THE INFLUENCE OF INTELLECTUAL CAPITAL ON THE FINANCIAL PERFORMANCE OF BANKS LISTED IN BAHRAIN

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A project paper submitted in partial fulfilment of the requirements for the award of the degree of Master of Science (International Accounting)

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DECLARATION

I declare that this thesis entitled "The influence of Intellectual Capital on the Financial Performance of Banks listed in Bahrain" is a result of my own research excepts as cited in the references. The thesis has not been accepted for any degree and is not concurrently submitted as a candidate of any other degree.

I certify that any help had received in preparing this thesis and all the sources that used have been acknowledged.

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ABSTRACT (ENGLISH)

This study examines if intellectual capital influences the financial performance of banks listed in Bahrain by using data drawn from 18 banks listed in Bahrain Stock Exchange for a period of three years from 2005 to 2007. Pulic's Value Added Intellectual Coefficient (VAIC) is used as the efficiency measure of capital employed and intellectual capital. By using correlation and regression analysis, the results support the hypothesis that firms' intellectual capital has a positive impact on financial performance of banks listed in Bahrain. In addition, when it is classified into major components, it is found that there is a positive relationship between capital employed efficiency (CEE) and human capital efficiency (HCE) and banks' financial performance. On the other hand, empirical findings fail to find any strong association between structural capital efficiency (SCE) and financial performance of the banks listed in Bahrain.

In general, empirical findings suggest the efforts to improve intellectual capital base of the banks listed in Bahrain still appear limited. Banks listed in Bahrain still appear to place greater weight on corporate performance based on physical capital assets. A possible policy implication of these findings from this study may be that policy makers may have to adjust or intensify initiatives to encourage greater acceptance and understanding of the concept of intellectual capital, and the development of related assets.

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LIST OF ABBREVIATIONS

- IC Intellectual Capital
- CE- Capital Employed
- HC- Human Capital
- SC- Structural Capital
- VAIC Value Added Intellectual Capital
- HCE Human Capital Efficiency
- SCE- Structural Capital Efficiency
- CEE- Capital Employed Efficiency
- HIC- Human Intellectual Capital
- SIC- Structural Intellectual Capital
- **RIC-Rational Intellectual Capital**
- **GDP-** Gross Domestic Product
- CBB- Central Bank of Bahrain
- GCC- Gulf Cooperation Council
- **ROA-** Return on Asset
- EVA- Economic Value Added
- CIV- Calculated Intangible Value
- ICE- Intellectual Capital Efficiency
- VA- Value Added
- **R-** Change in Retained Earnings
- S- Net sales revenues

B- bought-in materials and services

DP- depreciation

W- Wages

I- Interest

DD- Dividend

T- Tax

NI- after tax income

VIF- Variance Inflation Factor

CHAPTER ONE

BACKGROUND OF STUDY

1.1 Introduction

According to Proctor (2006), the key competitive constraint is no longer land, labour, or capital. It is, and will increasingly be, knowledge or intellectual capital (including competent managers, skilled knowledge workers, effective systems, loyal customers and strong brands). There is already strong evidence that those companies that have focused on building their intellectual capital have provided excellent returns for their shareholders and have outperformed their competitors on every (financial) measure (Proctor,2006).

In most companies today, intellectual capital forms the greater part of their market value. This applies to manufacturing companies as well as high-tech and service businesses (Proctor, 2006). It can be said that the inability or the shortage on financial statements in explaining firm value underline the fact that the source of economic value is no longer the production of material goods, but the creation of intellectual capital. Intellectual capital includes human capital and structural capital wrapped up in customers, processes, databases, brands, and systems (Edvinsson and Malone, 1997). Managers in present time are more and more aware of the fact that a company's advantage mainly depends on what does a company know, how will that knowledge be used, and how quickly can a company learn something new. Given the significance of emerging economies to the overall wellbeing and balance of the global economy, it is important to establish an

understanding of the developing of intellectual capital in different socio-political and economic settings.

The term "intellectual capital" has been widely used in recent times by the research community in the developed world. However, there have been very few studies that have used emerging economies as a case for evaluating the implications of intellectual capital for specific industries (Kamath, 2007). The implications of intellectual capital are more prominent in these emerging economies as they have abundant human capital at their disposal (Kamath, 2007). Therefore, it becomes necessary to understand whether this resource is being efficiently utilized by specific sectors to their advantage in creating value over a period of time.

The banking sector, in any country plays a pivotal role in setting the economy in motion and in its development process. It is considered to be the key factor for growth and success of projects in both industrial and developing countries. The increasing competition in the national and international banking markets, the change over towards monetary unions and the new technological innovations herald major changes in banking environment, and challenge all banks to make timely preparations in order to enter into new competitive financial environment (Tarawneh,2006).

According to Kamath (2007), the banking sector in general is an ideal area for IC research because:

- There are reliable data available in the form of published financial statements (balance sheets and income statement).
- 2. The business nature of the banking sector is "intellectually" intensive; and the whole staff is (intellectually) more homogeneous than in other economic sectors.

Bahrain seems to be an ideal place to conduct this study since Bahrain's financial sector is well-developed and diversified, consisting of a wide range of conventional and Islamic financial institutions and markets, including retail and wholesale banks, specialized banks, insurance companies, finance companies, investment advisors, money changers, insurance brokers, securities brokers and mutual funds. There is also a stock exchange, listing and trading both conventional and Islamic financial instruments. The sector is therefore well-positioned to offer a wide range of financial products and services, making it the leading financial centre in the Gulf region (www.cbb.gov). The financial sector is the largest single employer in Bahrain, with Bahrainis representing over 80% of the work-force. Overall, the sector contributes 27% of Bahrain's Gross Domestic Product (GDP), making it one of the key drivers of growth in the country (www.cbb.gov). The banking sector has played a pivotal role in the emergence of Bahrain as a leading financial center in the region. As at December 2006, banking sector assets stood at over US\$180 billion, more than twelve times annual Gross Domestic Product. Bahrain's banking system consists of both conventional and Islamic banks and is the largest component of the financial system, accounting for over 85% of total financial assets. The conventional segment includes 19 retail banks, 69 wholesale banks, 2 specialized banks as well as 36 representative offices of overseas banks. The Islamic segment, offering a host of Sharia compliant products and services include 6 retail banks and 18 wholesale banks.

Bahrain's Economic vision 2030 stated that Bahrain's financial sector will remain the economic engine, but will be increasingly complemented by growth in other high-potential sectors.

The underlying premise of Bahrain's economic vision 2030 is that in order to achieve sustainable economic growth, Bahrain needs to swiftly transform its economy, acquires the right skills, and boosts the productivity and innovation that can be achieved by effective management of both tangible and intangible resources. Bahrain's economic vision 2030 stated that Bahrain's economy will attain increasing levels of sophistication and innovation, enabling the country to claim an attractive position in the global value chain. As a result, Bahrain will capture emerging opportunities, particularly by expanding to knowledge-based sectors and by increasing its output of high-value-added goods and services.

The increasing competition from other countries in the region has put pressure on the Bahrain's financial sector to enhance its competitive capabilities and sustain its position as a leading financial sector in the region. Thereby, financial sector in Bahrain is required to pay more attention to develop its intellectual capital that has a wide recognition as a major source of corporate competitive advantage.

The purpose of this study is to evaluate the influence of intellectual capital on financial performance of banks listed in Bahrain to determine if intellectual capital contributes to banks` financial performance.

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1.2 Problem Statement

There is a consensus among researchers (for example, Roos and Roos, 1997; Edvinsson and Malone, 1997; Edvinsson and Sullivan, 1996; Andriessen, 2004; Goh, 2005; and Kamath, 2007) that in the new economy world (where knowledge plays a predominant role in creating of wealth) driving firm value and create sustainable competitive advantage depend on effective management of both tangible and intangible resources.

There is an increasing recognition of intellectual capital in driving firm value and competitive advantage. Especially in knowledge intensive industries like software companies and monetary industries. However, despite this increasing recognition, traditional accounting measures are still used to measure efficiency of utilizing capitals. The weakness in these traditional measures is that they ignore intellectual capital and do not provide information about its performance. By excluding intellectual capital, traditional accounting therefore underestimates the true value of firms (Goh, 2005). Therefore, in the emerging knowledge economy the role of traditional accounting and measurement systems to evaluate performance appears to be diluted and there is a need to look at the whole scenario from a different dimension of evaluating the business performance of firms that use IC as an important resource for growth. Using novel methods of measurement and reporting tools becomes imperative.

Traditional accounting and measurement systems seem to be unsuitable in the new economic world where competitive advantage is driven by intellectual capital because it does not reflect the completed and true picture about the company and may lead investors

and other relevant stakeholders to make inappropriate decisions when allocating scarce resources. There is a need to use new measures to measure performance of conventional and intellectual capital alike. According to Goh (2005), increasing attention on the pivotal role played by intellectual capital in value creation process has resulted in more than 20 methods of measuring intellectual capital (see www.sveiby.com). Among them are the balanced scorecard developed by Kaplan and Norton in 1992, the Skandia navigator developed by Edivisson in 1994, the technology broker by Brooking in 1996, the intellectual capital index developed by Roos in 1997, the intangible asset monitor developed by Sveiby (1997), the economic value added (EVA) by Stewart in 1997, the VAIC developed by Pulic in 1997 (VAIC is a trademark of Pulic and International Education Center Inc.)."

This study intends to examine if intellectual capital influence the financial performance of the banking sector in Bahrain. To achieve this objective, intellectual capital is measured using Value Added Intellectual Coefficient (VAIC) and banks` financial performance is measured by return on asset (ROA) for a period of three years from 2005 to 2007. These three years are chosen because its annual reports are relatively more recent and easier to obtain.

As mention before, the banking sector in general is an ideal area for intellectual capital research because the banking industry is one of the most knowledge-intensive industries. Intellectual Capital (IC) generally represents the critical resource in the value creation process. The business nature of the banking sector is "intellectually" intensive; and the whole staff is (intellectually) more homogeneous than in other economy sectors.

While Bahrain's financial sector development strategy succeeded in building a leading regional banking center, there have been constant challenges on the way. Competition from other Gulf Cooperation Council (GCC) countries has put pressure on the Bahraini financial industry to develop new products and instruments (Grigorian and Manole, 2005). While Bahrain has been able to reinvent itself over the decades and target new areas such as Islamic finance and insurance, today it faces its stiffest challenge yet in maintaining its regional role as other countries in the region, including Saudi Arabia, open their financial sectors and provide direct competition (Timewell, 2007). Other financial centers, such as Dubai, Qatar and Riyadh, are attracting new financial players to the region.

The banking sector in Bahrain is required to be ready and able to face the new challenges that posed by liberalization and globalization that represented in the increasing entering of foreign banks and the fierce competition. It can be noted that banks in Bahrain still used traditional accounting and measurement systems that focus on conventional capitals to measure its performance. However, it becomes necessary for banks to understand whether its intangible resources are efficiently utilized and whether their intellectual capitals influence its financial performance.

1.3 Research Questions

This research is designed to answer the following questions:

- Is there any relationship between a developing measure of intellectual capital namely the Value Added Intellectual Coefficient (VAIC) and the financial performance of banking sector in Bahrain?.
- 2. Does the Human Capital efficiency influence financial performance of banks listed in Bahrain?
- 3. Does the Structural Capital efficiency influence financial performance of banks listed in Bahrain?
- 4. Does the Employed Capital efficiency influence financial performance of banks listed in Bahrain?

1.4 Research Objectives

The primary objective of this study is to examine the relationship between a developing measure of intellectual capital – namely the Value Added Intellectual Coefficient (VAIC) developed by Pulic (1998) and the financial performance of banking sector in Bahrain. This study aims to analyze whether intellectual capital contributes to firms' financial performance measured by return on assets. Specifically, the study tries to achieve the following two objectives:

1. To identify the relationship between intellectual capital and financial performance of banks listed in Bahrain.

2. To identify the relationship between components of VAIC namely Human Capital efficiency, Structural Capital efficiency and Employed Capital efficiency) and financial performance of banks listed in Bahrain.

1.5 Significance of the Study

There are many studies that have been conducted to analyze the relationship between intellectual capital and firm performance in manufacturing and non- manufacturing industries in different countries around the world by using value added intellectual coefficient method (VAIC) such as Mavridis, (2004) in Japan, Chen, Cheng, and Hwang, (2005) in Taiwan, Goh (2005) in Malaysia, Yalama and Coskun (2007) in Turkey and Firer and Williams (2003) in South Africa. Their findings are mixed. Most of these studies present evidence that there is a relationship between intellectual capital and firms' financial performance (see for example, Chen et al. 2005; and Goh, 2005), whereas the other studies such as Firer and Williams (2003) failed to find any strong association between the efficiency of Value Added by the major components of a firm's resource base and profitability. However, there are still a number of countries that have not been tapped to investigate the relationship between intellectual capital and the performance. To my knowledge, none seems to have been made in Bahrain. Thus, this study may extend the understanding of the role of intellectual capital in developing countries. Thus, this study may extend the existing literature in this subject.

1.6 Scope and Limitations of the Study

This research is specified to banking industry in Bahrain which limits the generalization of the finding. The financial performance of the banks will be measured only by return on assets (ROA). The (ROA) is employed because:

1. The implementation of net profit before tax eliminates the effects of converting of tax structure to profitability level.

2. It identifies of the company's effectiveness in managing the resources.

In SFAC No.1 (Objectives of Financial Reporting) states that the profit information is the prime attention in appraising performance or responsibility of the management, and profit information helps the owner or stakeholders appraise the company's profitability in the long run. In a financial report, profits also function as a parameter to evaluate management performance. The investors focus their attention merely on profit information, with less attention on the procedure which is applied by the company to produce profit. The focus of profitability urges managers to maximize their profitability ratios.

ROA is a measure of asset-use efficiency. It can be used as a useful indicator for comparing the profitability of companies and businesses against a benchmark rate of return equal to the risk adjusted weighted average cost of capital. According to Haniffa and Hudai (2006), a higher ROA indicates effective use of companies' assets in serving shareholders' economic interests. ROA provides a measure for assessing the overall efficiency with which firm assets are used to produce net income from operations (Miller, Boehlje, and Dobbins, 2001). Moreover they argue that the ROA is indicative of management's effectiveness in deploying capital, because it is certainly possible to be

efficient and yet poorly positioned in terms of how capital is being utilized. It also measures the operating and financial performance (Klapper and Love, 2002).

In this study, intellectual capital is measured indirectly by using Pulic's Value Added Intellectual Coefficient (VAIC) as the efficiency measure of capital employed and intellectual capital. Firer and Williams (2003) pointed out two advantages of VAIC, which were that VAIC provides an easy-to-calculate, standardized, and consistent basis of measure, enabling effective comparative analyses across firms and countries. In addition, data used in the calculation of VAIC are based on financial statements, which are usually audited by professional public accountants.

1.7 Organization of the Study

The remainder of the research paper is divided into four chapters. The next chapter, Chapter 2 reviews the literature related to the study. Chapter 3 discusses the research methodology, which includes theoretical framework, hypotheses development, model specification, variable measurement and data collection. Chapter 4 discusses the results. Finally, chapter five presents the main conclusions, implications, and the recommendations of the study.

1.8 Summary

There is an increasing recognition of intellectual capital in driving firm value and competitive advantage. This is especially so in knowledge intensive industries like software companies and monetary industries. However, despite this increasing

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recognition, traditional accounting measures are still used to measure efficiency of utilizing capitals. The weakness in these traditional measures is that they ignore intellectual capital and do not provide information about its performance. By excluding intellectual capital, traditional accounting therefore underestimates the true value of firms. Therefore, there is a need to look at the whole scenario from a different dimension of evaluating the business performance of firms that use IC as an important resource for growth. Using novel methods of measurement and reporting tools becomes imperative. VAIC is one of methods that can be used as an analytical procedure designed to enable management, shareholders and other relevant stakeholders to effectively monitor and evaluate the efficiency of Value Added (VA) by a firm's total resources and each major resource component. This study aims to investigate the relationship between intellectual capital and financial performance of banks listed in Bahrain by using VAIC method. This study covers three years from 2005 to 2007. These three years are chosen because its annual reports are relatively more recent and easier to obtain.

The banking sector in general is an ideal area for IC research because of availability of reliable data and the business nature of the banking sector is "intellectually" intensive. On the other hand, Bahrain seems to be an ideal place to conduct this study since Bahrain's financial sector is well-developed and diversified. And it faces sharp competition comes from other countries in the region.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter discusses about the literature that is relevant to the study of the relationship between intellectual capital and financial performance. The first part of this chapter highlights intellectual capital concept development. The literature in the second part is arranged according to dependent variable and independent variables. The dependent variable financial performance is discussed first. The rest of the chapter summarizes all the independent variables. Value added intellectual coefficient (VAIC) and its component: capital employed efficiency (CEE), human capital efficiency (HCE), and structural capital efficiency (SCE) are considered as independent variables.

2.2. Intellectual capital

The term "intellectual capital" has been widely used in recent times by the research community in the developed world; however, there have been very few studies that have used emerging economies as a case for evaluating the implications of IC for specific industries (Kamath, 2007). According to Chen et al. (2005), the increasing gap between firms' market and book value has drawn wide research attention to exploring the invisible value omitted from financial statements. It is commonly observed that a company's market value is well above its book value. In most companies today, intellectual capital forms the greater part of their market value. There is an increasing recognition among researchers that the key competitive constraint is no longer land, labor, or capital. It is, and will increasingly be, knowledge or intellectual capital (including competent managers, skilled knowledge workers, effective systems, loyal customers and strong brands (Proctor, 2006). There is already strong evidence that those companies that have focused on building their intellectual capital have provided excellent returns for their shareholders and have outperformed their competitors on every financial measure (proctor, 2006).

Managers in the present time are more and more aware of the fact that a company's advantage mainly depends on what does a company know, how will that knowledge be used, and how quickly can a company learn some thing new. Many firms now recognize that the underlying source of future cash flows will increasingly come from the effective management of intellectual capital. Meeting the exact needs of the customer is what matters today, and this is more a function of leveraging knowledge to bid for contracts, solve problems, provide superior service and offer customized products, than simply investing, for example, in new productive capacity.

2.2.1. Definition of Intellectual Capital

According to (Engstrom, Westnes, and Westnes, 2003) there is no uniform definition of intellectual capital. Most of the definitions basically contain the same words: knowledge, skills, know-how, experiences, intangible assets, information, processes, and value creation. Definitions of intellectual capital are not significantly different among the researchers.

Edvinsson and Sullivan (1996) define intellectual capital as knowledge that can be converted into value. According to them, this definition is very broad, encompassing inventions, ideas, general knowledge, designs, computer programs, data processes, and publications. Roos and Roos. (1997) define intellectual capital as "the sum of the knowledge of its members and the practical translation of this knowledge into brands, trademarks, and processes". Edvinsson and Malone (1997) define it as "the possession of the knowledge, applied experience, organizational technology, customer relationships and professional skills that provide a company with a competitive edge in the market".

Andriessen (2004) argues that the problem with intangible resources is that they are intangible; therefore, a key problem is how to identify something that is hidden or not material. According to him, the intellectual capital community primarily uses the term intellectual capital. The accounting and the valuation community and key members of the performance measurement community (Kaplan and Norton, 2001) use the term intangible assets, whereas the human resource community uses the term human resources or human assets.

Brooking (1996) defines intellectual capital as the combined intangible assets which enable the company to function and see an enterprise as the sum of its tangible assets and intangible assets as expressed in the following formula:

Enterprise = Tangible Assets + Intellectual Capital

Taking it further, Edvinsson (1997) equates intellectual capital with the sum of human capital, structural capital and customer capital, i.e.

Intellectual Capital = Human Capital + Structural Capital + Customer Capital However, there is no one classification of intellectual capital as will be seen in the next section.

2.2.2. Components of Intellectual Capital

As mentioned above there is no one classification of intellectual capital. This may be because the field is still in its infancy. According to Tayles, Pike, and Sofian (2007), earlier writers may not agree on the precise definition of IC. There is a broad consensus that it contains human capital, structural capital and relational capital. Based on ICMA (2001) human intellectual capital (HIC) captures the knowledge, professional skill and experience, and creativity of employees. Structural intellectual capital (SIC) consists of innovation capital (intellectual assets such as patents) and process capital (organizational procedures and processes). Relational intellectual capital (RIC) captures the knowledge of market channels, customer and supplier relationships, and governmental or industry networks. Thus, IC is the possession of knowledge and experience, professional knowledge and skill, good relationships, and technological capacities, which when applied will give organizations competitive advantage (ICMA, 2001).

Intellectual capital is further classified into human and structural capital. For example, Edvinsson and Malone (1997), pulic (1998), (Roos and Roos, 1997), classify intellectual capital into two components: Human capital and Structural capital, they include the other types of intellectual capital such as customer capital, innovative capital, relational capital, and organizational infrastructure within structural capital. Roos and Ross, (1997)

documented that the separation between 'thinking' and 'non -thinking' intellectual capital can be considered the criterion of distinction at this level. They pointed out that the reason behind this distinction is obvious. People, and thus human capital, need totally different management methods from structural capital.

2.2.3. Why Measure Intellectual Capital?

Holem (2005) documented that one study identified five main reasons to measure intellectual capital. First, measuring intellectual capital can help an organization formulate business strategy. By identifying and developing its intellectual capital, an organization may gain a competitive advantage. Second, measuring intellectual capital may lead to the development of key performance indicators that will help evaluate the execution of strategy. Intellectual capital, even if measured properly, has little value unless it can be linked to the firm's strategy. Third, intellectual capital may be measured to assist in evaluating mergers and acquisitions, particularly to determine the prices paid by the acquiring firms. Fourth, using nonfinancial measures of intellectual capital can be linked to an organization's incentive and compensation plan. The first four reasons are all internal to the organization. A fifth reason is external to communicate to external stakeholders what intellectual property the firm owns.

2.2.4. Measures of Intellectual Capital

Despite the increasing recognition of intellectual capital in driving firm value and competitive advantages, an appropriate measure of firms' intellectual capital is still in infancy (Chen et al., 2005). According to Goh (2005), increasing attention on the pivotal

role played by intellectual capital in value creation process has resulted in more than 20 methods of measuring intellectual capital.

Andriessen (2004) conducted a review of 25 methods for evaluating and measuring intellectual capital such as market-to-book value, Tobin's 'q', Calculated Intangible Value (CIV), The Balanced Scorecard (BSC), Economic Value Added(EVA), and Value Added Intellectual Coefficient (VAIC).

According to Kujansivu and Lonnqvist (2007), many of the measures are non-financial and thus are not comparable between companies. However, there are also financial (i.e. monetary) measures that can be compared between companies. These methods include e.g. Value Added Intellectual Coefficient (VAIC), Calculated intangible value, and Economic value added (EVA). VAIC can be used to measure the efficiency of IC within a company, i.e. to describe how a company's IC adds value to the company. Instead of directly measuring firms' intellectual capital, Pulic (2000b) proposed VAIC method as a measure of the efficiency of value added by corporate intellectual ability. The major components of VAIC can be viewed from a firm's resource base – employed capital, human capital, and structural capital. VAIC measures and monitors the total value creation efficiency in the company.

The subordinate concept of VAIC, Intellectual Capital Efficiency (ICE), describes the efficiency of IC within a company. The method is built on the premise that value creation is derived from two primary resource bases: physical capital resources and intellectual capital resources. Actually, VAIC indicates the total efficiency of value creation from all resources employed and ICE reflects the efficiency of value created by the IC employed.

The better a company's resources have been utilized, the higher the company's value creation efficiency will be (Kujansivu and Lonnqvist, 2007).

Generally, traditional measures of accounting are used to evaluate the business performance of firms. This results in partial or biased communication to stakeholders, who are more interested in finding the true value and performance of the firm. The wrong conclusions may also result in wrong decisions. Thus, if the intellectual capital being created in the process of business functions is ignored, it may be disastrous for the firm in the long run. The VAIC is considered appropriate for an organization that is intellectually inclined. It can be used within the organization to measure the intellectual performance over a period of time without much change in the existing business setup (Kamath, 2007).

Service sectors are playing a dominant, important role in the growth of economies. Banking happens to be one service sector that uses a huge amount of human capital and customer capital for its survival ((Kamath, 2007). Thus, this research tries to investigate the relationship between (VAIC) and the financial performance of banking sector in Bahrain. The research tries to investigate the effects of four variables on financial performance of banking sector in Bahrain. Those four variables are value added intellectual capital coefficient and its three components, human capital efficiency (HCE), structural capital efficiency (SCE), and capital employed efficiency (CEE).

2.3. Financial Performance

According to Iswatia and Anshoria (2007), performance is the function of the ability of an organization to gain and manage the resources in several different ways to develop competitive advantage. There are typically three broad categories of performance: financial performance, operational performance and organizational effectiveness (Thomas, 2007).

This study concentrates on financial performance. Traditionally, the financial performance of banks and other financial institutions has been measured using a combination of conventional accounting measures and risk and return measures. (Duncan and Elliott, 2004). They argued that there are two principal paths to improve financial performance for financial institutions; i.e. through improved operational efficiency or via improved customer service. They found that there is a positive correlation between customer service and efficiency and financial performance. Tarawneh (2006) argues that there are three principal factors to improve financial performance for financial institutions: the institution size, its asset management, and the operational efficiency. He used ROA ratio with interest income size to measure the performance of Omani commercial banks during (1999-2003). Asset management, the bank size, and operational efficiency are used together to investigate the relationships among them and the financial performance. He found that in Omani banks with higher total capital, deposits, credits, or total assets do not always have better profitability performance.

There are many methods to measure financial performance such as the level of profitability, earning after taxes, residual income, return on assets, return on earning,

return on investment, economic value added, etc.). As mention in chapter one, this study uses return on assets (ROA) to measure financial performance. Return on total assets (ROA) reflects firms' efficiency in utilizing total assets, holding constant firms' financing policy.

There are many studies that used (ROA) as a measure of financial performance- either as a single measure or in addition to other measures- when they study the influence of intellectual capital on financial performance of firms such as (Chen et al., 2005; Firer and Williams, 2003; Yalama and Coskun, 2007; Jian, Ping, and Shengl, 2006; Kujansivu and Lonnqvist, 2007; Oliver and Porta, 2005; Nazari and Herremans, 2007).

2.4. Value Added Intellectual Coefficient (VAIC)

The value added intellectual coefficient (VAIC) method developed by Pulic (2000b) forms the underlying measurement basis for the three major independent variables in the present study. VAIC is an analytical procedure designed to enable management, shareholders and other relevant stakeholders to effectively monitor and evaluate the efficiency of value added by a firm's total resources and each major resource component (Firer and Williams, 2003). Value Added Intellectual Coefficient indicates the intellectual ability of the organization (Kamath, 2007). Formally, VAIC is a composite sum of three separate indicators :(1) Capital employed efficiency (CEE) – indicator of Value Added efficiency of capital employed. (2) Human capital efficiency (HCE) – indicator of Value Added efficiency of human capital. (3) Structural capital efficiency (SCE) – indicator of Value Added efficiency of structural capital.

There have been several studies in the field of IC using the VAIC model as the primary measurement method of IC (Nazari and Herremans, 2007). By using value added intellectual coefficient (VAIC) method as an aggregate measure of corporate intellectual ability, Chen et al, (2005) conducted a study to investigate empirically the relationship between firms` intellectual capital and market-to-book value ratios. They analyze whether intellectual capital contributes to firms` financial performance and can be used as a leading indicator for future financial performance. They used a sample of all firms listed on the Taiwan stock exchange (TSE) during 1992-2002. They found that firms' market value and financial performance is positively associated with corporate intellectual ability. They stated that overall firms' intellectual capital has a positive impact on market value and financial performance, and may be an indicator for future financial performance.

With regards to bank performance and intellectual capital, there are some researches that study the role of Intellectual Capital on banks' performance. Pulic (1997, 2002) used VAIC model, which he developed, to measure intellectual capital performance of Austrian banks in 1993-1995 and Croatian banks in 1996-2000. They revealed significant differences in bank ranking based on efficiency and performance. Goh (2005) conducted a study to measure the intellectual capital performance of commercial banks in Malaysia for the period 2001 to 2003, using (VAIC). He found that value creation capability of both domestic and foreign banks in Malaysia is largely attributed to human capital efficiency; the study concluded that the investment in human capital yields a relatively higher return than investment in the two other components of VAIC -in physical and

structural capital- Domestic banks were generally less efficient compared to foreign banks.

Yalama and Coskun (2007) conducted a study to obtain measure of the intellectual capital (IC) performance of quoted banks on the Istanbul Stock Exchange Market (ISE) in Turkey for the period 1995-2004 and test the effect of the intellectual capital performance on profitability. The authors measured the intellectual capital performance of quoted banks in ISE using the Value Added Intellectual Coefficiency (VAIC), and tested the effect of this intellectual capital performance on profitability using Data Envelopment Analysis (DEA). They conclude that IC seems to be a more important factor than physical capital for banks. Mavridis (2004) also applies the VAIC method in order to analyze the data of Japanese banks in terms of actual status of human capital and physical capital and stated the significant performance differences between the Japanese and some European banks. Mavridis and Kyrmizoglou (2005) present a study analyzing the intellectual performance of Greek listed corporations on the Athens Stock Exchange under the distinctive aspect of being a "globalized" or "localized" firm. By using VAIC method the firm's performance is researched under its intellectual (IC) and physical (CA) aspect. The investigation confirms the existence of some semantic - added value-based performance differences by using predictor variables (discriminant analysis) and factors or "drivers" (factor analysis) influencing the actual "globalization status quo".

Kamath, (2007) estimated and analyzed the (VAIC) for measuring the value-based performance of the Indian banking sector for a period of five years from 2000 to 2004.

The study confirms the existence of vast differences in the performance of Indian banks in different segments, and there is also an improvement in the overall performance over the study period. There is an evident bias in favour of the performance of foreign banks compared with domestic banks.

Pulic (1997 and 2002) used VAIC model, which he developed, to measure intellectual capital performance of Austrian banks in 1993-1995 and Croatian banks in 1996-2000. They revealed significant differences in bank ranking based on efficiency and performance. Appuhami (2007) used the data collected from listed companies in Thailand stock market and Pulic's (1998) (VAIC) as the measure of intellectual capital and developed multiple regression model to investigate the impact of corporate value creation efficiency on investors' capital gain. He found that the (VAIC) shows a significant positive relationship with capital gain on share.

Using data from 75 publicly traded companies in South Africa, Firer and Williams (2003) adopted the VAIC method to examine the relationship between intellectual capital and traditional measures of corporate performance, including profitability (returns on assets), productivity (turnover of total assets) and market value (market-to-book value ratio of net assets). Except that the capital employed efficiency has a significantly positive effect on market value of firms, their empirical results failed to find any strong association between the three values added efficiency components and the three dependent variables.

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2.4.1. Human Capital Efficiency

`According to Appuhami, (2007) there is no precise definition of human capital as it depends on the nature of job, situational factors and the nature of a firm. Chen et al. (2005) define human capital as an employee-dependent, such as employees' competence, commitment, motivation and loyalty, etc. OECD (1999) defines human capital as the knowledge, skills, competencies and other attributes embodied in individuals or groups of individuals acquired during their life and used to produce goods, services or ideas in market circumstances. According to Huang and Hsueh (2007), human capital is an integral and most important part of intellectual capital, including knowledge, skill, expertise of employees and managers, proactive response and entrepreneurship.

Human capital efficiency is one component of value added intellectual coefficient (VAIC). It is used as an indicator of value added efficiency of human capital (Firer and Williams, 2003). This ratio gives the contribution made by every unit of money invested in human capital to the value added in the organization (Kamath, 2007). Chen et al. (2005) observed that human capital efficiency is positively associated with financial performance measures (return on asset, return on equity, growth in revenue, and employee productivity). Goh (2005) found that value creation capability of both domestic and foreign banks in Malaysia is largely attributed to human capital efficiency; the study concluded that the investment in human capital yields a relatively higher return than investment in the two other components of VAIC -in physical and structural capital-. Mavridis and Kyrmizoglou (2005) investigated the effect of human capital and physical capital of Greek banking sector represented by the 17 biggest banks in the country using

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VAIC method on the period 1996-1999. They found that there is a normal, strong, significant and positive correlation between value added (VA) and physical capital (CA) but especially with human or intellectual capital (HC coefficient). According to the findings, human capital is a more important factor than physical capital for banks.

The same finding is obtained by Yalama and Coskun (2007) in the case of Turkey banks, Mavridis (2004) in the case of Japanese banks and Kamath (2007) in the case of Indian banks. Appuhami (2007) found a positive relationship between human capital efficiency and capital gains on shares. In opposition of the studies mention above, using data from 75 publicly traded companies in South Africa, Firer and Williams (2003) failed to find any strong association between human capital efficiency and traditional measures of corporate performance including profitability(ROA), productivity (turnover of total assets), and market value(market-to-book-value ratio of net assets).

2.4.2. Structural Capital Efficiency

Structural capital including innovative capital, relational capital, and organizational infrastructure, etc. (Chen et al., 2005). Structural capital is assumed to be the sum of organizational and customer capital while the organizational capital itself is the sum of innovation and process capital (Mavridis and Kyrmizoglou, 2005). According to Goh, (2005) structural capitals refer to whatever is left behind in the firm when employees go home. Examples of structural capitals are brand, network system, organization management process, supplier relation, customer loyalty and so forth. Structural capital

efficiency is one component of value added intellectual coefficient (VAIC). It is used as an indicator of value added efficiency of structural capital (Firer and Williams, 2003).

Chen et al. (2005) found that structural capital efficiency does not affect significantly on the financial performance of Taiwanian companies listed in Taiwan stock exchange. Goh (2005) concluded that investment in physical and structural capital yields relatively lesser return than investment in human capital. Using data from 75 publicly traded companies in South Africa, Firer and Williams (2003) failed to find any strong association between structural capital efficiency and traditional measures of corporate performance including profitability(ROA), productivity (turnover of total assets), and market value(market-tobook-value ratio of net assets). Appuhami (2007) found a positive relationship between structural capital efficiency and capital gains on shares.

2.4.3. Capital Employed Efficiency

Capital Employed (CE) refers to all the physical and material assets of the organization (Kamath, 2007). Capital employed efficiency is one component of value added intellectual coefficient (VAIC). It is used as an indicator of value added efficiency of capital employed (Firer and Williams, 2003). This ratio gives the contribution made by every unit of capital employed to the value added in the organization (Kamath, 2007).

Chen et al. (2005) found that there is a positive relationship between capital employed efficiency and both the market value and the financial performance of Taiwanian companies listed in Taiwan stock exchange. Appuhami (2007) found a positive relationship between capital employed efficiency and capital gains on shares. Goh (2005) concluded that investment in physical and structural capital yields relatively lesser return than investment in human capital. By using VAIC Mavridis and Kyrmizoglou (2005) found that there is a normal, strong, significant and positive correlation between value added (VA) of Greek banking sector represented by the 17 biggest banks in the country and physical capital. The same finding is observed by Yalama and Coskun (2007) in case of Turkey banks, Mavridis (2004) in case of Japanese banks and Kamath (2007) in case of Indian banks.

2.5. Summary

There is already strong evidence that those companies that have focused on building their intellectual capital have provided excellent returns for their shareholders and have outperformed their competitors on every financial measure. Increasing attention on the pivotal role played by intellectual capital in value creation process has resulted in more than 20 methods of measuring intellectual capital. Pulic (1998) proposed the Value Added Intellectual Coefficient (VAIC to provide information about the value creation efficiency of tangible and intangible assets within a company. VAIC is an analytical procedure designed to enable management, shareholders and other relevant stakeholders to effectively monitor and evaluate the efficiency of Value Added (VA) by a firm's total resources and each major resource component. The VAIC method mainly measures the efficiency of firms' three types of inputs: physical capital, human capital, and structural capital, namely the Capital Employed Efficiency (SCE). This Chapter discusses about the

literature in which it relevant to the study of the relationship between intellectual capital and financial performance. There are many studies that have been conducted to analyze the relationship between intellectual capital and firm performance in manufacturing and non- manufacturing industries in different countries around the world by using value added intellectual coefficient method (VAIC). Their findings are mixed. Most of these studies present evidence that there is a relationship between intellectual capital and firms' financial performance whereas the other studies such as Firer and Williams (2003) failed to find any strong association between the efficiency of Value Added by the major components of a firm's resource base and profitability.

CHAPTER THREE

HYPOTHESIS DEVELOPMENT AND RESEARCH METHODS

3.1 Introduction

This chapter explains the design and methodology of this study. It covers the hypothesis development, data collection, measurement of variables and finally model Specification and analysis.

3.2 Hypothesis Development

Currently, it can be said that there is a consensus among researchers (see for example, Andriessen, 2004; Procter, 2006; Edvinsson, 1997; Edvinsson and Malone, 1997; Edvinsson and Sullivan, 1996; Roos and Roos, 1997; Chen et al. 2005) that those companies that have focused on building their intellectual capital have provided excellent returns for their competitors on every financial measure. These studies are just example of studies that provided evidence that there is a positive relationship between intellectual capital and financial performance.

3.2.1. VAIC

Value added intellectual coefficient (VAIC) and its components- human capital efficiency, structural capital efficiency, and capital employed efficiency are considered as independent variables. The value added intellectual coefficient (VAIC) is a composite sum of three separate indicators human capital efficiency, structural capital efficiency, and capital employed efficiency.

The traditional view of the firm put forward by Adam Smith states that a firm obtains its resources from investors, employees, and suppliers to produce goods and services for its customers. In particular, this traditional view contrives corporate performance to be the financial returns to a firm's owners from the consumption of tangible resources (Firer and William, 2003). Alternatively, more recent theoretical views suggest investors, employees, suppliers, customers and other relevant stakeholders (such as unions and government) both contribute and receive benefits from a firm. In defining 'Stakeholder Theory' Clarkson (1994) states: "'The firm' is a system of stakeholders operating within the larger system of the host society that provides the necessary legal and market infrastructure for the firm's activities. The purpose of the firm is to create wealth or value for its stakeholders by converting their stakes into goods and services".

On the other hand, alternative theoretical view, resource-based theory conceives firms as collections of physical and intangible assets and capabilities. These contrasting views also provide different views of corporate performance. Advocates of resource-based theory, for example, suggest that corporate performance is a function of the effective and efficient use of the respective tangible and intangible assets of the firm. Further, VA (also called wealth creation) is considered as the appropriate means of conceptualizing corporate performance rather than the mere financial returns to a firm's owner.

There are several studies that found that there is a positive relationship between value added intellectual coefficient and financial performance of banking sector such as Pulic (1997), in Austria, Pulic (2002), in Croatia, Goh, (2005) in Malaysia, Mavridis (2004) in Japan, Mavridis and Kyrmizoglou, (2005) in Greece, and Kamath (2007) in India.

Based on the resource-based theory and previous findings that suggest that corporate performance is a function of the effective and efficient use of the respective tangible and intangible assets of the firm, the following hypothesizes are developed :

H1: There is a positive relationship between value added intellectual coefficient (VAIC) and financial performance of banking sector of Bahrain.

3.2.2. Human capital efficiency

Human capital efficiency is one of the three components of VAIC.It is used as an indicator of value added efficiency of human capital.

According to resource- based theory, the effective and efficient use of human capital will lead to improve corporate performance. Consistent with most of studies that used VAIC model as the primary measurement of intellectual capital (see for example, Goh, 2005; Kamath, 2007; Mavridis, 2004; and Mavridis and Kyrmizoglou, 2005) found that there is a positive relationship between human capital efficiency and financial performance. Therefore, this study hypothesizes as follows:

H2: There is a positive relationship between human capital efficiency and financial performance of banking sector of Bahrain.

3.2.3. Structural capital efficiency

Structural capital efficiency is one of the three components of VAIC. It is used as an indicator of value added efficiency of structural capital. According to resource- based theory, the effective and efficient use of structural capital will lead to improve corporate performance. Therefore, based on the theory, this study hypothesizes the following: H3: There is a positive relationship between structural capital efficiency and financial performance of banking sector of Bahrain.

3.2.4. Capital employed efficiency

Capital employed efficiency is one of the three components of VAIC. It is used as an indicator of value added efficiency of capital employed. Resource-based theory argues that the effective and efficient use of tangible and intangible assets will lead to better corporate performance. In addition, previous studies such as Chen et al, (2005); Goh (2005); Kamath, (2007) found that capital employed efficiency is positively associated with financial performance. Based on the theory and previous studies, this study hypothesizes the following:

H4: There is a positive relationship between capital employed efficiency and financial performance of banking sector of Bahrain.

Financial performance is the dependent variable in this study. There are many studies that used financial performance as a dependent variable such as Chen et al. (2005); Firer and Williams (2003); Yalama and Coskun (2007) ; Jian et al. (2006); Kujansivu and

Lonnqvist (2007); Oliver and Porta (2005); Nazari and Herremans (2007); Duncan and Elliott (2004).

For the purpose of this study, financial performance is measured by return on assets (ROA). ROA varies widely among companies and is a measure of asset-use efficiency. It can be used as a useful indicator for comparing the profitability of company and businesses against a benchmark rate of return equal to the risk adjusted weighted average cost of capital. According to Haniffa and Hudai, (2006), a higher ROA indicates effective use of companies' assets in serving shareholders' economic interests. ROA provides a measure for assessing the overall efficiency with which firm assets are used to produce net income from operations (Miller et al., 2001). Moreover, they argue that the ROA is indicative of management's effectiveness in deploying capital, because it is certainly possible to be efficient and yet poorly positioned in terms of how capital is being utilized. It also measures the operating and financial performance (Klapper and Love, 2002).

3.3. Data Collection

The population of this study consists of 21 banks listed on the Bahrain Stock Exchange. However, due to the unavailability of three banks` annual report (in spite of intensive search in annual reports and respective websites), only 18 banks become the subject of investigation. This paper covers a three-year period, from 2005-2007. The data used in this paper are secondary data collected from the banks' annual reports. Since all data are obtained from audited data, the measurement is objective and verifiable.

3.4 Measures of variables

3.4.1 Dependent variable

Financial performance is a dependent variable in this study. For the purpose of this study, financial performance should be measured by return on asset (ROA) that reflects firm's efficiency in utilizing total assets, holding constant firm's financial policy. Several previous studies used return on asset (ROA) as a measure of financial performance either a lone measure or in addition to other measures- when they study the influence of intellectual capital on financial performance of firms such as Chen et al.,(2005); Firer and Williams, (2003); Yalama and Coskun, (2007); Jian et al., (2006); Kujansivu and Lonnqvist,(2007); Oliver and Porta, (2005); Nazari and Herremans,(2007). Return on asset (ROA) is calculated by dividing pretax income over a average total assets.

3.4.2 Independent variables:

3.4.2.1 Value Added Intellectual Coefficient (VAIC)

VAIC has been used as a measure for corporate intellectual ability (Pulic, 2000b). Firer and Williams (2003) pointed out two advantages of VAIC. First, VAIC provides an easyto-calculate, standardized, and consistent basis of measure, enabling effective comparative analyses across firms and countries. Second, data used in the calculation of VAIC are based on financial statements, which are usually audited by professional public accountants. The procedures to calculate VAIC are as follows:

Calculate value added (VA):

 $VA = OUTPUT - INPUT - \dots (1)$

Output refers to gross income or the total of all income/revenue generated during the fiscal year by an organization by selling its goods or services. Input includes operating expenses excluding personal costs. Input refers to all the costs that are incurred by the organization towards purchase of inputs for operating and continuing the business. Here, the employees' compensation and other costs incurred on them for training and development (that is called personal costs) would be deducted from total expenses for the simple reason that they would be treated as investments and not expenditure (Kamath, 2007). Pulic (1998) argues that labor expenses are not considered as input. Because of the active role in the value creating process, intellectual potential (represented by labor expenses) cannot be considered as costs any more.

Value Added (VA) is the value created by the organization during the particular financial year. Chen et al. (2005) adopt a broader definition in calculating value added VA based on the stakeholder view. According to Chen et al. (2005), the stakeholder view maintains that any group that can affect or be affected by the achievement of a firm's objectives should have a "stake" in the firm. These stake groups include stockholders, employees, lenders, government, and society; therefore, in measuring firm performance, a broader measure of value added by stakeholders is better than accounting profit that only calculates returns to stockholders. According to Chen et al. (2005), the calculation of value added can be expressed as equation (2):

$$R=S-B-DP-W-I-DD-T....(2)$$

Where: R is changes in retained earnings; S is net sales revenues; B is bought-in materials and services (costs of goods sold); DP is depreciation; W is wages (employee salaries); DD is dividends; and T is taxes.

Equation (2) can be re-arranged as equations (3) and (4) as follows:

$$S - B = DP + W + I + DD + T + R$$
(3)
 $S - B - DP = W + I + DD + T + R$(4)

Equation (3) is the gross value added approach, whereas equation (4) is the net value added approach. The left-hand side of the equations calculates the gross (or net) value added, and the right-hand side of the equations represents the distribution of the value created by firms, including employees, debt-holders, stockholders, and governments. Chen et al, (2005) define Value Added as the net value created by firms during the year, and because DD plus R is equal to net income under the clean surplus assumption, equation (4) can be expressed as follows:

$$VA = S - B - DP = W + I + T + NI$$
(5)

Where: NI is after-tax income.

Being exploratory in nature, the current research sticks to the very foundation of VAIC model and thus intends to use the equation number one for measuring value added. Thus, equations 2, 3, 4, and 5 are not employed.

Calculating CE (capital employed), HC (human capital), and SC (structural capital):

Following Pulic (2000 a and 2000 b), and Firer and Williams (2003), the three major components of firm resources; Capital Employed, Human Capital and Structure Capital are, by definition, as follows:

Capital Employed (CE) = physical capital + financial assets = Total assets - intangible assets

Human Capital (HC) = total expenditure on employees

Structure Capital (SC) = Value Added – Human Capital

Calculating VAIC and its three components

By definition, the three components of VAIC are calculated as follows:

$$CEE = VA \div CE$$
$$HCE = VA \div HC$$
$$SCE = SC \div VA$$

Where: CEE is an indicator of Value Added efficiency of capital employed; HCE is indicator of Value Added efficiency of human capital; SCE indicator of Value Added efficiency of structural capital.

VAIC is the sum of the three components of VA efficiency indicators.

3.4.2.2 Human capital efficiency (HCE)

HCE is indicator of Value Added efficiency of human capital. HCE can be viewed as the value-added by a dollar input of human capital. It is measured by dividing value added over human capital that represents total expenditures on employees.

3.4.2.3 Structural capital efficiency (SCE)

SCE is an indicator of Value Added efficiency of structural capital. SCE represents the proportion of total VA accounted for by structural capital. It is measured by dividing structural capital over value added. Structural capital represents the difference between value added and human capital.

3.4.2.4 Capital employed efficiency (CEE)

CEE is an indicator of Value Added efficiency of capital employed. CEE can be viewed as the value-added by a dollar input of physical assets. It is measured by dividing value added by capital employed that represents the sum of physical and financial capitals.

3.4.3. Model Specification and Analysis

This study applies two regression models. Model 1 and model 2 examine the relationship between financial performance and the aggregate measure of intellectual capital VAIC, and its three major components, CEE, HCE, and SCE, respectively.

$$FP = a + \beta_1 VAIC + e \tag{1}$$

$$FP = a + \beta_1 CEE + \beta_2 HCE + \beta_3 SCE + e$$
(2)

Where:

FP = financial performance, measured by ROA.

VAIC = value added intellectual capital coefficient

CEE = capital employed efficiency

HCE = human capital efficiency

SCE = structural capital efficiency

e= allowed error.

The issues related to validity and reliability of measurement (i.e. multicollinearity) is discussed in chapter four with the results

3.6. Summary

Based on resource-based theory and previous studies, the study developed four hypotheses which imply there is a positive relationship between VAIC and its three components and financial performance of banks listed in Bahrain.

The final size of the sample used in the study is 18 banks. The study covers three years from 2005-2007.the data used is secondary data which are obtained from the banks` annual reports. Financial performance is a dependent variable and measured by ROA. VAIC and its three components are the independent variables.

Capital Employed Efficiency (CEE) is measured by dividing value added over capital employed. Human capital efficiency is measured by dividing by value added over human capital. Structural capital efficiency (SCE) is measured by dividing structural capital over value added.

This study applies two regression models. Model 1 and model 2 examine the relationship between financial performance and the aggregate measure of intellectual capital VAIC, and its three major components, CEE, HCE, and SCE, respectively.

CHAPTER FOUR

RESULTS AND DATA ANALYSIS

4.1 Introduction

This chapter presents the results of the study of the relationship between intellectual capital and financial performance of banks listed in Bahrain. A descriptive statistics have been shown to represent the general condition of the selected variables and then multicollinearity result has been displayed in order to look whether there is any relation among independent variables. Then correlation matrix (Pearson's Correlation analysis) for the variables has been displayed in order to look for significant correlations among the variables. Correlation analysis is the statistical tool that can be used to describe the degree to which one variable is linearly related to another (Levin and Rubin, 1998). Regression analysis has also conducted to test the strength of associations between the studied variables. The Statistical Package for Social Science (SPSS) software (version 11.5) has been employed to carry out the above analyses through using the data collected from the annual reports.

4.2 Hypothesis Testing

Table 4.1 presents the descriptive statistics of all the variables. Descriptive statistics include mean, maximum limit, minimum limit, and standard deviation.

Table 4.1: Descriptive Statistics for Return on Asset, Human Capital Efficiency, CapitalEmployed Efficiency, Structural Capital Efficiency, and Value Added IntellectualCoefficient (VAIC)

	Ν	Minimum	Maximum	Mean	Std. Deviation
HCE	54	1.80	19.24	6.1064	3.20106
CEE	54	.03	.39	.0990	.06521
SCE	54	.44	.95	.7954	.10034
VAIC	54	2.33	20.57	7.0005	3.31251
ROA	54	.00	.51	.0725	.08697
Valid N (listwise)	54				

Based on the table 4.1, the mean value of human capital efficiency (HCE) was (6.1064), this reveals that the (HCE) was not high as the minimum value was (1.80) and the maximum was (19.24). In addition, there are not high differences between the values of (HCE) as indicated by the low value of the standard deviation (3.20106).

The mean value of capital employed efficiency (CEE) was (.0990) which means that the (CEE) was low because the minimum value was (.03) and the maximum was (.39). Besides, there are small differences between values of CEE because the standard deviation was low (.06521).

The mean value of structural capital efficiency (SCE) was (.7954); this means that SCE tend to be high because the minimum value was (.44) and the maximum was (.95). This reveals the good SCE and there were small differences between the values of SCE because the standard deviation was very small (.10034).

The mean value of VAIC was (7.0005) which indicates that VAIC was not high because the minimum value was (2.33) and the maximum was (20.57), and there were small differences between the values of VAIC because the standard deviation was small (3.31251).

Finally, the mean value of ROA was (.0725) which indicates that ROA was low because the minimum value was (.00) and the maximum was (.51), and there were small differences between the values of ROA because the standard deviation was low (.08697). Comparison of CEE (.0990; sd = .06521), HCE (5.4838; sd = 2.59318), and SCE (.7954; sd = .10034), suggests that during 2005-2007, the sample banks were generally more effective in generating value from its human capital rather than physical and structural assets. The standard deviation of all the variables is observed a small.

4.3. Multicollinearity

Multicolinearity was used to check whether there is any relation among independent variables. multicollinearity describes the degree to which any variable's effect can be predicted by the other variable (Hair, Anderson, Tatham, and Black, 1995). The existence of multicollinearity, i.e. high correlation between the independent variables, is a serious problem in multiple regressions because the effect of each independent variable on the dependent variable becomes difficult to identify. A widely used method to detect for and measure multicollinearity is the Variance Inflation Factor (VIF) for each independent variable (Naser, Alkhatib, and Karbhari, 2002).

In circumstances where the VIF is above 10, the independent variables are considered highly correlated, causing a multicollinearity problem (Silver, 1997). Thus, the multicollinearity diagnostics command to include the VIF was selected when running the multiple regression models. The results in table 4.2 revealed that there is no multicollinearity problem because the VIF for each independent variable is less than 10.

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Table 4.2 Variance Inflation Factor

Variable	VIF
HCE	1.636
SCE	1.084
CEE	1.691
VAIC	1.000

Dependent variable ROA

4.4. Correlation analysis

Correlation analysis is the initial statistical technique employed to analyze the relationship between the dependent and independent variables. Findings from Pearson's correlations as shown in Table 4.3 indicate that VAIC is significantly positively related to ROA, suggesting that banks' financial performance is positively and significantly associated with the intellectual ability. The higher VAIC value, the better ROA the bank can obtain. HCE and CEE are significantly positively correlated with ROA, while SCE is not significantly correlated with ROA.

		CEE	SCE	VAIC	ROA
HCE	Pearson Correlation	.622	.210	.406	.719
	Sig. (2- tailed)	(.000)	(.128)	(.002)	(.000)
CEE	Pearson Correlation		.274	.488	.883
	Sig. (2- tailed)		(.045)	(.000)	(.000)
SCE	Pearson Correlation			.800	.230
	Sig. (2- tailed)			(.000)	(.094)
VAIC	Pearson Correlation				.541
	Sig. (2- tailed)				(.000)

Table 4.3: Correlation Matrix for all the dependent variable and independent variables (n=54)

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

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

4.5. Regression Analysis

Tables 4.4 and 4.5 present the results of the two regression models. The results in table 4.4 show that the coefficient on VAIC is significantly positively associated with financial performance. This result suggests that banks with greater intellectual capital perform better in terms of return on assets. Table 4.5 shows that ROA is positively related with CEE and HCE whereas it is negatively related with SCE, suggesting that banks' financial performance is positively associated with the intellectual ability's components, capital employed efficiency (CEE) and human capital efficiency (HCE). The ROA-SCE is negatively correlated but with a small impact. The major contribution on ROA is from capital employed efficiency (CEE). Furthermore, the ROA-SCE relationship is not significant, supporting that it has less impact on ROA. In pertaining of SCE the regression analysis shows a bit difference from what is

found in the correlation analysis since the regression analysis shows that SCE is negatively associated with financial performance measured by ROA.

Table4.4: Regression results of banks` financial performance model -independent variable – VAIC

		Unstar	ndardized	Standardized			Adjusted	Sig F
Model		Coeffi	cients	Coefficients	t	Sig	R square	Change
			Std.					
		В	Error	Beta				
1	(Constant)	027	.024		-1.140	.260		
	VAIC	.014	.003	.541	4.644	.000	.280	.000

Table 4.5: Regression results of banks` financial performance and components of VAIC

		Unstar	dardize	Standardized				
Model		d Coef	ficients	Coefficients	t	Sig.		
			Std.				Adjusted	Sig F
		В	Error	Beta			R square	Change
1	(Constant)	057	.041		- 1.367	.178	.816	.000
	HCE	.009	.003	.278	3.687	.001		
	SCE	021	.053	024	392	.697		
	CEE	.956	.102	.717	9.362	.000		

Table 4.4 shows that the value added intellectual capital coefficient (VAIC) can only explain 28% variability in banks` financial performance whereas in table 4.5, it is found that the value of R square remarkably increases from 28% in table 4.4 to 81.6% in Table 4.5. It suggests believing that the three components of VAIC are better in explaining the financial performance of banks compared to the aggregate measure of VAIC.

Results of the regression analysis provide (to a high degree) support to H1, H2, and H4 hypotheses that imply banks with better VAIC, HCE, and CEE yield greater financial performance. The conducted analysis of the study fails to find any strong relationship between SCE and financial performance.

A possible explanation for these results is banks in Bahrain are trying to increase profitability through the employment of tangible assets and utilizing its human resource base placing less effort into utilizing its structural capital.

This study supports previous findings by Chen et al. (2005), Kamath (2007), Mavridis and Kyrmizoglou (2005), and Yalama and Coskun (2007) which found that there is a positive relationship between VAIC, HCE, and CEE and financial performance. However, in consistent with the present study, Chen et al. (2005), Firer and William (2003), and Goh, (2005) found that structural capital efficiency does not affect significantly on the financial performance.

Overall, it can be said that these findings answered research questions since it shows that VAIC and its components except structural capital efficiency contribute significantly to banks' financial performance. However, the study revealed that contribution of intellectual

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capital to financial performance of banks listed in Bahrain is still limited in relation to tangible assets.

4.6. Summary

This chapter presents the results of the analysis that conducted by using several tools. After ensuring that there is no multicollinearity problem, correlation analysis and regression analysis have been conducted. Both analysis provided evidence that there is a significant positive relationship between VAIC and two of its components (HCE and CEE) and financial performance providing a support to H1, H2, and H4. Whereas both analysis failed to find any strong relationship between SCE and financial performance. The study supports previous findings of several previous studies.

CHAPTER FIVE

CONCLUSION AND LIMITATION

5.1. Introduction

In this chapter, results of the findings are discussed related to the hypotheses research question. The main findings and their implications should be highlighted. Based on the findings of the study a conclusion is drawn. The last section in this chapter includes the recommendation that describes the area that can be explored or future research that could be carried out by other researchers.

5.2. Discussion

Empirical findings have some strong association between the efficiency of intellectual capital and banks' financial performance. The efficiency of Intellectual Capital is found to be significantly associated with financial performance of banks listed in Bahrain. When it is classified into major components, the efficiency of total assets (CEE) plays a major role in enhancing the returns. The total assets, both financial and physical assets, and human resources base have been utilized importantly in generating highly valued returns. Empirical findings fail to find any strong association between SCE and financial performance of banks listed in Bahrain measured by (ROA). It means that investment in structural capital. Overall, the empirical findings, based on correlation and linear multiple regression analysis, indicate that the association between the efficiency of value added by a bank's major resource components and the financial performance measured by (ROA) is limited.

The findings from the present study have implications for numerous parties such as policy makers, regulators, shareholders and managers of banks listed in Bahrain. Managers who in general find their performance of IC to be low are required to conduct initiatives for better allocation of resources in those banks that ensure more efficiency of using of these resources. Such features are important concerns that need to be factored into in decision-making processes and setting policies at both national and international levels.

A possible policy implication of this study may be that policy makers and regulators may have to adjust or intensify initiatives to encourage greater acceptance and understanding of the concept of intellectual capital, and the development of related assets.

Shareholders may use the findings of this study to put more pressure on management of banks to use new measures like VAIC to measure performance of conventional and intellectual capital alike.

5.3. Conclusion

Today Bahrain faces its stiffest challenge yet in maintaining its regional role as a leading financial centre in the region where other countries in the region, including Saudi Arabia, Qatar, and Dubai open their financial sectors and thus provide direct competition. In its vision 2030, Bahrain places great importance in its financial sector to maintain its position as a leading financial center in the region. In its vision 2030, Bahrain will capture emerging opportunities, particularly by expanding to knowledge-based sectors and by increasing its output of high-value-added goods and services. However, in general, empirical findings suggest the efforts to improve intellectual capital base of the

banks listed in Bahrain still appear limited. Banks listed in Bahrain still appear to place greater weight on corporate performance based on physical capital assets

As Bahrain continues its efforts to swiftly transform its economy, and maintains itself as a leading financial centre in the region, a continued aversion from and apathetic view toward intellectual capital amongst banks listed in Bahrain and the business community may have negative consequences and may not help the country to achieve its vision 2030.

5.4. The strength and limitation of the study

The findings from the present study provide various insights that should be of interest to government, scholars, shareholders, institutional investigations, policymakers and other relevant stakeholders. The study confirms the existence of Intellectual Capital in the performance of the Banking Industry in Bahrain.

However, the study has some limitations. First, the selected banks are confined to banks listed on the Bahrain Stock Exchange. Second, this research only uses data for three years. Study with longer period of data may provide a different finding and more stable. The third limitation is the study does not use any control variable.

5.5. Suggestion for future research

The findings from the present study indicate avenues for further investigation. Analysis in the present study draws on data from a single nation and from firms within only one of business sectors reliant on intellectual capital. Additional research should be conducted using data from other business sectors reliant on intellectual capital such as insurance

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companies or from alternative domestic settings and/or firms from non-intellectual capital business sectors.

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