

UNIVERSITY OF GHANA

**THE EFFECTS OF BOARD DIVERSITY AND INTELLECTUAL CAPITAL ON RISK
AND RETURN OF BANKS IN GHANA**

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DECLARATION

I declare that this work is a result of my own research produced under supervision and no other person has presented this to University of Ghana or any other university.

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CERTIFICATION

We hereby certify that this thesis was supervised in accordance with procedures laid down by the University of Ghana.

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DATE

DEDICATION

I dedicate this work to my family.

ACKNOWLEDGMENT

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LIST OF ABBREVIATIONS

ACH	AUTOMATED CLEARING HOUSE
ARB	ASSOCIATION OF RURAL BANKS
ATM	AUTOMATED TELLER MACHINE
BBWA	BRITISH BANK OF WEST AFRICA
BGC	BANK OF GOLD COAST
BoG	BANK OF GHANA
CCC	CHEQUE CODELINE CLEARING
CE	CAPITAL EMPLOYED
CEE	CAPITAL EMPLOYED EFFICIENCY
CIV	CALCULATED INTANGIBLE VALUE
CSD	CENTRAL SECURITY DEPOSITORY
DF	DEPOSIT FUNDING
eFASS	ELECTRONIC FINANCIAL ANALYSIS AND SURVEILLANCE SYSTEM
EVA	ECONOMIC VALUE ADDED
FO	FOREIGN OWNERSHIP
GDP	GROSS DOMESTIC PRODUCT
GHIPSS	GHANA INTERBANK PAYMENTS AND SETTLEMENT SYSTEM
GSS	GHANA STATISTICAL SERVICE
HC	HUMAN CAPITAL
HCE	HUMAN CAPITAL EFFICIENCY

HRA	HUMAN RESOURCE ACCOUNTING
IC	INTELLECTUAL CAPITAL
IFS	INTERNAL FUNDING STRATEGY
ISSER	INSTITUTE FOR STATISTICAL, SOCIAL AND ECONOMIC RSEARCH
MBV	MARKET-TO-BOOK VALUE
NDF	NON-DEPOSIT FUNDING
NEDs	NON-EXECUTIVE DIRECTORS
OECD	ORGANISATION FOR ECONOMIC CORPORATION AND DEVELOPMENT
POSB	POST OFFICE SAVINGS BANK
RBS	RISK BASED SUPERVISION
RBV	RESOURCE BASED-VIEW
RMC	RISK MANAGEMENT COMMITTEE
ROA	RETURN ON ASSETS
ROE	RETURN ON EQUITY
RTGSS	REAL TIME GROSS SETTLEMENT SYSTEM
SC	STRUCTURAL CAPITAL
SCE	STRUCTURAL CAPITAL EFFICIENCY
VA	VALUE ADDED
VAIC	VALUE ADDED INTELLECTUAL COEFFICIENT
WACB	WEST AFRICAN CURRENCY BOARD

ABSTRACT

This study seeks to examine the nexus between board diversity and intellectual capital(IC) on risk and return of banks in Ghana. Board diversity is proxy by the nationality of the board of directors of banks in Ghana, Intellectual capital by Value Added Intellectual Coefficient (VAIC) and risk and return by Z-score and return of assets (ROA) respectively.

Data is collected from the annual report of twenty-nine (29) universal banks in Ghana between the years 2000 to 2015. Panel regression was used to analyse the data.

The nexus between the components of IC and performance show that human capital efficiency (HCE) and structural capital efficiency(SCE) did not reduce insolvency risk but significantly improve return on assets of banks in Ghana while Capital employed efficiency(CEE) significantly reduces insolvency risk and significantly improves return on assets of banks in Ghana. Board national diversity (BD) significantly improves return on assets (ROA) but did not decrease insolvency risk of banks in Ghana. The study further states that the interaction of HCE, SCE and board national diversity significantly affect insolvency risk while the interaction of HCE, SCE CEE and board national diversity significantly affect ROA.

The implications of the study are that, firstly, CE drives the risk performance of banks in Ghana core business compared to HC and SC and secondly, generally, demographic diversity contributes positively towards organisational performance. Thirdly, when banks concentrate on managing HC well, it has the ability of increasing both SCE, CEE and position banks to be competitive and profitable and finally, the interaction of board national diversity and HCE, SCE and CEE influence the level of HCE, SCE and CEE and banks ROA in Ghana.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

All over the world, banking sector of every economy significantly contributes to its economic development. (Demirgüç-Kunt, 2004; Demirgüç-Kunt, Feyen, & Levine, 2012; Levine, 1996, 1997; Levine, Loayza, & Beck, 2000; Paradi & Zhu, 2013). This is evidenced in the sector's contribution to Gross Domestic Product (GDP) of the economies all over the world of which Ghana is no exception. In Ghana contribution of the banking sector to GDP has been increasing steadily over the years (GSS, 2015). For instance, whereas the banking sector contributed 2.7% to GDP in 2006, the sector's contribution to GDP in 2014 and 2015 was 8.4% and 10.3% respectively (GSS, 2015).

The fall of giant US Corporations as a result of corporate governance failure and the global economic meltdown in 2008 which started from the United States was as a result of banks' excessive risk taking habits. (Aldamen, Duncan, Kelly, McNamara, & Nagel, 2012; Demyanyk & Hasan, 2010; Erkens, Hung, & Matos, 2012; Gulati & Kumar, 2016; Liu, Uchida, & Yang, 2012; Vithessonthi, 2014). This evidence that, excessive uncalculated risk taking directly impart the performance of corporations especially banks. This has drawn several researchers' attention to study how risk control affect banks performance. In addition, recent literature identifies corporate governance structure as key instrument for mitigating potential impact of risk taking on performance in the banking industry globally (Beltratti & Stulz, 2009; Peni & Vähämaa, 2012). Therefore, if any similar crisis occurred or may occur in the future might be explained because of bank governance failure (Adams & Mehran, 2012; Barth, Caprio, & Levine, 2008, 2004; Levine,

2004; Macey & O'Hara, 2003). Few studies have focused on banks' board diversity as corporate governance mechanisms and intellectual capital in explaining banks risk and returns of banks (Ho & Williams, 2003).

Corporate governance as defined by the Cadbury Committee is “the system by which companies are directed and controlled”(Cadbury, 1992, p. 13). It is a system through which the interests of all stakeholders are satisfied. Corporate governance is also described as the link between a firm's management, director, both executive and non-executive, shareholders, and other stakeholders and can be thought of as compliance with regulations and the mechanisms for establishing the nature of ownership and control of organizations within an economy (Alexander, 2006; BCBS, 2005; Becht, Bolton, & Röell, 2007; Bhagat & Bolton, 2008; Boubakri, Dionne, & Triki, 2008; Chrisostomos, 2008). Corporate governance can then be thought of as a system through which outside investors protect themselves against expropriations by insiders (managers and controlling shareholders).

In knowledge economy, intellectual capital is considered vital in terms of the competitive level of companies across industries. Kaplan and Johnson (1987) and Bornemann (1999) also suggested that intellectual capital could be the most vital factor to consider concerning the performance of a company, and that a complementary relationship exists between intellectual potential and financial performance of an enterprise. “In today's knowledge-based economy, three of the most invisible dynamic factors of an organization are its knowledge and know-how, which is created by and stored in its people (thereby creating human capital), its relationships (social capital) and its organizational information technology systems and processes (organizational capital)” (Edvinsson

& Malone, 1997). Intellectual capital is identified as a key strategic asset for organisation growth. For instance intellectual capital promotes corporate growth to international, multinational and transnational “corporate powerhouse”. Therefore, intellectual capital has become critical strategic intangible asset that can transform a national company into an international, multinational and transnational corporate powerhouse.

The contribution of the service sector to economic growth and development globally cannot be over-emphasized. It contributes enormously to GDP than the production sector and intellectual capital identified as key driver in creating firm value and competitive advantage in this sector (Lu, Kweh, & Huang, 2014; Lu, Wang, & Kweh, 2014; Lu, Wang, Tung, & Lin, 2010). Not only does intellectual capital play an important role in determining firm value but it is also viewed as a fundamental element in determining firm strength and future growth (Choudhury, 2010). This study analyses how board diversity and intellectual capital affect the risk and return of banks in Ghana.

1.2 Problem statement

There exist numerous studies that explained the nexus between CG and bank performance and/or between IC and bank performance. However, the present study identifies some gaps to address. Firstly, despite various studies conducted to explain the performance-enhancing attribute of intellectual capital, typically the studies used profitability to assess corporate performance and none of the study used risk as a performance measure (Al-Musali & Ismail, 2014; Chen, Cheng, & Hwang, 2005; Clarke, Seng, & Whiting, 2011; Maditinos, Chatzoudes, Tsairidis, & Theriou, 2011; Muhammad & Ismail, 2009b; Zéghal & Maaloul, 2010).

The study of intellectual capital of banks is imperative given their operations are service-oriented, and require investments in the human capacity of their personnel, the structural capital and capital employed.

Other studies on board diversity suggest that when there is a great demographic variation among the members of a corporate board of directors, it will contribute significantly in the company's financial performance (Adams & Ferreira, 2009; Carter, D'Souza, Simkins, & Simpson, 2010; Daily, Certo, & Dalton, 1999; Erhardt, Werbel, & Shrader, 2003; Nguyen, Locke, & Reddy, 2015). In the past, boards of directors were considered as a "homogenous group of elites who have similar socioeconomic backgrounds, hold degrees from the same schools, have similar educational and professional training, and as a result, have very similar views about appropriate business practices" (Westphal & Milton, 2000, p. 366). However, the emerging business environment is taking a different trend. More power is being assigned to wider stakeholder representative thus confirming the fact that increased diversity on boards of directors contributes greatly to decision-making (Coffey & Wang, 1998; Useem, Bowman, Myatt, & Irvine, 1993).

"Literature broadly defined board diversity as variety amongst the members of boards of directors with regard to individual features such as kinds of skills or knowledge in a particular field and managerial background, personality, learning style, age, education and values" (Williams & Nguyen, 2005). Literature recognize two demographic characteristic for their momentous role in promoting board coordination and monitoring in life of diversity. These are the representation of women and different racial groups on a company's board of directors (Al-Musalli & Ismail, 2012; Daily et al., 1999; Erhardt et al., 2003; van der Walt & Ingley, 2003). Secondly, although studies

have investigated the connection between IC and performance of firms (Al-Musali & Ismail, 2014; Al-Musalli & Ismail, 2012; Berzkalne & Zelgalve, 2014; Bontis, Wu, Wang, & Chang, 2005; Choudhury, 2010; Clarke et al., 2011; Firer & Williams, 2003; Kamukama, Ahiauzu, & Ntayi, 2010b; Lu, Wang, et al., 2014; Maditinos et al., 2011; Muhammad & Ismail, 2009a; Nick, William Chua Chong, & Stanley, 2000; Sumedrea, 2013; Zéghal & Maaloul, 2010), and board diversity and performance of firms (Reddy, Locke, and Fauzi (2013); (Adams & Mehran, 2012; Carter et al., 2010), these studies failed to investigate how board diversity and intellectual capital influence the risk and return of banks. In the Ghanaian context, several studies has been carried out in intellectual capital. For instance Asare, Arku, and Onumah (2014) studied Industry Intellectual Capital Disclosure on the GSE using 25 companies listed on the Ghana Stock Exchange and concluded that, among all the industries, the banking and the insurance industry rank average in terms intellectual capital disclosure. On the topic of Intellectual capital and bank productivity in emerging markets, Alhassan and Asare (2016) focusing on Ghana find productivity growth to be largely driven by efficiency changes compared to technological changes. Asare, Alhassan, Asamoah, and Ntow-Gyamfi (2017) once again using 36 life and non-life insurers studied the Intellectual capital and profitability in an emerging Insurance market and concluded that, significant positive relationship exist between IC and profitability of insurers in Ghana while human capital efficiency is the main driver of insurers' IC performance. All this studies in the Ghanaian context do not consider board diversity and intellectual capital in relation to risk and return. This is what the current study addresses. It analyses how board diversity and intellectual capital affect the risk and return of banks.

1.3 Research objectives

The main objective of the study is to investigate the performance effects of board diversity and intellectual capital of banks in Ghana. Specifically the study seeks to:

1. Determine the effect of intellectual capital components on performance of banks.
2. Examine how board diversity influences performance of banks.
3. Analyse how intellectual capital and board diversity affect performance of banks.
4. Analyse the sensitivity of board diversity and intellectual capital on risk and return of banks.

1.4 Research questions

To achieve these study objectives, the research questions below will be addressed:

1. What effect does HCE, SCE and CEE have on banks performance in Ghana?
2. How does national diversity of the board influence performance of banks?
3. How does intellectual capital and national diversity of the board affect the performance of banks?
4. What is the sensitivity of intellectual capital and national diversity of the board on risk and return of banks?

1.5 Significance of the study

This study contributes to policy, practice and literature. To policy, this study is relevant by empirically assessing the intellectual capital effect on performance of the Ghanaian banking

industry where the regulator, that is, the Bank of Ghana (BoG) can be better informed about the intellectual health of the industry towards regulating the banks. The BoG will also become well-informed regarding the trends and patterns as well as the potential drivers of banks performance. The analysis, therefore, provides insights and potential avenues for policy prescriptions and enhancement which can then be oriented towards the whole industry.

For managerial practice, bank management should be able to ascertain if investment in corporate governance mechanisms and intellectual capital are vital drivers of performance in order to make important managerial decisions that enhance them. The study equally makes two-fold contributions to the academic literature. Firstly, it provide empirical analysis on the effect of intellectual capital on banks risk. Secondly, this study contributes to literature by discussing the role of both board diversity and intellectual capital in explaining risk and returns of banks.

1.6 Scope and limitation of the study

The study used universal banks in Ghana to represent the banking industry. However, other banking institutions such as rural banks and microfinance institutions engage in banking activities. These other banking institutions were not included in this study because of the unavailability of data on them, coupled with different regulations and operating structure that faces them.

Also, the study used VAICTM as the proxy for intellectual capital. This model has received some constructive criticism with regards to its failure to provide consistent result and also regarding its effectiveness and reliability in assessing intellectual capital (Maditinos et al., 2011). They indicated that, the VAICTM methodology fails to recognize the risk level and composition of individual firms notwithstanding risk as most important factors determining corporate intellectual

capital value. Ståhle, Ståhle, and Aho (2011) “also criticised the VAICTM approach for its inability to measure intellectual capital in companies with negative book value or negative operating profit. They argue that the VAICTM model does not generate valuable analysis in companies which have their inputs to be more than their outputs, and as a result, generate low level of productivity”. Sumedrea (2013) one of the critics of VAICTM concluded that, the model is invalid because it is grounded on an unsettled conception of intellectual capital capitalisation in the study of intellectual capital and firm performance. The above-mentioned critics have initiated a debate as to whether the chosen method (VAICTM) is appropriate for measuring intellectual capital.

Notwithstanding the inherent limitations of VAICTM as a method of measuring intellectual capital, it generally the widely model due to its simplicity, subjectivity, reliability and comparability.

1.7 Organization of the study

This study is organised into six chapters. The first chapter of the study provides a general introduction to the study and includes the background of the study, the research problem, the gaps in existing studies, the objective of the study and the research questions. Also included in the chapter are the justification of the study, the scope of the study and the structure and organization of the study. Chapter two of the study presents a review of literature on the study, where theories and empirical review of relevant literature are presented. The third chapter provides information on the context of the study. Chapter four of the study explains the research methodology to employed and gives explanations of variables used to meet the study’s objectives. The fifth chapter presents the analysed data and empirical findings and discussions of the findings. Finally, chapter six summarizes the findings and conclude the study whilst giving policy and practical

recommendations for improving corporate governance, intellectual capital and performance, and recommending areas for further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides discussions concerning the main theories and empirical applications in the literature concerning corporate governance, intellectual capital and performance. The chapter is structured into two main sections: theoretical review and empirical review. The theoretical review discusses the theoretical justification for the study whereas the empirical review surveys the current state of research relating to firms performance, intellectual capital and corporate governance.

2.2 Theoretical Review

2.2.1 Agency Theory

The Agency theory is the most common used theory in CG studies. The theory posits that, there is a conflict between the interest of agents and their principals to the extent that, agents tend to gratify themselves at the expense of the principal. This gives rise to the issue of agency cost which mitigate shareholder wealth maximisation. The theory takes its root from the theory of economics initially proposed by (Alchian, 1965) and was later extended by Jensen and Meckling (1976) by consolidating component from theory of finance and property right. Jensen and Meckling (1976) identified managerial behaviour, cost of agency contract and ownership structure as the main pillars of the agency theory. The theory explains why returns to the principals (shareholders) fall below what they would have been if the shareholders themselves were to manage their organization's activities (Jensen & Meckling, 1976). Agency theory argues that in contemporary

organisations where shares of the organisation are held by diversified portfolio, managers take actions that suit their personal interest rather than to maximise shareholders interest (Abdullah & Valentine, 2009). It is expected that agents (managers) channel their activities towards enhancing the interest of their principals in agency contract. However, managers seek to gratify themselves first before making room for shareholders' interest of wealth maximisation. Shareholders appoint competent managers to manage their funds in order to generate for them the profit they desire (Davis, Schoorman, & Donaldson, 1997). The effect of this is the incurrence of agency costs. Agency cost is incurred when managers use shareholders' resources to satisfy their self-interests (Peterson, 2006). The primary focus of the agency theory is to mitigate agency cost by instituting internal controls to curtail agents from advancing their self-seeking behaviour (Jensen & Meckling, 1976).

According to Donaldson and Davis (1991), managers will fail to act in a manner that maximises the wealth of owners of firms, unless suitable CG mechanisms are instituted to secure the wealth of the owners. Accordingly, the theory of agency postulates that the main aim of CG is to reduce the opportunity available for managers to act in conflict with the shareholders' interests, to the barest minimum. Therefore, various mechanisms of CG are included into the agency contracts to align owner – manager interests.

The board of directors (BOD) are viewed as the most important mechanism of control in the internal governance structure of any firm (Fama & Jensen, 1983). In addressing the effectiveness of governance structures, the agency theory advocates for separation of management from the control of decision making process in order to reduce agency conflict. The BODs perform a basic

function of mediating owners and manager's activities to ensure they are aligned. However, for the BODs to act as an effective mechanism of monitoring, the characteristics of the board plays a pivotal role. These characteristics of the board which include board size (Conyon & Peck, 1998; Eisenberg, Sundgren, & Wells, 1998; Huther, 1997), board composition or independence (Agoraki, Delis, & Staikouras, 2009; Kang, Cheng, & Gray, 2007; Tanna, Pasiouras, & Nnadi, 2011), roles separation for board chair and managers (Elsayed, 2007; Krause, Semadeni, & Cannella, 2014; Lam & Lee, 2008), board diversity (Adams & Ferreira, 2009; Carter et al., 2010; Kang et al., 2007) and the structures of key committees of the board (Black & Kim, 2012; Callen, Klein, & Tinkelman, 2003; Klein, 1998) are central to the effective functioning of mechanisms of CG. Previous studies conclude that the performance of firms results from their fundamental link to the mechanisms of corporate governance; thus making the use of the agency theory relevant to the topic of study.

Fama (1980) and Fama and Jensen (1983) posit that diverse governance mechanisms are built into the agency contracts to align agents' incentives with interests of principals. The board of directors has been identified as the most important control mechanism in a firm's internal governance structure (Fama & Jensen, 1983). However, the ability of the board to act as an effective monitoring mechanism is dependent on board characteristics indicative of strong corporate governance practice. Board characteristics such as board composition (proportion of executive and non-executive directors (Leftwich, Watts, & Zimmerman, 1981), separation of the roles of board chair and chief executive officer (Haniffa & Cooke, 2002), board size (Williams & Nguyen, 2005), the existence of audit committee, etc are fundamental and important indicators of effective corporate governance mechanisms (Aboagye-Otchere, Bedi, & Ossei Kwakye, 2012). Prior studies

suggest that a company's performance is fundamentally connected to its governance structure which makes the agency theory relevant to the topic under study.

2.2.2 Resource-based view of the firm

There has been a continuing debate about why some firms in an industry perform better than other firms in the same industry. The resource-based view (RBV) of the firm provides an answer to this question (Penrose, 1959). RBV argues that certain firms possess certain resources which give them a competitive advantage over other firms (Wernerfelt, 1984). Hence, the essence of company performance lies in these resources. Studies indicate that a resource is viewed as any asset or competencies that is available and useful in responding to market opportunities and gaining competitive advantage (Grant, 1991; Wade & Hulland, 2004). Assets can be tangible - property, plant and equipment - or intangible, competencies, skills, softwares, processes, organizational structure (Kaplan & Norton, 2004; Srivastava, Shervani, & Fahey, 1998; Wade & Hulland, 2004). It is indicated that those intangible resources of firms which are not represented on financial statements are viewed as intellectual capital (Roos, Roos, Dragonetti, & Edvinsson, 1997).

Although both tangible and intangible resources play a vital role in business performance, they are not of equal importance (Barney, 1991). The competitive advantage of firms results from their intangible resources (Grant, 1991). This is because tangible assets can be easily duplicated or acquired by other firms, but intangible assets are hard to replicate. This idea, together with the underlying assumptions of the RBV means that a firm should possess certain intangible resources that competitors cannot duplicate or acquire easily in order to gain a competitive advantage. Consequently, the firm possessing and managing intangible resources strategically and

innovatively can gain competitive advantage in the market (Barney, 1991; Cho & Pucik, 2005; Grant, 1991; Newbert, 2007; Penrose, 1959; Wade & Hulland, 2004).

Penrose (1959) made three contributions towards the RBV. First, firms can create economic value not from the mere possession of resources, but from efficient management of those resources. Second, there is a causal link between firm resources and firm performance or competitive advantage (Kor & Mahoney, 2004). Third, Penrose argued that firm growth and performance is highly attributable to managerial competencies and talents and skills of a company's workforce. Arguably, firms that ignore these factors experience inefficiencies and bottlenecks in their growth and performance. Although some of Penrose's contributions have been disputed (Rugman & Verbeke, 2002, 2004), others have found them as valid foundations for intangible assets and intellectual capital theory (Conner, 1991; Lockett & Thompson, 2004). The main conditions underlying the RBV are that resources are heterogeneous, valuable, rare and immobile from one firm to the other (Barney, 1991; Peteraf, 1993). Thus, firms' resources are intrinsically different from those of other firms leading to the differences in their performance levels. A number of empirical studies have been conducted to test the validity of this RBV (De Carolis, 2003; Hitt, Biermant, Shimizu, & Kochhar, 2001; Powell & Dent-Micallef, 1997; Ray, Barney, & Muhanna, 2004; Zahra & Nielsen, 2002). An extensive review of these studies reveals that only 53% of these tests support the theory (Newbert, 2007). Therefore, more studies are warranted to assess the validity of the RBV. The current study adopts the RBV to explore the nexus between intellectual capital and bank performance.

Recently, there have been advancements in the RBV. These advancements are based on the perspectives and experiences of authors, the social groups to which they belong as well as their educational backgrounds (Acedo, Barroso, & Galan, 2006). These developments include the entrepreneurship of resource-based theory (Alvarez & Busenitz, 2001), the relational or inter-organizational view of the RBV Dyer and Singh (1998) and the dynamic capabilities theory (Eisenhardt & Martin, 2000; Teece & Pisano, 1994; Wheeler, 2002). In general, the RBV of the firm helps to comprehend the reasons why firms are keen on the quality of human resource they employ. This is because managers know that the competencies of their human resource can go a long way to affect their long-run performance as a firm. Intellectual capital is a vital resource of banks since the banking industry is knowledge-intensive and requires expertise, talent, goodwill, and human and customer capital to operate efficiently (Kamath, 2007; Nick et al., 2000). It is therefore crucial that managers are able to identify their intellectual capital base and manage them in an innovative way to improve their performance.

2.3 Board diversity issues in Ghana

Unlike jurisdictions such as the US and the UK, Ghana does not have a single comprehensive corporate governance framework. Rather, as with the laws that govern financial reporting in Ghana, the rules that govern the relationship among a business's stakeholders can be found in bits and pieces in different regulatory instruments. However, unlike with financial reporting rules, there is no single overarching set of principles for corporate governance for companies in Ghana.

The Companies Act (1963, Act 179) contains some corporate governance provisions that all companies are required to comply with. These include provisions on the number, appointment,

duties, remuneration and removal of directors; shareholder meetings; rights of shareholders; and the appointment, duties, powers, remuneration and removal of auditors. Other corporate governance rules such as the mix between executive and non-executive directors and the existence of board committees are not covered by the Act. Provisions on these other corporate governance best practices can however be found in other laws. In addition to the Companies Act, listed companies are required to comply with corporate governance principles set out in the Securities Industry Law (1993), the Securities Industries (Amendment) Act 2000, the SEC Regulations (2003) and the GSE Listing Regulations. Companies within the banking, insurance and minerals and mining industries also have to comply with additional corporate governance requirements contained in the laws regulating these industries. These laws include the Insurance Law (1989), the Banking Law (1989) and the Banking Act (2004).

Voluntary corporate governance codes in Ghana include the Ghana Manual on Corporate Governance issued by the Private Enterprises Foundation (PEF) and the Institute of Directors (IOD); and the SEC Guidelines on Best Corporate Governance Practices. The SEC guidelines are principally based on OECD principles. These voluntary codes however have little recognition in Ghana and are mostly not adhered to. The lack of adherence to these voluntary corporate governance codes is hardly surprising given that even statutory laws in Ghana generally suffer from weaknesses in compliance.

As noted by the World Bank (2005), several key aspects of good corporate governance practices are observable in Ghana – protection of basic shareholder rights, basic AGM rules, equitable treatment of shareholders in the law, and timely disclosures in the annual reports. There is however

a lack of coherent and comprehensive regulatory framework for corporate governance practices. This has resulted in the following significant weaknesses in corporate governance practices in Ghana – no rules on board diversity, poor enforcement, lack of certain key disclosures, inconsistencies in the provisions relating to mergers in the Companies Act and the SEC regulations, single tier boards and limited audit committee effectiveness (World Bank, 2005). Consequently, as with the regulatory framework for financial reporting, there is a need for comprehensive corporate governance rules in Ghana to address the weak level of corporate governance. The ability of the regulators to enforce compliance must also be enhanced to ensure a more effective adherence to the existing provisions of corporate governance.

2.4 Empirical review

2.4.1 Intellectual Capital and Performance

The literature on the effect of intellectual capital on risk of firms is non-existent. However, several researchers has focused on the link between IC and firm returns. Reference can be made of Nick et al. (2000) who studied the interrelationship intellectual capital – HC, SC and customer capital – and how they affect returns on assets in Malaysia using psychometrically-validated questionnaires. They concluded that human capital enhanced positively the performance of the non-service industries than in service industries and that structural capital had a positively significant impact on performance. Tayles, Pike, and Sofian (2007) also confirmed this by founding positive effect of IC on equity returns of Malaysian firms. However, the use of questionnaires as a means of gathering data has been criticized in literature (Anfara Jr, Brown, & Mangione, 2002; Marshall, 2005). Questionnaires limit the ability of respondents to present their own perspectives and

responses and are mainly subjective, making it hard to draw meaningful conclusions from them (Marshall, 2005).

Recently, studies on intellectual capital and returns of firms have been geared towards quantitative techniques. Whilst these studies measure intellectual capital with models such as VAICTM, Tobin's Q, MBV, Calculated Intangible Value, and profitability ratios such as ROA, ROE and MBV) are typically used to assess corporate performance. For instance, Firer and Williams (2003) assessed nexus between IC and performance of 75 publicly traded firms in South Africa using VAICTM to proxy IC and ROA, ROE, MBV to proxy performance. The study concluded that there was no significant relationship between value added and IC (HC, SC and physical capital) and performance. Also, Chen et al. (2005) assessed the intellectual capital and performance of Taiwanese listed companies by using VAICTM to proxy IC and ROA, ROE, MBV and employee productivity ratios to proxy corporate performance. The study concluded that firms' IC positively impact on market value and financial performance, and may be an indicator for future financial performance. Indeed, there are similar studies which arrived at similar conclusions (Al-Musali & Ismail, 2014; Bontis, Wu, Chen, Cheng, & Hwang, 2005; Clarke et al., 2011; Maditinos et al., 2011; Muhammad & Ismail, 2009b; Zéghal & Maaloul, 2010).

Most of the studies conducted on intellectual capital looked at how the components of intellectual capital (human capital efficiency, structural capital efficiency and capital employed efficiency) have effect on performance. For instance Puntillo (2009) looked at the effect of human capital efficiency, structural capital efficiency and capital employed efficiency on return on investment, return on assets and market to- book –value of 21 listed banks on the Milan stock exchange in Italy

and concluded that human capital efficiency has insignificant negative relationship with return on investment and return on asset but has insignificant positive relationship with market to-book – value, structural capital efficiency has an insignificant positive relationship with return on investment and return on assets but an insignificant negative relationship with market to book-value and capital employed efficiency has a significant positive relationship with return on investment and return on assets but a significant negative relationship with market to book-value. Studies by Nishi et al., (2014) found a significant positive relationship between human capital efficiency and capital employed efficiency with return on assets and return on equity. Joshi, Cahill, Sidhu, and Kansal (2013) found a significant positive relationship between human capital efficiency, structural capital efficiency and capital employed efficiency and return on assets of 40 Australian financial companies as well as Fathi, Farahmand, and Khorasani (2013) who found a significant positive relationship between human capital efficiency , structural capital efficiency and capital employed efficiency and return on assets and return on equity of Tehran listed companies. Ozkan, Cakan, and Kayacan (2016) also found human capital efficiency and capital employed efficiency to have a significant positive relationship return on assets. Ekwe (2015) concluded that human capital efficiency, structural capital efficiency and capital employed efficiency have a significant positive relationship with return on assets and return on equity of Nigerian banks. However Shamsudin and Yian (2013) and Anuonye (2016) found a negative relationship between human capital efficiency and return on assets but a significant positive relationship between structural capital efficiency and capital employed efficiency with return on assets of Malaysian and Nigerian firms respectively. Also Basyith (2016) concluded that human capital efficiency and structural capital efficiency have a negative relationship with return on assets but capital employed efficiency has a significant positive relationship with return.

The study of Kamukama, Ahiauzu, and Ntayi (2010a) on Uganda's microfinance firms found out that the components of intellectual capital (human capital efficiency and structural capital efficiency) have significant positive effects on returns on assets and equity. Similarly, (Wei-Kiong-Ting & Hooi-Lean, 2009) indicated that human capital efficiency, structural capital efficiency, and capital employed efficiency significantly and positively affect profitability of Malaysia's financial institutions. These findings are confirmed by the studies of Uwuigbe and Uadiale (2011) and Matinfard and Khavari (2015) who indicated that the human capital efficiency, structural capital efficiency, and capital employed efficiency of Nigerian businesses and Tehran firms respectively have significant positive effects on their profitability. These studies have explored the effect of the various components of intellectual capital on profitability, without considering risk. The current study posits as follows:

H1a: Human capital efficiency has a negative effect on insolvency risk of banks in Ghana.

H1b: Structural capital efficiency has a negative effect on insolvency risk of banks in Ghana.

H1c: Capital employed efficiency has a negative effect on insolvency risk of banks in Ghana.

H2a: Human capital efficiency has a positive effect on return on assets of banks in Ghana.

H2b: Structural capital efficiency has a positive effect on return on assets of banks in Ghana.

H2c: Capital employed efficiency has a positive effect on return on assets of banks in Ghana

2.4.2 Board diversity and risk and return

Studies that look at the nexus between board diversity and firms risk are scanty and inconclusive. For example, Berger, Kick, and Schaeck (2014), in studying the executive board composition and

bank risk-taking, concluded that board changes that increases the representation of female executives increase portfolio risk. Studies conducted by Baixauli-Soler, Belda-Ruiz, and Sanchez-Marín (2015) on Standard & Poor's Index 500 listed firms concluded that there is no significant relationship between gender diversity of the board and risk. In similar manner, the studies of Sila, Gonzalez, and Hagedorff (2016) on US firms, Loukil and Yousfi (2015) on Tunisian listed firms and Stellingwerf (2016) on US non-financial firms concluded that there is no significant relationship between board gender diversity and firms' risk. Wilson and Altanlar (2009) find a negative relationship between proportion of women on the board of directors and insolvency risk. Similarly, Jane Lenard, Yu, Anne York, and Wu (2014) found a negative relationship between the gender diversity of the board and firm risk.

Consequent to the findings of Wilson and Altanlar (2009) and Jane Lenard et al. (2014), this study posits that:

H3: Board diversity has a negative effect on insolvency risk of banks in Ghana.

H4: Board diversity has a positive effect on return on assets of banks in Ghana.

2.4.3 Board diversity, intellectual capital and risk and returns

“Most of the research in the area of ethnic diversity on the board of directors focuses on profitability. More so, there is no known previous literature that addresses the relationship intellectual capital and risk of firms. With literature on the nexus between board diversity and risk, some studies find that board diversity leads to better performance” (see Julizaerma & Sori, 2012; Oba & Fodio, 2013) while others find no such relationship, (see Carter, Simkins, & Simpson, 2003; Gregory-Smith, Main, & O'Reilly, 2014)

A number of studies have focused on the effect of board diversity on firm's return (Adams & Ferreira, 2009; Carter et al., 2010; Carter et al., 2003; Gallego-Álvarez, Prado-Lorenzo, & García-Sánchez, 2011; García-Meca, García-Sánchez, & Martínez-Ferrero, 2015). Adams and Ferreira (2009) identified female directors in the board composition of an organisation to have a significant impact on board inputs because they have better attendance records as compared to their male counterparts, and therefore influence greatly the performance of the organization. Thus previous literature indicated that a more gender diversified board enhances financial and market performance (Adams & Ferreira, 2009; Erhardt et al., 2003; Kang et al., 2007; Nguyen et al., 2015; Rosa, Carter, & Hamilton, 1996).

The study of Carter et al. (2003) which examined the impact of board gender and ethnic diversities on firm value of Fortune 100 firms found a significant positive effect of the two measures of diversity on firm value. In similar study, Jurkus, Park, and Woodard (2008) examine the nexus between top management gender diversity of Fortune 500 firms and concluded that board gender diversity significantly has a positive influence on returns on assets and market value. Darmadi (2010) also examined the effect of board gender and nationality diversities on firm value and found that whereas board gender diversity has a significant negative impact on firm value, board nationality diversity has an insignificant affect firm value. Apart from the studies of Carter et al. (2003) and Darmadi (2010), the existing literature failed to consider the significant influence that national variety of the board of directors has on returns of firms.

There are also studies that examined the effect of board diversity on intellectual capital performance. Generally these studies found a positive effect of board diversity on intellectual

capital performance. For instance, Swartz and Firer (2005), Williams (2001), Ho and Williams (2003), Van der Zahn (2006), Julizaerma and Sori (2012), and Oba and Fodio (2013) studied the impact of board diversity on intellectual capital and concluded that the gender diversity of the board has a significant positive effect on intellectual capital of listed firms of South Africa. On the contrary, Vermeulen (2014) failed to establish an effect of board gender diversity on intellectual capital of listed firms of South Africa.

Few studies looked at the effect of ethnic diversity on intellectual capital performance (Ho & Williams, 2003; Van der Zahn, 2006). These studies were conducted on South Africa's listed firms, and the authors found a significant positive impact of board ethnic diversity on intellectual capital performance. Vermeulen (2014) examined the effect of ethnic board diversity of South African listed firms on their intellectual capital, and concluded that ethnic board diversity has no significant effect on intellectual capital performance in South Africa's banking sector. Vermeulen (2014)'s study could not establish any significant relationship between ethnic board diversity and intellectual capital performance.

Several researchers have investigated the relationship between intellectual capital and returns. For instance, Nick et al. (2000) studied the multiple relationships of the components of intellectual capital – human capital, structural capital and customer capital – and how they affect returns on assets in Malaysia using psychometrically-validated questionnaires. They concluded that human capital played a greater role in non-service industries than in service industries and that structural capital had a positive impact on corporate performance. Tayles et al. (2007) also found a positive effect of intellectual capital on returns on equity of firms in Malaysia by use of questionnaires.

More so other studies also concluded that the components of IC have significant positive effect on profitability (Kamukama et al., 2010b; Matinfard & Khavari, 2015; Uwuigbe & Uadiale, 2011; Wei-Kiong-Ting & Hooi-Lean, 2009). These studies have explored the effect of the various components of IC on performance of the business firms across industries. Also, the studies could not examine the interactive effect of board diversity and intellectual capital performance on corporate performance. This study establishes the aforementioned missing links. In consonance with previous findings of Chen et al. (2005), Matinfard and Khavari (2015), Uwuigbe and Uadiale (2011), this study posits as follows:

H5a: Human capital efficiency has a negative effect on insolvency risk of banks in Ghana.

H5b: Structural capital efficiency has a negative effect on insolvency risk of banks in Ghana.

H5c: Capital employed efficiency has a negative effect on insolvency risk of banks in Ghana.

H5d: Board diversity has a negative effect on insolvency risk of banks in Ghana.

H6a: Human capital efficiency has a positive effect on return on assets of banks in Ghana.

H6b: Structural capital efficiency has a positive effect on return on assets of banks in Ghana.

H6c: Capital employed efficiency has a positive effect on return on assets of banks in Ghana.

H6d: Board diversity has a positive effect on return on assets of banks in Ghana.

CHAPTER THREE

BANKING IN GHANA

3.1 Introduction

This chapter of the study provides background of the banking industry, including its history, development and regulatory reforms. It also evaluates the nature of corporate governance mechanisms in the country.

3.2 The Ghanaian banking industry

3.2.1 Early development of banking in Ghana

Modern banking began in Ghana in the late nineteenth century when the Post Office Savings Bank (POSB) commenced operations in 1888. The POSB conducted its operations using the facilities of the various post offices dotted around the country. However, full banking activities started in the then Cape Coast in 1896 when the British Bank for West Africa (BBWA) now the Standard Chartered Bank (SCB) opened a branch in Accra to deliver primary banking services. The focus of the bank then was the provision of trade finance mainly to expatriates. The SCB successfully maintained government accounts and introduced cheques for the settlement of Government accounts. In 1917, that is, two decades after the founding of the SCB, Barclays Bank DCO (Dominion Colonial Overseas), now Barclays Bank Ghana (BBG) Limited, was established. These two banks were foreign subsidiaries of Banks registered in the United Kingdom (UK) and mainly provided finance to facilitate trade between Ghana and the UK. In 1921, the West African Currency Board (WACB) was established by the British administration to be responsible for

issuing currency of various denominations for colonies such as the then Gold Coast, Gambia, Nigeria and Sierra Leone. The farmers' Cooperatives in collaboration with the colonial government launched the Cooperative Bank in 1935. Apart from the normal banking services, the Cooperative Bank devoted attention to strengthening cooperatives and also extended financial assistance to the cocoa sector to boost cocoa marketing in the country. Together, these two expatriate banks exclusively provided banking services in the Gold Coast from the 1920s to the early 1950s. They operated commercial banks, provided trade finance to commercial firms, and were used by the colonial government to pay salaries.

In 1953, based on the recommendation of Sir Cecil Trevor, a national Bank of Gold Coast (BGC) was established with the mandate to service the local private sector; keep government accounts as well as leading the flotation of government bonds. In the events leading up to independence, the BGC was split into two, one arm became the Central Bank (Bank of Ghana), and the other the Ghana Commercial Bank (GCB). Thus the Bank of Ghana (BoG hereafter) was established by Bank of Ghana Ordinance (No. 34) of 1957 two days prior to independence, and charged to take over currency issue and other central banking functions from the WACB. In the same year July 1957 the BoG issued for the first time the cedi to replace the West Africa currency notes. The newly established Central Bank established branches in the towns it operated, and later extended coverage to Ashanti and the Northern Regions in order to hold its own against the expatriate banks. Upon the attainment of independence, the new banks were established to provide large volumes of capital to support the private sector. Banks incorporated between 1957 and 1980 are: the National Investment Bank (1964); the Agricultural Development Bank (1965); the Bank for Housing and Construction (1972); the Merchant Bank Ghana Limited (1972); The National

Savings and Credit Bank (1975); Social Security Bank (1977); the Bank for Credit and Commerce (1978); within the period, the state steered the development of the banking sector through the establishment of state banks and intervening directly in the credit market in a bid to ameliorate cost and channel credit to priority sectors.

3.2.2 Reformation of banking in Ghana

The Ghanaian banking industry has undergone regulatory and structural changes since the mid-1980s (Alhassan & Ohene-Asare, 2013). In 1983, as a remedy to the economic crisis the country was experiencing, the government of Ghana under the assistance of the International Monetary Fund (IMF), introduced the Economic Recovery Programme (Ohene-Asare & Asmild, 2012). This signalled an end to socialism and curb the various effect on trade and finance arising of legal restriction. The law also encouraged private investment with the intent of promoting growth and development. The Banking Law also created environment to promote local institutions to file for licences to operate as banks (Alhassan & Ohene-Asare, 2013). In particular, the authorization for the establishment of private banks following the passage of the Banking Act of 1989 led to the entrance of private banks such as: CAL Merchant Bank (1990); Ecobank Ghana Limited (1990); Meridian Bank (1991); Trust Bank (1995); Metropolitan and Allied Bank (1995); First Atlantic Merchant Bank; Prudential Bank (1996); and International Commercial Bank (1996). Since 2000 new banks have entered the banking scene. To incorporate the diverging trend in the banking industry globally, banking in Ghana was revamped in 2004 through the introduction of the Banking Act 2004 (Act 673) (Aboagye, Akoena, Antwi-asare, & Gockel, 2008).

The banking industry has since received several notable development. Mention can be made of the increase in the minimum capital requirement of universal banks which gave banks with 70 billion cedis in capital the authority to undertake all the banking activities unlike previously where they could only undertake the activities which they were specifically licensed to perform (Bokpin, 2013). Second is the enactment of the Banking Act 2004 (Act 673) under which banks were required to increase the minimum capital requirement to US\$ 8 million which was later increased to US\$ 30 million and US \$ 60 million in 2012 and 2013 respectively (Alhassan, 2015). Another development was the change of currency from the cedi to the Ghana cedi in July 2007 (BOG, 2007). Other significant legislation enacted to drive banking activities were “Foreign Exchange Act 2006 (Act 723), Whistle Blowers Act 2006 (Act 720), Credit Reporting Act 2007 (Act 726), Banking (Amendment) Act 2007 (Act 738), Borrowers and Lenders Act 2008 (Act 773), Non-Banking Financial Institutions Act 2008 (Act 774), Home Mortgage Finance Act 2008 (Act 770), and Anti-money Laundering Act 2008 (Act 749)”. During these development stages, there were significant mergers and acquisitions of banks resulting principally from the increases in the minimum capital requirement (Bokpin, 2013; Isshaq & Bokpin, 2012).

As of 2015, the banking industry of Ghana consisted of 30 universal banks (an increase from 18 in 2003 (BOG, 2015). Based on majority ownership (of 60 percent of ordinary shares), the banks in Ghana can be grouped into 14 locally-owned and 16 foreign-owned. Out of the 30 banks, 7 are listed on the Ghana Stock Exchange. Out of the listed banks, 4 are locally-owned while 3 are foreign-owned. Out of the 23 non-listed banks, 10 are locally-owned while 13 are foreign-owned.

Table 1: Description of universal banks by year-end 2015

NO	Name of Bank	Year of Incorporation	Majority Ownership	Listing status
1	Access Bank Limited	2008	Foreign	Non-listed
2	Agricultural Development Bank	1965	Local	Non-listed
3	Bank of Africa Limited	1997	Foreign	Non-listed
4	Bank of Baroda Limited	2007	Foreign	Non-listed
5	Barclays Bank Limited	1917	Foreign	Non-listed
6	BSIC Limited	2008	Foreign	Non-listed
7	Cal Bank Limited	1990	Local	Listed
8	Ecobank Ghana Limited	1990	Foreign	Listed
9	Energy Bank Limited	2010	Foreign	Non-listed
10	Fidelity Bank Limited	2006	Local	Non-listed
11	First Atlantic Bank Limited	1994	Local	Non-listed
12	FBN Ghana Limited	2013	Foreign	Non-listed
13	First Capital Plus Bank Limited	2013	Local	Non-listed
14	First National Bank Ghana Ltd	2015	Foreign	Non-listed
15	Ghana Commercial Bank	1957	Local	Listed
16	GN Bank	1997	Local	Non-listed
17	Guaranty Trust Bank Limited	2004	Foreign	Non-listed
18	HFC Bank limited	1990	Local	Listed
19	Universal Merchant Bank Ghana Limited	1971	Local	Non-listed
20	National Investment Bank limited	1963	Local	Non-listed
21	Prudential Bank Limited	1993	Local	Non-listed
22	Royal Bank Limited	2011	Foreign	Non-listed
23	SG-SSB Bank Limited	1975	Foreign	Listed
24	Sovereign Bank Ghana Limited	2015	Local	Non-listed
25	Stanbic Bank Limited	1999	Foreign	Non-listed
26	Standard Chartered Bank Limited	1896	Foreign	Listed
27	UniBank Ghana Limited	1997	Local	Non-listed
28	United Bank for Africa Ghana Limited	2004	Foreign	Non-listed
29	UT Bank Limited	1995	Local	Listed
30	Zenith Bank Limited	2005	Foreign	Non-listed

The reforms in banking also resulted in the creation of rural banks. Rural residents had to travel over long distances to receive payment such as salaries and pensions, transfer money and cash cheques for their farm produce. They mainly relied on high interest charging moneylenders and

traders for credit. Limiting factors such as collateral requirements, the need to have an account, and the seasonal high-risk nature of rural occupations (predominantly agriculture) precluded the rural folks from gaining access to formal credit. The concept of rural banking was, therefore, introduced in 1976 to provide banking services to the rural population and address the challenges associated with accessibility of banking services. The first rural bank, Agona Nyankrom Rural Bank, was established in a farming community in the Central Region. In less than a decade after the establishment of the first Rural Bank, the number of Rural and Community Banks (RCBs) were 106 by 1984. In 1981, the existing Rural Banks collaborated to form an Association of Rural Banks (ARB). The aim was to advance the common course of RCBs. It provided a platform for networking and represented RCBs on key matters at the central bank. By 2010 the number of RCBs reached 135. There were a total of 142 Rural and Community Banks (RCBs) as the end of 2015.

3.2.3 Financial systems

Over the past decade, a number of reforms has been adopted by Ghana to build, upgrade and modernize the financial system. Principal is the drive towards computerising banking activities, particularly with the influx of automated teller machines (ATMs). For example, the number of ATMs across the country equals 618 as of 2011. The computerisation process also includes the introduction of mobile banking, SMS banking and internet banking products. Following the introduction of ATMs, the Payment Systems Act 2003 (Act 662) was enacted to regulate the operation and supervision of electronic funds transfer, clearing and settlement systems. This led to the development of a national payment and settlement system called the e-zwich payment system. The e-zwich smart card provides holders and merchants with a nationwide and convenient means of transacting business by reducing the paper based transactions. Apart from e-zwich, some of the

payments and settlement reforms that have been implemented include Real Time Gross Settlement System (RTGSS), Central Security Depository (CSD), Automated Clearing House (ACH), Cheque Codeline Clearing (CCC), and the Ghana Interbank Payments and Settlement System (GHIPSS) (BOG, 2015).

Some of the reforms geared towards strengthening supervisory and regulatory framework of the financial sector include Risk Based Supervision (RBS), Electronic Financial Analysis and Surveillance System (eFASS), etc. In 2007, the enactment of the Credit Reporting Act 2007 (Act 726) led to the establishment of credit reference bureaus. The relevance of the bureaus is to bridge the information asymmetry in credit markets to ensure efficient allocation of resources to productive sectors in the economy. The intended role of the credit reference bureau is to support the credit risk management functions of banks (BOG, 2015). The objectives of these reforms are to improve efficiency and ameliorate risk in the payment system, foster financial intermediation, widen the range of financial securities, and build infrastructure that aids interoperability

The financial infrastructure development has led to the introduction of new banking products and has boosted branchless and cashless banking. For example, the introduction of ATMS and e-zwich in particular has made banking more accessible, reliable, convenient, fast, and efficient. The introduction of mobile banking has further enhanced branchless banking. Some of the mobile banking services available include money transfer, airline ticket purchase, cash deposit, balance enquiry, cash withdrawal, credit top-up and payment of utility bills. One needs just mobile phone, and not a bank account to undertake mobile banking. This has improved financial inclusion by roping in a large number of the previously unbanked into the banking system. These broad range reforms have strengthened the financial infrastructure leading to gains in financial deepening in

the country. Measures of financial depth such as deposit/GDP, M2/GDP, credit to the private sector/GDP have all improved (Bawumia, 2010). Though these reforms have modernized the national payment and securities payment systems, and strengthened the legal and regulatory framework, more reforms on regulatory and supervisory oversight are needed to improve and sustain the gains in financial development in Ghana.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

The conduct of a research is seen in terms of the research philosophy subscribed to the research approach adopted to achieving the research objectives, and the strategy to be used. This chapter of the study elucidates the research design adopted, the source of data and variables used and the research methodology adopted to achieve the objectives of the study.

4.2 Research design

The research design refers to the overall strategy that you choose to integrate the different components of the study in a coherent and logical way, thereby, ensuring you will effectively address the research problem; it constitutes the blueprint for the collection, measurement, and analysis of data or it circumscribes the set of research philosophy, approaches and strategies that have been adopted to carry out the research (Kemmis, McTaggart, & Nixon, 2014).

4.2.1 Research philosophy

The research philosophy is the belief about the way in which raw facts about a phenomenon is gathered, analysed and used (Saunders & Lewis, 2009) . The term epistemology (what is known to be true) comprises of the various philosophies of approaches to research (Zikmund, Babin, Carr, & Griffin, 2012). According to Saunders, Lewis and Thornhill (2011), there are two main acceptable research philosophies which describe how knowledge is developed and judged, namely positivism and interpretivism. This study adopts the positivist research paradigm because

knowledge of the effect of board diversity and intellectual capital of banks on their risk and return is not subjective, but rather requires objectivity from the researcher.

4.2.2 Research approach

The research approach ties a particular philosophy appropriately to the research methods which links philosophical notions to practical and applicable research strategies (Byrne, 2001). The inductive approach is associated with interpretivism while the deductive approach is usually attached to positivism. The deductive approach is adopted for this study because it leads to testing of the hypotheses with specific data. In connection with the positivism philosophy, data for the research (normally sourced secondary data) remain objective to enable comparisons to be made.

4.2.3 Research strategy

The research strategy is the road map guiding the study to answer the research question Saunders and Lewis (2009). Saunders et al. (2011) proposed two clusters of research strategies: quantitative and qualitative research. The former emphasizes quantification in the collection and analysis of data while the latter emphasizes words (rather than quantification) in the collection and analysis of data (Bryman, 2012). Considering the fundamental differences and the discussion in the literature review, it is apparent that this research follows the quantitative strategy. The quantitative strategy obtained an unbalanced panel data on banks in Ghana over a sixteen year period from 2000 to 2015. An unbalanced data is used (rather than balanced panel) because of unavailability of some observations of the same unit in every time period (year).

4.3 Data source

Data for the study were derived from secondary sources covering various variables for the period from 2000 to 2015 for all the universal banks in Ghana. 29 universal banks were sampled this is because one of the banks First National Bank Ghana Limited was incorporated in the year 2015 and has no annual as at the time data was collected. The data was extracted from annually published reports of banks in the Ghana. The data is panel in nature since it involves variables being studied across firms over a period of time. The use of secondary data source is deemed to be more appropriate for the purpose of this research in that apart from its relatively easy access and preciseness, it is also devoid of subjectivity associated with other mode of data collection such as interviews and questionnaires. Again, the regulatory framework governing the preparation of company annual reports helps ensure that the annual report is a reliable and attested public document (Ghazali, 2010).

4.4 Variable measurement

Intellectual capital is measured by the Value added intellectual coefficient (VAIC) (seePulic, 1998). VAIC is measured as the difference between sales and all inputs (except labour expenses), divided by intellectual capital, which is appraised by total labour expenses as a proxy. The higher the ratio, the more efficient and effective the company is at using intellectual capital assets. The main merit of this approach is simplicity. The figures are easy to obtain from any yearly report and, once calculated for a year, can be used for inter-or intra-company comparisons. However, this straightforwardness has many demerits. Comparing an organization's labour expenses to its IC would appear to undervalue IC when compared with other methods such as the market-based approach. Also, a company could be using its labour resources inefficiently, but this could be

masked by a more efficient use of other inputs leading to a similar ratio. The approaches outlined give a good idea of the range of methods, disciplines and functional specialism employed in measuring and valuing intellectual capital. Despite the above Maditinos et al. (2011) Also, the study used VAICTM as the proxy for intellectual capital. This model has receive some constructive criticism with regards to its failure to provide consistent result and also regarding its effectiveness and reliability in assessing intellectual capital (Maditinos et al., 2011). They indicated that, the VAICTM methodology fails to recognize the risk level and composition of individual firms notwithstanding risk as most important factors determining corporate intellectual capital value. Ståhle et al. (2011) “also criticised the VAICTM approach for its inability to measure intellectual capital in companies with negative book value or negative operating profit. They argue that the VAICTM model does not generate valuable analysis in companies which have their inputs to be more than their outputs, and as a result, generate low level of productivity”. Sumedrea (2013) is also one of the critics of VAICTM. In their study of IC and firm performance concluded that, the model is invalid because it’s grounded on an unsettled conception of IC capitalisation. The above-mentioned critics have initiated a debate as to whether the chosen method (VAICTM) is appropriate for measuring intellectual capital.

Notwithstanding the inherent limitations of VAICTM as a method of measuring IC, it is still assume the ideal model due to its simplicity, subjectivity, reliability and comparability as this study makes a contribution to the existing intellectual capital literature by analysing the effect intellectual capital has on risk and return of the banking sector in Ghana. Hence VAICTM is the sum of Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE). That is, $VAIC^{TM} = HCE + SCE + CEE$. To derive these component, Value Added is derive.

Value Added (VA) is computed as gross income (interest income + fees and commissions + other revenues) less gross expenses excluding employee costs (interest expense + fees and commission expenses + other operating expenses). Whereas Human Capital (HC) is the total expenditures on employees, Structural Capital (SC) is the value added less expenditure on employees. Equally, Capital Employed (CE) is derived as the sum of physical capital and human capital (employee cost). Subsequently, Human Capital Efficiency (HCE) is measured as the ratio of value added to human capital (VA/HC) and Structural Capital Efficiency (SCE) is the ratio of structural capital (SC) to value added (VA). Also, Capital Employed Efficiency (CEE) is measured as the proportion of value added (VA) to capital employed (CE).

Board diversity has been defined in several ways. It implies having the composition of the board with different range of people having different features. This different features constituting the diversity includes age, race, gender, educational background, nationality and professional qualifications etc of the directors to make the board less homogenous. Some may interpret board diversity by taking into account such less tangible factors as life experience and personal attitudes. In short, board diversity aims to cultivate a broad spectrum of demographic attributes and features in the boardroom. A simple and common measure to promote heterogeneity in the boardroom commonly known as gender diversity is to include female representation on the board. Board diversity is justified as a key to better corporate governance. According to Conger, Lawler, and Finegold (2001) the following serves as a good summary of board diversity: “The best boards are composed of individuals with different skills, knowledge, information, power and time to contribute. Given the diversity of expertise, information, and availability that is needed to understand and govern today’s complex businesses, it is unrealistic and impracticable to expect an

individual director to be knowledgeable and informed about all phases of business. It is also unrealistic to expect individual director to be available at all times and to influence all decisions. Thus, in staffing most boards, it is best to think of individuals contributing different species to the total picture that it takes to create an effective board". Board diversity had been measured by balance professional qualification, or ethnic origin or gender or nationality etc of the board of directors. Most prior studies, however, concentrate on the gender perspective of diversity, which has resulted in highlighting the importance of having more women on the board (Nguyen et al., 2015). Gender is seen to be much contested diversity issue not only with regard to board of directors, but also in areas of politics and in other social disciplines (Kang et al., 2007). There have, therefore been numerous advocacy and emphasis on the need for a more gender-diversified membership of the board. For example, Carter et al. (2010, p. 402) argue that "the gender composition of the board can affect the quality of the monitoring role that is played by the board". They suggest that women possess critical symbolic values, both within and outside the company, indicating their high performance. It has been indicated that women directors are able to generate a more productive discourse by being able to question issues more freely compared to directors who are males. Subsequently, gender diversity is measured as the proportion of female directors to the board size. For the purpose of this study board diversity represents the nationality of the board thus the ratio of Non-Ghanaians on the board to the number of board of directors.

Concerning returns, various studies used profitability ratios. The known measures of profitability over the years have been focused on either Return on Assets (ROA) or Return on Equity (ROE). In conducting a research of this nature, many researchers have argued for ROA as against ROE. According to Ariss (2010), ROA shows the profit earned per dollar of assets and most importantly,

it reflects the management's ability to optimize the banks financial and real investment resources to generate profits. The ROE is measured by dividing net income by equity. It measures the income earned on each unit of shareholders capital. The problem of this measure is that banks financial leverage tends to generate a higher ratio. Banks with high financial leverage may be associated with a higher degree of risk although these banks may register high ROE. Hence, ROE may sometimes fall short in exposing the true financial health of banks. Therefore, consistent with studies such as Amidu (2013), Bolt, De Haan, Hoeberichts, Van Oordt, and Swank (2012), Gul, Irshad, and Zaman (2011), Haslem and Longbrake (2015) and Javaid (2011), this study adopted ROA as a measure of returns of the banking sector in Ghana.

Z-score was employed by the study to measure bank insolvency risk which is the universally accepted measure of bank risk (see Turk-Ariss, 2010 and Amidu 2013). According to Amidu,2013, "it is defined to be the number of standard deviations that a bank rate of return has to fall for the bank to be bankrupt .The results potentially evaluates the accounting range to default for a given financial institution(bank). It is computed as the summation of the mean rate of return on assets and the mean equity-to- asset ratio to the standard deviation of the return on assets. From the perspective of the economy Z-score measures the potential probability of a financial institution (bank) to become bankrupt when the debt value exceed the assets value. This implies that a lower (higher) Z-score means a higher (lower) probability of insolvency risk".

Funding strategies is made up of deposits funding, non-deposits/wholesale funding and internal funding. Deposits funding is measured as the total deposits as a percentage of total assets. Non-deposits funding is calculated as all other debts (except deposits) divided by total assets (Amidu,

2013). Internal Funding is measured as the sum of net profits before extraordinary items and loan loss provisions relative to bank loans at the end of the period (Houston, James, & Marcus, 1997). Bank size is measured by the logarithm of total assets (Basyith, 2016). Risk Management Committee is measured as the number people on the risk management committee (Viljoen, Bruwer, & Enslin, 2016). Ownership is foreign ownership which is a dummy and it is determine by 1 if the bank is a foreign bank or 0 otherwise

4.5 Model development

A model is formulated for each of the respective objective of the study as follows:

$$Z - SCORE/ROA_{it} = \beta_0 + \beta_1 IC_{it} + \beta_2 SIZE_{it} + \beta_3 RMC_{it} + \beta_4 OWN_{it} + \beta_5 DF_{it} + \beta_6 NDF_{it} + \beta_7 IFS_{it} + \varepsilon_{it} \dots\dots\dots (1)$$

$$ZSCORE/ROA_{it} = \beta_0 + \beta_1 BD_{it} + \beta_2 SIZE_{it} + \beta_3 RMC_{it} + \beta_4 OWN_{it} + \beta_5 DF_{it} + \beta_6 NDF_{it} + \beta_7 IFS_{it} + \varepsilon_{it} \dots\dots\dots (2)$$

$$ZSCORE/ROA_{it} = \beta_0 + \beta_1 IC_{it} + \beta_2 BD_{it} + \beta_3 SIZE_{it} + \beta_4 RMC_{it} + \beta_5 OWN_{it} + \beta_6 DF_{it} + \beta_7 NDF_{it} + \beta_8 IFS_{it} + \varepsilon_{it} \dots\dots\dots (3)$$

$$ZSCORE/ROA_{it} = \beta_0 + \beta_1 IC_{it} + \beta_2 BD_{it} + \beta_3 (IC_{it} * BD_{it}) + \beta_4 SIZE_{it} + \beta_5 RMC_{it} + \beta_6 OWN_{it} + \beta_7 DF_{it} + \beta_8 NDF_{it} + \beta_9 IFS_{it} + \varepsilon_{it} \dots\dots\dots (4)$$

Where IC_{it} is the intellectual capital(IC) of bank i at period t , BD_{it} represents the board national diversity of bank i at time t , $SIZE_{it}$ is size of bank i at period t , RMC_{it} is risk management committee of bank i at period t , OWN_{it} is the foreign ownership of bank i at period t , DF_{it} is the deposit funding of bank i at period t , NDF_{it} is the Non-deposit funding of bank i at period t . IFS_{it} is the internal funding strategy of bank i at period t , $RISK_{it}$ is the insolvency risk facing a bank i at period t , and ROA_{it} is the returns on assets of bank i at period t .

4.6 Estimation strategy

The variance inflation factor is 4.18 for the variables. This is less than 10 which means there is no multicollinearity hence the Hausman test was employed in the selection of the results. The thumb rule is that the random effect is the null hypothesis and if the probability is 5 percent or less the null (random effect) is rejected and the alternate (fixed effect) is chosen or vice versa.

CHAPTER FIVE

ANALYSIS AND INTERPRETATION OF RESULTS

5.1 Introduction

This chapter presents the data analysis, results and findings of the study. The summary statistics and correlation matrix have also been discussed. Finally, this chapter presents and discusses the regressions results and findings.

Table 2: Summary Statistics

	Mean	Median	Std. Dev.	Maximum	Minimum
ZSCORE	11.088	9.534	10.474	70.475	1.557
ROA	0.039	0.037	0.021	0.092	(0.035)
HCE	1.907	2.246	1.532	3.957	(5.330)
SCE	0.650	0.600	1.114	7.143	(2.310)
CEE	0.503	0.480	0.421	1.461	(0.923)
BD	0.328	0.333	0.253	0.833	0.000
SIZE	20.514	20.467	0.805	22.458	18.830
RMC	4.277	4.000	1.262	8.000	2.000
OWN	0.578	1.000	0.497	1.000	0.000
DF	0.654	0.668	0.125	0.868	0.141
NDF	0.200	0.172	0.112	0.727	0.018
IFS	0.110	0.084	0.099	0.586	(0.069)

Note: ZSCORE, ROA= Return on assets, HCE= Human capital efficiency, SCE=Structural capital efficiency, CEE= Capital employed efficiency, OWN= foreign ownership, DF= deposit funding, NDF= Non-deposit Funding, IFS= Internal Funding Strategies, BD = Board Diversity, Size=Bank Size, RMC =Risk management Committee

Table 2 indicates the summary statistics for the main variables employ in the study. The table shows that Z-score of Ghanaian banks is at an average of 11.09, an indication that most of the banks in Ghana are stable. The average for the return on assets is 4 percent, indicating that the banks create value for their shareholders within the time period of the study. Also the positive value of the return on assets implies that the assets of the banks has been effectively used in generating surplus revenues. The value of human capital efficiency is 1.907. Human Capital is an indicator of the size of economic value of human resource capacity. Education, experience and capabilities of human resources can be assessed economically, indicating that the higher the value of human capital, the higher the quality of human resources as an assets in the company. The mean value of structural capital efficiency is 0.650. Structural capital includes infrastructure, better processing technology and goods, database companies, trademarks, and others that can be measured by economic value, suggesting that the higher the value of structural capital, the higher the firms' economic value as indicated by infrastructure/process/database/trademark and many others. The mean value of capital employed efficiency is 0.503. Capital employed includes physical capital and human capital, indicating how most the banks utilize all resources optimally in generating income. Average of board diversity for the banks is 33 percent. The average size of the banks is 20.51 with a range of 8.6840 to 20.8190 (Bayith,2016) indicating that most banks in the sample are relatively large banks, the risk management committee is average at 4 persons, while foreign ownership is 58 percent indicating that foreign investors are active in the Ghanaian banking industry. The deposit funding, Non-deposit funding and the internal funding strategy are average at 65, 20 and 11 percent respectively.

Table 3: Correlation Matrix

	Z-SCORE	ROA	HCE	SCE	CEE	BD	SIZE	RMC	FO	DF	NDF	IFS
ZSCORE	1											
ROA	0.082*	1										
HCE	0.066*	0.572*	1									
SCE	(0.065)*	0.137*	(0.197)*	1								
CEE	(0.083)*	0.388*	0.782*	(0.193)*	1							
BD	0.168*	0.139*	0.230*	(0.105)*	(0.149)*	1						
SIZE	(0.141)*	0.374*	0.329*	(0.004)	0.451*	(0.410)*	1					
RMC	0.086*	(0.102)*	(0.098)*	(0.048)*	(0.237)*	0.053*	(0.101)*	1				
OWN	0.144*	0.104*	0.298*	(0.158)*	0.054*	0.671*	(0.261)*	0.208*	1			
DF	(0.391)*	(0.042)*	(0.109)*	0.122*	0.091*	(0.082)*	0.099*	(0.402)	(0.018)*	1		
NDF	0.192*	0.026*	0.064*	(0.055)*	(0.045)*	(0.040)*	0.004	0.273*	(0.091)*	(0.897)*	1	
IFS	0.653*	0.415*	0.306*	(0.040)*	0.193*	0.301*	0.102*	(0.038)	0.261*	(0.174)*	(0.014)*	1

Note: HCE= Human capital efficiency, SCE=Structural capital efficiency, CEE= Capital employed efficiency, OWN= Foreign Ownership, DF= Deposit Funding, NDF= Non-deposit Funding, IFS= Internal Funding Strategies, BD = Board Diversity, HCE*BD, SCE * BD, CEE*BD are Interaction terms, Size = Bank Size, RMC=Risk Management Committee. ***,** and *implies significance level at 1%, 5% and 10% respectively

Table 3 present the correlation matrix coefficient as the primary analysis of the nexus between board diversity and intellectual capital and risk and return on asset. There is a significantly positive relationship between human capital efficiency (0.066) and insolvency risk proxy with z-score. However, there is a significantly negative relationship between structural capital efficiency (-0.065), capital employed efficiency (-0.083) and insolvency risk. Board diversity also have a significant positive relationship with insolvency risk with a correlation coefficient of 0.168. The relationship between return on asset and HCE, SCE, CEE and BD are positive and significant at coefficients of 0.572, 0.137, 0.388 and 0.139 respectively. This result shows that, all the other independent variable increase bank performance in terms of return on asset. However, an increase in HCE and BD increases banks risk, hence reduction in performance.

Table 4: Effects of intellectual capital on performance

	Z-score	ROA
C	47.896*** (6.639)	-0.098 (0.061)
HCE	0.085 (0.150)	0.004** (0.002)
SCE	0.084 (0.133)	0.003* (0.002)
CEE	-0.576** (0.288)	0.007** (0.003)
SIZE	0.717** (0.285)	0.005* (0.003)
RMC	0.050 (0.215)	0.001 (0.002)
OWN	-1.521 (1.134)	-0.004 (0.006)
DF	-59.897*** (4.754)	0.021 (0.043)
NDF	-60.262*** (4.765)	0.019 (0.044)
IFS	3.115 (2.584)	0.067*** (0.024)
R-squared	0.992	0.423
Adjusted R-squared	0.988	0.357
S.E. of regression	1.112	0.014
F-statistic	294.683	6.434
Prob(F-statistic)	0.000	0.000

Note: HCE= Human capital efficiency, SCE=Structural capital efficiency, CEE= Capital employed efficiency, RMC= Risk Management Committee, OWN= foreign ownership, DF= deposit funding, NDF= Non-deposit Funding, IFS= Internal Funding Strategies, BD = Board Diversity. *** = 1% level of significance, ** = 5% level of significance * = 10% level of significance

From Table 4, HCE has positive but statistically insignificant effect on insolvency risk. The estimated coefficient suggests that, holding all other factors constant, an improvement in HCE by 1 percent (or unit) would increase insolvency risk by 9 percent (units). This finding is in contrast with the hypothesis (H1a) of the study, which postulated a negative effect of human capital efficiency on insolvency risk. The positive effect of HCE on insolvency risk is in contrast with the predictions of the resource based theory. With the resource based theory, HCE should lead to reduction in risk and an improvement of performance. It should be noted that the effect of the variable on risk is inconsequential. Previous studies of Joshi et al. (2013) and Ozkan et al. (2016) suggest that HCE improves returns on assets, based on which this study assume a negative impact of HCE on insolvency risk. Therefore, this finding could not confirm the first hypothesis of the study and agrees to similar studies which could not establish any consequential and negative effect of HCE on performance of firms (Al-Musali & Ismail, 2014; Puntillo, 2009).

SCE also has positive but statistically inconsequential effect on insolvency risk. The estimated coefficient suggests that improving SCE by 1 percent (or unit) would increase insolvency risk by 8 percent (units). This finding is in contrast with hypothesis (H1b) of the study, which postulated a negative effect of SCE on insolvency risk. The positive effect of structural SCE on insolvency risk is in contrast with the prognosis of the resource based theory. With the resource based theory, SCE should lead to reduction in risk, while enhancing performance. It should be noted that the effect of the variable on risk is statistically inconsequential which is similar to Al-Musali and Ismail (2014) and Puntillo (2009) who could not establish any important effect of SCE on performance. Previous studies of Joshi et al. (2013) and Ozkan et al. (2016) suggest that SCE improves returns on assets, based on which this study assume a negative impact of SCE on insolvency risk. Therefore, this finding could not confirm the second hypothesis of the study.

CEE, however, has a negative and statistically important effect on insolvency risk. The estimated coefficient suggests that improving CEE by 1 percent (or unit) would reduce insolvency risk by 58 percent (or units). This finding conforms to hypothesis (H1c) of the study, which assume a negative effect of CEE on insolvency risk. The negative effect of capital CEE on insolvency risk conforms to the predictions of the resource based theory which states that CEE should lead to reduction of risk and improvement of performance. The effect of CEE on insolvency risk is negative and statistically significant. Previous studies like Puntillo (2009), Amri and Abdoli (2012), Joshi et al. (2013), Wei-Kiong-Ting and Hooi-Lean (2009), Basyith (2016), Ozkan et al. (2016) established that CEE improves returns on assets, based on which that the study assume a negative impact of CEE on insolvency risk. Therefore this finding confirms the third hypothesis of the study.

On ROA the results from the table show that HCE has a significant positive relationship on ROA. The estimated coefficient suggests that improving HCE by 1 percent (or unit) would increase return on assets by 0.4 percent (units). This finding confirms hypothesis (H2a) of the study, which postulated a positive effect of HCE on ROA. The positive effect of HCE on ROA conforms to the predictions of the resource based theory. With the resource based theory, HCE should lead to an improvement of performance. It should be noted that the effect of the variable on ROA is consequential. Previous studies of Joshi et al. (2013) and Ozkan et al. (2016) suggest that HCE improves ROA, based on which this study assume a positive impact of HCE on ROA. Therefore, this finding confirms the hypothesis (H2a) of the study and agrees to similar studies like Matinfard & Khavari, 2015 and Kamukama et al.,2010 who concluded that HCE increases ROA but disagrees with Al-Musali and Ismail (2014) and Puntillo(2009) who could not establish any consequential

effect of HCE on ROA and Basyith (2016) who found a negative effect of HCE on ROA. SCE also has positive but statistically consequential effect on ROA. The estimated coefficient suggests significant at 10 percent significance level, improving SCE by 1 percent (or unit) would increase ROA by 0.3 percent (units). This finding confirms hypothesis (H2b) of the study, which postulated a positive effect of SCE on ROA. The positive effect of SCE on ROA conforms to the prognosis of the resource based theory. With the resource based theory, SCE should lead to increase in ROA, while enhancing performance. It should be noted that the effect of the variable on ROA is statistically consequential and positive which is similar to studies by Rehman et al., (2011), Fathi et al., (2013). Ekwe (2015), Anuonye (2016), Joshi et al. (2013) and Ozkan et al. (2016) who suggest that SCE improves ROA, based on which this study assumes a positive impact of SCE on ROA. The finding contrasts with studies by Basyith (2016) who found a negative effect of SCE on ROA. CEE has a positive and statistically significant effect on ROA. The estimated coefficient suggests significant at 5 percent significance level, improving CEE by 1 percent (or unit) would increase ROA by 0.7 percent (or units). This finding confirms to hypothesis (H2c) of the study, which assumes a positive effect of CEE on ROA. The positive effect of CEE on ROA conforms to the predictions of the resource based theory which states that CEE should lead to improvement in performance. The effect of CEE on ROA is positive and statistically significant. Previous studies like Puntillo (2009), Amri and Abdoli (2012), Joshi et al. (2013), Wei-Kiong-Ting and Hooi-Lean (2009), Basyith (2016), Ozkan et al. (2016) established that CEE improves ROA, based on which the study assumes a positive impact of CEE on ROA.

The results of the adjusted R-Square indicating 0.99 means that 99% of the difference in insolvency risk can be explained by the difference of HCE, SCE and CEE and the remaining 1% of difference in insolvency risk can be explained by other factors. Secondly the adjusted on ROA indicate 0.36

meaning 36 percent of the difference in ROA can be explained the difference HCE, SCE and CEE and the remaining 64 percent by other factors.

Table 5: Board Diversity and Performance of Banks.

	Z-score	ROA
C	53.933*** (5.522)	-0.158** (0.058)
BD	0.785 (1.771)	0.024*** (0.014)
SIZE	0.631*** (0.218)	0.008*** (0.002)
RMC	0.256 (0.222)	0.002 (0.002)
OWN	-1.795 (1.118)	-0.014 (0.008)
DF	-65.719*** (4.458)	0.012 (0.043)
NDF	-67.780*** (4.090)	0.007 (0.041)
IFS	2.322 (2.411)	0.068*** (0.025)
R-squared	0.990	0.278
Adjusted R-squared	0.987	0.220
S.E. of regression	1.102	0.014
F-statistic	326.033	4.833
Prob(F-statistic)	0.000	0.000

Note: HCE= Human capital efficiency, SCE=Structural capital efficiency, CEE= Capital employed efficiency, RMC=Risk Management Committee, OWN= foreign ownership, DF= deposit funding, NDF= Non-deposit Funding, IFS= Internal Funding Strategies, BD = Board Diversity. *** = 1% level of significance, ** = 5% level of significance * = 10% level of significance

From table: 5 the relationship between Board national diversity and insolvency risk is positive but not statistically significant. The estimated coefficient suggests that diversifying the board of banks with different nationality by 1 percent will increase insolvency risk of banks by 78.5 percent. The

result did not confirm the third hypothesis of the study which assume that board national diversity should have a negative effect on insolvency risk. This also contrast the agency theory which postulate that more diversified board should influence the reduction of insolvency risk (Kang et al., 2007). This is in contrast with previous studies by Walt and Ingley, (2003), Mahfoundh and Ku, (2015) which concluded that diversified board should enhance performance. The study agrees with previous studies by Vermeulen (2014) who found no significant relationship of board diversity on performance and García-Meca et al. (2015) who found a negative effect of board national diversity on performance.

Equally the study found significant positive relationship between board national diversity and ROA of banks. At a significance level of 10 percent the estimated coefficient suggest that when the board is variegated by 1 percent of different nationality will result in improving the ROA by 2.4 percent all things been equal. This confirms the hypothesis 4 of the study which postulates a positive effect of board diversity on ROA. The findings conforms to the prognosis of the agency theory that diversified board improves performance. The finding agrees with the studies of Swartz and Firer (2005), Williams (2001), Ho and Williams (2003), Van der Zahn (2006), Julizaerma and Sori (2012), and Oba and Fodio (2013) who found a significant positive relationship between board diversity and performance. However, the findings disagrees with the study of García-Meca et al. (2015) who found a negative effect of board national diversity on ROA.

Table 6: Board diversity, Intellectual capital and bank performance

	Z-score	ROA
C	35.290*** (8.135)	-0.128 (0.105)
HCE	0.065 (0.222)	0.006** (0.003)
SCE	0.012 (0.129)	0.002 (0.002)
CEE	-0.610 (1.033)	-0.015 (0.013)
BD	-1.132 (1.933)	0.021 (0.025)
SIZE	0.914*** (0.301)	0.004 (0.004)
RMC	0.040 (0.225)	0.006 (0.003)
OWN	-2.091** (1.139)	-0.031** (0.015)
DF	-48.655*** (6.785)	0.070 (0.088)
NDF	-50.677*** (6.294)	0.049 (0.082)
IFS	5.160 (2.739)	0.101 (0.035)
R-squared	0.993	0.715
Adjusted R-squared	0.990	0.582
S.E. of regression	1.055	0.014
F-statistic	308.797	5.394
Prob(F-statistic)	0.000	0.000

Note: HCE= Human capital efficiency, SCE=Structural capital efficiency, CEE= Capital employed efficiency, RMC= Risk Management Committee, OWN= foreign ownership, DF= deposit funding, NDF= Non-deposit Funding, IFS= Internal Funding Strategies, BD = Board Diversity. *** = 1% level of significance, ** = 5% level of significance * = 10% level of significance.

On Z-score, results from table 6 show that HCE and SCE insignificantly have positive effect on insolvency risk. Their estimated coefficient suggest that improving the HCE and SCE by 1 percent will increase insolvency risk by 6.5 and 1.2 percent respectively. This variates the hypothesis (H5a) and hypothesis (H5b) and resource based theory of the study. The findings also did not conform to the resource base theory, which posits that human and structural capital efficiencies should lead to improvement in performance. Equally the findings contradict the studies of Joshi et al. (2013) and Ozkan et al. (2016) who concluded that HCE and SCE improve performance. It however agrees with Basyith (2016) who concluded that human and structural capital efficiencies did not improve performance. However CEE although not significant has a negative effect on insolvency risk. The estimated coefficient proposes that investing in CEE by 1 percent will lead to insignificant reduction in insolvency risk by 61 percent all things been equal. This agrees with the predictions of the resource base theory that CEE should improve performance (Kamath, 2007; Nick et al., 2000) and the hypothesis (H5c) of the study is confirmed. The result equally agrees with prior literature of Amri and Abdoli (2012) which indicated that CEE improves ROA. The result also denotes that board national diversity decrease insolvency risk although not significant. The estimated coefficient proves that a diversified board of different nationality by 1 percent will reduce insolvency risk by 113 percent all things been equal. This findings conforms to the agency theory which predicts that more diversified board should lead to enhancement in performance (Kang et al., 2007) and hypothesis (H5d) of the study. The findings also agrees with prior literature by Vermeulen (2014) who found no significant relationship between board diversity and performance and Wilson and Altanlar (2009) who found a negative effect of board diversity on insolvency risk.

On ROA, results from table 6 indicate that HCE has a significant positive relationship with ROA while SCE has an insignificant positive and CEE has an insignificant negative relationship on return on assets respectively. The estimated coefficient of HCE suggests that investing in HCE by 1 percent will improve ROA by 0.6 percent all things been equal. This confirms hypothesis (H6a) of the study and the resource based theory. The result equally agrees with prior literature of Matinfard & Khavari, 2015 who found a significant positive effect of HCE on ROA but disagrees with the study by Shamsudin and Yian (2013) who found a negative effect of HCE on ROA. The estimated coefficient of SCE denotes that improvement in structural capital efficiency by 1 percent will improve ROA by 0.2 percent all things been equal. This confirm hypothesis (H6b) and the resource based theory. The result is in agreement with previous studies of Kamukama et al., 2010a and Basyith (2016) who found that SCE improves ROA. The estimated coefficient of CEE indicates that improving CEE by 1 percent will lead to the reduction in ROA by 2 percent. This contradicts the prediction of the resource based theory and hypothesis (H6c) of the study. The result equally contrast the findings of Fathi et al.(2013) and Wei-Kiong-Ting & Hooi-Lean(2009) who indicated that CEE improves ROA. Board national diversity has a positive effect on return on assets however the effect is not significant. The estimated coefficient suggest that diversifying the board by different nationality will lead to improvement in return on assets by 2 percent. The finding confirms hypothesis (H6d) of the study as well as the agency theory. It equally agrees with prior studies who found board diversity to enhance performance (Adams & Ferreira, 2009; Erhardt et al., 2003; Kang et al., 2007; Nguyen et al., 2015; Rosa et al., 1996) but contrasts García-Meca et al. (2015) who found a negative effect of board national diversity on performance.

Table 7: Sensitivity of Board Diversity and Intellectual Capital on Risk and Return of banks

	Z-score			ROA		
	1	2	3	1	2	3
C	36.805*** (8.047)	37.88*** (7.945)	35.285*** (8.145)	-0.137** (0.062)	-0.090 (0.102)	- (0.063)
HCE	-0.139 (0.248)	-0.041 (0.219)	-0.001 (0.233)	0.005* (0.003)	0.005 (0.003)	0.007** (0.002)
SCE	0.045 (0.129)	-0.481* (0.253)	0.037 (0.132)	0.003* (0.002)	-0.005* (0.003)	0.003* (0.002)
CEE	-0.386 (1.024)	0.072* (1.044)	-0.708 (1.039)	-0.006 (0.009)	-0.005 (0.013)	-0.012 (0.009)
BD	-2.115 (1.985)	-1.195 (1.868)	-1.786 (2.059)	-0.006 (0.015)	0.020 (0.024)	-0.002 (0.014)
HCE*BD	0.724* (0.423)			0.009** (0.005)		
SCE*BD		1.684** (0.753)			0.025* (0.010)	
CEE*BD			2.066 (2.220)			0.039* (0.020)
SIZE	0.888*** (0.297)	0.932*** (0.291)	0.939** (0.303)	0.005* (0.003)	0.004 (0.004)	0.005* (0.003)
RMC	0.066 (0.222)	0.120 (0.220)	0.045 (0.225)	0.002 (0.002)	0.007** (0.003)	0.002 (0.002)
OWN	-1.801 (1.132)	-1.898* (1.103)	-1.926 (1.154)	-0.008 (0.006)	-0.028* (0.014)	-0.01 (0.006)
DF	-49.996*** (6.717)	- 52.725*** (6.804)	- 49.317*** (6.831)	0.058 (0.043)	0.01 (0.087)	0.053 (0.044)
NDF	-52.017*** (6.237)	-54.04*** (6.264)	- 51.193*** (6.326)	0.045 (0.043)	-0.001 (0.080)	0.04 (0.044)
IFS	4.78 (2.702)	3.557 (2.742)	5.006* (2.748)	0.066*** (0.022)	0.077** (0.035)	0.074** (0.023)
R-squared	0.993	0.994	0.993	0.459	0.745	0.450
Adj. R-squared	0.990	0.991	0.990	0.375	0.620	0.364
S.E. of regression	1.037	1.019	1.056	0.014	0.013	0.014
F-statistic	307.732	57.120	296.680	5.472	5.964	5.273
Prob(F-statistic)	0.000	0.000	0.000	0.000	0.000	0.000

Note: HCE= Human capital efficiency, SCE=Structural capital efficiency, CEE= Capital employed efficiency, RMC= Risk Management Committee, OWN= foreign ownership, DF= deposit funding, NDF= Non-deposit Funding, IFS= Internal Funding Strategies, BD = Board Diversity, HCE*BD, SCE * BD, CEE*BD are Interaction terms, Size=Bank size, *** = 1% level of significance, ** = 5% level of significance * = 10% level of significance.

From table 7, the interaction between HCE and BD, is statistically significant on insolvency risk and resulted in HCE and CEE been less sensitive on insolvency risk while SCE is more sensitive. The magnitude is such that without the interaction, HCE and CEE in table 6 has estimated coefficient of 0.065 and -0.610 respectively but have -.0339 and -0.386 after the interaction in table 7. However SCE is more sensitive on insolvency risk with an estimated coefficient of 0.045 while estimated coefficient before the interaction in table 6 is 0.012. BD is less sensitive on insolvency risk with coefficient of -2.115 but have an estimated coefficient before the interaction in table 6 of -1.132. The interaction between SCE and BD is statistically significant on insolvency risk and indicated that, HCE is less sensitive on insolvency risk with an estimated coefficient of -0.041. Estimated coefficient of HCE in table 6 is 0.065. SCE indicated a less sensitivity but statistically significant on insolvency risk with estimated coefficient of -0.481 while the estimated coefficient in table 6 is 0.012. The estimated coefficient of CEE in table 6 is 0.012. However, CEE shows a statistically significant and more with estimated coefficient of 0.072 after the interaction between SCE and BD. The estimated coefficient for CEE in table 6 is -0.610. BD is less sensitive with the estimated coefficient of -1.195 while the estimated of BD in table 6 is -1.132. The interaction of CEE and BD is not significant on insolvency risk and shows that, HCE and CEE are less sensitive with estimated coefficients of -0.001 and -0.708 respectively. The estimated coefficient for HCE and CEE in table 6 are 0.065 and -0.610 respectively. SCE is more sensitive with an estimate coefficient of 0.037 while the estimated coefficient in table 6 is 0.012. BD is less sensitive with an estimated coefficient of -1.786 while the estimated coefficient in table 6 is -1.132. On ROA the interaction between HCE and BD is statistically significant on ROA and shows that HCE and SCE are significantly more sensitive with an estimated coefficients of 0.005 and 0.003 respectively. Their estimated coefficients in table 6 are 0.006 and 0.002 respectively. CEE is less sensitive with an estimated coefficient of -0.006. The estimated coefficient in table 6 is -0.015. BD

is less sensitive with estimated coefficient of -0.006 and estimated coefficient in table 6 is 0.021. The interaction of SCE and BD on ROA is statistically significant. Hence it cause HCE to be more sensitive with the estimated coefficient of 0.005 while significant in table 6 with estimated coefficient of 0.006. SCE is less sensitive but significant with an estimated coefficient of -0.005. The estimated coefficient of SCE in table 6 is 0.002. CEE is less sensitive with an estimated coefficient of -0.005. The estimated coefficient in table 6 is -0.015. BD is more sensitive with an estimated coefficient of 0.020 and has estimated coefficient of 0.021 in table 6. The interaction between CEE and BD on ROA is statistically significant. The results indicate that HCE and SCE are significantly more sensitive with an estimated coefficient of 0.007 and 0.003 respectively while the estimated coefficient for HCE and SCE in table 6 are 0.006 and 0.002 respectively. CEE is less sensitive with an estimated coefficient of -0.012 with the estimated coefficient in table 6 is -0.015. Equally, BD is also less sensitive with an estimated coefficient of -0.002 while the estimated coefficient in table 6 is 0.021.

CHAPTER SIX

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter summarizes the findings of the study and conclude the study whilst giving policy and practical recommendations for improving corporate governance, intellectual capital and performance, and recommending areas for further research.

6.2 Summary of findings

The first objective of the study was to measure the effect of IC components on performance of banks in Ghana. Recent literature has identified three of the most hidden dynamic factors of an organization forming the foundation for knowledge know-how. These factors are mostly created by and stored in its people (HC), exhibits relationships (SC), and its enveloped organizational information technology systems and processes (organizational capital) (Edvinsson & Malone, 1997). Therefore, intellectual capital has become critical strategic intangible asset that can transform a national company into an international, multinational and transnational corporate powerhouse. It was observed that at 5 percent significant level, CEE has a significant negative effect on insolvency risk of banks in Ghana. This confirms the postulation of the resource based view of the firm and hypothesis (H1c) of the study. However, HC and SC efficiencies have no significant impact on risk of banks in Ghana. Therefore, hypotheses (H1a) and (H1b) of the study are not confirmed, and so is the resource based view of the firm concerning human capital and structural capital efficiencies.

Intellectual capital influence return on assets of banks in Ghana. The study found at 5 percent significant level that the human capital has a significant positive on ROA of banks in Ghana and therefore it improves ROA. This confirms hypothesis (H2a) of the study and confirms the agency theory. Similarly, SCE and CEE have a positive and significant effect on return on assets. At 10 percent and 5 percent significance level SCE and CEE will increase return on assets. This confirms hypotheses (H2b) and (H2c) of the study and the resource base theory.

The study's second objective was to examine how board national diversity influence insolvency risk and return on assets of banks in Ghana. The study found at 1 percent significant level that the board national diversity has a significant positive on ROA of banks in Ghana and there and therefore a more diversified board will improve ROA. This confirms hypothesis 4 of the study and confirms the agency theory. However, on the contrary board national diversity has a positive effect on insolvency risk of banks and not significant. A more diversified board will increase insolvency risk and thus fail to confirm the fourth hypothesis and the postulations of the agency theory.

The third objective of the study was to examine how board national diversity and intellectual capital on risk and return of banks in Ghana. On risk the study found that HCE and SCE have a positive impact on Insolvency risk hence an improvement in them increases insolvency risk. These did not support the postulations of the resource based theory and did not confirm hypothesis (H5a) and (H5b) of the study. On the contrary, CEE and board national diversity have negative relationship with insolvency risk. These means that an improvement in them will decrease insolvency risk. These confirm the hypothesis (H5c) and (H5d) of the study and also support the predictions agency and resource based theory of the study. On ROA the study found that human capital efficiency has a significant positive relationship with ROA. This confirms Hypothesis

(H6a) of the study and the resource base theory. Equally structural capital efficiency and board national diversity has a positive relationship with ROA but not significant and this confirms hypothesis (H6b) and (H6d) of the study as well as the resource base and the agency theories. However Capital employed efficiency has negative effect on ROA hence an improvement in it will reduce ROA. The finding contradicts hypothesis 6c and the resource base theory.

The fourth objective of the study was to analyse the sensitivity of board diversity and intellectual capital on risk and return of banks. On risk, the study found that interaction of human capital efficiency and board diversity is significant, however human capital efficiency, capital employed efficiency and board diversity are less sensitive to the insolvency risk and are not significant. Structural capital efficiency is more sensitive to insolvency risk. The interaction of structural capital efficiency and board diversity is significant. However, human capital efficiency and board diversity are less sensitive and not significant. Structural capital efficiency and capital employed efficiency are significant and more sensitive and less sensitive on insolvency risk respectively. The interaction of capital employed efficiency and board diversity is not significant and also human capital efficiency, capital employed efficiency and board diversity are less sensitive to insolvency risk. On ROA, the interaction of human capital efficiency and board diversity is significant. Human capital efficiency and structural capital efficiency are significant and more sensitive to ROA. However capital employed efficiency and board diversity are not significant and less sensitive to ROA. The interaction structural capital efficiency and board diversity is significant. Also human capital efficiency and board diversity are more sensitive to ROA but not significant. Structural capital efficiency is significant but less sensitive to ROA as well as Capital employed efficiency and not significant. The interaction between capital employed efficiency and board diversity is significant cause human capital efficiency and structural capital efficiency to be significant and

more sensitive to ROA. However, capital employed efficiency and board diversity are not significant and less sensitive on ROA. Hence sensitivity of Structural capital and board diversity significantly affect insolvency risk while the sensitivity of human capital efficiency, structural capital efficiency, capital employed efficiency and board diversity significantly affect ROA.

6.3 Conclusions

The study concludes that capital employed efficiency is significant in reducing insolvency risk of banks in Ghana. The risk-reducing effect of capital employed efficiency conforms to the postulations of the resource based view of the firm which suggest that capital employed efficiency should be able to reduce risk while improving of returns. This implies that capital employed drives the risk performance of banks in Ghana core business compared with human capital and structural capital. Through the efficiencies in the employment of capital employed, banks in Ghana can better reduce the probability of high insolvency risk. This also confirm previous studies such as, Amri and Abdoli (2012), Basyith (2016), Joshi et al. (2013), Wei-Kiong-Ting and Hooi-Lean (2009), Ozkan et al. (2016) and Puntillo (2009) who indicated that capital employed efficiency improves returns on assets, based on which that the study hypothesized a negative impact of capital employed efficiency on insolvency risk. The study also concludes that the diversified board of different nationality helps in significantly improving ROA of banks. The findings is in agreement with the propositions of the agency theory. The of findings is in agreement with previous literature on board diversity, which indicated that a more diversified board enhances financial and market performance (Adams & Ferreira, 2009; Erhardt et al., 2003; Kang et al., 2007; Nguyen et al., 2015; Rosa et al., 1996). This implies that generally, demographic diversity contributes positively towards organizational performance as well as firm financial performance. There are many studies

carried out on demographic diversity (mainly on gender, age) and its implications on performance, but very few studies conducted with a special focus on nationality involving top management in general and boards of directors in particular. In the context of Ghana currently the takeover of banks by the central bank had sparked off many domestic policy weaknesses and admittedly, poor corporate governance. In view of this, since board of directors are directly involved in issuing, restructuring, takeover exercises, introducing measures to enhance regulatory, transparency, accountability and independence therefore, the current principles of good corporate governance should not ignore the relevance of heterogeneity in 'reshaping' board members' commitment in making sure that their companies are on the right track, The study further concludes human capital efficiency significantly improves ROA. This is consistent with the resource based theory and previous study of Uwuigbe & Uadiale (2011) but contrast the findings of Basyith (2016) who found a negative effect of human capital efficiency on ROA. Human capital in general is found to be a driver of banks performance. This implies that, when banks concerntrate on managing human capital, a component that when managed well has the ability of increasing both structural capital efficiency and capital employed efficiency and position banks to be competitive and profitable. Additionally, the study make a case for banks in Ghana and other developing markets to place emphasis on their intellectual capital since it is found that intellectual performance improves the underlinning performance of banks.

Lastly, the study concludes the interaction of structural capital efficiency and board national diversity is significant hence capital employed efficiency is significant and more sensitive to insolvency risk while structural capital efficiency less sensitive but significant. Secondly the interaction between human capital efficiency and board national diversity is also significant. This cause human capital efficiency and structural capital efficiency to be significant and more sensitive

to ROA. Structural capital efficiency and board diversity is significant. This cause structural capital efficiency to be Significant but less sensitive to ROA. The interaction between capital employed efficiency and board diversity is significant hence cause human capital efficiency and structural capital efficiency to be significant and more sensitive to ROA. These imply that the interaction of board national diversity and HCE, SCE and CEE influence the level of HCE, SCE and CEE and banks ROA in Ghana.

6.4 Recommendation

Banks in Ghana should intensify their investment in capital employed. Investment in capital employed consists of putting financial resources into the development of physical and human capital. This recommendation is giving in light of the risk-reducing role of capital employed efficiency among banks. Investing resources into physical and human capital is able to add value to the banking firm, thus enabling the firm to reduce risk.

Additionally, banks should increase the proportion of their resources invested in expanding the nationality diversity of the board. This recommendation is given in light of the significant positive impact of diversified board of different nationality on ROA. This recommendation does not suggest that Ghanaian nationals are ignored in forming board of directors of banks, but rather to ensure representation of other nationals who can bring in competitive advantage to banks in Ghana. Furthermore banks should invest in human capital, structural capital, capital employed and board national diversity since they all significantly improve ROA. Lastly the study recommends that banks should interact human capital and structural capital efficiencies with board national diversity since they have a significant relationship on insolvency risk and in improving ROA banks should

interact human capital efficiency, structural capital and capital employed efficiencies with board national diversity.

It is recommended for policy makers to ensure that banks undertake some level of investment in their human capital. Since the human capital efficiency is performance-enhancing, investing resources in human capital will ensure long-term returns on it for banks. More so, the banking industry is driven by knowledge, and investing in human resources makes this knowledge value-adding to the activities of banks. Therefore, the regulator of banks (i.e. Bank of Ghana) take measures to ensure sustained human capital investments in the banking industry through employee training and research and development. Also, it is recommended for policy makers to take measures aimed at sustaining investments in capital employed by banks in Ghana. The physical capital and human capital constitutes capital employed. And so policy makers will derive a risk-minimizing impact of investments in the physical capital of banks. These investments include expenditure on banking infrastructure, systems and equipment needed to drive growth in the banking sector.

6.5 Limitations and Further Recommendations

The study makes recommendations for further studies because of limitations of the current study. Further studies can consider cross-country empirical analysis of intellectual capital, board diversity and performance of banks. Since the current study sampled banks from Ghana only, the effect of macro-economic variables on intellectual capital, board diversity and bank performance could not be studied. It is, therefore, recommended for further studies to consider the economic environment within which banks operate by analysing cross-country data. Future studies should explore other factors that drive the insolvency risk of banks. It is evident from the study's results that there are

some other factors that affect insolvency risk of banks which the current study did not consider. This is evidenced by the extreme magnitude of the constant term in table 4 and 5 on Z-score which was significant at 1 percent level of significance. This is similar to studies by Puntillo (2009) and Anuonye (2015). Therefore, further studies are needed to explore these factors. It is recommended for further studies to explore the influence of board age diversity and intellectual capital on performance of banks in Ghana. Given the youthful nature of the country's population, it will be of an immense contribution to study the extent to which inclusion of the young men and women on the board will affect dynamics of intellectual capital and performance of banks. This study also signifies a very important aspect in management whereby companies might have to face a dangerous practice- '**Groupthink**' in the presence of homogeneity especially when the board members are of the same national group and this in turn leads making wrong decisions at strategic level. Finally, further studies can be conducted on rural banks since they mostly deal with the small scale industries whom also play a major role in the Ghanaian economy.

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