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**THE EFFECT OF INTELLECTUAL CAPITAL ON  
MALAYSIAN BANKS FINANCIAL PERFORMANCES:  
COMPARATIVE STUDY ON CONVENTIONAL AND  
ISLAMIC BANKS**



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**MASTER OF SCIENCE (BANKING)  
UNIVERSITI UTARA MALAYSIA  
August 2016**

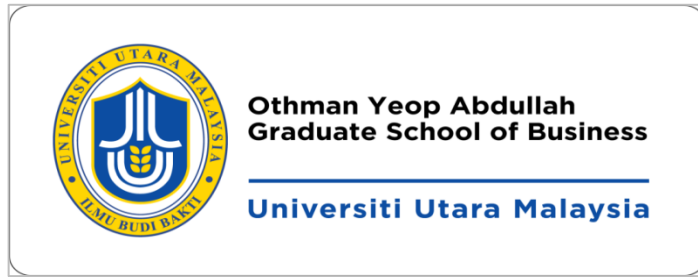
**THE EFFECT OF INTELLECTUAL CAPITAL ON MALAYSIAN BANKS  
FINANCIAL PERFORMANCES: COMPARATIVE STUDY ON  
CONVENTIONAL AND ISLAMIC BANKS**



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**Thesis Submitted to  
Othman Yeop Abdullah Graduate School of Business,  
Universiti Utara Malaysia,  
in Partial Fulfillment of the Requirement for the Master of Science (Banking)**



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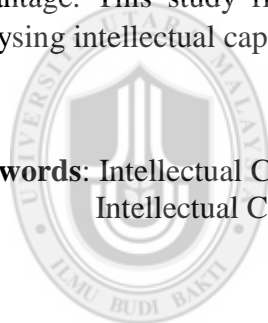


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## ABSTRACT

In ultra competitive banking industry nowadays, banks could not solely rely on monetary capital for competitive advantage. In this respect, intellectual capital (intangible asset) emerged as viable resources for banks. AFAS (ASEAN Framework Agreement on Services) which will commence in 2020 has put prominence on intellectual capital. This research aims to examine relationship between intellectual capital and financial performances of 32 Malaysian banks (conventional and Islamic) for eight years from 2008 to 2015. In this respect, comparative study between conventional and Islamic banks are undertaken. Value added intellectual coefficient (VAIC) technique is utilised to compute banks' value added performances. Profitability proxies such as return on asset, return on equity, and data envelopment analysis' efficiency are used. The banks intellectual capital (human capital, structural capital) and physical capital (capital employed) effect on banks financial performances had been computed by utilisation of panel data estimation method. The results of this research study showed relationships between intellectual capital and banks financial performances between Malaysian conventional and Islamic banks are varied. Moreover, study findings implied intellectual capital is crucial for banks competitive advantage. This study findings can assist banks decision makers and investors in analysing intellectual capital position of Malaysian financial institutions.

**Keywords:** Intellectual Capital, Return on Asset, Return on Equity, Value Added Intellectual Coefficient

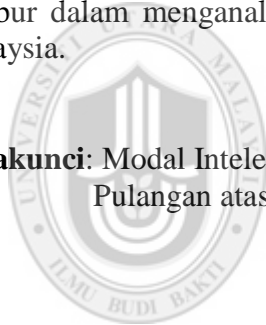


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## ABSTRAK

Dalam industri perbankan yang sangat kompetitif pada masa kini, bank tidak boleh hanya bergantung pada modal kewangan untuk memperoleh kelebihan daya saing. Dalam hal ini, modal intelek (aset tidak ketara) muncul sebagai sumber yang penting untuk bank. AFAS (Perjanjian Rangka Kerja Perkhidmatan ASEAN) yang akan bermula pada tahun 2020 telah menonjolkan kepentingan modal intelek. Objektif kajian ini adalah untuk mengkaji hubungan antara modal intelek dan prestasi kewangan 32 bank Malaysia (konvensional dan Islam) selama lapan tahun daripada tahun 2008 hingga 2015. Dalam hal ini, kajian perbandingan di antara bank konvensional dan Islam telah dijalankan. Teknik nilai pekali intelek tambahan (VAIC) telah digunakan untuk mengira nilai prestasi tambahan bank. Proksi-proksi keuntungan seperti pulangan atas aset, pulangan atas ekuiti, dan kecekapan analisis kecekapan telah digunakan. Kesan modal intelektual bank (modal insan, struktur modal) dan modal fizikal (modal kewangan) terhadap prestasi kewangan bank telah dikira dengan menggunakan kaedah anggaran data panel. Keputusan kajian ini telah menunjukkan hubungan antara modal intelek dan prestasi kewangan antara bank konvensional dan Islam di Malaysia adalah berbeza. Selain itu, keputusan kajian telah menunjukkan modal intelek adalah penting untuk kelebihan daya saing bank. Keputusan kajian ini akan dapat membantu bank dan pelabur dalam menganalisis kedudukan modal intelek dalam institusi kewangan di Malaysia.

**Katakunci:** Modal Intelek, Nilai Pekali Intelek Tambahan, Pulangan atas Aset, Pulangan atas Ekuiti



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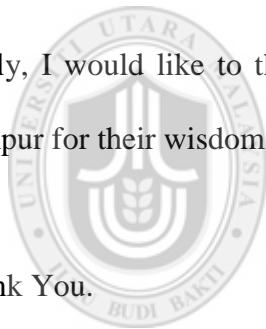
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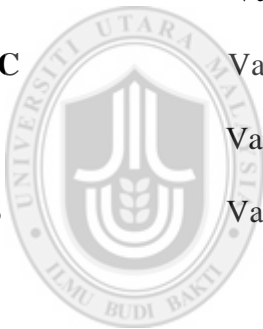
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## LIST OF ABBREVIATIONS

<b>AFAS</b>	ASEAN Framework Agreement on Services
<b>AFTA</b>	Association of Southeast Asian Nations Free Trade Area
<b>ASEAN</b>	Association of Southeast Asian Nations
<b>BCC</b>	Banker, Charnes and Cooper Model
<b>BIMB</b>	Bank Islam Malaysia Berhad
<b>BMMB</b>	Bank Muamalat Malaysia Berhad
<b>BNM</b>	Central Bank of Malaysia
<b>CE</b>	Capital Employed
<b>CEE</b>	Capital Employed Efficiency
<b>DEA</b>	Data Envelopment Analysis
<b>DFI</b>	Development Financial Institutions
<b>DFIA</b>	Development Financial Institutions Act
<b>EFF</b>	Efficiency
<b>FSMP</b>	Financial Sector Master Plan
<b>GDP</b>	Gross Domestic Product
<b>GLC</b>	Government Linked Companies
<b>GLS</b>	Generalised Least Squares
<b>HC</b>	Human Capital
<b>HCE</b>	Human Capital Efficiency
<b>IBS</b>	Islamic Banking Scheme
<b>IFSB</b>	Islamic Financial Services Board
<b>IV</b>	Independent Variables
<b>LEV</b>	Leverage

<b>MYR</b>	Malaysia Ringgit
<b>OLS</b>	Ordinary Least Squares
<b>PLS</b>	Profit and Loss Sharing
<b>ROA</b>	Return on Asset
<b>ROE</b>	Return on Equity
<b>SAB</b>	Shari'ah Advisory Body
<b>SAC</b>	Shari'ah Advisory Council
<b>SC</b>	Structural Capital
<b>SCE</b>	Structural Capital Efficiency
<b>SE</b>	Standard Error
<b>VA</b>	Value Added
<b>VAIC</b>	Value Added Intellectual Coefficient
<b>VIF</b>	Variance Inflation Factor
<b>VRS</b>	Variable Return to Scale



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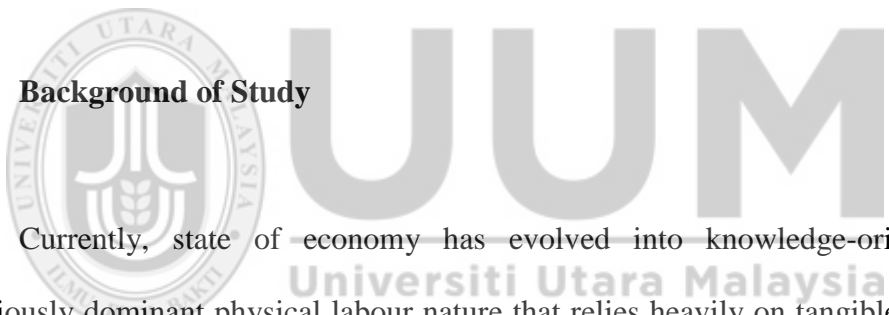
# CHAPTER ONE

## INTRODUCTION

### 1.0 Introduction

This introductory chapter aims to provide an overall picture of area of study. The chapter is organised into eight sections. It essentially describes research study' background, problem statement, research questions, research objectives, significant of study, scope and limitations, and thesis organisation. Finally, chapter summary is presented.

### 1.1 Background of Study



Currently, state of economy has evolved into knowledge-oriented from previously dominant physical labour nature that relies heavily on tangible asset. This scenario places more importance towards knowledge, skilled employees and information technology systems. Thus, according to Guthrie and Petty (2000), most developed economies in the world had put prominence on intangible asset (service-oriented field) in relative to physical-oriented industry such as commodity and manufacturing. This is evident as service industries significantly dominating developed countries' gross domestic product (GDP).

According to Cardinal (2001), it is inevitable for firms to face competitive environment nowadays as a result of rapid globalization and technology improvement. This scenario has placed significant importance on intellectual capital (intangible asset).



Thus, Andriessen (2004) and Maheran and Amin (2009) asserted that unique intangible resources play a decisive factor for firms survival in ultra competitive environment nowadays.

Therefore, it is no surprise as firms venturing beyond tangible resources towards intellectual capital in order to possess sustainable competitive advantage in knowledge-oriented economy (Guthrie, 2001). Shih *et al.*, (2010) postulate that this scenario is more evident in knowledge-oriented field such as banking. According to Roslender and Fincham (2004), and Serenko and Bontis (2004), this phenomena is fuelled by banks management recognition of the importance of intellectual capital. Scholars such as Barney (1991), Bontis *et al.* (2000), Marr *et al.*, (2004), Ismail (2005), Montequin *et al.*, (2006), Shih *et al.* (2010), Gigante and Previati (2011), Maditinos *et al.* (2011), and Sharabati *et al.* (2013) postulate that intellectual capital turns out to be vital key point of firms' success by aiding in firms' value creation. Therefore, it is being implied that information (technology and marketplace) that belongs to firms are more advantageous in relative to physical assets. As information being rapidly transmitted presently, knowledge handling skills emerged as a vital strong point for firms (Widen-Wulff and Suomi, 2003). Thus, according to Siegel (2004) and Teece (2007), knowledge is a vital tool for firms survival as nowadays, cost reduction technique alone could not provide sustainable competitive advantage to firms.

In essence, intellectual capital is generally defined as knowledge-oriented resources that can be utilised by firms in order to make economic gain (Edvinsson and Sullivan, 1996). According to Kaplan and Norton (2001) and Andriessen (2004), intellectual capital broadly covers all knowledge-based assets that provides value to

firms. In this respect, Guthrie and Petty (2000) considers that intellectual capital is very crucial component for firms as most of industry currently are being dominated by high “knowledge-based” fields such as banking and technology. This research study is aimed to examine the relationship between intellectual capital (includes its underlying elements; human capital and structural capital) and banks financial performances. This study is aimed for comparative study between dual banking system in Malaysia (conventional and Islamic banking). According to Bontis (1998) and Bontis *et al.*, (2000), significant past research on intellectual capital and firm performances are being concentrated on developed economies.

## **1.2 Malaysian Banking Industry**

Malaysia banking systems are described as “dual banking” (its legal effect are provided under Central Bank of Malaysia Act, 2009) due to the practice of parallel conventional and Islamic based financing. Most of leading financial institutions in Malaysia are providing both conventional and Islamic based finance services and products (Joo and Lin, 2014).

The banking industry in Malaysia essentially consists of Bank Negara Malaysia (BNM) (Central Bank of Malaysia), commercial banks, investment banks, Islamic banks, development financial institutions (DFI), offshore banks (Labuan International Offshore Financial Centre). The BNM is the regulatory agency for all the banks in Malaysia (except Labuan offshore banks). Bank Negara Malaysia was established in 1959 as a result of Banking Ordinance, 1958. As the apex of Malaysian monetary and financial system, BNM primarily regulates and supervises Malaysian financial

industry. In addition, Bank Negara Malaysia is also responsible to uphold soundness and stability of Malaysian financial system (San *et. al*, 2011).

Currently, there are 27 commercial banks (eight locally-owned and 19 foreign-owned), 11 investment banks, 19 Islamic banks (10 locally-owned and nine foreign-owned), six development financial institutions (refer Appendix A). Commercial banks play financial intermediary role between depositors and borrowers. It usually involves in activities such as accepting deposits from depositors and lending loans to borrowers. The commercial banks constitutes over 80% of Malaysian overall retail loans. Meanwhile, investment banks provides financial services for large scale firms such as multinational firms, government linked companies, public listed firms. According to Sufian (2009), Said and Tumin (2011), and Joo and Lin (2014), its financial products are mainly associated with capital market.

Islamic banks are considered as financial institutions which follow Islamic law (Shari'ah) in its operation and financial products. The Islamic finance products can be utilised by both Muslims and non-Muslims. Meanwhile, the DFIs can be regarded as specialised banks and were created in order to stimulate development in targeted fields (small and medium sized enterprises, agriculture, maritime, infrastructure developments, trade, capital intensive and high technology industries). In this respect, DFIs are important for these target sectors as commercial banks usually shuns funding in these areas. The DFIs are regulated under Development Financial Institutions Act 2002 (DFIA) (Matthews and Ismail, 2006).

### **1.2.1 Malaysian Conventional Banking Industry**

The conventional banks in Malaysia are regulated under under Financial Services Act 2013 by Bank Negara Malaysia. It is the largest and considered as important component in Malaysian financial industry. The conventional banks are involved in variety of financial activities such as accepting deposit, lending loans, hire purchase, leasing, and other services. In terms of history, conventional banks can be considered as the oldest form of banking in Malaysia (Joo and Lin, 2014).

The first conventional bank in Malaysia was Chartered Mercantile Bank of India, London and China which was established at Penang (Beach Street) in 1859. Following this, another foreign bank, Hong Kong Bank was also set up in Penang in 1884. During the 19<sup>th</sup> century, the foreign banks function primarily to cater to needs of British merchants who had conducted their trading business in British colonies such as Malaya and Singapore. Pre-independent Malaysian banking industry was dominated by foreign banks.

However, post independence, local banks had gained prominence in Malaysia with implementation of pro-local banks government policies by BNM. Domestic banks started its operation in 1959 (coincide with establishment of Bank Negara Malaysia in 1959). From 1960s, Bank Negara Malaysia started to reinforce Malaysian oriented financial industry by broadening local conventional banks network and restrategised foreign based conventional banks operation in order to focus serving the domestic needs. The percentage of Malaysian banking share held by foreign banks had significantly reduced since 1957. Conventional banks in Malaysia had experienced major mergers

and consolidation activities aftermath 1997 Asian Financial Crisis and this had led to decline in its numbers. Moreover, another landmark event for conventional banks in Malaysia was the establishment of Financial Sector Master Plan (FSMP) in 2001. This plan objective is to strengthen local banks effectiveness and capacity (Matthews and Ismail, 2006 and Joo and Lin, 2014).

### **1.2.2 Malaysian Islamic Banking Industry**

The implementation of Islamic Banking Act in 1983 by Central Bank of Malaysia (BNM) had paved the way for establishment of first Islamic bank in Malaysia. Following this Act, first full-fledged Malaysian Islamic bank known as Bank Islam Malaysia Berhad (BIMB) was formally created on 1<sup>st</sup> July 1983. It remained as the sole Islamic finance provider for a decade as it was given avenue to function without adverse competition which can hamper Islamic banking development in Malaysia. Since 30 June 2013, Islamic banks in Malaysia are regulated by Islamic Financial Services Act, 2013 as it repealed former Islamic banks act (Islamic Banking Act 1983).

Albeit Islamic banks adhering to Shari'ah law, in Malaysia, it is classified under civil laws and courts jurisdiction. The regulation and supervision of Islamic banks in Malaysia falls under the purview of BNM. The next major spark in Islamic financing development in Malaysia happened through establishment of "Interest Free Banking Scheme" or known as "Islamic Banking Scheme (IBS) in the year 1993 which enabled "window concept". This scheme intensified rapid development of Islamic financing in Malaysian financial market as conventional banks are permitted to provide Islamic

financing products and services in addition to its existing conventional based banking products.

In 1994, Malaysian' interbank Islamic money market was created. It enabled interbank cheque clearing system for Islamic banks. The underlying principle for the system is Mudharabah. In this respect, Islamic bank' clearing account deficit would be funded by BNM or another Islamic bank surplus funds. In order to further strengthen Islamic finance in Malaysia, a second full-fledged Islamic bank was created (Bank Muamalat Malaysia Berhad, BMMB) in 1999. Existing Islamic banking portfolio of Bank of Commerce (Malaysia) Berhad and Bank Bumiputra Malaysia Berhad had been merged in this process of creating BMMB.

In addition to this, in 1997, BNM also had created a special agency, Shari'ah Advisory Council, (SAC) to act as overseer for Shari'ah law implementation in Malaysian financial institutions. The SAC also functions as the utmost authority for resolving Shari'ah issues concerning Islamic banks in Malaysia. In this respect, its published rulings are binding on Malaysian courts and Islamic banks. Meanwhile, Shari'ah Advisory Body (SAB) also had been created in order to monitor Shari'ah law practices and ensuring financial institution transactions adhere to Shari'ah law. Unlike the SAC which is positioned under the purview of Central Bank of Malaysia, the independent SAB is present in each Malaysian Islamic financial institutions (Rosly and Abu Bakar, 2003 and Mokhtar *et al.*, 2006). The SAB implements both the BNM' guidelines and SAC' fatwas (ruling on points of Islamic law) pertaining to Islamic financing transactions. In the case of dispute pertaining to Shari'ah financial transactions issues, SAB will refer to SAC for further guidance. In 2001, BNM had

created 10 year Financial Sector Masterplan (FSMP) which aimed to further expand Islamic banking and to position Malaysia as strategic financial centre for Islamic finance.

In 2002, BNM had established Islamic Financial Services Board (IFSB). The IFSB is responsible to formulate international level regulatory standards to uphold stability and soundness of Islamic finance in Malaysia. Currently, every local based conventional banks (previously had Islamic banking window) had converted its Islamic finance operation towards full fledged Islamic banks stature (Sufian, 2007). Moreover, BNM had also given licence to three full fledged Middle Eastern based Islamic banks (Al-Rajhi bank, Asian Finance Bank and Kuwait Finance House) to enable them to provide Islamic finance products in Malaysia.

### **1.3 Problem Statement**

In essence, banks are considered to be core of country's financial system and valid barometer for any nation's economy "health". In this respect, banks are vital for economies advancement. In addition to financial intermediation roles, banks' tasks also incorporate maintaining a strong and resilient financial market. Currently, Malaysia is practising dual banking system which incorporates both conventional and Islamic banks. Leading Malaysian banks such as Malayan Banking Berhad, CIMB Berhad, Public Bank Berhad, RHB Bank Berhad, and Hong Leong Berhad had expanded its' services beyond Malaysia to ASEAN (Association of Southeast Asian Nations) region. Other ASEAN banks are also offering its services and products in Malaysia.

This resulted in a more intense competition between banks in ASEAN. As AFAS (ASEAN Framework Agreement on Services) is expected to begin in 2020, the level of competition in ASEAN region is expected to escalate. The AFAS is considered to be a constituent of ASEAN trade bloc treaty which is known as AFTA (ASEAN Free Trade Area) (Verico, 2012). The AFAS will subsequently removes any barrier to employment between ASEAN nations. Thus, this phenomenon will put importance to intellectual capital in the form of human capital.

The financial institutions also need to “buckle up” by adapting to new surroundings for striving in ultra-competitive atmosphere aftermath the diminished trade barrier (Evanoff and Israilevich, 1991 and Verico, 2012). In this respect, Ahmad and Khanal (2007) postulate that financial institutions should significantly focus on intellectual capital (intangible asset) as opposed to only depend on monetary capital in order to thrive in competitive financial industry. Therefore, financial institutions need to practice few steps such as having adequate investment in knowledge-based capital, possess and implement suitable intellectual capital strategies.

Therefore, significance of intellectual capital relationship with Malaysian banking financial performances is an important point of study. As significant portion of previous intellectual capital studies had been concentrated on advanced economies, there is only scarce literatures that are devoted specifically to Malaysian banks. Moreover, there is dearth of comparative studies between Malaysian conventional and Islamic banks in terms of intellectual capital and financial performances. In addition, there is no previous research that utilised DEA (Data Envelopment Analysis) method



for efficiency in intellectual capital and Malaysian banks interrelationship studies. Thus, this undertaken research study aimed to fill these identified area of gaps.

#### **1.4 Research Questions**

This research study aimed to answer these following research questions:

1. Is there any relationship between intellectual capital and bank financial performances?
2. What are the factors influencing intellectual capital and bank financial performances?

#### **1.5 Research Objectives**

The research objectives for this undertaken research study are as per below:

1. To examine the relationship between intellectual capital and bank financial performances
2. To investigate the factors influencing intellectual capital and bank financial performances

#### **1.6 Significance of Study**

This research study has several benefits for Malaysian banks stakeholders. The findings of this study will enhance investors (shareholders) knowledge on intellectual capital position. In this respect, the importance of intellectual capital on banks financial

performances and its competitiveness can be comprehended. Thus, it creates a platform for them to assess their current investment policy from the financial institutions financial performances (as a result of intellectual capital).

In addition, the results of this research study also will be beneficial for other bank's stakeholders such as bank's senior management team. First, they can clearly establish intellectual capital standards relative to their closest rivals. Thus, it will provide avenue for them to fine tune their internal policies to outperform their rivals in terms of value generation capacity. Apart from benefiting bank stakeholders, this research study will aid potential researchers that concentrates in intellectual capital study on Malaysian dual banking systems. In this respect, findings of this study will act as reference for future studies in this area.

## **1.7 Scope and Limitations of the Study**

This research study concentrates on the relationship between intellectual capital (including its underlying elements) and Malaysian commercial banks (conventional and Islamic) financial performances (profitability). This comparative study analyses efficiency of intellectual capital and bank profitability proxies. Apparently, there are two limitations pertaining to this research study. The sole intellectual capital measurement technique used in this study is value added intellectual coefficient (VAIC). Thus, the results obtained can differ if other intellectual capital measurement is utilised. Next, the research period is limited to 2008 – 2015. This scenario is due to small sample size of Islamic banks in Malaysia prior to 2008.

## 1.8 Organization of the Thesis

The undertaken research study essentially divided into five chapters; introduction (chapter 1), literature review (chapter 2), methodology (chapter 3), results and discussion (chapter 4), conclusion and recommendation (chapter 5).

Chapter one is essentially an introductory to the undertaken research. It sets the platform for overall view of this study. It contains background of research and other study related elements; problem statement, research questions, objectives, study' significance, scope and limitation, thesis organisation. Meanwhile, chapter two analyses literatures that are relevant to the subject matter. In this respect, aspects such as conventional and islamic banking fundamentals, islamic finance mode of financing, intellectual capital underlying theory (resource based theory), intellectual capital (including its underlying elements such as human capital and structural capital) background, capital employed, value added intellectual coefficient (VAIC), human capital efficiency (HCE), structural capital efficiency (SCE), capital employed efficiency (CEE), banking financial performances (return on asset, return on equity, data envelopment analysis efficiency) and relationship between intellectual capital and banks financial performances are highlighted. Chapter three essentially describes how this research study is conducted. Following this, chapter four presents and analyses obtained outcomes from the undertaken analysis. Finally, chapter five discusses on research study' results and highlights future recommendations.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter provides overall picture regarding intellectual capital and its role in financial performances by analysing related previous literatures. This chapter begins with discussion on conventional and Islamic banking fundamentals and this section is followed by analysis of Islamic mode of financing. Next, resource based theory is discussed. The subsequent subsection highlights on definition of intellectual capital (including its underlying constituents) and capital employed. Next, Value Added Intellectual Coefficient (VAIC), human capital efficiency (HCE), structural capital efficiency (SCE), and capital employed efficiency (CEE) is analysed. Afterwards, bank financial performances (return on asset, return on equity and data envelopment analysis' efficiency) is discussed. The following subsection analyse on relationship between intellectual capital and banks financial performances. At the end of this chapter, overall summary pertaining to the literature review is presented.

#### **2.1 Conventional Banking Fundamentals**

The conventional banking primarily utilises interest based concept where interest will be charged upon loans provided to borrowers. Interest is a vital revenue for the conventional banks. The bank primarily plays role of mediator between depositors (possess surplus funds) and borrowers (deficiency of funds). Thus,

conventional banks essentially pool funds together in order to facilitate country's economic activities (Said and Tumin, 2011).

According to Sufian (2009), Said and Tumin (2011) and Joo and Lin (2014), the underlying principles of conventional banks are based on secular rules (prudential banking principles along with fiduciary guidelines) and thus, it is not bound to any religious ethos. The main motive of these banks is to optimise its financial performances. Relationship between conventional bank and its customers is referred as creditors and debtors. In essence, conventional banks generate credit and ultimately furnish nations' money supply by multiplier effect. In this respect, multiplier is closely associated with central banks' reserve ratio. Thus, money supply can be regulated by adjusting reserve ratio. Tight money supply can be achieved by imposing high reserve ratio.

In terms of financing, its financial products usually features interest (fixed or floating) in lieu of using money. The interest rate will be based upon few factors such as loan's sum and tenure, perceived lending risk to borrowers based on their credit rating. In the event of default, the defaulters will be imposed with extra charges (known as compounded rate of interest). For deposits, the depositors are guaranteed of predetermined interest rate (it will based upon deposit sum and period of maintenance of deposit in the bank) with subsequent principal repayment assurance during maturity (Matthews and Ismail, 2006). In terms of financing, unlike Islamic banks, conventional banks are free to provide its service to any legal economies activities without restrictions. In addition to involvement in retail and business based financing, conventional banks are also involved in trading and dealing in derivatives oriented

products. Moreover, conventional banks can practically perform investment in any asset categories as long as it is not classified as illegal by the bank' country of incorporation law.

The conventional bank profits will be ultimately decided by its net interest income. It is essentially computed by deducting interest serviced on deposit amount from bank' loans gross interest earned income. In essence, conventional banks capacity in generating profits ultimately determined by clients confidence towards the bank. Otherwise, without deposit placement by investors, banks will be unable to perform its lending activities (Joo and Lin, 2014).

## **2.2 Islamic Banking Fundamentals**

The contemporary form of Islamic finance essentially begins with establishment of Mit Ghamr Savings Bank at Egypt in 1963. From the humble beginning as niche oriented financing, Islamic banking had blossomed into viable alternative type of financing to conventional banking (Chong and Liu, 2009). Modus operandi of Islamic banking differs to conventional banking as the former financing fundamentals is based on Islamic religious law; Shari'ah. The Shari'ah law mainly had been derived from primary sources; Qur'an (Muslims holy book), Sunnah (life chronicle of Prophet Muhammad (pbuh)), Hadith (collection of dictums from Prophet Muhammad (pbuh)) and secondary sources such as Qiyas (analogical reasoning procedure) and Ijma (consensus by Islamic scholars).

The Islamic banking is only permissible to conduct finance transactions that are allowed (halal) under Shari'ah law. In this respect, Shari'ah law forbids Muslims from involved in certain nature of business such as interest or usury (riba), liquor, tobacco, pork, and pornography. These activities are considered to be vice (haram) for Muslims. In addition, gambling (maysir) and speculative (gharar) activities also falls under haram category (Rosly and Abu Bakar, 2003). Risk is an important factor in Islamic financing transactions. Profits shall match undertaken risk level in a financing transaction. Thus, "free profit" (obtain profit without any involvement of risk) is being shunned under Islamic finance. In this respect, in Islamic finance, money can only depict medium of exchange role. Moreover, risk sharing and equity participation remains unique facet of Islamic finance (Yudistira, 2004 and Ika and Abdullah, 2011).

### **2.3 Islamic Mode of Financing**

In Islamic finance, mode of financing can be divided into two major groups; profit and loss sharing (PLS) and non-PLS. Under the PLS category, it can be further sub-divided into Mudarabah and Musharakah. Meanwhile, non-PLS involves transactions such as Murabaha, Ijarah, Istisna'a, and Salam. Non-PLS is considered to constitute most of Islamic financing in relative to PLS (Dar and Presley, 2000 and Rosly and Abu Bakar, 2003).

For Mudarabah, agreement is reached between two parties; Islamic banks (play investor role) and customer (act as entrepreneur). In this mode of financing, profits will be divided between these two parties based on an agreed predetermined ratio. Meanwhile, in the event business venture face loss, the Islamic bank will bear the

financial losses. The customer meanwhile will not face any financial losses as they only have to borne time and effort loss that was invested for the business venture. For Musharakah, the profit elements sharing is similar to Mudarabah. However, the concept differs when it comes to losses. In Musharakah, contrary to Mudarabah (losses is only borne by Islamic banks), the losses have to borne by both parties; Islamic banks and customer in an agreed predetermined ratio.

Meanwhile, in Murabaha (non-PLS), the modus operandi differ significantly to profit and loss sharing products. It involves selling of an asset (chosen by customers) by Islamic banks to customers with a “mark-up price”. This mark-up price is essentially the profit margin for Islamic banks and it is agreed by both the customer and bank prior to transactions. Meanwhile, for Ijarah (leasing), Islamic banks will initially purchase asset and it will subsequently rent out to customers in exchange of monthly payments.

According to Zaher and Hassan (2001), Salam is akin to forward contract sale. In this concept, seller will enter into agreement with buyer (payment made in single payment during contract signing) with intention of selling products but the delivery of the products will be only made in the agreed future date. The last non-PLS financing is Istisna'a. Its concept is almost similar to Salam. However, there are few notable differences. The buyer will only make instalment payment on monthly basis as opposed to single upfront payment in Salam. Next, seller undertake to construct a custom made product following the buyer requirements. This act is contrary to Salam as the seller will only makes generic based products (Zaher and Hassan, 2001 and Chong and Liu, 2009).



## 2.4 Resource Based Theory

Before this chapter delve into intellectual capital context, it is imperative that underlying theory that relates to it need to be analysed. The resource based theory (part of organisational theory) had been identified as appropriate underlying theory. Firms' resources are an important antecedent for its final products and ultimately, directly linked to its financial performances (Nelson and Winter, 1982 and Hadjimanolis, 2000). According to Wernerfelt (1984) and Barney (1991), ultimately resource will become the unique factor for any firms and it will project in the financial performances differences in relative to its competitors. In this respect, an indispensable resource can provide competitive advantage to a particular firm.

Thus, according to resource based theory, firms' distinct resources are an important indicator of firms characteristic and it plays the decisive factor in enabling firms to enjoy sustainable competitive advantage over its peers (Peteraf, 1993 and Marr *et al.*, 2003). The important attributes of resources are valuable, non-substitutability, inimitability, rarity. These four facets of resources ultimately aid firms to achieve sustainable competitive advantage. Intellectual capital possesses all the four facet of resources traits (Roos and Roos, 1997 and Bharadwaj, 2000).

In this context, resources are not only limited to firms' physical asset such as machineries, goods and plants that are utilised to manufacture end products. Thus, resources ultimately encompass exhaustive list of tangible and intangible items in a firm (Grant, 1991). This includes firms' physical asset, knowledge and prowess. In general, resources may be classified into three distinct classes; physical capital, human

capital and organisational based capital. In this respect, intellectual capital (intangible asset of firms) plays important role for firms' competitive advantage (Conner and Prahalad, 1996 and Sveiby, 2001).

## 2.5 Intellectual Capital

The intellectual capital represent intangible asset that belongs to a particular firm. In this respect, firm knowledge (includes worker's technical know-how) that aid in creating value added for the betterment of the firm is generally known as intellectual capital (Roos and Roos, 1997 and Bontis, 1998). The intellectual capital had profound impact on firms' operation, financial performances and competitive advantage (Burgman *et al.*, 2005 and Cabrita and Vaz, 2005).

These attributes drive firms value generation process and ultimately shapes its performance aspect. Nevertheless, Cabrita and Vaz (2005) stated that firms' overall sustainable competitive advantage ultimately depends on its effectiveness in leveraging, spreading and usage of knowledge. The intellectual capital can be classified into elements such as human capital and structural capital (Bueno *et al.*, 2006 and Choudhury, 2010). The human capital essentially linked to knowledge and skills set of firms' workers (Roos and Roos, 1997). Meanwhile, structural capital includes firms' internal values. Section 2.4.1 and Section 2.4.2 analyse human capital and structural capital in more detail. These underlying constituents of intellectual capital aid in elevation of firms' market value. It is imperative to analyse the impact of each individual components of intellectual capital towards banks profitability. This analysis is vital to comprehend contribution of distinct intellectual capital resources constituents

on banks performances (McGregor *et al.*, 2004 and Zeghal and Maaloul, 2010). According to Akpinar and Akdemir (1999), intellectual capital and firm financial performances are positively linked in a chain of series. If capital being invested for human capital purpose, it will provide avenue to enhance workers' expertise and prowess. Then, this set of workers are in a better position to strengthen firms' structural capital. Subsequently, it will lead to significant external capital generation and better financial performances. (Roos and Roos, 1997 and Bontis, 1998).

### **2.5.1 Human Capital**

Akpinar and Akdemir (1999) had postulated that intellectual capital plays vital role in enhancing firms financial performances. A better equipped firms' employees through human capital investment will lead to robust firm' structural capital and this will subsequently lead to better output. Therefore, examination of relationship between intellectual capital and banks financial performances is utmost important. Moreover, Edvinsson and Sullivan (1996), Roos and Roos (1997), Mavridis (2004), and Goh (2005) postulated that as banks are considered to be catalyst for economy growth, it is crucial to study effectiveness of banks in creating value added and utilisation of intellectual capital in its operations.

As mentioned in the preceding section, human capital refers to employees' technical know-how, skills set and knowledge that can be utilised by firms to achieve its objective. Human capital is essentially an investment aspect for any firms (McGregor *et al.*, 2004 and Guthrie *et al.*, 2006). The knowledge which had been gained through education and job experience boosts their marketability (Youndt and Snell,

2004 and Zeghal and Maaloul, 2010). On contrary with structural capital, human capital knowledge will be forever lost once the workers had left the firm to its rivals for better employment or any other reasons. Thus, human capital only exists in the firm during the presence of its employees (Roos and Roos, 1997 and Pennings, *et al.*, 1998). Importance of human capital cannot be underestimated as they are considered as backbone of any firms (Youndt *et al.*, 1996 and Sveiby, 1997). The employees are a crucial component in maintaining and fulfilling relationship with parties such as customers and suppliers. In addition, they have capacity to alter firm' dynamic and considered to be core of firm' innovation (Seleim *et al.*, 2004 and Maheran and Amin, 2009).

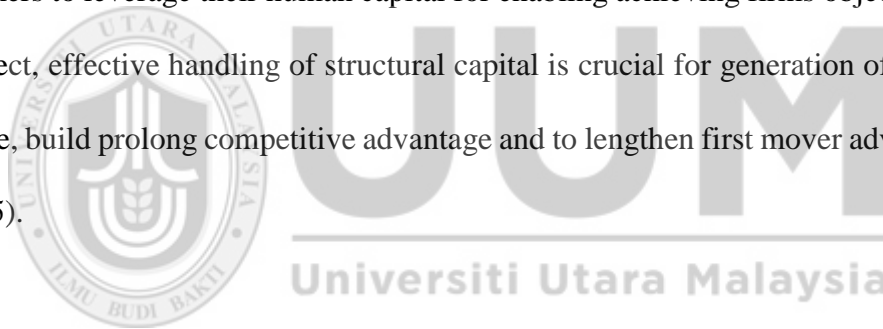
### **2.5.2 Structural Capital**

The structural capital can be referred to internal firm' assets such as strategies, trademark, culture, technology, patent, value, brand, database, research and development, relationship with external parties, management, production, information technology (Roos and Roos, 1997 and Goh, 2005). This infrastructure ultimately supports human capital. The structural capital can be considered as contra to other intellectual capital element (human capital) as it refers to firms' institutionalised knowledge that endures with the firm perpetually irrespective of employees stay in the firm (Bontis, 1998).

A strong structural capital yield advantage for firm over its rivals (Bontis *et al.*, 2000 and Zeghal and Maaloul, 2010). It represents firms' internal values that are being formed over the years. In essence, it encompasses overall firm' non-human based

resources and results based on products or systems that firm had generated over period of time (Bontis, 1999). Moreover, the intangible asset is rooted in the firm itself (Bontis, 1998). The structural capital considered as constituent of firm' intangible asset and it represents the firm systems outcome. According to Bontis *et al.*, (2000), firms with superior structural capital will possess supportive culture that enables its workers to explore and practice new matters.

The structural capital can be classified as firms' skeleton as structural capital can be considered as a system for gathering, processing and transform knowledge into a form of firm' property. Thus, structural capital is vital as it provides avenue for firms workers to leverage their human capital for enabling achieving firms objectives. In this respect, effective handling of structural capital is crucial for generation of shareholder value, build prolong competitive advantage and to lengthen first mover advantage (Zyl, 2005).



Structural capital can be classified into three constituents; organisation capital, innovation capital and process capital. The organisational capital is essentially comprised of firms' culture, principles, distribution and supply channels. These component in essence becomes human capital supporting backbone. Meanwhile, innovation capital refers to firms capacity in order to generate latest products and services which gives additional value for firms customers. This includes firms' patents and brands. The process capital meanwhile refers to firms distinctive project management techniques and business processes. Innovation and process capital aid in firm generation of sustainable competitive advantage and lengthen first mover advantage (Zyl, 2005).

## 2.6 Capital Employed

Capital employed is a form of physical capital and financial capital that generally considered as amount of capital that are harnessed by firm in fixed and current assets form. Alternatively, it is known as operating asset where it refers to firms' asset value that furnish to its capacity in order to create revenue.

The capital employed is usually financed by dual funding techniques such as firms shareholders equity and net of debts. These asset falls under firm' management direct authority. It is viewed as form of asset that give avenue to firm to generate revenue. Generally, it comprised of plant, equipment, inventory and account receivable (Muhammad *et al.*, 2009). The capital employed is essentially the sum of firms' fixed asset and working capital (through asset viewpoint). Meanwhile, if look from funding viewpoint, it represents sum of firms' stockholders equity and long term liabilities.

According to Pulic (1998), it is imperative to take physical and financial capital (both constitute the capital employed) into consideration during overall analysis of firms' value generation resources effectiveness. This scenario is due to the fact that intellectual capital unable to generate value only by its own. Moreover, albeit capital employed primacy declined in the knowledge-based economy nowadays, its relevancy cannot be totally ignored.

## 2.7 Value Added Intellectual Coefficient

As discussed in the preceding section, intellectual capital is considered as intangible asset (Zeghal and Maaloul, 2010). Thus, its computation will not be outright simple (Gigante and Previati, 2011). Currently at global arena, Chan (2009) assert that there is no single default intellectual capital computation technique. Albeit this scenario, value added intellectual coefficient (VAIC) had been extensively utilised by researchers in order to compute intellectual capital and its underlying elements; human capital and structural capital.

This technique was founded in the year 1988 by Ante Pulic. As intellectual capital is an intangible asset, the computation is not straightforward and a couple of steps need to be followed in order to deduce the amount of value added intellectual coefficient (represent overall value of intellectual capital). Prior to obtaining VAIC, the value of its underlying elements; human capital efficiency, structural capital efficiency and capital employed efficiency need to be obtained. In this case, Maheran and Amin (2009) stated that addition of three underlying VAIC result in the VAIC value.

Pulic (1998) proclaim that VAIC essentially provides details pertaining to firms' intangible and tangible value creation effectiveness. If the VAIC value is significant, then it indicates that firm had excelled in value added creation (Riahi- Belkaoui, 2003). In addition, this technique also enables managements and stakeholders to scrutinise on firms' value creation efficiency in relative to its closest rivals (Maheran and Amin, 2009).

The extensive usage of VAIC in order to compute intellectual capital value is due to its list of advantages. Firstly, VAIC utilise data that are obtained through financial statements. As the financial statements are readily available in published firm' annual report, ease of obtaining reliable and audited data is certainly a plus point. Secondly, VAIC method of computation is simple to be comprehended, utilised and analysed (results). Lastly, it is applicable for all firms irrespective of its firm size and type of industry (Shamsudin and Yian, 2013).

## **2.8 Human Capital Efficiency**

The human capital efficiency (HCE) is a part of value added intellectual coefficient (VAIC) model. The HCE measures the amount of value generated by firms through invested one monetary unit in the firms' human resources. Thus, it represent value that firms generated from its human capital at given point of time. According to Pulic (1998), the HCE will be analysed by computing firms' human capital level (employees' salary and wages at point of time). The human capital essentially comprised of workers' extent of productivity, expertise, and competence. These skills will be indicated by workers' salary, wages, bonus, increment earned. Thus, in terms of earned salary, it will be usually in upper scale for highly skilled workers (contribute more value to the company) in relative to low skilled workers.

Thus, value added is generated through investment of each dollar on the firms' workers and its the amount created is computed. Value added is vital as it significantly influence human capital efficiency. Based on the amount of value added and firms incurred employees salary, firms are able to judge its effectiveness in managing its



human capital. In the event low value added is obtained in relation to firms employees wages, it indicate that firms is not effectively handling its human capital resources. Meanwhile, if high value added in relative to employees salaries is obtained, then, it is indicating that based on the accrued salary and wages, the firm is effectively oversee its human capital. Thus, a significant human capital efficiency emanate from effective utilisation of human capital by adding value to the firms (Pulic, 1998).

## **2.9 Structural Capital Efficiency**

The structural capital efficiency (SCE) is the proxy of structural capital. From SCE, the amount value generated by firms' structural capital is obtained. It represent dollar amount of structural capital for each dollar of firms' value added (Edvinsson and Sullivan, 1996). The structural capital comprised of firms intellectual products. This includes patents, brands, databases. This items derived as a result of systems that are placed in the firms. Thus, structural capital is effectively the difference between value added and human capital (Pulic, 1998 and Sveiby, 2001).

Structural capital efficiency is thus effectively affected by firms' human capital and value added efficiency. Thus, significant human capital will translate towards enhanced firms internal structures (Pulic, 1998 and Sveiby, 2001).

## 2.10 Capital Employed Efficiency

The capital employed efficiency (CEE) indicates effectiveness of firms in utilising both physical and financial capital in generating value. It represents computation of value added through one unit of firms' investment (both physical and financial) for capital employed.

Thus, capital employed efficiency effectively reflects amount of value added generated by firms' every dollar expenditure on its capital employed. As intellectual capital is build and generate value through aid from capital employed (physical and financial capital), therefore, capital employed efficiency exhibits efficiency that both the human capital efficiency and structural capital efficiency fail to take into account (Pulic, 1998).

## 2.11 Bank Financial Performances

According to Lokman and Clarke (1999), bank financial performances can be defined as effectiveness of firms in attaining its target objectives. In these research study, bank financial performances are represented by profitability proxies such as return on asset, return on equity and efficiency (data envelopment analysis). Profitability in essence compute banks capacity to create earning in relative to cost incurred in a given period time. Banks are regarded to fare better in performance if it has significant profitability value. Firer and Williams (2003), Chen *et al.*, (2005), Iqbal and Molyneux (2005) had stated that both ROA and ROE remains most preferred choice as profitability proxy for researchers. Pandya and Rao (1998) mentioned usage

of ROA and ROE for firm analytical performance measurement and in this respect, competent management performance will be reflected in firms significant ROA and ROE value.

### **2.11.1 Return on Asset**

The return on asset (ROA) is essentially a proxy of profitability ratio. It is generally considered as good overall reflector of bank's financial performances. In this respect, it furnish firms' value added details that contribute to firms overall enhanced performances. The accounting based ratio represent computation of banks efficiency by dividing net income (pre tax income) over its total assets. Thus, it indicates the effectiveness of banks in managing its available resources (total asset). In the ROA, it compute banks earning relative to its available resources (shareholders equity and borrowed funds). If exhaustive asset oriented business margin is reducing, it reflects that additional funds needed in order to continue create earnings. Alternatively, banks can formulate competitive strategy by enhancing net margin with improved effectiveness of operation or cost reduction while preserve inflow of revenue (Shamsuddin and Yian, 2013).

Thus, return on asset is extremely useful for investors and banks stakeholders as it contains banks value added information which contributed to enhanced performances. The investors and banks stakeholders can utilise ROA in order to analyse the effectiveness of banks leadership and management in creating profit for each investment of one dollar of asset (Core *et al.*, 1999).

### **2.11.2 Return on Equity**

The return on equity is another alternative profitability computation method. In bank context, it represents return to banks' shareholders investment. Along with return on asset, it is extensively used as performance benchmark for a lot of researches. It is a comparison of banks after tax profit over its shareholders equity value. Thus, this profitability proxy indicates the amount of profit earned in relative to shareholders invested funds (retained earnings and paid in capital). Moreover, ROE is crucial for publicly traded banks investors as it will reveal the effectiveness of the bank in meeting their economic interests (Main *et al.*, 1996 and Core *et al.* 1999).

The return on equity reflects productivity of handling banks capital. There are several benefits of utilising ROE as performance measure. Firstly, it is very easy to utilise and comprehend. Secondly, it provides avenue for comparative research on varied firms or different industries. Lastly, it represent direct banks shareholders invested financial return (gain or loss) (Ting and Lean, 2009).

### **2.11.3 Efficiency (Data Envelopment Analysis)**

Efficiency score is computed by using Data Envelopment Analysis (DEA). DEA (a type of linear programming technique) measures relative efficiency of business unit (banks) which had multiple inputs and outputs. The modus operandi of DEA is through identification of relatively efficient decision making units (DMU) which serves as reference points to construct efficient frontier.

The efficiency score represent banks relative efficiency. Advantages of the efficiency score includes providing avenue for potential efficiency betterment through variances observation between efficient and inefficient banks. In addition to this, efficiency score also provides determination of adjustment for input and output variables in order to improve banks efficiency (Mousa, 2015).

For DEA, its benefits includes usage of multiple inputs and outputs which are not in similar scale. According to Jemric and Vujcic (2002), DEA provides platform for banks relative efficiency measurement by setting efficient bank as benchmark. Next, other banks input combinations inefficiencies (slack variables) in relative to the fixed benchmark is subsequently measured. Apart from that, DEA method had upper hand over regression analysis technique. This is due to DEA provide platform for firms' performance comparative and meanwhile, regression analysis method could not be applied to production relations that utilise multiple levels of input and outputs. Meanwhile, DEA assist bank' decision makers by disclose inefficiency scale and resources that are used in the bank (Coskun, 2007).

## **2.12 Relationship between Intellectual Capital and Banks Performances**

Intellectual capital impact on banks performances had been studied by several researchers. All the past studies that being discussed in this section had utilised value added intellectual coefficient (VAIC) method in order to compute intellectual capital and its underlying constituents. For intellectual capital research, financial industry (especially banks) are an important area of study.

Both Kwan (2003) and Puntilo (2009) had listed down several reasons pertaining to this scenario. Firstly, banking industry is essentially a service-based industry with significance presence of intellectual capital (knowledge). Thus, intellectual capital plays a prominent role in shaping financial industry end products (financial based services) and it had become as essential traits for its success. Secondly, intellectual capital aspect in banking industry can be easily analysed through widely presence of audited and published annual financial statements. Lastly, as banks plays a crucial role in economy development, thus, it is imperative that banks' value added creation is optimised for its continue success.

In Malaysia, relationship between intellectual capital and commercial banks was conducted for the period of 2001 to 2003. In this study, human capital found to be vanguard of intellectual capital aspect as human capital efficiency is reported to be very significant in relative to other coefficients; structural capital efficiency and capital employed efficiency. Moreover, it has been stated that local banks were found to create significant value added in relative to its foreign based banks rivals. However, in terms of efficiency, the trend had been reversed with foreign banks had edge over its local counterparts (Goh, 2005).

In a similar nature of study which was conducted in Malaysia neighbour country; Thailand had yielded a positive relationship between intellectual capital and banks performance (profitability). Saengchan (2008) had also utilised commercial banks (2000 – 2007) for this study. It had been found that intellectual capital had been a plus point for the banks and it is considered to be a significant asset for banks sustainable competitive advantage. Meanwhile, in a study involving Indian banks (2000 – 2004)

had revealed that local banks had edge over its foreign counterparts in capital employed efficiency (HCE). However, the foreign banks fare better in human capital efficiency. In essence, Kamath (2007) deduced that Indian banks lower generation of value added can be linked to its inflated and lower efficient workforce. Meanwhile, in a study held in India neighbouring country; Bangladesh by Najibullah (2005) had also revealed a direct relationship between intellectual capital and its underlying constituents and banks performance (denoted by market values).

Joshi *et al.*, (2010) had obtained similar nature of results as Goh (2005) as he noticed that Australian banks also had significant portion of human capital efficiency (HCE) in relative to other intellectual capital underlying elements. This indicates the prominence of human capital factor towards banks performances. Moreover, the author also observed that other bank specific variables like size of firm, workforce size and equity amount (contributed by shareholders) did not significantly contribute towards to banks financial performances.

In another study based on Asian country (Japan) banks in the year 2000 to 2001 had indicated that human capital had played prominent role in banks value creation as banks with significant human capital efficiency value had performed better. On contrary, capital employed efficiency was found to have lesser impact (Mavridis, 2004). Meanwhile, more studies on relationship between intellectual capital and bank performances conducted on European banks as its economy are more developed and matured. In a study done on Greece banks for the period of 1996 to 1999 had revealed that human capital had emerged as forefront of intellectual capital aspect in relative to other elements (Mavridis and Kyrmizoglou, 2005). This scenario is again reflecting

similarity to results obtained by Goh (2005) and Joshi *et al.* (2010). In addition to this, Spanish banks had been observed to possess direct relationship between human capital (denoted by human capital efficiency) and financial ratio (represented by market to book value) (Saenz, 2005).

Nevertheless, some scholars had observed different outcomes as compared to results that had been discussed so far. For instance, most of the above literatures postulating that human capital had been the vanguard of intellectual capital in its relationship with bank performances. Nonetheless, in a study concentrated on Portugal banks revealed that structural capital had been significant factor in relationship between intellectual capital and banks performance. Moreover, significant relationships between intellectual capital and performances of banks had been observed (Cabrita and Vaz, 2005). Besides this, adverse relationship between intellectual capital and banks profitability by means of return on asset and return on equity had been obtained by Puntilo (2009). In the same study which had been conducted on Italy banks sample, the results also indicating negative relationship between market to book value and banks intellectual capitalism.

### **2.13 Chapter Summary**

Previous studies on intellectual capital relations with bank performances had been discussed in this literature review chapter. Moreover, the background aspect of intellectual capital and its underlying elements; human capital and structural capital also had been presented. In addition, underlying theory pertaining to intellectual capital; resource based theory also had been reviewed. Moreover, context and advantages of



value added intellectual coefficient (VAIC) method, which measures intellectual capital and its underlying constituents, had been discussed.



## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.0 Introduction**

This chapter primarily aims to describe methodology that are employed in this research study to investigate undertaken research questions and objectives. This chapter commences with outlining of undertaken research framework. Next, measurement of variables is described. In the following section, hypotheses development is analysed. Following this, data collection and sampling is covered. The next section elaborates on techniques of data analysis. Lastly, chapter summary is presented.

#### **3.1 Research Framework**

The main objective of this research study is to perform comparative study on relationship between intellectual capital with Malaysian conventional and Islamic banks financial performances. The relationship analysis is conducted in two stages as the first phase is concentrate on investigation of overall intellectual capital (represented by value added intellectual coefficient, VAIC) relationship with banks financial performance.

In the next level, VAIC is further subdivided into its triad elements; human capital efficiency (HCE), structural capital efficiency (SCE) and capital employed efficiency (CEE). In this stage, these VAIC elements relationship with Malaysian banks

financial performances is analysed. Both stages encompass profitability as indicator of financial performances.

The research framework model is outlined in Figure 3.1 and it is hypothesized that there is a relationship between independent variables (intellectual capital) and dependent variables (financial performance) (Goh, 2005 and Saengchan, 2008). The independent variables are represented by value added intellectual coefficient (VAIC) (measure firms' collective intellectual capital) and its constituents; human capital efficiency (HCE), structural capital efficiency (SCE) and capital employed efficiency (CEE) (Pulic, 1998 and Mavridis, 2004).

Meanwhile, banks financial performances (profitability) is measured by accounting based profitability ratios; return on asset (ROA), return on equity (ROE) and profit efficiency (gauged by data envelopment analysis, DEA technique) (Mondal and Ghosh, 2012). Essentially, this research study employs profitability proxies (in the form of traditional accounting ratios and efficiency method by utilisation of DEA).

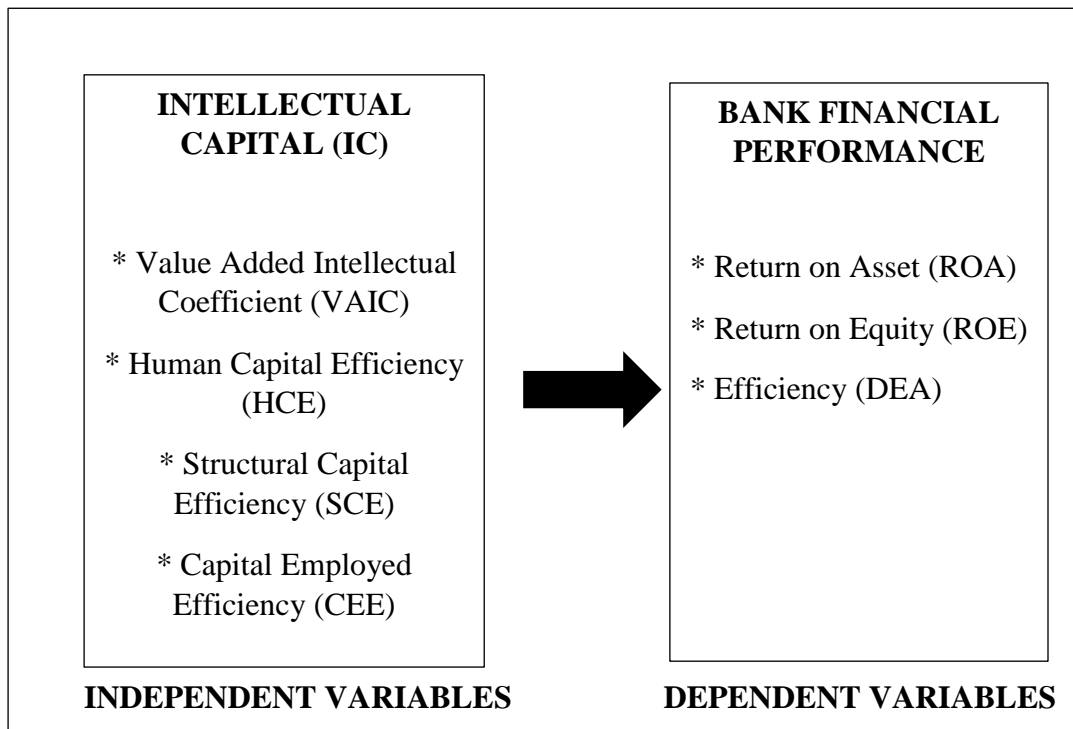


Figure 3.1  
*Research Framework Model*

### 3.2 Measurement of Variables

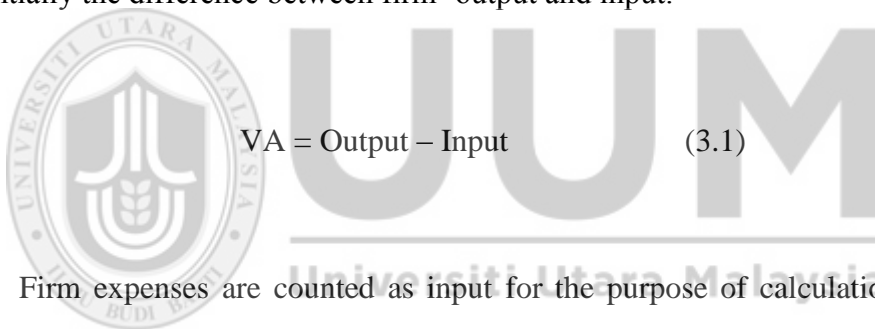
This subsection analyses the independent variables, dependent variables and control variables that are applied in this undertaken research study. There are four independent variables (IV); VAIC, HCE, SCE, CEE that are involved in this study. Meanwhile, dependent variables are represented by ROA, ROE and efficiency. For the control variables, financial crisis, banks' leverage and size are used.

#### 3.2.1 Independent Variables

Intellectual capital (VAIC and its underlying constituents: HCE, SCE and CEE) are selected as the independent variables of this study. They are measured by a measurement technique called Value Added Intellectual Coefficient (VAIC). This

technique was formulated by Ante Pulic in 1988 and it represent value added creation by a firm. A significant VAIC value signifies firm is excelling in value creation process (Pulic, 1998). This technique incorporates three different components. Two of the elements belongs to intellectual capital constituents; human capital and structural capital. In VAIC method, the two elements are known as human capital efficiency and structural capital efficiency. The third element is physical capital element which is represented by capital employed efficiency. In order to compute VAIC, several distinct steps need to be performed.

Firstly, value added (VA) need to be computed. Value added of a firm is essentially the difference between firm' output and input.


$$VA = \text{Output} - \text{Input} \quad (3.1)$$

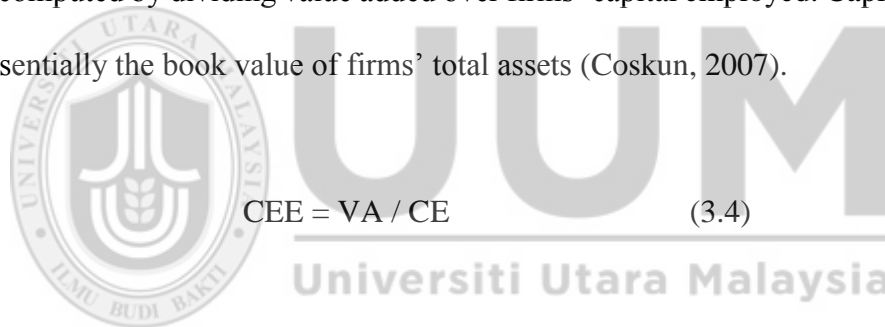
Firm expenses are counted as input for the purpose of calculation. However, according to Pulic (1998), labour expenses is excluded as it is regarded to play significant role in firms' value creation process. Meanwhile, overall income created by firm through rendition of its services and products is counted as its total output. Following the computation of value added, first element of VAIC; human capital efficiency is measured. HCE essentially showcases the amount of firms' value creation generated from its human capital over a given time. It is computed by dividing calculated value added over human capital (HC) cost that is incurred by firms for its staff salaries and other payments such as bonuses.

$$HCE = VA / HC \quad (3.2)$$

Next, the second component of VAIC, structural capital efficiency, is computed. It is calculated by dividing structural capital (SC) over value added (VA). Structural capital is essentially the difference between value added and human capital. It represents the value that are retained in a firm.

$$SCE = SC / VA \quad (3.3)$$

The final VAIC element is the capital employed efficiency. It refers to firms' value creation through usage of its capital employed (CE) portion over in given period. It is computed by dividing value added over firms' capital employed. Capital employed is essentially the book value of firms' total assets (Coskun, 2007).



$$CEE = VA / CE \quad (3.4)$$

After the three VAIC elements are calculated, the VAIC (represent firm' effectiveness to harness value from its owned resources) can be computed. It is calculated by the summation of all three VAIC components (HCE, SCE, CEE) amount.

$$VAIC = HCE + SCE + CEE \quad (3.5)$$

### 3.2.2 Dependent Variables

For this research study, there are three profitability proxies; return on asset (ROA), return on equity (ROE) and efficiency (DEA). Profitability is chosen as the proxy for banks financial performance in this study. This is due to fact that profitability is highly regarded in banks and still remains as banks' highest priority and action plans are placed in order to achieve this particular agenda (Ongore and Kusa, 2013). In this study, both ROA and ROE are utilised. If both are used together, they gives clearer view of firms' performances and effectiveness of management.

Return on asset refers to the effectiveness of firms to create positive net earnings based on its asset usage. It represent firms' returns created out from its asset. A higher ROA essentially signifies better firm performances in the form of significant profitability (Maudos *et al.*, 2002). The formula for ROA is shown as per equation below:

$$\text{ROA} = \text{Net Income} / \text{Total Asset} \quad (3.6)$$

Meanwhile, another traditional form of profitability ratios that is employed in this study is return on equity (ROE). Similar with ROA, a higher value of ROE denotes better performances (profitability) of a particular firm (Maudos *et al.*, 2002). The formula is a reflection of firms' effectiveness in creating net profit based on invested ordinary shareholders fund. The formula of ROE is as per equation below:

$$\text{ROE} = \text{Net Income} / \text{Total Ordinary Shareholder Equity} \quad (3.7)$$

Besides traditional accounting profitability ratios such as ROA and ROE, in this study, efficiency (profit) is computed using Data Envelopment Analysis (DEA) method. The DEA estimates firms' maximum potential output for a given set of inputs, and has primarily been utilised in efficiency estimation. Thus, DEA programme version 2.1 is utilised to run efficiency score. This method essentially computes banks efficiency score and it does this by measuring banks relative efficiency through analysing banks multiple output and input. The modus operandi of DEA is via identification of relatively efficient decision making units (DMU) which serves as reference points to construct efficient frontier. The method provides avenue for banks relative efficiency via having efficient banks as benchmark and subsequently, other banks' input combinations inefficiencies (known as slack variables) in relative to established benchmarks will be computed (Jemric and Vujcic, 2002).

The efficiency score ranges from 0 (minimum) to 1 (maximum). A higher efficiency score indicates significant effectiveness of banks. Variable return to scale (VRS) is utilised for this study. The variable return to scale indicates that input levels incremental does not lead to same proportional incremental in the output levels. This is more pragmatic approach in banking world nowadays as financial institutions are subjected to imperfect competitions and financial limitations (Coelli, 1996).

The BCC (Banker, Charnes and Cooper, 1984) model is chosen in this study. This model is suitable for this study as it utilises variable return to scale (VRS). Moreover, in terms of orientation model, input oriented approach is applied in this study as it represents creation of maximum amount of output from a certain level of input.



This approach is more appropriate for banks as they have more authority over their inputs in relative to output (Fethi and Pasiouras, 2010). In order to compute efficiency score, both multiple input and output need to be identified first. In this study, profit efficiency is used and thus, according to Leightner and Lovell (1998), Avkiran (2008), Sufian (2009) and Akhtar (2010), interest income and non-interest income are chosen as outputs. Meanwhile, interest expense and non-interest expense are regarded as inputs.

### **3.2.3 Control Variables**

In addition to independent and dependent variables, this study also controls for bank specific variables. Three chosen control variables are financial crisis (FCRISIS), banks' leverage (BLEV) and size (BSIZE) (Mondal and Ghosh, 2012 and Al-Musali and Ismail, 2014). The financial crisis (FCRISIS) is treated as dummy variable in this research study and denoted as 0 and 1 respectively. The former figure refers to years in which financial crisis is absence. Meanwhile, the latter figure refers to financial crisis years. Since the period of study is set between 2008 to 2015, financial crisis years is for 2008 and 2009 respectively. The rest of financial period deemed as non-financial crisis years (Al-Musali and Ismail, 2014), According to Al-Musali and Ismail (2014), financial institutions performances can be strongly influenced with occurrence of financial crisis. Thus, it is crucial to control the effect of financial crisis in this study.

Next, banks size (BSIZE) is also chosen as control variable as it also has prominent influence on banks performances. In this study, size is represented by the natural log of bank total asset. In essence, according to Riahi-Belkaoui (2003) and Chan

(2009), economy of scale is a plus point for larger banks and it results in significant financial results.

The last control variable in this study is leverage (BLEV). Leverage essentially measures the percentage of firms' liability relative to its total assets. It represent firms' ability to service their debt obligations. In practice, banks are involved in high leverage industry, and according to Wheelock and Wilson (2000), it provides significant insolvency risk for the financial institutions. Banks with high leverage are exposed to significant level of bankruptcy risk in the event they are unable to meet due payment. Thus, it can have strong impact on bank financial performances.

### 3.3 Hypotheses Development

Value added intellectual coefficient (VAIC) is essentially the combination of two intellectual capital elements (human capital and structural capital) and physical capital (capital employed). According to Akpınar and Akdemir (1999) and Mavridis (2004), these three combined elements provides benefit to firms in terms of its financial performance. The input of capital (physical capital) on firms had profound impact on human capital with enhancement of workers' prowess and eventually, these set of workers would be able to strengthen firms' structural capital.

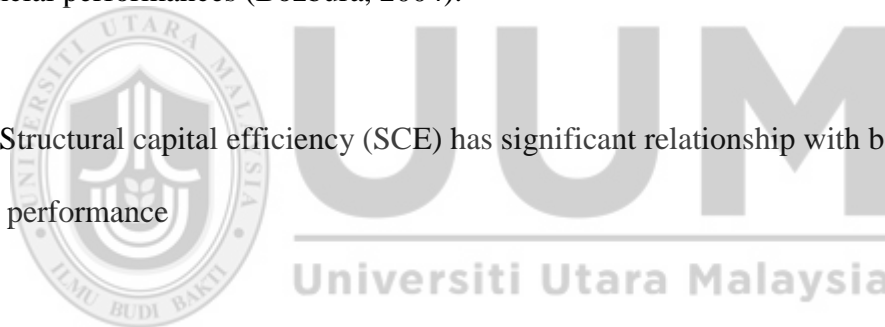
H1: Value added intellectual coefficient (VAIC) has significant relationship with bank financial performance

The human capital is one of important element for intellectual capital (Goh, 2005). The human capital (better trained and equipped workforce) is attributed to be a strong provider for firms' financial performance with enhanced effectiveness of firm' operational system (Becker *et al.*, 2001 and Kamath, 2007).

H2: Human capital efficiency (HCE) has significant relationship with bank financial performances

The structural capital in firm is vital as it provides avenue for employees to fully accomplish their full potential. Thus, it is directly linked to firms' productivity and financial performances (Bozbura, 2004).

H3: Structural capital efficiency (SCE) has significant relationship with bank financial performance



The physical capital also aids in firm value creation (Najibullah, 2005). It is needed for attracting, developing and keep best talents in firm. In addition, physical capital is vital to build and strengthen strong firm structural value and culture (Pulic, 1998 and Saengchan, 2008).

H4: Capital employed efficiency (CEE) has significant relationship with bank financial performance

### 3.4 Data Collection and Sampling

The sample for this research study is composed of both conventional and Islamic banks in Malaysia. The selected banks are restricted to one sector (commercial banks). It is because larger number of banks in Malaysia are commercial banks. Moreover, other banks in Malaysia are specialised (such as development financial institutions, DFI) and regulated by other banking laws such as Development Financial Institutions Act, DFIA. Thus, other form of banks in Malaysia such as investment banks and development financial institutions is omitted for the purpose of this study.

Financial data for these banks (for the period of 2008 to 2015) are extracted from their published annual report. The data essentially are denominated in Malaysia Ringgit (MYR). The panel data contains a total of 32 banks (refer Appendix B). From this total, 17 banks are classified as conventional banks and Islamic banks had a total count of 15. A further breakdown of these banks as per their ownership is shown in Table 3.1 below.

Table 3.1  
*Classification of Banks and Their Ownership*

TYPE OF BANKS	CONVENTIONAL BANKS		ISLAMIC BANKS	
	LOCAL	FOREIGN	LOCAL	FOREIGN
	8	9	8	7
<b>TOTAL</b>	17		15	

### **3.5 Techniques of Data Analysis**

In this research study, panel data analysis technique is applied for the chosen panel data. Since the data in this research study is panel data in nature, diagnostic tool (multicollinearity analysis) is applied for the chosen data.

#### **3.5.1 Multicollinearity Analysis**

The collinearity diagnostic test is conducted in order to investigate presence of multicollinearity in the undertaken panel data model. Multicollinearity happens when two or more number of variables in regression model are correlated (moderately or highly). Thus, multicollinearity essentially limits research conclusions that can be drawn upon from the results. For this purpose, variance inflation factor (VIF) analysis is pursued. In VIF analysis method, there is a collinearity extent that are deemed as acceptable in regression models. Beyond this cut-off level, multicollinearity deemed to occur in chosen data model. The threshold value is less than 10 for variance inflation factor and tolerance value ( $1/VIF$ ) higher than 0.10 (Hair *et al.*, 1992).

#### **3.5.2 Panel Data Analysis**

In order to analyse the impact of intellectual capital over Malaysian banks financial performances, panel data analysis method is utilised. In this respect, Stata statistical software (version 11) is employed to focus towards hypothesis testing by conducting Generalised Least Squares (GLS) estimation (Pirayesh and Khojasteh, 2016). In this respect, Generalised Least Squares (GLS) estimation is vital as panel

data tend to have clustered (individual based) errors which could be correlated for research study period. The clustering is due to correlated errors inside study' observation subsection. In addition, GLS had advantage over Ordinary Least Squares (OLS) as OLS techniques primarily works on principles that errors variances are homoscedastic (random variables in sequences possess similar range of variance) and uncorrelated. If the two stated OLS assumptions are not valid, then, OLS estimates rendered to be inefficient and it will possess biased standard errors (Winship, 2009).

A total of six panel data estimation models had been developed for the purpose of investigating relationship of intellectual capital (includes its underlying elements) with financial performances of Malaysian conventional and Islamic banks. The first three models reflect measurement of intellectual capital (as represented by VAIC) relationship with financial performances indicators - return on asset (ROA), return on equity (ROE) and efficiency (measured with DEA method). Meanwhile, the latter three estimation models estimate the relationship of VAIC underlying elements; human capital efficiency, structural capital efficiency and capital employed efficiency with banks financial performances indicators. The panel data estimation models also control for banks specific variables - financial crisis, leverage and bank size.

$$\text{ROA}_{it} = \alpha_i + \beta_1 (\text{VAIC})_{it} + \beta_2 (\text{FCRISIS})_{it} + \beta_3 (\text{BLEV})_{it} + \beta_4 (\text{BSIZE})_{it} + \varepsilon_{it} \quad (3.8)$$

$$\text{ROE}_{it} = \alpha_i + \beta_1 (\text{VAIC})_{it} + \beta_2 (\text{FCRISIS})_{it} + \beta_3 (\text{BLEV})_{it} + \beta_4 (\text{BSIZE})_{it} + \varepsilon_{it} \quad (3.9)$$

$$\text{EFFICIENCY}_{it} = \alpha_i + \beta_1 (\text{VAIC})_{it} + \beta_2 (\text{FCRISIS})_{it} + \beta_3 (\text{BLEV})_{it} + \beta_4 (\text{BSIZE})_{it} + \varepsilon_{it} \quad (3.10)$$

Note:

SYMBOLS	DESCRIPTIONS
$\text{ROA}_{it}$	Return on Asset for bank $i_{th}$ in year $t$
$\text{ROE}_{it}$	Return on Equity for bank $i_{th}$ in year $t$
$\text{EFFICIENCY}_{it}$	Efficiency for bank $i_{th}$ in year $t$
$\text{VAIC}_{it}$	Value Added Intellectual Coefficient for bank $i_{th}$ in year $t$
$\text{FCRISIS}_{it}$	Dummy Variable (0 = Absence of Financial Crisis, 1 = Occurrence of Financial Crisis) for bank $i_{th}$ in year $t$
$\text{BLEV}_{it}$	Ratio of Total Liability / Total Asset for bank $i_{th}$ in year $t$
$\text{BSIZE}_{it}$	Natural logarithm of Total Asset for bank $i_{th}$ in year $t$
$\varepsilon_{it}$	Error Term

$$\text{ROA}_{it} = \alpha_i + \beta_1 (\text{HCE})_{it} + \beta_2 (\text{SCE})_{it} + \beta_3 (\text{CEE})_{it} + \beta_4 (\text{FCRISIS})_{it} + \beta_5 (\text{BLEV})_{it} + \beta_6 (\text{BSIZE})_{it} + \varepsilon_{it} \quad (3.11)$$

$$\text{ROE}_{it} = \alpha_i + \beta_1 (\text{HCE})_{it} + \beta_2 (\text{SCE})_{it} + \beta_3 (\text{CEE})_{it} + \beta_4 (\text{FCRISIS})_{it} + \beta_5 (\text{BLEV})_{it} + \beta_6 (\text{BSIZE})_{it} + \varepsilon_{it} \quad (3.12)$$

$$\text{EFFICIENCY}_{it} = \alpha_i + \beta_1 (\text{HCE})_{it} + \beta_2 (\text{SCE})_{it} + \beta_3 (\text{CEE})_{it} + \beta_4 (\text{FCRISIS})_{it} \quad (3.13)$$

$$+ \beta_5 (\text{BLEV})_{it} + \beta_6 (\text{BSIZE})_{it} + \varepsilon_{it}$$

Note:

SYMBOLS	DESCRIPTIONS
HCE $_{it}$	Human Capital Efficiency for bank $i_{th}$ in year $t$
SCE $_{it}$	Structural Capital Efficiency for bank $i_{th}$ in year $t$
CEE $_{it}$	Capital Employed Efficiency for bank $i_{th}$ in year $t$

### 3.6 Chapter Summary

This research study main motive is to study relationships between Malaysian conventional and Islamic banks intellectual capital with its financial performances (profitability). Thus, the specific research objective includes performing comparative analysis on banks profitability (return on asset (ROA), return on equity (ROE), profit efficiency) between Malaysian conventional and Islamic banks (as a result of intellectual capital). In this respect, banks efficiency in generating value creation analysed. This chapter highlighted research methods that are utilised for the purpose of this research study. Essentially, study' research framework, measurement of variables, hypotheses development, data collection and sampling, techniques of data analysis are discussed. Two software are used for this research study; Data Envelopment Analysis (DEAP version 2.1 by Coelli T.J.) in order to compute bank' profit efficiency score and Stata statistical software (version 11) for performing generalised least square (GLS) estimation on panel data.



## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.0 Introduction

In essence, chapter four presents research study' obtained results. The results are presented in the following formats; descriptive statistics, multicollinearity studies, analysis of panel data and chapter summary. In each sections, research study' results intertwined with discussion on obtained findings.

#### 4.1 Descriptive Analysis

Table 4.1 as per below indicating descriptive statistics such as average, standard error and median for undertaken variables (dependent, independent and control variables) for both conventional and Islamic banks in Malaysia.

Table 4.1  
*Descriptive Statistics for Malaysian Conventional and Islamic Banks Variables (2008 to 2015)*

		TYPE OF BANKS	
Variables		Conventional (n= 17)	Islamic (n= 15)
ROA	Average	2.2356	0.7756
	SE	0.2556	0.0936
	Median	1.4891	0.8405

Table 4.1 (Continued)

		<b>TYPE OF BANKS</b>	
<b>Variables</b>		Conventional ( <i>n</i> = 17)	Islamic ( <i>n</i> = 15)
ROE	Average	11.6219	7.7381
	SE	0.5445	0.6584
	Median	12.4533	8.7589
EFF	Average	0.8729	0.8423
	SE	0.0132	0.0188
	Median	0.9090	0.9020
VAIC	Average	4.8048	6.0429
	SE	0.3168	0.7255
	Median	4.8639	3.8458
SCE	Average	0.5960	0.6656
	SE	0.0444	0.0330
	Median	0.7550	0.6973
HCE	Average	4.1745	5.3582
	SE	0.2976	0.7152
	Median	4.0812	3.1418
CEE	Average	0.0337	0.0192
	SE	0.0022	0.0010
	Median	0.0274	0.0187
SIZE	Average	17.3275	16.1087
	SE	0.1157	0.1146
	Median	17.5419	16.1589
LEV	Average	0.8177	0.8934
	SE	0.0198	0.0087
	Median	0.9085	0.9214

Remarks:

ROA (Return on Asset); SE (Standard Error); ROE (Return on Equity); EFF (Efficiency); VAIC (Value Added Intellectual Coefficient); SCE (Structural Capital Efficiency); HCE (Human Capital Efficiency); CEE (Capital Employed Efficiency); LEV (Leverage)

Based on Table 4.1 above, Islamic banks in Malaysia, on average, exhibits higher value added intellectual coefficient (VAIC) (6.0429) in relative to conventional banks (4.8048) in the period of 2008 to 2015. If this VAIC value is compared against other previous intellectual capital research studies done in other countries by Al-Musali and Ismail (2014), El-Bannany (2008), El-Bannany (2012), Joshi *et al.*, (2013) and Ozkan *et al.*, (2016), it is noted that it is lower than VAIC (average) of banks operate in United Kingdom (10.80), United Arab Emirates (7.94) and higher than banks in Saudi Arabia (3.65), Australia (3.67), Turkey (3.89). The higher VAIC amount indicates that firm can perform better in generating value added (Riahi- Belkaoui, 2003 and Maheran and Amin, 2009). For this scenario, Islamic banks are more efficient than conventional banks in value added creation process.

In terms of value added intellectual coefficient constituents, Islamic banks, on average, had upper hand over their conventional banks counterparts' in structural capital efficiency (SCE) and human capital efficiency (HCE), and both are components of intellectual capital. Meanwhile, another VAIC element, capital employed efficiency (CEE) (which is part of physical capital) is in favourable of conventional banks (0.0337) compared to Islamic banks (0.0192).

For the profitability proxies that are undertaken in this research study, conventional banks recorded higher profitability than their Islamic banks counterparts.

Conventional banks, which includes Ambank Berhad in the sample, had recorded very high return on equity value due to Ambank had very high profit at year 2008-2015. Meanwhile, for control variables, conventional banks on average are larger in size (RM 71,740,233,000) in relative to Islamic banks (RM 18,761,585,000). An opposite trend is observed in leverage, as Islamic banks (0.8934) is highly leveraged in relative to conventional banks (0.8177).

#### 4.2 Multicollinearity Analysis

Based on the research study findings (Table 4.2 – 4.5), the variables had VIF (Variance Inflation Factor) amount less than 10 and tolerance value greater than 0.10. Therefore, based on Hair *et al.*, (1992), it shows that there is no presence of multicollinearity problems between variables in this panel data model.

Table 4.2  
*Collinearity Diagnostic Test for Value Added Intellectual Coefficient and Control Variables (Malaysian Conventional and Islamic Banks, 2008-2015)*

Type of Banks	Conventional Banks		Islamic Banks	
	VIF	Tolerance Value	VIF	Tolerance Value
VAIC	1.08	0.9230	1.28	0.7786
Crisis	1.1	0.9122	1.04	0.9626
Leverage	1.18	0.8510	1.68	0.5963
Size	1.19	0.8419	1.4	0.7139
<b>Mean VIF</b>	1.14		1.35	

Table 4.3

*Collinearity Diagnostic Test for Value Added Intellectual Coefficient Elements and Control Variables (Malaysian Conventional and Islamic Banks, 2008-2015)*

Type of Banks	Conventional Banks		Islamic Banks	
Variables	VIF	Tolerance Value	VIF	Tolerance Value
CEE	2.06	0.4843	1.23	0.8128
HCE	1.81	0.5525	1.62	0.6186
SCE	3.16	0.3167	1.21	0.8295
Crisis	1.15	0.8678	1.04	0.9613
Leverage	4.48	0.2234	1.74	0.5737
Size	1.3	0.7698	1.6	0.6263
<b>Mean VIF</b>	2.33		1.41	

### 4.3 Panel Regression Results

The panel data analysis results are exhibited in Table 4.4 to Table 4.9. In this respect, the empirical analysis can be divided into two major parts. This two tier based research study had common dependent variables; return on asset (ROA), return on equity (ROE) and efficiency (EFF).

The first part of this research study involves analysis of Value Added Intellectual Coefficient (VAIC) relationship with bank financial performances such as ROA, ROE and EFF (Table 4.4 to Table 4.6). The second part involves analysis of relationship between intellectual capital elements such as human capital efficiency (HCE), structural capital efficiency (SCE), capital employed efficiency (CEE) and ROA, ROE and EFF respectively (Table 4.7 to Table 4.9).

Based on the findings, for VAIC analysis, on average, independent variables explain the changes in ROA about 5.37% for Islamic banks and 67.74% for conventional banks (Table 4.4). Meanwhile, for return on equity relationship with

VAIC, the adjusted R-squared values are 24.71% for Islamic banks and 35.42% for conventional banks (Table 4.5). For efficiency relationship with VAIC, independent and control variables essentially explain 16.44% for Islamic banks and 35.41% for conventional banks (Table 4.6). The adjusted R-squared values varied significantly between Malaysian conventional and Islamic banks. This is due to the presence of outliers (AmBank Berhad) in the data.

Table 4.4  
*Results of Regression Analysis between ROA with VAIC and Control Variables for Malaysian Commercial Banks (2008-2015)*

Variables	TYPE OF BANKS	
	Conventional (n= 17)  t-value (significance)	Islamic (n= 15)  t-value (significance)
Constant	1.12 (0.264)	0.55 (0.579)
VAIC	-4.66 (0.000)*	3.33 (0.001)*
SIZE	-1.13 (0.259)	0.7 (0.485)
CRISIS	0.74 (0.459)	-0.2 (0.844)
LEV	1.05 (0.298)	-1.85 (0.064)
Adjusted $R^2$	0.6747	0.0537
F-value	5.95	2.94
Significance of F-value	0.0002*	0.024**

Remarks: VAIC (Value Added Intellectual Coefficient); SIZE (Size of Bank); CRISIS (Financial Crisis Dummy Variable); LEV (Leverage). \*,\*\*,\*\*\* signifies 1,5 and 10 percent respectively.

Table 4.5  
*Results of Regression Analysis between ROE with VAIC and Control Variables for Malaysian Commercial Banks (2008-2015)*

<b>TYPE OF BANKS</b>		
<b>Variables</b>	<b>Conventional</b> (n= 17)	<b>Islamic</b> (n= 15)
	<b>t-value</b> <b>(significance)</b>	<b>t-value</b> <b>(significance)</b>
Constant	-3.96 (0.000)*	-1.75 (0.081)***
VAIC	-1.22 (0.224)	2.81 (0.005)*
SIZE	4.86 (0.000)*	1.85 (0.064)***
CRISIS	4.1 (0.000)*	-0.98 (0.327)
LEV	0.14 (0.887)	0.55 (0.58)
Adjusted $R^2$	0.3542	0.2471
F-value	3.97	3.97
Significance of F-value	0.0047*	0.0049*

Remarks: VAIC (Value Added Intellectual Coefficient); SIZE (Size of Bank); CRISIS (Financial Crisis Dummy Variable); LEV (Leverage). \*, \*\*, \*\*\* signifies 1, 5 and 10 percent respectively.

Table 4.6  
*Results of Regression Analysis between EFF with VAIC and Control Variables for Malaysian Commercial Banks (2008-2015)*

<b>TYPE OF BANKS</b>		
<b>Variables</b>	<b>Conventional</b> ( <i>n</i> = 17)	<b>Islamic</b> ( <i>n</i> = 15)
	<b>t-value</b> <b>(significance)</b>	<b>t-value</b> <b>(significance)</b>
Constant	1.64 (0.104)	0.37 (0.712)
VAIC	-6.82 (0.000)*	-1.3 (0.193)
SIZE	0.89 (0.378)	1.86 (0.063)***
CRISIS	1.09 (0.278)	-3.56 (0.000)*
LEV	-3.73 (0.000)*	1.17 (0.241)
Adjusted $R^2$	0.3541	0.1644
<i>F</i> -value	15.95	6.44
Significance of <i>F</i> -value	0.000*	0.0001*

Remarks: VAIC (Value Added Intellectual Coefficient); SIZE (Size of Bank); CRISIS (Financial Crisis Dummy Variable); LEV (Leverage). \*, \*\*, \*\*\* signifies 1, 5 and 10 percent respectively.



Based on the Table 4.4, value added intellectual coefficient (VAIC) significantly and positively impact Islamic banks profitability (return on asset). Meanwhile, for Malaysian conventional banks, VAIC had significant and negative effect on its ROA. Based on this result, it supports hypothesis H1 for Islamic banks in Malaysia as VAIC had positive impact on Islamic banks performances. The trend of positive relationship between VAIC and banks return on asset also had been observed by Mavridis (2004), Goh (2005) and Najibullah (2005). For Islamic banks, leverage had significant and negative impact on profitability (ROA). Meanwhile, leverage had positive impact on conventional banks' ROA but it is not significant. Mondal and Ghosh (2012) also noted debt capital usage has negative impact on Indian banks' profitability (ROA).

Meanwhile, based on regression findings of VAIC and ROE (Table 4.5), it is shown that VAIC had positive and significant influence on Islamic banks' return on equity. In this respect, it supports hypothesis H1 (positive association of VAIC and bank performances). However, for conventional banks, VAIC had negative impact on banks ROE but it is insignificant. For bank size, it had positive and significant relationship with banks return on equity (for both conventional and Islamic banks). This same pattern of observation also noted by Mondal and Ghosh (2012). The financial crisis yielded positive and significant effect on banks profitability for conventional banks and although it is negative for conventional banks, the result is not significant.

For VAIC relationship with banks efficiency (DEA), the findings (Table 4.6) revealed negative relationship between VAIC and conventional and Islamic banks' efficiency but only significant for conventional banks. Islamic banks exhibits positive relationship between bank size and efficiency. For financial crisis, Islamic banks noted

to have negative and significant relationship with efficiency. For conventional banks, financial crisis had positive impact on efficiency but it is insignificant. The leverage had been associated with negative and significant relationship to conventional banks efficiency aspect. Meanwhile, for Islamic banks, leverage had positive impact on Islamic banks but it is not significant.

Table 4.7  
*Results of Regression Analysis between ROA with VAIC Elements and Control Variables for Malaysian Commercial Banks (2008-2015)*

Variables	TYPE OF BANKS	
	Conventional (n= 17)	Islamic (n= 15)
	t-value (significance)	t-value (significance)
Constant	-0.98 (0.328)	0.49 (0.623)
CEE	15.27 (0.000)*	4.98 (0.000)*
HCE	-4.75 (0.000)*	0.87 (0.382)
SCE	3.8 (0.000)*	2.41 (0.016)**
SIZE	0.43 (0.671)	-0.19 (0.849)
CRISIS	0.16 (0.874)	0.12 (0.903)
LEV	1.09 (0.276)	-0.98 (0.327)
Adjusted R <sup>2</sup>	0.9125	0.2553
F-value	75.93	4.93
Significance of F-value	0.000*	0.0002*

Remarks: CEE (Capital Employed Efficiency); HCE (Human Capital Efficiency); SCE (Structural Capital Efficiency); SIZE (Size of Bank); CRISIS (Financial Crisis Dummy Variable); LEV (Leverage). \*, \*\*, \*\*\* signifies 1, 5 and 10 percent respectively.

Table 4.8  
*Results of Regression Analysis between ROE with VAIC Elements and Control Variables for Malaysian Commercial Banks (2008-2015)*

Variables	TYPE OF BANKS	
	Conventional (n= 17)	Islamic (n= 15)
	t-value (significance)	t-value (significance)
Constant	-5.36 (0.000)*	-2.41 (0.016)**
CEE	6.37 (0.000)*	5.59 (0.000)*
HCE	0.72 (0.473)	0.32 (0.75)
SCE	-0.21 (0.834)	1.35 (0.178)
SIZE	4.72 (0.000)*	1.66 (0.098)**
CRISIS	3.11 (0.002)*	-0.58 (0.56)
LEV	2.55 (0.011)**	1.58 (0.114)
Adjusted R <sup>2</sup>	0.5125	0.39
F-value	8.73	7.8
Significance of F-value	0.000*	0.000*

Remarks: CEE (Capital Employed Efficiency); HCE (Human Capital Efficiency); SCE (Structural Capital Efficiency); SIZE (Size of Bank); CRISIS (Financial Crisis Dummy Variable); LEV (Leverage). \*, \*\*, \*\*\* signifies 1, 5 and 10 percent respectively.

Table 4.9  
*Results of Regression Analysis between EFF with VAIC Elements and Control Variables for Malaysian Commercial Banks (2008-2015)*

<b>TYPE OF BANKS</b>		
<b>Variables</b>	<b>Conventional</b> (n= 17)	<b>Islamic</b> (n= 15)
	<b>t-value</b> <b>(significance)</b>	<b>t-value</b> <b>(significance)</b>
Constant	1.25 (0.211)	-1.81 (0.073)***
CEE	-0.2 (0.843)	3.75 (0.000)*
HCE	-6.07 (0.000)*	-3.22 (0.002)*
SCE	2.01 (0.045)**	2.11 (0.037)**
SIZE	3.88 (0.000)*	1.89 (0.061)***
CRISIS	0.89 (0.371)	-1.6 (0.114)
LEV	-3.32 (0.001)*	2.31 (0.023)**
Adjusted $R^2$	0.3617	0.2067
F-value	10.94	7.3
Significance of F-value	0.000*	0.000*

Remarks: CEE (Capital Employed Efficiency); HCE (Human Capital Efficiency); SCE (Structural Capital Efficiency); SIZE (Size of Bank); CRISIS (Financial Crisis Dummy Variable); LEV (Leverage). \*, \*\*, \*\*\* signifies 1, 5 and 10 percent respectively.

Table 4.7 to Table 4.9 shows findings of the regression analysis of VAIC elements (human capital efficiency, structural capital efficiency and capital employed efficiency) and banks financial profitability (ROA, ROE and EFF). Based on Table 4.7 and Table 4.8, it is shown that capital employed efficiency had positive influence on banks return on asset (for both conventional and Islamic banks). These findings support hypothesis H4 (CEE had positive influence on banks performances). The capital employed (physical capital form) is an important constituent in generating value added for banks performances (Firer and Williams, 2003). Malaysian commercial banks put significance to capital employed (physical capital) in order to boost its financial performances (Khairunnisa *et. al*, 2014).

Meanwhile, this same trend also been observed in structural capital efficiency positive impact on banks return on asset and efficiency (for both conventional and Islamic banks). These results essentially support hypothesis H3 (structural capital efficiency had positive impact on banks financial performances). Meanwhile, human capital efficiency had reported to have negative relationship with banks efficiency for both conventional and Islamic banks and negative association with conventional banks' return on asset.

Shamsudin and Yian (2013) also had obtained negative relationship between HCE and return on asset and return on equity during their study of Malaysian commercial local based conventional banks in the period 2005 to 2010. There are

several possible explanations for this negative relationship between human capital efficiency and banks financial performances. According to Maheran and Amin (2009), this scenario can occur if firm rechannelled human capital towards different set of goals which are not in best interest for the firms. Meanwhile, Shamsudin and Yian (2013) postulate that significant turnover level can lead to decline of employees' productivity level and presence of low skilled financial institutions employees also can contribute to the lower productivity issues.

For control variables, bank size had positive and significant impact on profitability (ROE and efficiency) for both conventional and Islamic banks. This is in line with results obtained by Mondal and Ghosh (2012). For financial crisis, it has positive and significant impact on conventional banks' ROE and negative impact on Islamic banks' ROE but it is not significant. Al-Musali and Ismail (2014) also had observed positive and significant relationship between financial crisis and banks' return on equity. For leverage, it has positive relationship with conventional (significant) and Islamic banks' (not significant) return on equity. Meanwhile for efficiency, leverage had negative and significant impact on conventional banks. This is in line with Mondal and Ghosh (2012) observation on intellectual capital study on Indian banks. Meanwhile, leverage had positive and significant impact on Islamic banks' efficiency.

The differences in intellectual capital elements contribution towards bank financial performances had been explained by Bontis *et al.* (2000). He postulated that albeit intellectual capital significantly contributes towards firm financial performances but not necessarily that all its components collectively impact performances of firms.

The bank size had positive association with banks return on equity and efficiency (for both conventional and Islamic banks).

#### **4.4 Chapter Summary**

In essence, the results of this research study is presented in this chapter. From the findings, it is apparent that value added intellectual coefficient had significantly and positively impact Islamic banks financial performances in Malaysia. In terms of intellectual capital elements relationship with banks profitability, capital employed efficiency and structural capital efficiency had more profound positive impact than human capital efficiency.



## CHAPTER FIVE

### CONCLUSION AND RECOMMENDATION

#### 5.0 Introduction

The concluding chapter of this research study outlines conclusions based on the findings that are presented in the preceding chapter. In essence, this chapter is divided into four main sections; results, limitation of study, future research recommendations and chapter summary.

#### 5.1 Results

The nature of economy (knowledge-based economy) in current environment had placed importance on intellectual capital. This scenario is especially more relevant in highly “intensive” knowledge-based industries such as banking. Currently, the banks are involved in competitive environment and extremely regulated. Thus, in addition to traditional based physical capital (capital employed), intangible asset (intellectual capital) can prove decisive in its financial performances through optimisation of value added generation.

Thus, this study is undertaken to examine intellectual capital contribution towards Malaysian banks profitability (as represented by return on asset (ROA), return on equity (ROE) and efficiency). In this respect, comparative analysis is performed on the dual banking system in Malaysia (conventional and Islamic banks). Meanwhile, VAIC analysis also been further conducted by separation into its elements; human



capital efficiency, structural capital efficiency and capital employed efficiency. The findings had revealed different pattern of intellectual capital contribution towards Malaysian banks profitability. For Islamic banks, VAIC significantly and positively influence both return on asset and return on equity (validating H1 that VAIC had significant relationship with banks financial performances). However, for conventional, VAIC had opposite effect (for ROA and efficiency).

For intellectual capital elements, it has differing impact on conventional and Islamic banks. It has noted that capital employed had significant role in influencing Malaysian banks' financial performances. The CEE had been positively influencing ROA, ROE and DEA efficiency (for Islamic banks) and positively impacting ROA, ROE (for conventional banks). Therefore, it is validating H4 (CEE had significant relationship with banks financial performances). Thus, the findings of this research study had reaffirm notion that intellectual capital is vital alongside traditional physical capital. For banks, Goh (2005) had postulated that physical capital will be utilised for operation needs and meanwhile, intellectual capital is vital for its quality of service.

Meanwhile, SCE had been noted to positively influence both ROA and efficiency for the conventional and Islamic banks. Thus, H3 (SCE had significant relationship with bank financial performances) is validated. For human capital efficiency, there is negative and significant influence is been observed for both conventional (efficiency) and Islamic banks efficiency. Thus, H2 (HCE had significant relationship with bank financial performances) is valid.

Based on the results, intellectual capital need to be prioritise by banks and needed to be looked in similar reputes as monetary capital. In essence, an investment in intellectual capital will eventually prove decisive in shaping competitive advantage factor for financial institutions.

## **5.2 Limitation of Study**

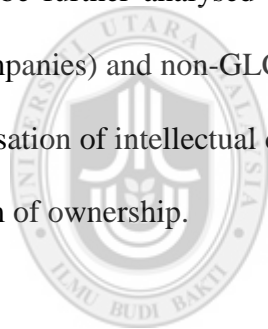
For this research study, the main obstacle faced during the conduct of study is availability of financial data. In essence, data that are utilised in this study are collected from annual financial statements that are readily available in respective financial institutions website. However, the annual reports are limited for some banks. Thus, the period of this study is limited from 2008 to 2015 based on the majority availability of financial statements period of time. In addition to this, some foreign banks that are operating in Malaysia only in recent times also been omitted from study sample due to lack of financial data for the chosen research study period of time (2008 to 2015). Albeit this, this study essentially captured the manifestation of intellectual capital contribution towards banks value added creation and boosting of its financial performances.

## **5.3 Future Research Recommendations**

There are a couple of recommendations that are listed in this subsection for future research study in this area of study (intellectual capital impact on bank financial performances). Firstly, future research can include other type of banking form that existed in Malaysia; mainly DFI (Development Financial Institutions), investment banks. This will essentially broaden scope of future research study. Thus, an exhaustive

comparative analysis of intellectual capital towards four largest type of banks can be performed. This will shed light on the effectiveness of these distinct financial institutions in utilising intellectual capital for value creation.

Secondly, different banks financial performances proxies can be used for future research study. In this study, profitability is chosen as proxies of financial performances. The intellectual capital can have different impact on other financial performances proxies. Thirdly, comparative studies can be broadened through analysis of intellectual capital performances by type of ownership (local or foreign-owned banks). Lastly, the impact of intellectual capital towards bank financial performances can be further analysed by segregating local banks into GLC (Government Linked Companies) and non-GLC form. By this method, we can examine different patterns of utilisation of intellectual capital for value added generation between these two distinct form of ownership.



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#### **5.4 Chapter Summary**

The undertaken research study is essentially conclude with this final chapter. The chapter mainly summarise results that are presented in Chapter 4. In addition to summarisation, general conclusions also been implied based on the study' results. Islamic banks tend to utilise intellectual capital more efficiently than its conventional banks counterparts. Moreover, value added intellectual coefficient (VAIC) had significant impact on Islamic banks profitability proxies (return on asset, return on equity).

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