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The Intellectual Capital as a Measure of the Post-War Performance of Lebanese Banks

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ABSTRACT

This is the first study to analyze the relationship between the Intellectual Capital (IC) and financial performance of the Lebanese Banking Sector. The study covers a 15 years period after the end of the Lebanese civil war, that is from 1990 to 2004.The consolidated financial statements of the all banks are analyzed. The Intellectual Capital performance of banks is measured through the value added intellectual coefficient (VAIC) methodology as developed by Pulic in 1998 and 2002. ROE and ROA are used as indicators for the financial performance of banks. Regression models are developed and ANOVA test is applied. The results showed that SCE, HCE, and CEE had a high significant explanatory power of the variations in the VAIC, with a dominating effect of the CEE. The results also showed a significant effect of the VAIC on performance as measured by ROA, and an insignificant effect on performance as measured by ROE. When the VAIC is divided into its components, it can be observed that the CEE has the most significant effect on banks performance measured by both ROA and ROE. Lebanese banks are encouraged to start using the IC and other performance measurement systems (PMS's), and not limiting their work only to financial measures to judge performance.

Key Words: Lebanese banking sector; Intellectual capital; Value added intellectual coefficient (VAIC); Financial performance; Return on asset; Return on equity.

INTRODUCTION

During the Lebanese civil war, most of the social and economic structures of Lebanese society were destroyed (Mezher, 1997). Governmental expenditures were negligible and were limited to only financing the inevitable costs of the ministries, while revenue base was eroded due to the inability of the government to collect taxes (Neaime,2004).The main role of the government was narrowed to just keeping operations at their lowest possible levels. Despite all of the difficulties, the banking sector was able to perform. During the civil war, the banking sector continued to grow (Corm, 1995), hence played a vital role in protecting the wellbeing of Lebanon as a nation.

The years from 1975 until 1990 are known as the hard years of the civil war. This period can be divided into two main phases that ended the nation's economic glory, and had dramatic negative effects on tourism, infrastructure, migration and immigration The first phase was the pre-Israeli invasion (1975-1982), and the second phase was the post Israeli invasion (1982-1990). During 1977 – 1982, the growth and expansion of banking activities in domestic and foreign currencies increased. Despite the continuing years of war, Beirut managed to stay as the banking center of the Middle East. The exchange rate remained stable and ranged between LBP 2.43/one USD in 1975 to LBP 4.63/one USD in 1981 (BDL official website). Total assets of the Banking Sector increased from $ 5.8 billion in 1977 to $ 16.2 billion in 1982. Total deposits

increased from $ 4.3 billion in 1977 to $ 11.9 billion in 1982, total credit increased from $2.69 billion in 1977 to $ 6.84 billion in 1982. The Israeli invasion caused a dramatic drop in foreign deposits, a decline in the consolidated balance sheet of the commercial banks, a decrease in deposits and credits in LBP and USD. The banking sector deteriorated during this phase; the profitability of the banks declined by 24%, while assets decreased by 25%. The Lebanese currency experienced a sharp depreciation against foreign currencies. The Bank of Lebanon-Banque de Liban (BDL) unsuccessfully tried to stop the depreciation of the Lebanese pound though it risked the loss of all of its foreign reserves. As a result, the Lebanese pound fell dramatically from 1982 until 1990. The exchange rate went from LBP 5.42 per dollar in 1982, to LBP 69.74 at the end of 1986, and to LBP 490.45 by the end of 1990.

After the end of the war, the government launched an outstanding plan to reconstruct Lebanon (Dibeh, 2005). This plan covered all aspects of social and economic life. Between 1992 and 2004, billions of dollars were spent on reconstruction projects. This recovery approach was adopted to restore and rebuild the capacity of existing physical infrastructure to enable the private sector to lead the recovery and, subsequently expanding the capacity through the construction of new facilities, and finally the economy would be developed and modernized through the utilization of the domestic potential (UNDP, 1997). The Lebanese Banking Sector was deeply involved in most aspects of the reconstruction processes, and contributed extensively in the financing of reconstruction projects. At the same time, governmental institutions and BDL enacted new decrees, circulations, and laws, to make the interaction between the banking sector and other sectors of the economy, more efficient**.** The banks were aware of the importance of the assumed projects on the welfare and the wellbeing of the country. The cooperation between the Lebanese government and the Association of Banks in Lebanon (ABL) led to remarkable improvements in many economic and financial indicators. Additionally, this cooperation helped to render many of the provisions that related to the development of the Lebanese banking and financial systems.

THE LEBANESE BANKING SECTOR AFTER THE CIVIL WAR

The period extending from 1990 until 2004 was typified by ***mergers and acquisitions*** that strengthened the Lebanese Banking Sector. During that period, 36 merging transactions took place. These mergers were not accompanied by a reduction of banking capacity in terms of bank branches, since the number of agencies increased over that period from 531 branches in 1992 to 799 branches in 2004 (ABL annual reports) . The number of employees also increased from 13,844 in 1990 to 15,493 (ABL annual reports) in 2004. To smooth the progress of the consolidation process of the banking sector, the BDL granted many soft loans to the banks that were taking account of a merger or an acquisition. Between 1995 and 2002, the Central Bank issued soft loans estimated at USD 1131.1 million for supporting consolidation. As a result the number of commercial banks dropped from 72 banks in 1992, to 61 banks in 2001, and to 59 banks in 2002. The mergers and acquisition process led to the emergence of top banks offering a wide range of products. According to the volume of activities, the banks were divided into four groups, namely Alpha, Beta, Gamma, and Delta, with the activity being concentrated in the first group.

During the early year of the 1990's, banks started to promote the sale of cars and housing loans. Since then, the retail banking operations began to expand and offered a more ***diversified portfolio of products***, being wedding loans, travel loans, schooling loans, and personal loans. Diversification, along with innovation, vision, and the capabilities of the bankers, played a main role in enhancing the totals of the consolidated balance sheets of the banks, and that reached USD 67,760.2 million by the end of 2004, representing around 334% of the GDP (ABL annual

report, 2004). Another facet of the diversification was the expansion of Lebanese banking activities beyond borders, mainly in the three regions of the MENA countries, being the Levant, the GCC, and North Africa. Many of the top ranked banks launched operations in these regions, to improve their domestic franchises, to strengthen their immunity against local adverse conditions, and to enhance their activities through investments in value added markets (Baz, 2007). The involvement of the commercial banks in retailing, led to an inevitable cooperation with the insurance business. The insurance companies found themselves before a new and large market segment that necessitated additional capitalization and regulations. On the other side, the inability of many insurance companies to coop with the new demands left no room for the banks, other than a direct involvement in the insurance business.

In the early 1990's, the Lebanese Banking Sector started to use ***modern information technology*** in accomplishing its activities. To regulate this new banking activity, a legal framework was prepared by the DBL, and was approved by parliament (Law 133). Many banks started by purchasing systems for their internal operations, while other banks such as BLOM Bank developed their own systems (official website of BLOM bank). The information technology revolution started to foster competition among the banks. The use of this new technology reduced the costs of the banks, and increased their productivity and profits. More banks were also becoming more innovative by inviting firms, and individuals, to domicile their accounts, and encouraged employees to use ATMs, or credit cards, to access their salaries.

The commercial banks had been the main subscribers to the issuance of ***treasury bills*** over the period 1990-2004 (ABL annual reports; Ministry of finance). Being aware of the monetary and fiscal situation at that time, the banks considered that their participation in financing the public debt was a national task, and one of their essential roles. The investments made by the Lebanese Banking Sector in T-bills was USD 822 million in 1990, peaked at USD 17,630 million in 2002, and recorded a USD 16,023 million in 2004. These investments represented between 15% and 42.21% of earning assets, and ranged from between 14.02% and 35.82% of total assets. The investments in T-bills dropped in 2003 and 2004 due to the failure of the Paris I meeting to produce any commitment (BDL data; ABL, 2001; Lebanese Republic, 2002), that was reflected in the unwillingness of the commercial banks to increase their already large stock of LBP treasury bills.

REVIEW OF LITERATURE

During the last decade, the study of bank performance using the Intellectual Capital (IC) was marked with a high degree of momentum in developing and emerging economies in Africa, Asia, East Europe, and the MENA region. Such countries include but are not limited to Nigeria, Uganda, Ghana, South Africa, Kenya, Pakistan, Malaysia, Bangladesh, India, Indonesia, Sri Lanka, Romania, Albania, Tunisia, Jordan, UAE, Palestine, GCC countries, and Saudi Arabia. A considerable number of articles which study and evaluate the performance of a single bank (Almazari, 2012; McGowan et al., 2011; Badreldin, 2009), the performance of the whole banking sector in a country (Rustam & Rashid, 2015; Alrafadi & Md-Yusuf, 2013; Abbas et al., 2012; Raza et al., 2011; Chaudhary & Sharma, 2011), and the performance of banks in a region (Flamini et al., 2009; Wong et al., 2014) have been published.

Various researchers have argued on the extent that Intellectual Capital can enhance firms' performance. The academia for the past two decades has been drawn into the web of a continuous debate concerning the place of intangible assets in corporate value creation. In their separate study, Lev and Sougiannis (1996) and Amir and Lev (1996) claimed that financial reporting which mainly assesses the tangibles of corporations is to some extent losing relevance especially in the industrial sector that is dominated by knowledge-intensive and

innovative organizations. Swartz, et al., (2006) in Sofian et al., *(*2011) argue that Intellectual Capital, together with information from financial statements can explain the market value of firms (share prices). A study conducted by Pedrini (2007) found that Intellectual Capital can be used for multiple needs instantaneously and revealed that it eliminates the scarcity that normally limits the use of physical resources. As Intellectual Capital can improve the financial performance of organizations, create value, and provide sustainable environment for competitive advantage, the use of Intellectual Capital should become one of the priorities of all organizations (Cohen and Kaimenakis, 2007).

As there is no consensus in the literature on the definition of Intellectual Capital, scholars have not agreed upon its components. Yet, it is widely acknowledged that Intellectual Capital encompasses three components which are Human Capital, Structural Capital and Relation/ Customer Capital (Ozkan et al., 2016). Human Capital is defined as the knowledge, qualifications, capabilities, experiences, and skills of employees that they take with them when they leave the firm (Zeghal & Maaloul, 2010). Structural Capital covers production processes, organization's management processes, organizational routines, procedures, systems, cultures and databases, information technology, supplier relation, and firm brand and reputation. Structural capital refers to the knowledge that remains with a firm after the employees leave it at night (Zeghal & Maaloul, 2010; Goh, 2005). Customer Capital refers to all intangible assets which regulate and manage the relationships of an organization. It comprises the organization's relationships with its customers, suppliers, shareholders and other stakeholders (Joshi et al., 2013; Kurt, 2008; Mondal & Ghosh, 2012).

Many methods were developed to measure Intellectual Capital (Edvinsson, 1997; Kaplan & Norton, 1996; Roos et al., 1997; Steward, 1991; Sveiby, 1997). Sveiby (2010) reviewed the IC measurement methods and identified 34 methods. Most of the recent studies analyzing the relationship between the Intellectual Capital performance and the financial performance of the firms use the "Value Added Intellectual Coefficient (VAIC)" model developed by Pulic from 1998 to 2002 (Chan, 2009; Yalama and Coskun, 2007). This model argues that previous IC measurement systems contains too much subjective evaluation which does not enable comparison. Consequently, there is a need to have a simple and quantitative approach for measuring IC. VAIC measures the depth and breadth of IC efficiency based on a company's accounting data, and produces a standardized measure that can be used for comparison across companies, industries and nations (Chan, 2009, Pulic, 2000). The key assumptions of the VAIC method is that the IC alone cannot operate independently without the support of physical capital. So the value added in a company derives from the combination of Intellectual Capital and physical capital (Chan, 2009; Pulic, 1998).

The banking sector is one of the sectors which utilizes intensive Intellectual Capital, and is deemed to be one of the knowledge-intensive industries. It is anticipated that studying the role of IC on banks' performance would advance during the coming decades (Goh, 2005; Najibullah, 2005; Belkaoui, 2003; Saengchan, 2008). Measuring performance based on IC allows a detailed understanding of how Capital Coefficient, Human Capital as well as Structural Capital contribute to the banking financial performance.

The review of literature states a strong relevance to appraising the performance of banks through the Intellectual Capital model, but no evidence has been found in terms of an academic project or a research material for applying this model to Lebanese banks. Additionally, the performance measurements used at Lebanese banks are still based on financial measures, and monthly and annual reports. The sole dependence of Lebanese banks on financial measures is

deemed to be misleading because it does not provide a holistic view about how banks are doing regarding non-financial measures. This research seeks to empower the Lebanese banks, academics and researchers to follow the steps of many other countries in the MENA region and to start practicing this model in a trial to improve the performance of banks and enhance economic growth in Lebanon.

Pulic (1997, 2002), in two consecutive studies "The Physical and Intellectual Capital of Australian Banks" and "Value Creation Efficiency of Croatian Banks 1996–2000", investigated the effect of Intellectual Capital on the performance of the Austrian banks from 1993 to 1995, and on the Croatian banks during the period between 1996 and 2000. The researcher used the value added Intellectual Capital (VAIC) as a measure of the Intellectual Capital. The results indicated that there were significant differences in the ranking of banks depending on the Intellectual Capital efficiency, and showed that the Intellectual Capital is still not treated as a resource equal to the financial and physical capital by many banks.

Goh (2005), in his study "Intellectual Capital Performance of Commercial Banks in Malaysia", used the efficiency coefficient VAIC developed by Pulic to measure the Intellectual Capital performance of commercial banks in Malaysia for the period between 2001 and 2003. The data required to calculate Human Capital, Structural Capital and Capital Employed efficiencies were obtained from annual reports. The results showed that all banks had relatively higher Human Capital efficiency than Structural and Capital efficiencies. Domestic banks were generally less efficient compared to foreign banks. Hong Leong Bank, Public Bank and Southern Bank are the top three efficient domestic banks based on VAIC assessment while Scotia Bank is the most efficient foreign bank. Public Bank and EON Bank have consistently showed improvement in efficiency in the three years. Results indicated that there were significant differences between rankings of banks according to efficiency and traditional accounting measures.

Yalama & Coskun (2007), in their study "Intellectual Capital Performance of Quoted Banks on the Istanbul Stock Exchange Market", measured the Intellectual Capital (IC) performance of quoted banks on the Istanbul Stock Exchange Market (ISE) during the period 1995-2004. The authors tested the effect of the Intellectual Capital performance on profitability using Data Envelopment Analysis (DEA). The authors measured the Intellectual Capital performance of quoted banks using the Value Added Intellectual Coefficient (VAIC).The study concluded that the banks that used the Intellectual Capital measure as an input yielded higher returns.

Mondal & Ghosh (2012), in their study "Intellectual Capital and Financial Performance of Indian banks", investigated the relationship between Intellectual Capital and financial performance of 65 Indian banks between 1999 and 2008. The reserve bank of India's database and Annual reports, especially the profit and loss accounts and balance sheets of the banks were used to obtain the data. Value Added Intellectual Coefficient (VAIC) method was applied for measuring the value based performance of banks. ROA and ROE were used to measure the profitability while productivity was measured by assets turnover ratio (ATO). Results showed that Intellectual Capital (Human and Structural Capital) might have affected the financial performance indicators, namely profitability and productivity, of Indian banks.

Gigante (2013), in his article/book, "Intellectual Capital and Bank Performance in Europe," obtained measures of Intellectual Capital performance for quoted banks in selected European countries (Czech Republic, Denmark, Finland, Germany, Italy, Norway, Poland, Spain, Sweden) during the period between 2004 and 2007. The paper investigated the effect of Intellectual Capital on profitability using data drawn from annual reports. Pulic's Value Added Intellectual Coefficient (VAIC) was used as a measure of the efficiency of Capital Employed and Intellectual

Capital. The study used regression models to examine the relationship between corporate value-creation efficiency and firms' market-to-book value ratios and corporate value-creation efficiency. Results indicated that banks' VAIC may affect their financial performance. Besides, results showed that investors may place higher value on firms with greater Intellectual Capital.

Joshi et al. (2013) , in their study "Intellectual Capital and Financial Performance: An Evaluation of the Australian Financial Sector", used Pulic model to examine the effect of Intellectual Capital (IC) on the financial performance of the Australian financial sector during the period 2006-2008. The results showed that the value creation capability of the financial sector is highly influenced by the Human Capital. The performance of the various components of the VAIC and the overall VAIC varied across all subsectors in the financial sector. About two thirds of the sample companies had very low levels of Intellectual Capital efficiency while investment companies had high values of VAIC due to high levels of Human Capital efficiency. As compared to banks, insurance companies were more focused on Physical Capital rather than on Human and Structural Capital leading to lower VAIC.

Zia ul haq et al. (2014), in their study "VAIC and Firm Performance: Banking Sector of Pakistan", used Pulic's VAIC tool to measure the Intellectual Capital efficiency and Capital Employed efficiency as applied on commercial banks of Pakistan . The results indicated that there was a significant relationship between the Intellectual Capital and organizational performance while public owned banks were not utilizing their Intellectual Capital optimally. Results also showed that for public owned banks, the VAIC had positive impact over profitability (ROA and ROE) but there is no relationship between VAIC and productivity (ATO). At the same time, for the private owned banks, VAIC had a significant relationship and impact on both profitability and productivity.

Alber & Shaklab (2016) conducted a study entitled "The Impact of Intellectual Capital on the Performance of the Egyptian Banks". The study was conducted using panel data analysis according to a fixed effect technique as applied on a sample of 13 banks listed in the Egyptian exchange during the period between 2010 and 2014. Intellectual Capital was measured by Value Added Intellectual Capital VAIC, Value Added Intellectual Capital coefficient components, market to book value and Tobin's Q whereas banking performance is measured according to CAMELS approach. Results indicated that there was a significant impact of Intellectual Capital on capital adequacy, asset quality, earnings and liquidity in Egyptian banks.

Isanzu (2015) conducted a study entitled "Impact of Intellectual Capital on Financial Performance of Banks in Tanzania". He investigated the Intellectual Capital of banks operating in Tanzania for the period between 2010 and 2013. Annual reports, especially the profit and loss accounts and balance sheets of 31 banks, were used to obtain the data. The study used the Value Added Intellectual Capital model (VAIC) in determining Intellectual Capital and its three major components: Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE) and Capital Employed Efficiency (CEE). The results revealed that Intellectual Capital had a positive relationship with financial performance of banks operating in Tanzania. Besides, when the VAIC was divided into its three components, it was discovered that the financial performance was positively related to Human Capital Efficiency and Capital Employed Efficiency but was negatively related to Structural Capital Efficiency.

Lipunga (2015) conducted a study entitled "Intellectual Capital Performance of the Commercial Banking Sector of Malawi". The study used the Value Added Intellectual Capital coefficient (VAIC). The sample comprised 10 commercial banks representing all banking community in

Malawi during the period of the study (2011-2013). The results indicated that the banks achieved an average, common performance in all the years under study, except in 2011 when they achieved good performance. Furthermore, the trend analysis suggested an upward trend in terms of the level of efficiency although at a very low rate. This implied that the commercial banks had to put more effort to improve their Intellectual Capital Efficiency. Furthermore, consistent with other prior studies, the study found that Human Capital Efficiency of the sampled banks was relatively higher than Structural Capital and Capital Employed Efficiencies over the entire period. This confirmed the significance of Human Capital to value creation for the banks, and hence ,called for a need for the management of the banks to pay required attention to their employees.

Ikapel (2016), in his study "Analysis of Intellectual Capital and Financial Performance of Commercial Banks in Kenya: An Application of Value Added Intellectual Coefficient (VAIC)", investigated the impact of Value Added Intellectual Capital (VAIC) on financial performance of top five banks at the Nairobi securities exchange (NSE) during the period 2010 - 2014. The study focused on Capital Employed Efficiency, Human Capital Efficiency and Structural Capital Efficiency as predictor variables while the Net Interest Margin was the dependent variable. Regression analysis was used. The findings showed that Capital Employed Efficiency (CEE) had the greatest impact on the financial performance of commercial banks. However, Human Capital Efficiency (HCE) coefficient was higher than Structural Capital Efficiency (SCE) coefficient. Banks should recognize that Human Capital, and ultimately Human Capital Efficiency is deemed to be critical to the realization of their corporate objectives. The study suggested that financial institutions should adopt value added financial reporting so as to establish the impact of Intellectual Capital on their business. Banks in Kenya should continue investing in their Structural Capital, information technology, databases and other satellite services such as agency banking, mobile phone banking and internet banking to improve their performance. The productivity of physical and financial assets of banks can be enhanced by investing in Human Capital efficiency.

Isanzu (2016) conducted a study entitled "The Relationship between Intellectual Capital and Financial Performance of Banks in Tanzania". This study examined Intellectual Capital (IC) performance of 6 banks operating in Tanzania during the period 2010-2013. The study further investigated the effect of Intellectual Capital on performance of banks. The study used the Value Added Intellectual Coefficient (VAIC) methodology. The results of the study showed that Intellectual Capital performance of Tanzanian banks was low and it was positively associated with bank financial performance indicators. However, when VAIC was disaggregated into its components, the relationships between these components (HCE,CEE and SCE) and the banks' financial performance indicators varied.

Ozkan et al. (2016) conducted a study entitled "Intellectual Capital and financial performance: A study of the Turkish Banking Sector" to analyze the relationship between the Intellectual Capital performance and the financial performance of 44 banks operating in Turkey between 2005 and 2014. The Intellectual Capital performance of banks was measured through the Value Added Intellectual Coefficient (VAIC) methodology. The Intellectual Capital performance of the Turkish banking sector was generally affected by Human Capital Efficiency (HCE). In terms of bank types, development and investment banks had the highest average VAIC. When VAIC was divided into its components, it was observed that Capital Employed Efficiency (CEE) and Human Capital Efficiency (HCE) positively affected the financial performance of banks. However, CEE had more influence on the financial performance of banks compared to HCE. Therefore, banks operating in the Turkish banking sector should use their financial and physical capitals if they wish to reach a higher profitability level.

Onyekwelu et al. (2017), in their study "Effect of Intellectual Capital on Financial Performance of Banks in Nigeria", appraised the effect of Intellectual Capital on financial performance of 3 banks in Nigeria for the period 2004-2013. The authors used the Value Added Intellectual Coefficient (VAIC) to determine the effect of Intellectual Capital on the performance of the three banks. Data were collected from the published annual financial statements of the banks and analyzed using regression tool. The study indicated that Intellectual Capital had a positive and significant effect on banks' financial performances. The results further showed that the banks were statistically different in both the Intellectual Capital and financial performance indicators. It also showed that the banks with high IC also show high financial performance. The study recommended banks in Nigeria to invest vigorously in the development of their Human Capital as a key driver of bank's performance.

THEORETICAL FRAMEWORK

Banks, as financial intermediaries, play a vital role in the efficient allocation of resources of countries (Ongore, 2013). They contribute to the economic growth of the country by making funds available from investors to borrowers as well as to the financial deepening in the country (Otuori, 2013). The banking system has become an integral part for operating economic activities in every country. The economic condition of a country depends on the soundness of its banking system (Teker et al., 2011), and the banking sector is one of the most significant players in the development of an economy. Banks have important roles in economy with regard to accumulation of capital, growth of corporations and provision of economic wealth (Taskin, 2011). Banks in a country are so important that the economy may come to a halt without their activities. Just as the existence of any human being is unlikely to be thought of without the heart, economic activities are unthinkable without the help of a banking system (Stankeviciene and Mencaite, 2012). By giving financial support during business startups, controlling the supply of money in circulation, providing loans to smooth and increase the level of production, supporting modern trade and commerce, keeping people's money safe, affecting pending and saving tendencies, providing capital for innovation and infrastructure, facilitating foreign trades and so on, a banking sector is actually fueling the engine of development of a country. Thus, any disturbance to this banking sector will surely have a severe impact on the country's economic growth (Aspal and Malhotra, 2013).

Banks and financial institutions are special components of a healthy and wealthy financial system of a country (Ahmad et al., 2011), and a profitable and productive commercial banking sector has the ability to tolerate the adverse distress and accumulate the strength and power in the economic system of the country (Aburime, 2009). Athanasoglou et al., (2008) noted that, profitability and soundness of the commercial banking sector are at a better point to add to the performance in of the financial system.

In the resource allocation process, shareholders will be compensated with sufficient return on their investment if a bank performs well. These returns and their reinvestments will produce economic growth. On the other hand, negative consequences on the economic growth and development are encountered in case of poor performance. The failure of banks to achieve acceptable performance may lead to financial crises which in turn bring the economic meltdown as happened in the USA in 2007 (Marshall, 2009). That is why governments set laws, rules and regulations through their central banks in order to enhance a sound and a healthy banking system to avoid crises and to protect the depositors and the economy (Shekhar and Lekshmy, 2007). Thus, to avoid such crises, appropriate and careful attention was given to banking performance.

Financial data, as the sole source of performance measurements, has always been criticized for many reasons. First, financial measures deal with historical data, and are inherently of a backward-looking nature. They do not reflect the future and the long term consequences of managerial actions (Beechey& Garlick, 1999; Clarke, 1997; Hemmer, 1996). Second, financial statements embrace a considerable potential for subjectivity (Angus-Leppan, 1997; Brailsford et al., 2004; Jones 2002). Financial statements are management declarations that contain information required by law, institutional best practices, and any other supplementary information that the company wishes to disclose. Third, financial statements are the output of the accounting policies and methods being utilized. Such policies and methods may reflect the objectives of the management in a way that may not be aligned with the interests of the stockholders (mutual agency). Fourth, using financial indicators that are solely derived from financial statements as a sole measure for incentive purposes, may encourage the management to focus on short term perspectives, and may distort the decision-making process (Ittner & Larcker, 2003; Kalagnanam, 1997; Kaplan & Norton, 1996). Fifth, financial statements have limited abilities to measure operational performance and are biased toward focusing on the short-term (Ittner et al.,1997; Kaplan & Norton, 2001). Sixth, financial measures give inadequate considerations to quantify difficult "intangible" assets such as Intellectual Capital (Mohobbot, 2004).

Many criticisms were encountered as to the appropriateness of accounting earnings as being a sole measure of performance. Accounting profits failed to include an essential expense item which is the opportunity cost of equity invested. Hence, businesses were only evaluated on the level and rate of growth, without taking into account the risk of private funds invested (Kimball, 1998).

The performance of a banking industry not only defines competitiveness and potentiality of the business, but also provides indication for future doings. It provides indications to the management, shareholders, the public, and the regulator (government and central bank). In a competitive financial market, the performance of a banking industry provides signals to domestic and international depositors and investors, helps shareholders to rectify and improve the structure of the deposits and loans, and finally assists regulators in monitoring the wellbeing of the industry for regulatory purposes.

This century is recognized as the era of knowledge economy .Hence, with the advent of knowledge based economy, the traditional bases sources of competitive advantage began to fade - especially those that depend on tangible assets such as labor and capital in creating firm value (Pablos, 2002). There is a move from production era to knowledge era and from production labor to knowledge worker, which accordingly enhanced the overall productivity in the economic sector. Many companies and even countries are planning and repositioning their strategies. Intellectual Capital (IC) generally represents the critical resource in the value creation process. IC is considered crucial for the competitiveness of companies regardless of the industry. Johnson and Kaplan (1987) suggested that IC might be the most important consideration regarding the performance of a company. Bontis (1998) specified the significance of Intellectual Capital in worldwide competition and new economy. Bornemann et al. (1999) suggested correlation between intellectual potential and organizational performance, and found that a better competitive advantage can be accomplished if an organization oversees better Intellectual Capital. Brennan and Connell (2000) argued that Intellectual Capital administration is exceptionally a key for continuing business performance.

Purpose of the study

The application of the Intellectual Capital by banks in Lebanon is not voiced yet. The study provides background information to research organizations and scholars who may want to carry out further research in this area. They can also benefit from the findings of this study as it contributes to the existing literature by building the available theoretical frameworks. The study also allows individual Lebanese banks to understand the effect of Intellectual Capital on their respective organizations and the industry as a whole, and therefore prompts them to seek ways through appropriate and proactive policies and procedures to enhance the adoption and implementation of such a methodology in their banks and in the industry. Bankers can use the results of this study to apply integrated performance measurement tools to get the best financial and non-financial information for effective decision making as well as to suit their managerial needs. The results also assist stockholders and investors in their understanding of performance measurements and the way in which to determine the progress of the companies.

The study also helps concerned government bodies in determining how well the companies operate, and how efficiently resources are utilized. Employees at Lebanese banks can benefit from the findings of this study as performance appraisal is used as an effective tool to improve performance, productivity, and career development. Finally, it would be helpful for academic studies on performance evaluation of the Banking Sector in Lebanon.

More specifically, the purpose of this study is to answer the following questions:

1- How can an Intellectual Capital analysis be used to assess the financial performance of banks in Lebanon?
2- Does Intellectual Capital provide more information with respect to the performance of commercial banks in Lebanon than the traditional financial metrics alone?
3- Which of the components of the Intellectual Capital has the dominant effect?
4- Is there any relation between the financial performance of Lebanese banks and the Intellectual Capital and/or its components?

DATA AND METHODOLOGY

The data to be utilized in this study is based upon secondary data mainly the consolidated financial statements of the Lebanese Banking Sector as published by the Association of Banks in Lebanon (ABL) and reported by the BDL for the period 1990-2004. To get more reliable results, the figures of the financial statements will be converted from the Lebanese currency to the USD based on the official exchange rate as of the end of each year.

This study adopts the value added intellectual coefficient (VAIC) to measure Intellectual Capital performance of Lebanese banks. The VAIC reveals the intellectual capability of a bank and whether its sources are used efficiently or not. In other words, VAIC measures the newly-created value per monetary unit invested in each source. The higher the VAIC value of a bank is, the more is the value added created by overall sources of that bank. This study further investigates whether Intellectual Capital (IC) and its components influence banks` financial performance measures, namely return on assets (ROA) and return on equity (ROE). The famous model which is very popular in many countries and has been used to measure Intellectual Capital is the Value Added Intellectual Coefficient (VAIC) developed by Pulic in 1998 and 2002. Firer and Williams (2003), state that VAIC is an easily applicable and effective model to measure firms' Intellectual Capital performance and to make comparisons between firms. The VAIC methodology is a widely used method that has been adopted by many researchers as the most appropriate method to measure IC performance (Al- Musali & Ismail, 2014). VAIC does not measure IC itself, but it measures the impact of IC management (Ulum,

2009; Ulum et al., 2008). The assumption is that if a company has a good Intellectual Capital, and if it is managed well, there will be a good impact for the company. The VAIC has been, for example, noticed in the studies of Chen et al. (2005), Ercan et al. (2003), Joshi et al.(2013), Kayacan & Ozkan (2015), Mondal & Ghosh (2012), Yalama (2013) Onyekwelu et al.(2017), Arslan &Zaman (2014), Isanzu(2016) and Ikapel (2016). .

REGRESSION MODEL & HYPOTHESIS

The adoption of the value added Intellectual Capital as a research method in this study contributes significantly by providing Lebanese banks with a simple method in understanding and evaluating performance, as well as enhancing the management of Intellectual Capital. This also helps in deciding the potential role of IC efficiency in the financial performance of banks in Lebanon, which lacks such research.

Mathematically, the VAIC is computed as follows: Components of the VAIC model are used as independent variables in this study. VAIC is calculated as follows (Ghosh & Mondal, 2009; Pulic, 1998, 2004; Yalama, 2013):

$VAIC_t = CEE_t + HCE_t + SCE_t$

VAIC*t* refers to the Value Added Intellectual coefficient of the Lebanese Banking Sector in year *t*.
CEE*t* refers to the Capital Employed Efficiency coefficient of the Lebanese Banking Sector in year *t*.
HCE*t* refers to the Human Capital efficiency coefficient of the Lebanese Banking Sector in year *t*.
SCE*t* refers to the Structural Capital efficiency coefficient of the Lebanese Banking Sector in year *t*.

In order to calculate these variables, the total Value Added in year *t* -Va*t*- created by the Lebanese Banking Sector needs to be considered. Total VA*t* is calculated as follows (Al Musalli & Ku Ismail, 2014; Alipour, 2012; Chu et al., 2011; Pulic, 2004):

$VA_t = OUT_t – INP_t$

Where:
VA*t* = Value Added in year *t*
OUT*t* = Output in year *t*
INP*t* = Input in year *t*

VA*t* = Total Income *t*- Total Expenses *t* + Personnel Expenses *t*

The labor expense is not calculated into “Value Added” because of its active role in the value creating process, and is instead considered a part of the firm's intellectual potential. Instead of directly valuing the firm's Intellectual Capital, “Value Added” mainly measures the efficiency of the firm’s three types of inputs: physical and financial capital (capital employed), Human Capital and Structural Capital.

Following the calculation of the total VA*t*, the components of VAIC*t* (CEE*t*, HCE*t* and SCE*t*) are considered as follows:
CEE*t* = VA*t*/CE*t*: where CE*t* refers to the book value of total assets of the Lebanese Banking Sector in year *t*.
HCE*t* = VA*t*/HC*t*: where HC*t* refers to personnel costs of the Lebanese Banking Sector in year *t.*
SCE*t* = SC*t*/VA*t*: where SC*t* is defined as the difference between VA*t* and HC*t*.

The VAIC*t* for the Lebanese Banking Sector during the period of the study is calculated. The higher the VAIC value of a year is, the better its value creation potential is in that year. The higher the growth rate in a certain year is, the better the performance in that year is.

Prior studies found that there is a positive relationship between Intellectual Capital efficiency and corporate performance (Bharathi, 2010; Ahangar, 2011; Khalique, 2012; Khan et al., 2012; Zia ul haq et al., 2014; Isanzu, 2015; Onyekwelu et al.,2017). Therefore, in line with the prior studies, it can be hypothesized that there is a positive relationship between Intellectual Capital Efficiency and Lebanese banks' performance.

Hypothesis 1: There is a significant relationship between VAIC and Lebanese banks' performance measured by ROE and ROA.

Researchers also found that Structural Capital Efficiency is an important component of Intellectual Capital and has a positive impact on the firm's performance (Chen et al., 2006; Rehmanet al., 2011; Khalique et al., 2012; Khalique et al., 2015). Based on these previous studies, it can be hypothesized that there is a positive relationship between Structural Capital Efficiency and Lebanese banks' performance.

Hypothesis 2: There is a significant relationship between SCE and Lebanese banks' performance measured by ROE and ROA.

The Human Capital Efficiency is one of the most important components of Intellectual Capital. Previous studies found a positive and significant relationship of HCE and firms performance (Chen et al., 2006; Darvish et al., 2013; Khalique et al., 2013, Isanzu, 2015; Ikapel, 2016; Ozkan et al., 2016). Therefore, based on these past studies, it can be hypothesized that there is a positive association between Human Capital Efficiency and Lebanese banks' performance.

Hypothesis 3: There is a significant relationship between HCE and Lebanese banks' performance measured by ROE and ROA.

Furthermore, the Capital Employed Efficiency also showed a positive impact on the financial performance of banks. (Chen et al., 2006; Isansu, 2015; Ikapel, 2016; Ozkan et al., 2016) Hence, the fourth hypothesis can be developed based on the notion that there is a positive relationship between Capital Employed Efficiency and Lebanese banks' performance.

Hypothesis 4: There is a significant relationship between CEE and Lebanese banks' performance measured by ROE and ROA.

Based on the above hypothesis, the following regression models can be developed:

Model 1: VAIC*t* = βo + β1SCE*t* + β2HCE*t* + β3CEE*t*
Model 2: ROA*t* = βo + β1VAIC*t*
Model 3: ROA*t* = βo + β1SCE*t* + β2HCE*t* + β3CEE*t*
Model 4: ROE*t* = βo + β1VAIC*t*
Model 5: ROE*t* = βo + β1SCE*t* + β2HCE*t* + β3CEE*t*

Where,

ROA*t* represents the Return on Assets of the Lebanese Banking Sector at point *t* in time.
ROE*t* represents Return on Equity of the Lebanese Banking Sector at point *t* in time.
VAIC*t* represents the Value Added Intellectual Coefficient of the Lebanese Banking Sector at point *t* in time.
SCE*t* represents the Structural Capital Efficiency of the Lebanese Banking Sector at point *t* in time.

HCE*t* represents the Human Capital Efficiency of the Lebanese Banking Sector at point *t* in time.
CEE*t* represents the Capital Employed Efficiency of the Lebanese Banking Sector at point *t* in time.
β1to β3 represent coefficients of the explanatory factors while β0 denotes the constant of the model

FINDINGS

1) The linear regression model implemented to study the significance of relationship between the VAIC as a dependent variable and its constituents (CEE, HCE, and SCE) as independent variables showed that there is a significant relationship between the VAIC and all its constituents. The model's R square is equal to 1.00. All variations in VAIC can be explained in the variations of CEE, HCE, and SCE. The P-value of all independent variables is 0.000. The main constituent that drives the VAIC is the CEE with Beta coefficient of 0.011, compared to Beta coefficient of 0.262 and 0.734 for SCE and HCE respectively.
2) Testing the four hypotheses developed concerning the significant relationship between VAIC, CEE, HCE, and SCE, from one side and ROE and ROA as measures for performance from the other side produced the following results.
    a) There is no significant relationship between the VAIC and the performance measured by ROE. R square is 0.007 and P-value is 0.768.
    b) There is a significant relationship between the VAIC and the performance measured by ROA. R square is 0.666 and P-value is 0.000.
    c) There is a significant relationship between the CEE and the performance measured by ROE. R square is 0.394 and P-value is 0.012.
    d) There is a significant relationship between the CEE and the performance measured by ROA. R square is 0.675 and P- value is 0.000.
    e) There is no significant relationship between the HCE and the performance measured by ROE. P-value is 0.553.
    f) There is a significant relationship between the HCE and the performance measured by ROA. R square is 0.675 and P-value is 0.007.
    g) There is no significant relationship between the SCE and the performance measured by ROE. P-value is 0.971.
    h) There is no significant relationship between the SCE and the performance measured by ROA. P-value is 0.521.

CONCLUSION

The Intellectual Capital was analyzed using five models: The results of the first model showed that the Structural Capital (SCE), the Human Capital (HCE), and the Capital Employed (CEE) had a perfect explanatory power of the variations in the Value Added Intellectual Capital -VAIC- (R squared = 1). CEE dominated the effect on VAIC (Beta coefficient = 0.11). The second model showed that the VAIC had highly significant explanatory power of the variations in ROA. R square= .666 that is 67% of the variations in ROA are explained the variations in VAIC. In the third model, ROA was regressed against SCE, CEE, and HCE. SCE showed no significance (P-value = 0.521), thus the model was squeezed to include just HCE and CEE as dependent variables of the model. The adjusted model showed a high explanatory power of the variations in ROA; HCE (P-value = 0.07, Beta coefficient = -0.641) while CEE (P-value=0.000, Beta coefficient = 0.988). HCE was negatively related to ROA. The forth model relates ROE with VAIC as independent variable. Results showed insignificance of the relation (P-value = 0.768, R square = 0.007), thus the model was dropped. The fifth model Measures the effect of CEE, HCE and SCE on ROE as a measure of performance. The model showed that HCE and SCE had no

significant effect on ROE (P-value of both variables is greater than 0.05). The adjusted model measures just the effect of CEE on ROE, where high significance was found (P-value = 0.012, R Square = 0.394).

Lebanese banks are still measuring and evaluating the performance of their business using only traditional financial measures. Till our days, the idea of introducing non-financial measures, Performance Measurement Systems, and Intellectual Capital to measure the performance of banks is still away from the strategies of Lebanese bankers. This is mainly noticed in the various types of reports issued by banks. it is highly recommended that the BDL and ABL start encouraging banks to adopt non-financial measures and the Intellectual Capital that, in addition to the current practice, will reflect financial, non-financial, and intangibles' aspects of performance at banks. It is highly believed that this is crucial since the Lebanese Banking Sector is anticipated to face new era of challenges due upcoming extraction of gas resources, the anticipated reconstruction of Syria, and the development of the banking sectors in the Arab Gulf Area.

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