regression analysis was carried out. Since the data collected was panel data, the analysis was performed using panel data regression techniques with the aid of Eviews version 7 analysis software.

3.5.1 The Analytical Model

Based on other models that have been used to test the effect of intellectual capital on performance of firms, the present study adopted the following model:

$$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + e$$

Table 3.1: Operationalization of variables

Variable	Definition
Y	Financial performance = return on equity (ratio of income to equity)
X_1	Intellectual capital = market value to tangible assets (Tobin's q)
X_2	Size of the firm measured as the natural logarithm of the book value of total assets at the end of the year
X_3	Leverage measured as the total liabilities divided by total assets at the end of the year
X_4	State ownership measured as the percentage of shares owned by the state.
X_5	Age of the firm measured by difference between current year and the year of incorporation

3.5.2 Test of Significance

Correlation analysis was used to examine the inter-relationships between the independent variables in the study. This showed if there are any serial correlations within the independent variables before a regression analysis was carried out. A multiple regression analysis was then performed using the model above. The F-test was used to show the strength of the model. The coefficients were interpreted to show how each of the independent variables affected financial performance as measured by ROE. The significance was tested at 5% level.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the results of data analysis. From the 61 firms listed on the NSE, data from 2009 to 2013 was complete for only 48 of the firms. Therefore, the analysis was based on the 48 firms with complete data for the entire period of study. From these, 239 observations were available for each of the variables in the study. This is therefore a balanced panel of 48 firms from 2009 to 2013. The analysis was done using Eviews version 7. The chapter is organised as follows. The next section presents the results of the descriptive analysis, correlation analysis, unit root tests and regression analysis. The last section presents a discussion of the results.

4.2 Descriptive Statistics

Table 4.1 shows the descriptive results for the variables in the study except state ownership which was a dummy variable. As shown, the average ROE was 0.17 with a standard deviation of 0.24. The mean intellectual capital for the listed firms was 16.18 with a standard deviation of 65.43. The mean age of the firms was 55 years, the mean leverage was 0.58 and the mean size was 16.07.

Table 4.2: Descriptive Statistics

	AGE	IC	LEV	ROA	ROE	SIZE
Mean	55.00000	16.19790	0.580879	0.069103	0.169863	16.06986
Median	46.00000	1.473470	0.583234	0.047773	0.164262	16.30354
Std. Dev.	29.87368	65.42830	0.232440	0.077251	0.244737	2.632713
Observations	239	239	239	239	239	239

4.3 Correlation

Table 4.2 shows the correlation matrix for all the independent variables in the study. This was done in order to check for serial correlations. Correlations of more than 0.5 are usually considered higher. The results show that all the correlations were low and

therefore the problem of serial correlation does not exist between the independent variables.

Table 4.3: Correlation Matrix

	AGE	IC	LEV	ROA	SIZE	STATE
AGE	1.000000					
IC	-0.053650	1.000000				
LEV	-0.009522	-0.203127	1.000000			
ROA	0.046883	0.115256	-0.415391	1.000000		
SIZE	0.004196	0.053624	0.322487	-0.290108	1.000000	
STATE	-0.207157	0.264544	0.000328	-0.063527	0.196195	1.000000

Before a regression analysis is done on a panel data, it is always important to test for unit roots in order to avoid having spurious results. The study used Phillips-Perron method to test for the presence of unit roots in all the variables used in the study. The results of unit root tests are shown in appendix II. In summary, variables that were stationary at levels are ROE and ROA while the rest of the variables were stationary at first difference. The model was therefore modified to fit with the stationary positions of the variables.

4.4 Regression Analysis

4.4.1 Model Statistics

With the modified model, two regressions were run with pooled OLS and random effects model. The results are shown in Table 4.3 and Table 4.4. Both are presented for comparison purposes but the random effects model is best suited to explain the panel data results in this case because it explains most of the variance in firm financial performance (64.32%) compared to OLS model (56.94%) and has a DW value of 1.8 compared to the pooled OLS model with a DW of 1.15.

Table 4.4: Pooled OLS Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.020558	0.025711	0.799594	0.4250
D(IC)	-9.03E-05	0.000178	-0.505956	0.6135
D(LEV)	0.135383	0.102296	1.323453	0.1873
D(SIZE)	-0.021496	0.012020	-1.788320	0.0754
ROA	2.025535	0.134288	15.08347	0.0000
AGE	0.000216	0.000355	0.610036	0.5426
STATE	-0.013663	0.024395	-0.560073	0.5761
R-squared	0.569462	Mean dependent var		0.162533
Adjusted R-squared	0.555498	S.D. dependent var		0.213830
S.E. of regression	0.142562	Akaike info criterion		-1.022299
Sum squared resid	3.759937	Schwarz criterion		-0.903537
Log likelihood	105.1407	Hannan-Quinn criter.		-0.974200
F-statistic	40.78246	Durbin-Watson stat		1.157619
Prob(F-statistic)	0.000000			

Table 4.5: Random Effects Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.003995	0.033635	0.118770	0.9056
D(IC)	-8.54E-05	0.000126	-0.675730	0.5001
D(LEV)	0.096829	0.079004	1.225619	0.2219
D(SIZE)	-0.030492	0.008691	-3.508615	0.0006
ROA	2.315305	0.127629	18.14085	0.0000
AGE	0.000169	0.000480	0.352678	0.7247
STATE	-0.010815	0.033044	-0.327302	0.7438
Effects Specification				
			S.D.	Rho
Cross-section random			0.083235	0.4137
Idiosyncratic random			0.099080	0.5863
Weighted Statistics				
R-squared	0.643284	Mean dependent var		0.083127
Adjusted R-squared	0.631715	S.D. dependent var		0.173483
S.E. of regression	0.105281	Sum squared resid		2.050553
F-statistic	55.60336	Durbin-Watson stat		1.803707
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.555246	Mean dependent var		0.162533
Sum squared resid	3.884084	Durbin-Watson stat		0.952244

4.4.2 ANOVA

The results in Table 4.3 and Table 4.4 of the F-statistics show that both models were however fit to explain the relationship between intellectual capital and financial performance, $p < 0.01$.

4.4.3 Coefficients

The results in Table 4.4 show that using the random effects regression model, intellectual capital had a negative but insignificant effect on financial performance, $p = 0.5001$. The study found that leverage had a positive but insignificant effect on ROE, $p = 0.2219$. Size of the firm had a negative and significant effect on ROE, $p = 0.0006$. ROA was positively and significantly related with ROE, $p = 0.0000$. Age of the firm has a positive but insignificant impact on ROE, $p = 0.7247$. Further, state ownership had a negative but insignificant effect on ROE, $p = 0.7438$.

4.5 Discussion of Findings

The study has shown that intellectual capital, measured as the Tobin's q, had a negative and non-significant effect on ROE. This means that intellectual capital does not influence financial performance of listed firms in Kenya. The intellectual capital value present in firms does not therefore offer them any competitive advantage in the market as compared to their peers.

In terms of the direction of the relationship, this study is consistent with a number of studies such as Tan et al. (2007), Muhammad and Ismail (2009), Fathi et al (2013) and Ngari et al (2013). However, the results are inconsistent with these studies in terms of the significance of the relationships. This could be attributed to the differences in analysis

method as the present study uses a panel data as compared to the prior studies that have used either time series data or primary survey data.

Further, the inconsistencies with the previous studies in terms of finding no significant relationship between intellectual capital and financial performance can be attributed to the differences in the way intellectual capital is measured in the present study. While most measures in previous studies are based on VAIC (Samiloglu et.al, 2006; Tan et al, 2007), the present study used Tobin's q as a proxy for intellectual capital.

Tobin's q is one of the market capitalisation methods of measuring intellectual capital as explained in Jurczak (2008) and similar to market-to-book value method espoused by Stewart (1997) and Luthy (1998). Further, Tobin's q as a measure of intellectual capital had been proposed by Stewart (1997) as an effective measure of a firm's intellectual capital. While Stewart (1997) proposed the measurement of Tobin's q as the ratio of stock market value of firm divided by the replacement cost of its assets, Luthy (1998) refers to the replacement cost of tangible assets. Luthy (1998) is therefore more specific on which assets are to be used in the calculation of Tobin's q. Following this definition, the present study thus measured Tobin's q as a ratio of market value of a firm to the tangible assets.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The previous chapter presented the results of the study and the discussions of the results. In this chapter, a summary of findings is presented. This is followed by a conclusion of the findings. Then recommendations for policy and practice are made. Limitations encountered in the study are then discussed followed by some suggestions for further studies.

5.2 Summary of Findings

The study intended to achieve two objectives: determine the value of intellectual capital of listed firms in Kenya and examine the relationship between intellectual capital and financial performance. The study used a panel data of 48 firms from 2009 to 2013 with a total of 239 observations. The results showed that the value of intellectual capital as measured by Tobin's q averaged 16.19 while the median intellectual capital was 1.47.

The random effects model explained 64% of the variance in ROE as shown by the R^2 and the DW was closer to 2 suggesting that it was a better model to explain the relationship between intellectual capital and financial performance. The results showed that the model was fit to explain the relationship between intellectual capital and financial performance at the F statistic was significant.

The results showed that intellectual capital had a positive effect on financial performance but the effect was not significant at 5% level. Further, leverage and age of the firm were positively but insignificantly related with financial performance while state ownership

had a negative and insignificant relationship with financial performance at 5% level. The results also showed that size of the firm had a negative and significant effect on financial performance while ROA had a positive and significant effect on financial performance at 5% level.

5.3 Conclusion

The study concludes that most of the listed firms offer a higher intellectual capital as shown by the average IC of more than 1 in the study. Most of the firms therefore have a competitive advantage, based on intangible assets that they can offer. This advantage may lead to better financial performance. Thus, the relationship between financial performance and intellectual capital was tested.

The study concludes that intellectual capital does not influence financial performance of listed firms in Kenya. Thus, firms are unlikely to translate their higher intellectual capital values into better financial performance in the market. However, in terms of the direction of the relationship, there is a possibility of firms performing better based on their higher IC values.

The study further concludes that leverage, state ownership, and age of the firm do not influence financial performance of listed firms while size of the firm and ROA influence intellectual capital. The financial performance of listed firms in Kenya is therefore influenced by size and their ROA than with leverage, state ownership or their age.

5.4 Recommendations for Policy and Practice

The study recommends that since intellectual capital does not influence financial performance of listed firms in Kenya, they need to focus on other parameters that they improve their performance other than intellectual capital. Such parameters include size of the firm. As the study showed, being large is detrimental to ROE thus firms should not be quick to grow bigger as this may bring on inefficiencies that can lead to declining financial performance.

These results also question the value of accounting for intellectual capital in Kenya. As the relationship between intellectual capital and financial performance was found to be insignificant in this study, accounting professionals may need to rethink the value of accounting for the same other than being a cosmetic measure in annual reports of firms.

5.5 Limitations of the Study

The study intended to collect data from 61 listed companies but data for only 48 companies were complete and usable for purposes of this study. Thus, it was impossible to cover all 61 companies due to data deficiencies. The study also focus on 5 years period, while this was appropriate for purpose of providing a larger data set for analysis, a longer period than this would have been preferred .

5.6 Suggestions for Further Research

This study has not exhaustively discussed all the issues of intellectual capital reporting in Kenya. There is therefore need for further research especially to examine the determinants of intellectual capital reporting in Kenya. This is an areas that has not been explored. Further, research needs to be carried out to examine the value of intellectual

capital reporting in Kenya. This will be important in providing an incentive to firms to report on their intellectual capital.

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APPENDICES

Appendix 1: Companies listed at the NSE as at 1st August 2014

Sector 1: Agricultural

1. Eaagads Ltd
2. Kapchorua Tea Co. Ltd
3. Kakuzi
4. Limuru Tea Co. Ltd
5. Rea Vipingo Plantations Ltd
6. Sasini Ltd
7. Williamson Tea Kenya Ltd

Sector 2: Commercial and Services

8. Express Ltd
9. Kenya Airways Ltd
10. Nation Media Group
11. Standard Group Ltd
12. TPS Eastern Africa (Serena) Ltd
13. Scangroup Ltd
14. Uchumi Supermarket Ltd
15. Hutchings Biemer Ltd
16. Longhorn Kenya Ltd

Sector 3: Telecommunication and Technology

17. Safaricom

Sector 4: Automobiles and Accessories

18. Car and General (K) Ltd
19. CMC Holdings Ltd
20. Sameer Africa Ltd
21. Marshalls (E.A.) Ltd

Sector 5: Banking

22. Barclays Bank Ltd
23. CFC Stanbic Holdings Ltd
24. I&M Holdings Ltd

25. Diamond Trust Bank Kenya Ltd
26. Housing Finance Co Ltd
27. Kenya Commercial Bank Ltd
28. National Bank of Kenya Ltd
29. NIC Bank Ltd
30. Standard Chartered Bank Ltd
31. Equity Bank Ltd
32. The Co-operative Bank of Kenya Ltd

Sector 6: Insurance

33. Jubilee Holdings Ltd
34. Pan Africa Insurance Holdings Ltd
35. Kenya Re-Insurance Corporation Ltd
36. Liberty Kenya Holdings Ltd
37. British-American Investments Company (Kenya) Ltd
38. CIC Insurance Group Ltd

Sector 7: Investment

39. Olympia Capital Holdings Ltd
40. Centum Investment Co Ltd
41. Trans-Century Ltd

Sector 8: Manufacturing and Allied

42. B.O.C Kenya Ltd
43. British American Tobacco Kenya Ltd
44. Carbacid Investments Ltd
45. East African Breweries Ltd
46. Mumias Sugar Co. Ltd
47. Unga Group Ltd
48. Eveready East Africa Ltd
49. Kenya Orchards Ltd
50. A.Baumann CO Ltd

Sector 9: Construction and Allied

51. Athi River Mining

52. Bamburi Cement Ltd

53. Crown Berger Ltd

54. E.A.Cables Ltd

55. E.A.Portland Cement Ltd

Sector 10: Energy and Petroleum

56. KenolKobil Ltd

57. Total Kenya Ltd

58. KenGen Ltd

59. Kenya Power & Lighting Co Ltd

60. Umeme Ltd

Sector 11: Growth Enterprise Market Segment

61. Home Afrika Ltd

Source: Nairobi Securities Exchange Website (August, 2014).

Appendix II: Unit Root Test Results

ROE in Levels

Null Hypothesis: Unit root (individual unit root process)
Series: ROE
Date: 09/12/14 Time: 02:33
Sample: 2009 2013
Exogenous variables: None
Newey-West automatic bandwidth selection and Bartlett kernel
Total number of observations: 191
Cross-sections included: 48

Method	Statistic	Prob.**
PP - Fisher Chi-square	168.233	0.0000
PP - Choi Z-stat	-2.67618	0.0037

IC in Levels

Null Hypothesis: Unit root (individual unit root process)
Series: IC
Date: 09/12/14 Time: 02:35
Sample: 2009 2013
Exogenous variables: None
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 192
Cross-sections included: 48

Method	Statistic	Prob.**
PP - Fisher Chi-square	86.0394	0.7570
PP - Choi Z-stat	2.53952	0.9944

IC in first difference

Null Hypothesis: Unit root (individual unit root process)
Series: D(IC)
Date: 09/12/14 Time: 02:36
Sample: 2009 2013
Exogenous variables: None
Newey-West automatic bandwidth selection and Bartlett kernel
Total (balanced) observations: 144
Cross-sections included: 48

Method	Statistic	Prob.**
PP - Fisher Chi-square	321.070	0.0000
PP - Choi Z-stat	-11.1244	0.0000

Age in Levels

Null Hypothesis: Unit root (individual unit root process)
Series: AGE
Date: 09/12/14 Time: 02:37

Sample: 2009 2013
 Exogenous variables: None
 Newey-West automatic bandwidth selection and Bartlett kernel
 Total (balanced) observations: 192
 Cross-sections included: 48

Method	Statistic	Prob.**
PP - Fisher Chi-square	0.01190	1.0000
PP - Choi Z-stat		NA

Leverage in level

Null Hypothesis: Unit root (individual unit root process)
 Series: LEV
 Date: 09/12/14 Time: 02:39
 Sample: 2009 2013
 Exogenous variables: None
 Newey-West automatic bandwidth selection and Bartlett kernel
 Total (balanced) observations: 192
 Cross-sections included: 48

Method	Statistic	Prob.**
PP - Fisher Chi-square	136.225	0.0044
PP - Choi Z-stat	-1.45964	0.0722

leverage in first difference

Null Hypothesis: Unit root (individual unit root process)
 Series: D(LEV)
 Date: 09/12/14 Time: 02:40
 Sample: 2009 2013
 Exogenous variables: None
 Newey-West automatic bandwidth selection and Bartlett kernel
 Total (balanced) observations: 144
 Cross-sections included: 48

Method	Statistic	Prob.**
PP - Fisher Chi-square	325.324	0.0000
PP - Choi Z-stat	-11.5624	0.0000

size in level

Null Hypothesis: Unit root (individual unit root process)
 Series: SIZE
 Date: 09/12/14 Time: 02:41
 Sample: 2009 2013
 Exogenous variables: None
 Newey-West automatic bandwidth selection and Bartlett kernel
 Total (balanced) observations: 192
 Cross-sections included: 48

Method	Statistic	Prob.**
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PP - Fisher Chi-square	6.67672	1.0000
PP - Choi Z-stat		NA

size In difference

Null Hypothesis: Unit root (individual unit root process)

Series: D(SIZE)

Date: 09/12/14 Time: 02:42

Sample: 2009 2013

Exogenous variables: None

Newey-West automatic bandwidth selection and Bartlett kernel

Total (balanced) observations: 144

Cross-sections included: 48

Method	Statistic	Prob.**
PP - Fisher Chi-square	215.079	0.0000
PP - Choi Z-stat	-6.91565	0.0000

Appendix III: Regression Output

Pooled OLS

Dependent Variable: ROE
 Method: Panel Least Squares
 Date: 09/12/14 Time: 12:52
 Sample (adjusted): 2010 2013
 Periods included: 4
 Cross-sections included: 48
 Total panel (balanced) observations: 192

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.020558	0.025711	0.799594	0.4250
D(IC)	-9.03E-05	0.000178	-0.505956	0.6135
D(LEV)	0.135383	0.102296	1.323453	0.1873
D(SIZE)	-0.021496	0.012020	-1.788320	0.0754
ROA	2.025535	0.134288	15.08347	0.0000
AGE	0.000216	0.000355	0.610036	0.5426
STATE	-0.013663	0.024395	-0.560073	0.5761
R-squared	0.569462	Mean dependent var		0.162533
Adjusted R-squared	0.555498	S.D. dependent var		0.213830
S.E. of regression	0.142562	Akaike info criterion		-1.022299
Sum squared resid	3.759937	Schwarz criterion		-0.903537
Log likelihood	105.1407	Hannan-Quinn criter.		-0.974200
F-statistic	40.78246	Durbin-Watson stat		1.157619
Prob(F-statistic)	0.000000			

Random model

Dependent Variable: ROE
 Method: Panel EGLS (Cross-section random effects)
 Date: 09/12/14 Time: 12:53
 Sample (adjusted): 2010 2013
 Periods included: 4
 Cross-sections included: 48
 Total panel (balanced) observations: 192
 Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.003995	0.033635	0.118770	0.9056
D(IC)	-8.54E-05	0.000126	-0.675730	0.5001
D(LEV)	0.096829	0.079004	1.225619	0.2219
D(SIZE)	-0.030492	0.008691	-3.508615	0.0006
ROA	2.315305	0.127629	18.14085	0.0000
AGE	0.000169	0.000480	0.352678	0.7247
STATE	-0.010815	0.033044	-0.327302	0.7438

Effects Specification

	S.D.	Rho
Cross-section random	0.083235	0.4137
Idiosyncratic random	0.099080	0.5863

Weighted Statistics

R-squared	0.643284	Mean dependent var	0.083127
Adjusted R-squared	0.631715	S.D. dependent var	0.173483
S.E. of regression	0.105281	Sum squared resid	2.050553
F-statistic	55.60336	Durbin-Watson stat	1.803707
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.555246	Mean dependent var	0.162533
Sum squared resid	3.884084	Durbin-Watson stat	0.952244

APPENDIX IV: INTRODUCTION LETTER



UNIVERSITY OF NAIROBI SCHOOL OF BUSINESS MBA PROGRAMME

Telephone: 020-2059162

P.O. Box 30197

Telegrams "Varsity", Nairobi

Nairobi, Kenya

DATE: 26th September 2014

TO WHOM IT MAY CONCERN

The bearer of this letter BERNARD JOAQUIM MUMIA

Registration No. D61/7454/2004

Is a bona fide continuing student in the Master of Business Administration (MBA) degree program in this University.

He/she is required to submit as part of his/her coursework assessment a research project report on a management problem. We would like the students to do their projects on real problems affecting firms in Kenya. We would, therefore, appreciate your assistance to enable him/her collect data in your organization.

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the Interviewed organizations on request.

Thank you.

PARTICK NYABUTO
MBA ADMINISTRATOR
SCHOOL OF BUSINESS