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The Journal of ARSYM (JARSYM) is a refereed journal published bi-annually by the Faculty of Business Studies & Finance, Wayamba University of Sri Lanka. The aim of the JARSYM is to disseminate high-quality research findings on a variety of timely topics generated by the undergraduate and postgraduate researchers in the Wayamba University of Sri Lanka. Furthermore, it opens up avenues for the undergraduates involved in the industry to share their inventions, state-of-the-art discoveries and novel ideas. The main philosophy behind the JARSYM is to enhance the research culture within the faculty, thereby within the Wayamba University. All research articles submitted are double blind reviewed prior to publishing. Views expressed in the research articles are not the views of the Faculty of Business Studies and Finance, Wayamba University of Sri Lanka or the Editorial Board.

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Aims and Scope

The Journal of ARSYM (JARSYM) is a refereed bi-annual journal committed to publish undergraduate research papers of the Faculty of Business Studies and Finance, Wayamba University of Sri Lanka. The JARSYM publishes theoretical and empirical papers spanning all the major research fields in business studies and finance. The aim of the JARSYM is to facilitate and encourage undergraduates by providing a platform to impart and share knowledge in the form of high quality and unique research papers.

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IMPACT OF INTELLECTUAL CAPITAL ON FINANCIAL PERFORMANCE: SRI LANKAN EVIDENCE

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ABSTRACT

The study aims to analyze the relationship between the intellectual capital (IC) and the financial performance of 11 local licensed commercial banks for the period 2010 to 2019. Data has been obtained from published annual reports of the banks, mainly from the statement of comprehensive income and the Statement of Financial Position for the relevant years. The value-added intellectual coefficient (VAIC) method was used to measure the numeric value of the IC-based performance of the banks. Return on assets (ROA) and return on equity (ROE) are the two proxies for the bank's performance. To analyze the value of IC, the variable was divided into three parts as intellectual human, structural and physical capital. Intellectual Capital's impact on return on asset and return on equity was measured using simple and multiple regression techniques. The analysis indicated a significant relationship between the VAIC, the components of VAIC and financial performance. The nature of the relationship between such components and the ROE and ROA were also found positive with different degrees. Among the VAIC components, human capital efficiency was identified as the most critical factor that contributes to creating value in the Sri Lankan banking sector. The VAIC tool can be used as an important method of measuring IC when making management decisions. This study is one of the first empirical researches in Sri Lanka that examines the impact of IC on the financial performance of Sri Lankan banks till 2019. The study attempts to highlight the need for further investigating the contribution of IC to the financial performance in the banking sector.

Key Words*: Intellectual Capital, Value Added Intellectual Coefficient, Financial Performance*

1. INTRODUCTION

The society where people currently live in is known as the information society, and it has previously been in three socio-economic phases known as primitive society, agricultural society, industrial society (Kandemir, 2008). Drucker (1999) mentions knowledge as the leading resource in the modern economy. The capital based on knowledge is known as Intellectual Capital (IC). IC has three components Human Capital, Structural Capital and Customer Capital.

According to Bhasin (2015), Human Capital includes knowledge, competence, skills, individual and collective experiences, training and practices. This can be summarized as the skills and knowledge which can be enhanced further with proper training. Structural capital includes business processes, policies, information systems, trademarks, which is considered as the knowledge created by the organization. Customer capital includes customer relations, loyalty, relational capital, repeating business opportunities and activities related to an organization with its external elements. Even though the intangible assets have such importance these are not explicitly listed on a firm's balance sheet, but positively impact the firm's performance. (Edvinsson, 1997). The firm's balance sheet does not provide the real value of an organization but is prepared only to fulfill the legal reporting purposes. (Brooking, 1996) IC should be a part of the published financial statements of the organizations because we see the tangible asset value explicitly but the driving force of such is IC (Zarowin, 1999) and when IC is calculated and published stakeholders and the management would know the real importance and will be able to develop required IC.

It is highly believed that IC plays a vital role in creating value (Powell, 2003). The reason for not measuring the value of IC is not knowing the real importance and it is difficult to assess the value compared to the value assessment of tangible capital. Since IC's value was realized, many measuring methods were developed such are market to book ratio, Tobin's Q ratio, calculated intangible value method, Skandia IC navigator (Edvinsson, 1997) the technology broker's IC audit (Brooking, 1996) Balanced scorecard method (Kaplan,1996) IC services IC index (Roos, 1997), the intangible asset monitor (Sveiby, 1997) market value-added, economic value added (Steward, 1991) and the value-added coefficient method -VAIC model (Pulic, 1998.; Pulic,2004). The VAIC model is a popular method used in many researchers across the world in many industries to measure the value of IC and used in this study too.

In a knowledge-based economy, the role of the service sector is important since it has a share of more than 70% in GDP in developing countries and employs 65% of the working population of these countries (OECD - Organization for Economic Co-operation and Development, 2000) IC is more important in service industries (IC:

characteristics and significance in the service sector (Ognjanovic, 2016). Banking industry is a service providing industry and IC has major significance in this industry. The creation of a unique, differentiated, intangible service depends on the level of IC that the service company manifests. Since IC has this much importance it is essential to disclose information as the banking industry is the backbone to any economy especially for a developing country like Sri Lanka. Though the Sri Lankan banking industry is a human resource-rich industry, only a limited number of studies have been conducted in the Sri Lankan banking industry related to IC. Therefore, this study attempts to analyze the impact of IC using the VAIC method on the financial performance (measure using ROA and ROE) of 13 selected local licensed commercial banks in Sri Lanka during 2010 and 2019. Based on the research problem the main research question was developed as follows;

How does the Intellectual Capital of Sri Lankan Banks affect their financial performance?

2. LITERATURE REVIEW

The term intellectual capital (IC) has been defined by many researchers in different ways from a different point of view therefore there is no single definition that defines the broad concept of IC. "IC can be defined as the intangible assets which are not listed explicitly on a firm's balance sheets, but they positively impact the performance of it, thereby revealing the relationship between employees, ideas, and information and measure what is not measured" (Edvinsson, 1997). IC is the main driver of creating value in the company by combining the use of human, structural and relational capital. It consists of knowledge and skills of employees, business culture, databases, company's reputation and relations with external partners" (Ognjanovic, 2016). Characteristics of the IC have been described by many researchers. Carnall, (1999) described IC as a non – material resource which is difficult to accumulate, which has multiple simultaneous uses and the resource which can simultaneously be in both inputs as well as the output of the business. According to Riahi-Belkaoui (2003) IC is a rare, valuable, impossible to imitate resource with the nonexistence of substitutes.

Even though IC of an organization has a vital role in long-run of the business and it is being studied over the last decade that the performance of IC is not direct, that's because intangible assets which create value to the enterprise are not reflected through traditional accounting systems (Canibao, 2000.; Lhaopadchan, 2010). Therefore, the practicality of the data from financial reports are diminishing (Zarowin, 1999). IC is considered as the main reason for the deviation of market and accounting value of the company (Ognjanovic, 2016). It is believed that the value of IC is defined by the difference between the accounting and market value of a company by the authors

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Sveiby (1997) and Lev (2001). Researchers have not completely agreed upon the components of IC but the commonly accepted components of IC are human capital, customer or relational capital and structural capital. Human capital is defined in the Oxford English Dictionary as "the skills the labor force possesses and it is considered as a resource or asset". Customer capital is defined as "Organization's relationships with its customers, suppliers, shareholders and other stakeholders. (Joshi, 2013; Kurt, 2008; Mondal, 2012). Structural capital includes all the non-human knowledge resources and it is considered as a capital that has high value than its material value (Roos, 1997). VAIC method which was developed by Pulic (1998) is a commonly accepted method and it has been used and is still used by researchers to measure the IC efficiency in the banking sector and many other sectors (Manfred 1999; Vaz, 2005; Ming-Chin Chen, 2005; Firer and Williams, 2003; Goo, 2005; Lönnqvist, 2004; Lönnqvist, 2007; Mavridis, 2004; Kyrmizoglou, 2005; Shiu, 2006).

Many research studies have been developed in many industries using the VAIC method, but the most significant research projects for this study are the ones that were conducted in the banking and finance industry worldwide using the VAIC method. Pulic (1998) who initiated VAIC method conducted research on Austrian banks which revealed the importance of IC. The result of the research highlighted the strong relationship between IC and the corporate success of the organization. According to the study, banks with higher IC component expenses tend to be more profitable. Results of many studies suggest that IC has a positive impact on the financial performance of the banks. Saengchan, (2008) who studied the Thailand banking industry & Lean's, (2009) study conducted in the Malaysian banking industry confirmed the positive impact of IC on financial performance. Many research projects also concluded HCE as the most important VAIC component, and such studies would be the study by Goh, (2005) conducted in the Malaysian banking industry. Mohiuddin (2006) conducted a study in Bangladesh banking industry and a study conducted in the Indian banking industry by Mani, (2012), a research conducted by Nasif Ozkan (2016) on Turkish banking concluded that HCE and CEE had a positive impact on financial performance but CEE had more influence. Therefore, it was concluded that the Turkish banking sector should use more of their financial and physical capital to increase their profitability.

Even though many studies show a significant positive relationship between IC and financial performance, there are some studies which did not show a positive relationship between these variables. Puntillo, (2009) conducted a research on Italian banks using the VAIC method and market to book value ratio, which was analyzed using multiple linear regression model. The result of this study concluded that IC performance and financial performance measured using ROA and ROE method did not have a significant relationship and the market to book value ratio was negative.

In Sri Lanka, the empirical study conducted by Kehelwalatenna &. Gunaratne, (2010) investigated the impact of IC on the firm Performance and investor response of selected sectors in the Colombo stock exchange for the period 2002 to 2006 using VAIC method. The statistical methods researchers used were Pearson's correlation method and regression analysis. The result showed that there was a positive relationship between performance and investor response. But it was also revealed that the level of importance by investor were not so uniform with the three VAIC components. Aruppala, (2018) carried out a study on the performance of Sri Lankan banks from 2008-2017 using the VAIC method and concluded that IC has a significant positive relationship with financial performance. The research motivated bankers to apply knowledge management practices, and also the study provided a valuable method for the stakeholders to assess the value-creating capabilities of the banks.

The above-presented literature representing several sectors and time periods shows different results on the relationship between Intellectual Capital & Financial Performance. Accordingly, this research paper attempts to contribute to the existing literature by revealing the relationship between IC and financial performance of selected 11 Sri Lankan local banks for the time period 2010-2019 by developing and testing the following conceptual model.

The term intellectual capital (IC) has been defined by many researchers in different ways from a different point of view therefore there is no single definition that defines the broad concept of IC. "IC can be defined as the intangible assets which are not listed explicitly on a firm's balance sheets, but they positively impact the performance of it, thereby revealing the relationship between employees, ideas, and information and measure what is not measured" (Edvinsson, 1997). IC is the main driver of creating value in the company by combining the use of human, structural and relational capital. It consists of knowledge and skills of employees, business culture, databases, company's reputation and relations with external partners" (Ognjanovic, 2016). Characteristics of the IC have been described by many researchers. Carnall, (1999) described IC as a non – material resource which is difficult to accumulate, which has multiple simultaneous uses and the resource which can simultaneously be in both inputs as well as the output of the business. According to Riahi-Belkaoui (2003) IC is a rare, valuable, impossible to imitate resource with the nonexistence of substitutes.

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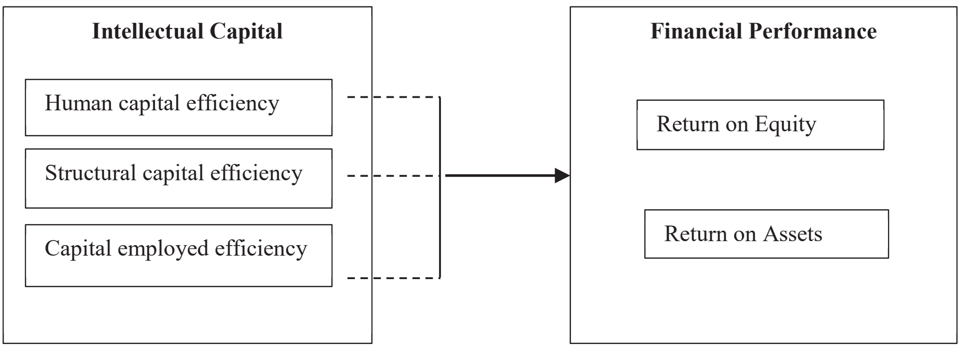

Figure 1. Conceptual Framework

The conceptual framework has two dependent variables (ROA & ROE) and four independent variables (VAIC, HCE, SCE and CEE)., Accordingly hypothesis was developed as follows;

Model "A" based on ROA

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H1a. Value added intellectual coefficient makes a positive impact on return on assets

H2a. Capital employed efficiency makes a positive impact on return on assets

H3a. Human capital efficiency makes a positive impact on return on assets

H4a. Structural capital efficiency makes a positive impact on return on assets

Models "B" based on ROE

H1b. Value added intellectual coefficient makes a positive impact on return on equity

H2b. Capital employed efficiency makes a positive impact on return on equity

H3b. Human capital efficiency makes a positive impact on return on equity

H4b. Structural capital efficiency makes a positive impact on return on equity

3. METHODOLOGY

Eleven domestic licensed commercial banks out of the 13 domestic banks in Sri Lanka have been selected for this study. Out of the total number of domestic banks, the study excluded two commercial banks due to the unavailability of data throughout the selected time period of one bank as well as for the reason that the other bank has totally different nature in its banking operations. It is noteworthy that banks with significant contribution to the economy have been included in the sample size and the sample covers 85% of the population. Required data regarding both dependent and independent variables were collected from the published financial statements of these selected banks for the selected period. A ten-year time span has been considered as a significant time to analyze the effect of IC on the financial performance of the banks. The underlying measurement of this research is VAIC which was developed by Pulic (1998). The VAIC method is used to reveal the IC capability of any organization and to analyses whether the organization's resources are used efficiently. It is considered that the higher the VAIC value of the firm, the more the value-added created by the firm resources. The independent basis of this study is purely based on the VAIC method.

Dependent variables considered in this study are the variables which are used to assess the financial performance of the banks. The two dependent variables are ROA (return on asset) and ROE (return on equity) which are considered as the key measures of the bank's profitability. This is used in similar studies to measure the financial performance of the organization (Joshi, 2013; Lean, 2009; Yalama, 2013; Nasif Ozkan, 2016) ROA reveals the profit level earned by the company in comparison to its assets overall. Generally, the organization is considered to be better positioned when the ratio is high in value. ROA is calculated by diving the net profit by the total assets for the current period. ROE is a measure of the financial effectiveness of the organization in creating profit using the company's assets. The satisfactory level of ROE depends on the payments provided to investors of other companies in a similar industry or region. This ratio is more important to investors than ROA because it indicates the effectiveness of the capital being reinvested and they look for and tend to invest in companies with high ROE as the return they get will be high. ROE can be calculated by dividing the net income of a firm by the Average Shareholders' Equity.

3.1 Independent Variable

Components of the value-added coefficient method (VAIC) are the independent variables in this study. To calculate these coefficient values first and foremost the total valued added (VA) calculations were done according to Pulic's (1998) method of calculating VAIC.

Table 1: Calculating VAIC

Equation		Description	
VAIC	CEE+HCE+SCE	VAIC	Value added intellectual coefficient of the bank
		CEE	Capital employed efficiency coefficient of the bank
		HCE	Human capital efficiency coefficient of the bank
		SCE	Structural capital efficiency coefficient of the bank
VA	OP+EC+A	VA	Total Value Added of the bank
		OP	Operating profit of the bank
		EC	Total Employment cost of the bank
		A	Amortization and depreciation of the bank
CEE	VA/CE	CE	Equity value of the bank
HCE	VA/HC	HC	Personal expenses of the bank
SCE	SC/VA	SC	Structural Capital
SC	VA-HC		

Source: Pulic, (1998)

4. RESULTS

Dependent variables ROA and ROE, independent variables VAIC, CEE, HCE and SCE obtained from the published annual financial statements of selected 11 domestic licensed commercial banks of Sri Lanka were analyzed using descriptive analysis methods and Regression analysis. Table 2 demonstrates the average values of the

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variables which are related to the IC performance of the banks from the period 2010 to 2019

Table 2: Average Value of VAIC and its Components for the Sample Banks

	VAIC	CEE	HCE	SCE
DFCC Bank PLC	7.92	0.21	6.91	0.80
People's Bank	5.59	0.82	4.03	0.74
Bank of Ceylon	5.34	0.62	3.97	0.75
Commercial Bank of Ceylon PLC	5.28	0.42	4.11	0.75
Nations Trust Bank PLC	5.14	0.51	3.89	0.73
Hatton National Bank PLC	5.11	0.39	3.98	0.72
Sampath Bank PLC	5.11	0.46	3.91	0.74
Seylan Bank PLC	4.92	0.37	3.81	0.73
National Development Bank PLC	4.81	0.39	3.70	0.72
Union Bank of Colombo PLC	3.72	0.16	2.91	0.65
Pan Asia Banking Corporation PLC	3.67	0.43	2.64	0.60

Source: Researcher constructed,2020

Table two is ranked according to the average VAIC value from the banks for the period 2010 to 2019. According to Table 01 it can be concluded that the most important VAIC component in the Sri Lankan banking sector is the Human Capital Efficiency coefficient of the bank (HCE)

4.1 Regression Analysis

In this study the researcher employed a simple linear regression to generate results between the variables ROA –VAIC and ROE – VAIC. Multiple regression was carried out to generate results between ROA- CEE, HCE, SCE and ROE – CEE, HCE, SCE. The researcher has considered the general mean value of each variable for the period 2010 to 2019 in order to run the multiple regression. Assumptions of normality and multicollinearity were tested by the researchers prior to running the regression.

The ROA model's results and the ROE models have been summarized in Table 03 and in Table 04, respectively.

Table 3: Model "A" output - ROA & VAIC

	VAIC	CEE	HCE	SCE
Coefficient Value	0.743**	0.442**	0.675**	0.655**
R square	0.552	0.653	0.653	0.653
Adjusted R square	0.548	0.643	0.643	0.643

Source: Researcher constructed,2020

Table 4: Model "B" output - ROE & VAIC

	VAIC	CEE	HCE	SCE
Coefficient Value	0.350**	0.855**	0.259**	0.353**
R square	0.123	0.810	0.810	0.810
Adjusted R square	0.114	0.805	0.805	0.805

Source: Researcher constructed,2020

The R square value indicates the degree to which the dependent variable is explained by the independent variable. According to both tables, VAIC components have a high R square value than VAIC alone, which is a proof that components of VAIC are better than VAIC alone in explaining the profitability (Ming-Chin Chen, 2005). All the coefficient values of the independent variable show a significant positive relationship between the dependent variable but the degree of the positive relationship varies. According to Table 03 coefficient of VAIC shows that it has a significant positive relationship with ROA, and HCE shows the second-highest degree of relationship with ROA. According to Table 04, CEE records a high degree of positive relationship with ROE and the second-highest degree of relationship of ROE is with SCE.

Table 03 shows that VAIC, CEE and HCE have a significant value of 0.000 which confirms that VAIC, CEE and HCE have a significant relationship with ROA. Also, it is notable that the Sri Lankan banking industry uses their human resource most effectively than any other resources to increase their profitability as HCE records the highest coefficient among the three components. The results reveal that SCE does not have a significant relationship with ROA. This finding is in line with several studies

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conducted in Turkish, Malaysian and Australian banking sectors (Lean, 2009;Joshi.M C. S., 2013; Nasif Ozkan, 2016). Table 4 shows that VAIC and its components have a significant positive relationship with ROE. CEE records the highest coefficient in the ROE model among these variables. Therefore, it can be considered that CEE affected the most for profitability (in ROE terms) of Sri Lankan banks during the period 2010 to 2019.

5. DISCUSSION

The modern economy is providing organizations with many more innovative business opportunities along with increased competition. Increasing the investment and the asset base cannot be considered the only way to increase profitability and survive in the long term. Organizations that experience profitability in the short term also, require many more factors to be considered to sustain in the long term. Productivity and efficiency in asset utilization are the most important factors which contribute to the optimum goals of the organization in this modern competitive world.

Many studies have reviewed the impact of IC on the financial performance of many organizations, especially banks. This study shows the importance of IC in the knowledge-based sector, like the banking and finance industry. The literature review presented in this study establishes that in most cases, the IC has a positive effect on banks' financial performance in various regions of the world. This study analyzed the IC impact of 11 Sri Lankan banks on their financial performance for the period 2010 – 2019; therefore, this can be considered as a significant analysis for the banking industry in Sri Lanka. This study also includes the current ended financial year, which contributes to its significant application.

This study analyzed the financial performance of the banks in two ways (ROA & ROE). As per the mean values HCE can be considered as the most important VAIC component in the Sri Lankan banking sector. By considering the ROA model, it revealed that the Sri Lankan banking sector is primarily affected by HCE than the other two components. ROE based regression analysis shows that CEE has a higher impact than HCE and SCE for the financial performance of Banks.

Looking at the above interpretation it can be concluded that HCE is a more critical factor than CEE and SCE in creating value in the Sri Lankan banking sector because even though ROE is used as the traditional measure of financial performance it implies from the investor's point of view so by considering earning profit from the assets of the organization ROA can be considered as the most important profitability indicator and the impact HCE has on ROA is high compared to the impact CEE has on ROE. Therefore, the Sri Lankan banking sector's profitability is mostly affected by HCE. Approximately 55% of the selected banks have VAIC values that are above and related to the total mean. This complies with the study performed on the Sri

Lankan banking industry by Aruppala (2015; 2018) which found that the Sri Lankan banking industry continuously concentrates on their human resource to increase their profitability.

It is recommended that the Sri Lankan banking sector should utilize their human resource more efficiently and effectively to achieve higher financial profitability, but this doesn't conclude that other components should be ignored. HCE having a high impact on ROA and CEE having a high impact on ROE shows the importance of both components which adds to the significance of the study in the Sri Lankan banking sector.

This study only considers domestic licensed commercial banks of Sri Lanka. An extended study can consider including other banking institutions as well as financial organizations in their samples. Since there are various models to analyze IC, further extended studies can also include such methods to analyze IC performance. VAIC method can also be developed to include customer relational capital efficiency which is an excluded IC component in the VAIC method. Customer capital efficiency is a complex calculation in any industry but developing such will increase the reliability of the VAIC method.

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