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Intellectual Capital and Performance of Firms Listed on Nairobi Securities Exchange

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Based on a survey of 50 firms listed on Nairobi Securities Exchange, this study examines the relationship between intellectual capital (human capital, social capital and organizational capital) and organizational performance. In order to test the study's hypotheses and their effect on organizational performance, a series of hierarchical multiple regression models were performed. In the first step we entered control variables (years of operation, ownership structure and size of the organization measured by number of employees) in all the analyses. In the second step, we entered the composite index of each of the three constructs of intellectual capital. Four hypotheses were formulated and were tested one at a time, beginning with non-financial where linear regression analysis were conducted to explain the variation among the variables. The study found that there was significant relationship between social capital, organizational capital and non-financial performance. Using optimal scaling the results indicated that intellectual capital had a significant influence on financial performance measured by return on assets. The findings also indicated that there was no significant relationship between intellectual capital and return on equity and Dividend Yield of firms listed on Nairobi Securities Exchange. The results provide support for the Resource based view of the firm (RBV), that the integration of intellectual capital constructs leads to competitive advantage and higher performance.

Keywords: *Intellectual capital, human capital, social capital, organizational capital, organizational performance.*

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Introduction

Academics and practitioners have long held the position that firms with high intellectual capital achieve a higher competitive advantage. Quinn et al. (1996) and Stewart (1997) postulate that the knowledge economy which is driven by knowledge, information and brainpower as the primary sources of competitive advantage is attributed to increasing prominence of intellectual capital. Further support from Ling and Huang (2012) provide that intellectual capital has emerged as a company's key factor for future success and long-term profitability in the age of knowledge based economy where tangible assets are slowly being replaced by intangible assets. The question of whether intellectual capital pays off has been a subject of numerous empirical investigations leading to accumulation of substantial body of research. Apparently, there is yet no consensus as studies report inconclusive results surrounding the relationship between intellectual capital and organizational performance. This study argues that the inconsistency can be attributed to several limitations.

First, there is confusion and inconsistencies in the definition of the concept of intellectual capital and its close relation to other terms such as knowledge assets (Bontis, 1999) intangible assets (Carmeli and Tishler, 2004), intellectual material (Stewart, 1997), intellectual property (Brooking, 1996) and intangible capital (Kristand and Bontis, 2007). Bontis (1998) allege that principal reason why research cannot accurately define intellectual capital because of categorization and definition results from diversity of disciplines from which it has been derived. He attributes the lack of consensus on definition and measurement to "embryonic stage'' of intellectual capital research. In addition, Amedieu and Vivian (2010) argue that there is no convergence in measuring intangible and this presents different measurement methods, with different purpose and often lack comparability. Notwithstanding the diversity in definition and measurement surrounding intellectual capital, scholars concur that it is a basis of competitive advantage and increased profitability (Bontis, 1998; Riahi-Belkaouli, 2003; Cabrita and Bontis, 2008). The definition and measurement are beyond the scope of the current research.

Second, prior studies on intellectual capital have examined the subcategories (human capital, social capital and organizational capital) in isolation. Scholars have suggested that inconsistency may arise from use of uni-dimensional view of intellectual capital. Thus, there is need to study the integrated approach of intellectual capital and performance founded on the Resource Based View (RBV) assertion that unique configuration of firm resources creates a sustainable competitive advantage that cannot be explained by isolated factors. Consistent with the notion of RBV, Youndat et al. (2004) and Cabrita and Bontis (2008) support that the combined effect of the components of intellectual capital constructs is more likely to lead to competitive advantage and superior performance than isolated effect of human capital, social capital and organization capital on organizational performance. As noted by Tsai and Ghoshal (1998), previous investigations that examined the independent effect of intellectual capital constructs resulted in incomplete

information about the organization (Youndat et al. 2004). Drawing on propositions of (Youndat, et al. 2004; Cabrita and Bontis, 2008) that combination or integration of intellectual capital components leads to competitive advantage and higher performance compared to the isolated effect of the components, we examined both the isolated effect and the combined effect of the constructs of intellectual capital on organizational performance.

Moreover, most previous studies have tended to rely on single performance measures, either financial indicators or perceptual measures. Venkatraman and Ramanujam (1986) amongst other management theorists observed that there is no agreement on performance measures as scholars operationalize the concept depending on their discipline of study. Despite the diversity, literature converges on two common measurement approaches namely; financial and non-financial. Financial performance highlights company's profitability (Return on Assets), liquidity, productivity (turnover over total assets) or market strength (market to book value ratio of net assets). Waterhouse and Svendsen (1998) argue that financial measures are inadequate for strategic decision making and need to be supplemented by non-financial measures. As pointed by Kaplan and Norton (1992) traditional financial measures worked well for industrial era and not adequate for knowledge economy. Thus, it would be appropriate to incorporate both financial and non-financial measures of organizational performance. Subjective or non-financial measures of performance seek respondent's opinion about organizational performance. The use of perceptual measures or non-financial measures is not unique in Human Resource Management (HRM) Studies (Huselid, 1995; Guthrie 2001). Researchers (Becker and Gerhart, 1996; Richard, et al. 2009) agree that it is important to use firm performance measures that are meaningful, implying that studies should weigh the tradeoffs between subjective and objective measures against the research context to determine the most favorable measures. Kaplan and Norton (1992; 1996) proposed a balanced approach incorporating financial and non-financial indicators. Based on stakeholder's theory propositions that a firm has multiple responsibilities to a wider set of groups other than the shareholders. The BSC complements information provided by financial measures with three additional measures; customer perspective which measures how well the business is satisfying the needs of the customer, internal business process measures how efficiently and effectively an organization is meeting its goals and objectives. The firms listed on Nairobi Securities Exchange (NSE) are judged by multiple constituencies such as shareholders, investors and general public. The different interests of the various stakeholders require that performance should be assessed in several areas simultaneously (Kaplan and Norton, 1992: 1996). Huselid (1995), Fire and William (2003) suggest that variables such as years of operation, size of organization and ownership structure are likely to influence organization performance and should their effect should be controlled. To mitigate limitation of previous studies, we incorporate both financial and non-financial measures of performance and we

also included control variables in our analyses..

Bontis (1998) and Cabrita and Bontis (2008) recommended that future studies should consider a multi-industry sample that would permit an examination of inter-industry effects and provide a wider generalization. To this end, the study will seek to vary the context by studying firms listed on Nairobi Securities Exchange (NSE).

Literature Review

This section provides a review of the major theory guiding the study on intellectual capital. This is followed by literature review of key variables on intellectual capital and their respective relationship leading to formulation of hypotheses.

Resource based view of the Firm

The study is anchored on the RBV introduced by Wernerfelt (1984) and refined by (Barney, 1991) that borrows heavily from earlier research by Penrose (1959). Central to the proposition of RBV is that a firm represents a collection of unique resources and capabilities that provide basis for sustained competitive advantage so long as they are valuable, rare, non-substitutable and difficult to imitate (Barney, 1991). The theory presumes that firms are a bundle of heterogeneous and capabilities that are imperfectly immobile across firms. According to this view, firm performance can be attributed to unique resources rather than industry structure, a proposition supported by strategy literature (Guthrie,et al. 2004). Hall (1992) and Grant (1996) classified resources into tangible assets, intangible assets and human resources, with human being characterized as the most productive asset.

Consistent with strategy and Strategic Human Resource Management (SHRM) literature, competitive advantage can be attributed to unique resources particularly intangible ones when they are combined or integrated (Barney, 1991; Reed, et al. 2006). Teece, et al. (1997) also note that competitors would have difficulty in duplicating a competitive advantage based on combination of firm specific resources, because the combination arise from organization process that is casually ambiguous, path dependent and socially complex. Building on the work of Barney (1991) and Hall (1992), the current study proposed that the combined effect of intellectual capital components has a greater influence on corporate performance than individual influence of human capital, social capital and organization capital thus supporting the proposition of RBV. In support of this proposition Becker and Gerhart (1996) and Wright et al. (2001) noted that a synergetic effect rather than a set of independent practices leads to competitive advantage. This argument discredits the assumption that reliance on a single element like human capital which has been overly emphasized in literature as a source of competitive advantage. RBV is governed by general belief that resource interaction should be more valuable than the sum of its part. Critics of RBV such as Priem and Butler (2001) suggest that the theory is not prescriptive in that it does not provide managers with appropriate advice on which specific resources they should accumulate to gain a competitive advantage. Barney (2001) claims that RBV is tautological and does not generate testable theories. He notes that majority of

the studies applying RBV, has failed to test its fundamental concepts, but have utilized the theory to establish the context of empirical research. In this vein, Wright et al. (2001) recommends that studies in SHRM should test the core concepts of RBV. Notwithstanding a great room for development, it is clear that the conceptual and application of RBV has impacted on SHRM (Reed et al. 2006). With exception of Swart (2006) critique amongst others, that RBV does not explain how intellectual capital contributes to performance, a series of studies (Riahi-Belkaouli, 2003; Cabrita and Bontis, 2008) have provided empirical support for the RBV theory.

Intellectual Capital

The concept of intellectual capital became popular in SHRM after the classical study of John Kenneth Galbraith in 1969 (Bontis, 1998) when he postulated that intellectual capital represents collective knowledge embedded in people, organization routines and network relationship of an organization. The concept was further expounded by management guru, Peter Drucker (1993) in his description of a post-capitalistic society. By 1990s, reference to intellectual capital in contemporary business publication was a common theme after the ground-breaking cover story by Thomas Stewart in the Fortune Magazine. This was followed by publication of his book "The new Wealth of Nations'' (Stewart, 1997). He defined intellectual capital as intellectual material, knowledge, information, intellectual property and experience that can be put to use to create wealth. Similar definition proposed by Lynn (1998) described intellectual capital as knowledge transformed into something of value to the organization. The definitions imply that intellectual capital is an asset that can be valuable to an organization. Stewart (1997) and Nahapiet and Ghoshal (1998) defined intellectual capital as sum of knowledge and knowing capabilities that can be utilized to give a competitive advantage. According to Bontis (1998), intellectual capital is collective knowledge embedded in people, organization routines and network of relationships. Congruent with the above definition, Youndat et al. (2004) analysis of intellectual capital characteristics, revealed a consensus among scholars that intellectual capital is a multi-dimensional concept that resides at individual level, network and organization.

In the late 1990s, numerous writers (Bontis, 1996; Edvinsson and Malone, 1997; Stewart, 1997) presented frameworks to help conceptualize intellectual as well as make it easier to operationalize. According to Bontis (1996), intellectual capital comprises of human capital, structural capital and introduced relation capital as an example of customer capital. Similarly, Edvinsson and Malone (1997) and Stewart (1997), classification consists of human capital, structural capital and introduces customer capital. Roos et al. (1997) classified intellectual capital into structural and human capital. Their classification is similar to Sveiby (1997) who looked at external (customer related capital), internal structures and human capital. Whilst there are slight variations across the frameworks, there is a great convergence that the subcomponents of intellectual capital encompass the intelligence found in human beings, organizational routines and network relationship. Bontis (1998) and Marr et al. (2004) noted that scholars

converge on three categories of intellectual capital: human capital, structural capital and customer capital (Bontis, 1996; Edvinsson and Malone, 1997; Stewart, 1997). The tripartite dimensions coalesce Bontis (1998) definition that intellectual capital is not uni-dimensional but resided at resides at individual (human capital), network (customer capital) and organization level (structural capital). This study adopts the conceptual definition proposed by Wright et al. (2001), Youndat et al. (2004), and Uadiale and Uwigbe (2011) that identified three components: human capital, social capital and organization capital.

Drawing from RBV theory, the study proposed that intellectual capital is a multi-dimension concept that is created through combination and exchange of the three constructs (Bontis, 1998, 2001). Reflecting this orientation, studies conducted by Youndat et al. (2004) and Cabrita and Bontis (2008) amongst others focused on interaction of intellectual capital components. In this vein, Edvinsson and Malone (1997) and Stewart (1997) demonstrated that corporate value arises from interaction and integration of intellectual capital components. Barney (1991) proposed that resource integration results to higher rents because a combined set is indivisible and distinctive, we proposed that combined effect of intellectual capital components has a greater influence on organizational performance than the isolated influence of human capital, social capital and organization capital.

Human Capital and Organizational Performance

The origin of human capital can be traced to the work of Schultz and Becker in 1960's. Earlier studies, Schultz (1961) and Becker (1964) focused on economic behaviour especially how accumulation of knowledge and skills enables individuals to increase their productivity and their earnings. Human capital refers to the acquired skills, knowledge and abilities held by individuals and obtained through their education; training and experience often cited as an intangible asset that differentiates financial performance among firms (Hitt et al. 2001). Similarly, Becker and Gerhart (1996) defined human capital as knowledge, skills, health or values that unlike physical and financial capital cannot be separated from persons who own it.Becker (1993) defined human capital as the knowledge, information, ideas and skills of individuals. OECD (1998) defined human capital as knowledge, skills, competence and attributes embodied in individual that are relevant to economic activity. In addition, Hatch and Dyer (2004) suggest that human capital reflects knowledge and skills embodied in people.

Studies on human capital have progressed through two perspectives. First, the economic perspective that looks at individual decisions regarding productivity-enhancing skills, knowledge and career choices (Wright and McMahan, 2011). According to this view, individuals weigh the benefits and costs associated with the investment and focus on benefits such as career success, promotion and higher wages (Hitt et al. 2001). The second approach is the psychological perspective that focuses on individual differences such as knowledge, skills, abilities and other

characteristics of the individual (Ployhart and Molitern, 2011). Drawing from the aforementioned streams of research, this study operationalized human capital as skills, experience and educational levels possessed by an individual that have economic benefit to the firm. Drawing inference from human capital theory, Schultz (1961) and Becker (1964) submitted that an increase in workers skills, knowledge and ability has an effect on organizational performance.

The education of an employee represents the duration of schooling and levels of qualification, and represents a common standard measure of human capital. Bontis (1999) demonstrated that stock prices reacted to change in management, affirming that investors attach value to skills and expertise of their Chief Executive Officers (CEOs) and other top management. Bontis (1998; 1999) argued that higher levels of education reflect investments in human capital.They observed that investors and financial markets attach value to skills and expertise of CEOs and other top management.The importance of education resonatesBecker (1993) notion of investment in education. Their findings are consistent with the human capital theory that proposes that additional investment in education has returns on investment for the individual and the organization. In a subsequent study, Blundell, et al. (1999) demonstrated that individuals who completed schooling with formal qualification had significant larger returns than those with no formal qualifications. Nahapiet and Ghoshal (1998) found that partners with education from the best institution and with higher levels of experience represented substantial human capital to firms. They argued that the human capital produced highest quality of service to clients, thereby contributing significantly to firm performance. In a study on professional service firms, Hitt et al. (2001) confirmed that highly educated individuals are more knowledgeable and productive than their less educated counterparts. The authors found that the educated individuals have more opportunities for career advancement. Subsequently, the organizations with more educated individual will outperform those firms with less levels of education. This notion was supported by Lin and Huang (2005) who affirmed that more educated workforce increases workers' productivity, innovative behavior and facilitate the adoption and use of new technology. Cabrita and Bontis (2008) study on Portuguese banking industry that revealed that the quality of banking relationship with clients depends on caliber of employees and their ability to satisfy client needs.

In contrast to most previous studies, Mutuku (2012) findings on Top Management Team (TMT) diversity in Commercial Banks in Kenya indicated a negative association between academic qualification, diversity in tenure and performance. Despite this counter finding, the prevailing pattern of results suggests that more educated employees are more receptive to competition. Based on the above findings, this study concludes that education level is an important determinant of human capital in organization.

Work experience is a dimension of human capital that refers to number of years an employee has worked in a certain organization. Hitt et al. (2001) and Lin and

Huang (2005) observed that it is easier to get reliable measures on experience than skills, thus, several studies have looked into how experience influences productivity. In their study, Hitt et al. (2001) found that more experienced partners contributed more return to firms than new partners. Their finding is consistent with Wright and MacMahan (2011) whocontended that individuals with a particular industry experience tend to have a historical perspective that cannot be easily replicated. The authors acknowledge the importance of experience during recruitment and selection.

Blundell, et al. (1999) defined training as courses designed to help individuals develop skills that might be of use in their job. Becker (1993) argued that on-the job training is a process that raises future productivity and differ from schooling in that an investment is made on the job rather than at the institution. In their study, Stovel and Bontis (2002) established that increased training may lead to higher productivity and enhance creativity resulting in satisfied and loyal customers. Lin and Huang (2005) asserted that training contributes to building human capital and improving the performance of the organization. Alusa and Kariuki (2015) study on HRMP and performance of a state corporation found that training was not a significant predictor of organizational performance.

While it is undisputable that human capital is the most important construct of intellectual capital, Teece, et al. (1997) noted that human capital represents the highest mobility since it is a private good owned by the individual. Thus, an organization should integrate human capital with other complementary resources and use that integration to develop organizational competencies. If a worker leaves the firm, the competitor would need to asses all organizational resources and systems to fully use the knowledge resource that the individual possesses (Curado and Bontis, 2007). Based on the afro mentioned discussion we propose that:

H_1: Human capital has a significant influence on organizational performance

Social Capital and Organizational Performance

Nahapiet and Ghoshal (1998) defined social capital as the sum of actual or potential resources embedded within and available through network of relationship possessed or developed by individuals or social units. Bontis (1996) discusses customer capital as one part of relational capital (Roos et al. 1997). His view is similar to what is referred to as external social capital by sociologist (Coleman, 1998; Burt, 1992) and management theorist (Nahapiet and Goshal, 1998). Other writers have used terms such as customer capital (Bontis, 1996) external capital (Roos et al. 1997), relation capital (Edvinsson and Malone, 1997), and alliance capital (Stewart, 1997). Drawing from the RBV of the firm, Nahapiet and Ghoshal (1998) observed that social capital is a source of competitive advantage, because of its tactiness, path dependence and social complexity. Coleman (1988) and Burt (1992) draw our attention that a definition of social capital can be formed around social networks. They postulate that social capital theory draws distinction between external and internal sources.

The concept of social capital originated from sociology to describe the assets that

an individual possesses. Later, management scholars (Burt 1992; Nahapiet and Ghoshal 1998; Adler and Kwon, 2002) adopted the concept to explain individual, group and organizational performance. As noted by Coleman (1990), most scholars consider social capital as a resource that is jointly owned rather than controlled by an individual. In addition, Burt (1992) demonstrates that social networks can be described as social resources that facilitate access to information, resource and opportunities. Extensive research on social networks has demonstrated its importance in diverse facets ranging from individual occupation attainment (Lin and Huang, 2005), to a firms business operations (Coleman, 1990; Burt, 1992). The social network theory, network position is important because it opens an opportunity to gain access to interaction with other parties (Adler and Kwon, 2002). Burt (1992) claimed that social capital is owned jointly by parties in a relationship and has value in the sense that it cannot be traded easily as no one has exclusive ownership rights. An important theme in social capital theory is that difference in networks produces inequalities in respect to individual, team and group performance. This notion corroborates with the finding of Lin and Huang (2005) who established that central networks position was more important than human capital.

Tsai and Ghoshal (1998) suggests that social capital should include perspectives of both the organization as well as the individual, and in this way incorporate aspects of internal and external social networks. Drawing on comprehensive review of previous work on social capital, Burt (1992) and Adler and Kwon (2002) identified two types of social capital; internal social capital and external social capital. Fukyuma (1995) defined internal social capital as the ability of people to work together for a common purpose in groups within organizations. Moreover, Nahapiet and Ghoshal (1998) claimed that internal social capital is concerned with internal relationship between employees and supervisors and among employees. Internal social capital is defined by strength of ties, repetitive group activities such as frequency of meetings and other formal interaction as well as informal gatherings and other formal activities. On the other hand, external social capital focuses on direct and indirect relation an actor or participants establish and maintain with other actors outside the organization. Dyer and Singh (1998) posit that a firm's ability to persistently outperform rivals depends on advantageous access to external information and resources uniquely held by other market participants.

Greenhaus and Callanan (1994) reported that participation in formal organizations, professional association and informal discussion assist in development of contacts. They argue that the contacts enhance performance because the organization is likely to identify new opportunities. Tsai and Ghoshal (1998) examined social interaction, trust, shared vision and found that intra firm network had a significant effect on resource exchange and combination resulting to product innovation. In a similar study, Hitt et al. (2001) finding on law firms indicated that individuals graduating from top institutions develop and maintain elite social networks that can be a valuable source of clients. They posited that the

networks created from law schools can be a source of clients to the law firms. In the same vein, Mehra,et al. (2001) identified centrality in network position as a result of maneuvering into central network position. A similar finding by Lin and Huang (2005) indicated that people's role in central network position is positively related to career development. Kor and Sundaramurthy (2009) study on experience-based human capital and social capital of outside directors revealed that external directors had extensive external connectivity through multiple board membership that enhances firm growth. They submitted that the external directors have greater social capital because they have quick access to information and resources through external and internal connections suggesting that external social capital builds on the internal social capital. Contrary, Uzzi (1997) found that effect of social capital on performance may be u-shaped. He argued that the positive effect may reach threshold after which embededness can derail the firm by insulating them from information that exists beyond their networks. Coleman (1990) demonstrated that social capital could produce inequality in employment through social connection. Portes (1998) cited four negative effects of social capital which are; exclusion of outsiders, excessive claim on group membership, restriction on freedom and downward level of norms. Coleman (1990) observed that social capital could produce inequality, demonstrating how people gain employment through social connections.

Despite the negative effects highlighted in the preceding section, it is widely recognized that social capital stands for the ability of actors to secure benefits by virtue of membership in social networks and other social structures. Coleman (1988) suggested that social capital could produce human capital. He suggested that people during interaction learn from one another. Florin, et al.(2003) demonstrated that interaction of human capital and social capital had a positive effect on organizational performance. This complementary role of social capital and human capital facilitates transfer of knowledge resulting into higher economic benefits for the individual and the organization. In addition,Lengnick-Hall and Lengnick-Hall (2003), posited that human resource practices facilitate the formation of social capital. Social capital available to a firm can be built when employees are working in teams and encouraged to learn from their colleagues and parties outside the firm.This leads to the proposition that:

H_2: Social Capital has a significant influence on organizational performance

Organizational Capital and Performance

Organization capital also referred to as structural capital (Roos and Roos, 1997; Bontis, 1998) comprises mechanisms which help support employees. Edvinsson and Malone (1997) defined structural capital as everything that supports employee's productivity. Roos et al. (1997) suggest that structural capital is that which is left behind when employee leaves the office to go home, 'non-thinking asset'. They subdivided structural capital into organizational capital and defined it as a system, tool and operating philosophy that speed the flow of knowledge through the organization. Bontis (1996) and Stewart (1997) defined organization capital as an institutionalized knowledge and codified

experience stored in organization memory devices including operation process, internal organization structure and administrative system in a firm.

Organization capital is made of explicit knowledge and reflects the casual ambiguity of organizational resources making it difficult to imitate. In their study, Bontis (2000) demonstrated there is a positive relationship between organization capital and business performance. They opined that proper management of organization capital is important, as it allows human capital, technological capital, business and social capital to be exploited by an organization (Bontis, 1996). Tsen and Goo (2005) suggests that organization capital help a company to establish a good relationship with other participants in the labour market. As noted by Bontis (1998), organization capital comprises mechanisms and structures of the organization that support employees and their performance. They submitted that if an organization has poor systems and procedures, the overall intellectual capital of the organization will not be fully utilized.

However, despite the importance attached to human capital and social capital, Bontis (1998) noted that structural capital is a critical link that allows intellectual capital to be measured at organization level. Youndat et al. (2004) proposed that organizational capital as compared to structural capital is important in studying intellectual capital because it is capital that is owned by the organization. Stewart (1997) defined organization capital as an institutionalized knowledge and codified experience stored in organization memory devices including operation process, internal organization structure and administrative system. Further, to leverage human and social capital an organization need to provide supportive mechanism. Based on this proposition we propose that:

H_3: Organizational Capital has a significant influence on organizational performance.

Intellectual Capital and Organizational Performance

Varied literature and theoretical perspectives (RBV, human capital theory and social capital theory) suggest that intellectual capital can create and enhance organizational performance. Empirical studies on intellectual capital and corporate performance have presented two conflicting strands that yield inconsistent and inconclusive research findings. One strand looks at the isolated effect of intellectual capital components on corporate performance. Riahi-Belkaouli (2003) surveyed 81 multi-national organizations in the United States on the relationship between intellectual capital (trademark application) and performance. They found a positive and significant relationship between intellectual capital and corporate performance. The population of the study was biased as it included only companies that had been listed on Forbes Magazine "Most International 100 American Manufacturing service''. Furthermore, the use of trademark application as the only component of intellectual capital, contradicts Marr et al. (2004) assertion that intellectual consists of human capital, social capital and organizational capital. In addition, the study did not examine the non-financial measures of performance. The financial measures of performance

have been criticized as inadequate for decision making and need to be supplemented by non-financial measures of performance.

In a similar study, Fire and William (2003) examined the relationship between structural, physical and human capital on financial performance of 75 publicly quoted companies in South Africa, and found a negative relationship. Similar to Riahi-Belkouli (2003), the population consisted of a homogeneous sample of industries that extensively relied on intellectual capital. The study also did not incorporate non-financial measures of performance. Shabarati et al. (2010) in their study on pharmaceutical companies in Jordan reported a positive relationship on isolated effect of intellectual capital components and performance. Ngari et al. (2011), study on Kenya pharmaceutical companies, demonstrated that isolated effect of intellectual capital components had positive effect on performance. The studies relied on population that was homogeneous. Drawing on the above studies, there are several knowledge gaps that need to be addressed. First, the use of homogeneous population, or organization that heavily relies on intellectual capital, raises questions over generalization as it does not offer an opportunity to explain inter-industry effects. The current study incorporated a more representative sample of firms listed on Nairobi Securities Exchange. It is evident that previous studies did not incorporate non-financial and financial measures of performance, yet corporate performance is a multi-dimensional construct that requires a balanced approach. Further, studying the independent effect of intellectual capital components denies scholars and practitioners an opportunity to establish how value creating process actually occurs. Consistent with the propositions of RBV, the study proposed that the combined effect of intellectual capital components has a greater effect on corporate performance than the individual influence of human capital, social capital and organization capital.

Studying the independent effect of intellectual capital components denies scholars and practitioners an opportunity to establish how value creating process actually occurs. Ittner and Larcker (1998) asserted that intangible assets affect corporate performance indirectly through complementary and non-linear relationship of cause and effect. In their study, Youndat et al. (2004) adopted a configuration approach to examine the effect of human, social and organization capital on financial performance. The general finding from this study was that organization with high intellectual capital outperforms those with low profile of intellectual capital. Further support comes from Cabrita and Bontis (2008) who in their study examined interrelationship and interaction of intellectual capital components and business performance. Their study revealed a positive and significant relationship between intellectual capital and corporate performance. They recommended that future studies should incorporate corporate culture as moderating variable and take into account objective measures of performance. Collectively implied in the preceding discussion, is that the combined effect of intellectual capital components has a greater effect on corporate performance than isolated effect of human capital, social capital and organization capital.

This is supported by Bontis (1998) and Cabrita and Bontis (2008) argument that intellectual capital creates value through coordinated effort of human, social and organization capital. We propose that:

H_4: Intellectual capital has a significant influence on corporate performance.

Methodology

A preliminary version of the questionnaire was designed for this study. A pilot test was conducted to investigate whether or not the questionnaire items are representative of actual intellectual capital management in the firms listed on NSE. The population of the study comprised all firms listed at the NSE for a four year period from 2009 to 2012. In 2009 there were 55 companies, and of the 55 companies listed before 2009, five companies were ineligible for the study as preliminary review of their records revealed that they did not have the required data for the study. A census survey of the companies was carried out since the population was very small. In total 50 companies were studied, divided into 10 sectors of the economy. A final version of the questionnaire was refined and eventually 50 firms were selected for the study. The data was gathered on a three month period beginning in January 2014 and ending in March 2014. Out of the 50 firms, with follow up visits, telephone calls and e-mails, 34 human resource managers completed and returned the questionnaire resulting in a response rate of 68%. 16 (32%) firms declined to participate citing problems such as lack of time, confidentiality clause, especially divulging information on demographic characteristics of employees which seemed too personal while others simply refused to participate without citing any reason. The choice of the respondents is consistent with studies by Cabrita and Bontis (2008) and Shabarati et al. (2010) who argued that organization characteristics measured were known to selected members in upper echelons, thus they were likely to provide more reliable information. The view of key informant is widely used in human resource management studies (Huselid et al. 1997; Cabrita and Bontis, 2008). The targeted respondents were deemed knowledgeable about issues under investigation for which they are directly responsible. Drawing from Cooper and Schindler (2009), the researcher principally administered the questionnaire in order to enhance the response rate and quality of data collected.

Despite the various challenges encountered, the response rate compares well with similar studies on performance of firms listed on Nairobi Securities Exchange. For example, Ongore (2008) 87.5 percent, Letting' (2011) 85 percent and Osoro (2013) 87.5 percent. The response rate of 68%, hence becoming an acceptable response rate. This is typical for research using senior management as respondents. Indeed the attained response rate represented better results compared to similar studies that used smaller samples in international settings. Bollen et al. (2005) study on the relationship between intellectual capital property and corporate performance in German pharmaceutical industries had a response rate of 14%.

Operationalization of Variables

Dependent Variable

The dependent variable of the current study was corporate performance measured along the BSC measures proposed by Kaplan and Norton (1996)

that captured financial and non-financial measures. Non-financial measure included customer perspective, internal business process and learning and growth that were measured on a five point likert-type scale. The financial measures included ROE, ROA and dividend yield obtained from NSE Handbook (2011-2012) and CMA reports Non-financial performance was measured using 12 items and had a reliability of 0.877 and constructs of customer service 0.741, internal business process 0.677 and learning and growth 0.916.These variables were measured using a five point likert-type scale ranging from 1 'not at all' to 5 'to a very large extent'.

Secondary data relating to financial performance was obtained from the listed companies audited accounts, NSE handbooks and CMA yearly reports. The data included ROA, ROE and dividend yield as an average of four year performance from 2009 to 2012. The use of both primary and secondary data has been supported by Bagire (2012) and Osoro (2013) who opined that the combination of both overcomes problems of data aggregation from surveys.

Independent Variable

The independent variable for the current study was intellectual capital measured as a composite score of human capital, social capital and organizational capital. The components of human capital, social capital and organization capital were operationalized using various items modified from literature. Human capital was measured using seven (7) items drawn from Huselid et al. (1997), Youndat et al. (2004) and Reed et al. (2006). The adapted measures captured the competence of employees in general. Five measures adapted from Youndat et al. (2004) were found to be reliable with cronbach alpha of 0.81. The wordings of human capital from Youndat et al. (2004) and Reed et al. (2006) were slightly modified to make them applicable to firms listed on NSE and to accommodate the anchorage of five point likert-type scales. On social capital the study adopted Adler and Kwon (2002) conceptualization of internal and external social networks. Internal social capital was measured with two (2) items drawn from Youndat et al. (2004) with a cronbach alpha of 0.88; five items on external social capital were drawn from wide review of literature. Organization capital was measured using three measures which were adapted from Youndat's et al. (2004) items which were found to be moderately reliable with a cronbach alpha of 0.62. Intellectual capital had 17 items and reliability of cronbach alpha 0.861. The constructs of human capital had a cronbach alpha of 0.774; social capital had a reliability of 0.844, and organization capital 0.948. This implies that all constructs of intellectual capital had acceptable reliability. These values are in line with the results of Youndat et al. (2004) and Reed et al. (200l6). The variables contributed significantly to the Cronbach's alpha for the individual component and therefore an input for further studies.

Control Variables

Recent reviews of literature (Huselid 1995; Jackson and Schuler, 1995) suggest that a variety of conditions in the external and internal organizational environment influence human resource management activities and firm performance, these conditions represent sources of potential extraneous variance. To reduce the possibility of spurious results caused by correlation among these variables and

constructs of interest, we included the age of the firm, size of the organization measured by number of employees and ownership structure of the organization as control variable in our statistical analysis. These data was obtained from the survey instrument and CMA handbook.

Results and Analyses

The variables were first tested for multi-collinearity through correlation analysis as shown in Table 1. All bivariate correlations are lower than 0.6 with the exception of human capital and social capital (r=.610, p<.010). Non-financial measures of performance have significant relationship with human capital (r=.408, p<.05), social capital (r=.538, p<.01) and organizational capital (r=.488, p<.01). Notably, among the financial measures of performance only ROA and social capital has a significant relationship (r=.353, p<.05).

To systematically investigate for overall multi-collinearity, Variance Inflation Factor (VIF) was included in all the regression models. The VIF indicates whether a predictor has a strong linear relationship with other predictor variables with concerns raised if VIF is 10 and above (Hair et al. 2006). The VIF for this study ranged from 1.112 to 2.484 indicating no problem of multi-collinearity between the study variables.

Table 1: Results for test of Multi-collinearity

		1	2	3	4	5	6	7	8	9	10
Years of operation		1									
Number of employees		.113	1								
Ownership Structure		.070	.157	1							
Human capital		**-.353***	.115	.079	1						
Social Capital		-.295	.138	.180	**.610****	1					
Organizational Capital		-.252	.094	-.062	.079	.212	1				
Non-financial Performance		-.251	-.031	.247	**.408***	**.538****	**.488****	1			
Dividend yield		.096	.031	.081	.050	.043	-.147	.155	1		
Return on Assets		.001	.065	.169	.227	**.343***	-.086	.423*	.217	1	
Return on Equity		.130	.299	.353	.050	.056	.205	.315	.086	**.382***	1

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

Hypotheses Testing

The study utilized both financial and non-financial measures, and since it was not possible to combine both, the researcher divided the hypotheses into two categories; financial and non-financial. Separate analyses were performed for non-financial and financial indicators of organizational performance respectively. Hypotheses were tested one at a time, beginning with non-financial measures and financial measures respectively.

In order to test the study's hypotheses and their effect on organizational performance, a series of hierarchical multiple regression models were performed. The hierarchical regressions allow one to specify the fixed order of entry of variables in order to control for the effect of covariate. In the first step we entered control variables (years of operation, ownership structure and size of the organization measured by number of employees) in all the analyses. In the second step, we entered the composite index of each of the three constructs of intellectual capital. As shown in Table 2, years of operation, ownership structure and size of the organization had no significant association on non-financial performance for hypothesis 1 to 4. As shown in Table 2, when control variables were entered they accounted for 14.8

percent of non-financial performance (R^2=.148, adjusted R^2=.053, F=1.563, p>.05) for all the models. In the second step, when human capital was entered the results indicates that human capital added additional variance, R^2=.264 (R^2 change=.116). However, the beta coefficient was not significant (β=.438, P>.05) implying that human capital has no significant influence on organizational performance, thus partially failing to support H_1.

In Hypotheses 2, it was assumed that social capital positively influences performance. The first step which included control variables accounted for 14.8 percent of the variation in non-financial performance. The inclusion of social capital resulted in additional 22.0 percent of the variance being explained by social capital (R^2 change=.220) showing a very substantive effect on non-financial performance. The overall model was significant (F=9.050, p<.05) so as the beta coefficient (β=.432, p<.05) providing support partial support for hypothesis ($H_{2)}$. In Hypothesis 3, the control variables accounted for 14.8 percent of the variance in non-financial performance and the beta coefficient were statistically insignificant. An additional of organizational capital into the model resulted in additional of 20.5 percent of the variation in non-financial performance (R^2 change=.220). The beta coefficient of organizational capital was statistically significant (β=.244, P<.05) implying that organizational capital has a significant influence on non-financial, partially supporting H_3.

Based on latter streams of research proposition that the combined effect of intellectual capital constructs have a greater influence on corporate performance than individual effect of each construct. A simultaneous regression analysis was performed and the results for hypothesis 4, indicate that the three constructs (human capital, social capital and organizational capital) accountedfor 54.3 percent of the variance in non-financial performance (R^2 change=0.395). The overall model was statistically significant (F=6.925, p<0.05) and the beta coefficients for human capital (β= 243, p>.05) and social capital were (β=.281, p>.05) were not significant. However, the coefficient for organizational capital was statistically significant (β=.224 p<.05). From the results, there is sufficient evidence to support the relationship between intellectual capital and non-financial performance. The results further provide sufficient evidence to support the proposition that the combined effect of intellectual capital on non-financial performance is greater than individual effect of human capital, social capital and organization capital. Subsequent analysis, on financial indicators of performance,(ROA, ROE and divided yield) had no significant relationship with human capital, social capital and organizational capital apart from social capital which had a positive influence on ROA (R^2=.163, β=1.31, R^2 change =.150, F=1.267p<.050).
(*Regressionmodels on financial measures of performance do not show significant relationships and are not presented in the tables and can be provided on request).*

Due to the lack of evidence supporting linear relationships between intellectual capital and financial indicators optimal scaling was used to test the financial measures of performance (ROA, ROE and dividend yield) as presented in Table 3.

Similar to test for non-financial performance the isolated effect of human capital, social capital and organization capital was tested and compared to the combined effect. Human capital accounted for 11.5% of variance on ROA (R^2=0.115).Theoverall model was statistically insignificant (F=13.067, P>0.05) but the coefficient were statistically significant (β=0.459, P<0.05). In model 2, social capital accounted for 28.5% of variance on ROA (R^2=0.285).Theoverall model was statistically insignificant (F=13.067, P>0.05) and regression coefficient were statistically significant (β=0.459, P<0.05). In model 3, organization capital accounted for 11.5% of the variance in ROA (R^2=0.115), overall the model was statistically insignificant (F=2.006, P>0.05), the regression coefficients were statistically significant (β=-0.339, P< 0.05). After ascertaining the individual contribution of each variable, the next step was to measure the combined effect of human capital, social capital and organization capital on financial performance. The regression results in Table 3 show that the overall model was statistically significant (F=3.464, p<0.05) and explained 18.3 % of variation in ROA (R^2= 0.183). The regression coefficient was statistically significant (β=0.427, p<0.05).

Table 2: Hierarchical Regression Results for Intellectual Capital and Non-financial Performance

Variable	β	S.E	H_1 β	S.E	H_2 β	S.E	H_3 β	S.E	H_4 β	S.E
Control Variables										
Constant	.715	.-.089								
Ownership structure	-.033	.020								
Years of operation	-.034	.022								
Size of the firm	-.003	.013								
Predictor Variables										
Human Capital			.438	.217					.243	.216
Social Capital					.432*	.144			.281	.156
Organizational Capital							.244*	.085	.224*	.074
R^2	.148	.264			.368		.353			.543
Adjusted R^2	.053	.150			.271		.253			.429
R^2 change		.116			.220		.205			.395
F for Change inR^2		4.088			9.050*		7.901*		6.925*	
F	1.563	2.328			3.784*		3.540*		4.759*	

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

Table 3: Optimal Scaling Results for Intellectual Capital and ROA

Variable	H_1 Beta	H_2 Beta	H_3 Beta	H_4 Beta
Human Capital	.339*			
Social Capital		.534*		
Organizational Capital			-.339*	
Intellectual Capital				.427*
Multiple R^2	.115	.285	.115	.183
F	2.017	6.179	2.006	3.464*

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

Discussion

Empirical findings on the relationship between intellectual capital and performance have yielded mixed research findings. There are two conflicting strands in literature. One strand examined the isolated effect of human capital, social capital and organization capital on corporate performance. Based on this assumption, there was need to test the influence of each construct onorganizational performance. Three hypotheses were formulated and hierarchical regression analysis was performed. The latter studies suggest that the combined effect of intellectual capital, computed as a composite index of the three components and hierarchical regression was performed on both financial and non-financial measures of performance. In line with the development of performance measurement which suggests that organizations need to implement multiple performance measures the study adopted the balanced scorecard measures in respect to both non-financial and financial performance indicators.

The findings of the hierarchical regression analysis indicate that of the three constructs of intellectual capital, social capital and organizational capital significantly influence non-financial performancepartially providing support for H_2 andH_3. These relationships were confirmed after controlling for a range of control variables, including size of the organization, ownership structure and age the firm has been in operation. A notable observation was that three control variables had a negative and no statistically significant influence on organizational performance.Overall, the results of linear combination of intellectual capital constructs explained 54.3 percent of the variance in organizational performance. The study established that combined effect of the three constructs was greater than the individual effect in respect to non-financial performance as the dependent variable.

Results of optimal scaling on financial performance indicated that intellectual capital accounted for 18.3% on financial performance measured as ROA (R^2=.0183) and was statistically significant (F=3.64, β=0.421 $p<0.05$) for ROA. However, the results showed non-significant relationship between intellectual capital, Dividend yield and ROE. The study established that intellectual capital was a better predictor for financial measured by ROA, since the overall models for human capital and social capital were insignificant. The findings are consistent with observations

made by Becker and Gerhart (1996) that synergetic effect rather than independent practices leads to competitive advantage. The weak relationship between intellectual capital and organizational performance in this study implies that other variables could possibly enhance the relationship.

Based on the above findings, there is sufficient evidence to support that there is a statistically significant relationship between intellectual capital and non-financial performance and financial measures of performance measured as ROA. These findings are consistent to a greater extent with previous findings of Youndat et al. (2004). The researchers established that organizations with high intellectual capital outperform those with low profile of intellectual capital. They proposed that scholars should adopt a configuration approach to examine the effect of human, social and organization capital on financial performance. Similarly, a study by Cabrita and Bontis (2008) on the banking sector in Portugal established a positive significant relationship between intellectual capital and perceptual measures of performance. They tested for interrelation and interaction of human capital, structural capital and customer capital. In a subsequent study, Choundhury, (2010) findings indicated a significant positive relationship between intellectual capital and performance in the Indian Information Technology sector. This approach was similar to that used by Ngari et al. (2011). They relied on non-financial measures of performance and did not control for any variables. Riahi-Belkouli (2003) studied relationship between intellectual capital and corporate performance of multinational firms in the United States. He found a positive and significant relationship.

However, Fire and William (2003) study on the relationship between intellectual capital and performance, reported a negative relationship between intellectual capital (structural, physical and human capital) and performance of 75 publicly listed companies in South Africa. A major difference between the study by Fire and William and the current study is that their study focused on financial measures of performance, while the current study focused on both financial and non-financial measures. Another notable difference is that their study looked at the interaction between the components of variables, while the current study focused on all firms listed on Nairobi Securities Exchange for a four year period. Their study also established that physical capital had a greater effect on corporate performance, while the findings of the current study did not focus on physical capital. Their study is in line with the findings of the current study that indicated no significant relationship between intellectual capital ROE and dividend yield. Other studies (Ongore, 2008; Letting, 2011; Osoro, 2013) reported mixed results on ROE, ROA and dividend yield performanceThe results conforms to Ittner (2008) assertion that stronger results are obtained using self-reported measures than actual accounting or stock market measures. This is evident in the study by Amedieu and Viven (2010) which reported mixed results on the relationship between intangible assets and financial and commercial measures of performance. Their study established that intangible assets had a negative impact on firm economic performance measurement and

positive impact on commercial performance. The authors drew our attention difficulties experienced in linking intangible asset to financial gains of the company.

Despite the mixed research findings, the study on the relationship between intellectual capital and organizational performance are significant for several reasons. First, they support the recent argument of some organization and human resource management scholars regarding the importance of intellectual capital to firm performance (Bontis, 1998; Cabrita and Bontis, 2008). Drawing on theoretical insights of resource based view of the firm, the study complements and extends the arguments that competitive advantage can be attributed to unique resources particularly intangible ones when they are combined or integrated. This finding lends support that combined effect of intellectual components have a greater effect on organizational performance than isolated effect of individual components. The results suggest that it would be difficult for a competitor to imitate the three components compared to a single component. The results of the study reinforced conclusion from other studies which have supported RBV theory (Riahi-Belkaouli, 2003; Cabrita and Bontis, 2008).

Conclusion

The major objective of the study was to determine the relationship between intellectual capital and organizational performance. This was achieved by ascertaining whether the combined effect measured as a composite index of predictor variables had a greater effect on organizational performance compared to the individual construct variables (human capital, social capital and organization capital). The findings also revealed that the combined effect of intellectual capital constructs had a greater effect than individual predictor variable, supporting recent stream of literature that argues that organizations cannot generate sustainable performance without the coordinated effect of the three constructs. The results support the tenets of resource based view of the firm that the synergetic effect has a greater effect than independent effect. Based on the results, it can be concluded that the combined effect among set of intellectual capital variables create complexity that would be difficult to imitate and therefore contribute to overall corporate performance of firms listed on Nairobi Securities Exchange.

From a theoretical standpoint, the current study extended intellectual capital research in two ways. First analysis on constructs of human capital, social capital and organizational capital was done independently. Second while recognizing the distinct constructs, the study moved beyond analysis of each construct to examine their combined effect and their influence on organizational performance. This is in line with the RBV theory which has been instrumental to development of strategic human resource management. Wright et al. (2001) argues that due to the advantage associated with internal resources the resource based is often used by strategic human resource management scholars both in development of theory and rationale for empirical research. The study provides support to the growing body of knowledge and research that attest to the importance of integration of intellectual

capital as a source of competitive advantage.

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