

DOES INTELLECTUAL CAPITAL MATTER FOR VALUE CREATION OF COMPANIES? EVIDENCE FROM SRI LANKA

Wanigasekara. W.A.D.K.J, Weligamage. S.S, Karunarathne. W.V.A.D

Department of Accountancy, Wayamba University of Sri Lanka. kaushalya@wyb.ac.lk

Department of Finance, University of Kelaniya, Sri Lanka. susima@kln.ac.lk

Department of Accountancy, University of Kelaniya, Sri Lanka. anurawvadk@gmail.com

ABSTRACT

Value creation is the ultimate purpose of any company and it is affected by many factors including capital. In knowledge-based economy, not only the financial capital but also non-financial capital play a pivotal role for creating value for the organizational stakeholders. The non-financial capital includes specially, the intellectual capital and its components; human capital, structural capital and relational capital. Thus, this study tried to explore the impact of intellectual capital and its components on value creation of Sri Lankan companies. The study was carried on the views obtained from the top personnel of 263 Sri Lankan companies out of 814 Sri Lankan companies including both Public Listed Companies and private companies. Further, the value creation was quantified using both financial and non-financial value drivers in this study. Data were analyzed using multivariate data analysis through Partial Least Square Structural Equation Modeling. Intellectual capital and structural capital have a significant positive impact on value creation according to the study's findings. Human capital and relational capital do not have a significant impact on value creation. Furthermore, the explanatory power of the intellectual capital on value creation was lower than the explanatory power of the components of intellectual capital on value creation. Further, the findings of the study support to the theory, specially they confirm the stakeholder theory, knowledge based theory and intellectual capital based theory. Moreover, the study adds more value to the practice by identifying intellectual capital, human capital, structural capital and relational capital as the major predecessors of value creation of Sri Lankan companies.

Keywords: Human capital, Intellectual capital, Relational capital, Structural capital, Value creation

1. Introduction

Value Creation (VC) has been appeared among the empirical finance scholars as a prominent topic during the past periods (Shakina and Molodchik, 2014). The value of a profitable company is its market value, which comprises with its financial capital and other all the things remaining within the firm. Financial capital denotes the firm's book value and it includes the value of its financial and physical assets. Other all the things remaining within the firm is viewed as the 'intellectual capital' (IC), which contains assets made by intellectual activities ranging from learning and discoveries to create valued relationships (Ali and Anwar, 2021; Iacuzzi *et al.* 2020; Wiig, 1997). According to the International Integrated

Reporting Council (IIRC), the capitals including financial capital, manufactured capital, intellectual capital, human capital, social and relational capital and natural capital are the basis of an organization's value creation (International Integrated Reporting Council, 2013).

Moreover, Low (2000) highlights the significance of intangible assets for value creation. He highlighted that the financial results are showing a decreasing trend in companies' performance and on the other hand, intangibles, like, technology, connectivity and human capital can enhance the companies' performance. The findings of study of Hitt *et al.* (2001) verified that the intangible capital is paying a more leading role than tangible capital. Another study done by Najibullah (2005), shows that, intellectual capital can be acknowledged as imperative recourses, which contribute for organizational efficiency, effectiveness, productivity and innovativeness better than physical capital and financial capital.

Consistent with the resource-based view, components of IC affect to enhance the competitive advantage of the organizations, therefore value creation for the stakeholders. Furthermore, some of the components of IC might have a resilient influence on the organizational process of value-creation, based on the distinctiveness of the organization (for instance, a Research and Development) firm may perhaps have a significant value addition from its knowledge and competences, while a consultancy firm can get more advantage from its relational capital (Cricelli *et al.* 2014).

The Value Platform Model¹ describes the contribution of IC, i.e. the collection of human capital, internal structures and external structures, to the organizational VC. According to the following Figure 1, the intersection of all three dimensions of IC provides a basis for value creation of a company. Two important messages through this model are; first, company value does not create from any of its IC factors directly, but the value is created only from the relations between all of them; second and the most significant one is that, even if one or two factors are strong, if the third factor is weak, then IC cannot be employed to create value by an organization (Edvinsson and Malone, 1997).

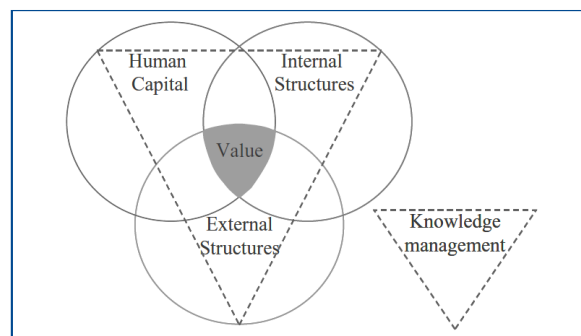


Figure 1: Value Platform Model²
Source: Hussi (2004)

¹ The first source for this model was Edvinsson and Malone (1997). According to Edvinsson and Malone (1997), this Model was developed by Hubert Saint-Onge, Charles Armstrong, Gordon Petrash and Leif Edvinsson.

² This is a modified model of the original Value Platform Model created by Hubert Saint-Onge, Charles Armstrong, Gordon Petrash and Leif Edvinsson.

Pulic (2004) has shown the importance of IC in companies than their physical capital. One of his analysis's results indicated that, the Intellectual Capital Efficiency (ICE) was higher consecutively for considered three years than Capital Employed Efficiency (CEE) of Ericsson Company. It is illustrated in following figure clearly.

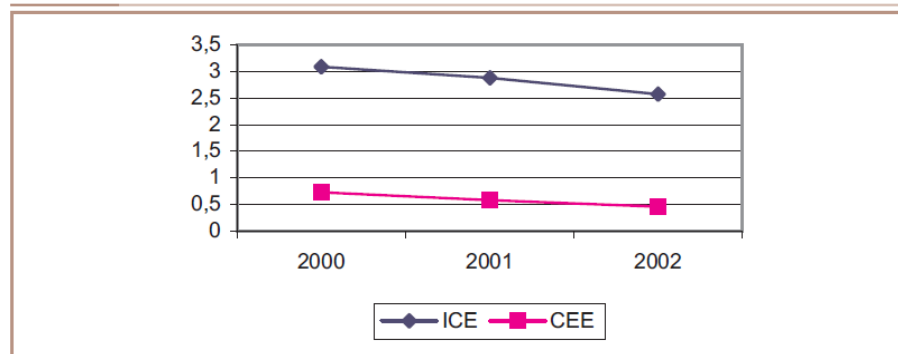


Figure 2: Business results based on the new IC based measurement model
Source: Pulic (2004)

Above evidences prove the significance of IC in the business society, which are based on the knowledge. Thus, it is evidenced that the IC has a capability of contributing to the companies' financial performance, competitive advantages and ultimately to VC. Moreover, there is an emerging interest among the scholars and practitioners to develop various methodological underpinnings to assess the IC of companies. It signals the emergent importance of the intellectual assets of the companies (North and Kumta, 2018).

1.1 Research Gaps and Problem Statement

Thus, all these evidence highlights the importance of IC to businesses for improving their financial performance and hence to VC. Even though it is evidenced that, IC is as the most prominent organizational intangible asset, why Accountants and Financial Analysts are reluctant to figure out it? The most apparent answer is that; IC is not only problematic in measuring but also problematic in evaluating (Abeysekara, 2011; Abeysekara, 2008; Abeysekara and Guthri, 2005). However, after realizing the importance of IC, there are lots of seminars, conferences and workshops being conducted all over the world to understand how to measure and value IC (Bontis, 1999). Most of the countries has started to introduce Intellectual Capital Statements (ICS) enabling companies to identify, measure and report their IC. ICS is a new way to account for important intangible assets to make them visible.

But, Sri Lankan companies are rather reluctant to disclose IC in their financial statements due to the measurement and recognition difficulties exist in IC components (Abeysekara, 2011; Abeysekara, 2008; Abeysekara and Guthri, 2005), since, there is a deficiency in ICSs or index in Sri Lankan context. The Sri Lankan authorities have not yet initiated much efforts in providing guidelines for preparing ICS by Sri Lankan companies. This is one of the *contextual gaps* identified through the literature in the field of IC, which leads research studies, which motivate authorities to take initiations towards ICS and IC index for Sri Lankan companies. This gap exists due to the poor literature in relation with

IC arena in Sri Lanka. Thus, there is a deficiency of empirical evidence to assist in identifying the worth of IC to Sri Lankan companies, which then hindering the need of disclosing IC information.

Due to the emerging acceptance and recognition of IC as an imperative strategic asset in a firm, which contribute positively for the creation of sustainable competitive advantage, greater performance and eventually the organizational VC, scholarly efforts have been arisen to explore whether IC influence to organizational performance and VC in international context (Bhini, 2015; Nuryaman, 2015; Tseng *et al.* 2015; Berzkalnea and Zelgalve, 2014; Mhedhbi, 2013; Choong, 2008; Ayed, 2007; Cabrita and Vaz, 2005; Bontis *et al.*, 2004; Bontis, 1998). Though there is an emergent scholarly effort towards recognizing the importance and impact of IC on VC in international settings, such efforts are still in very infancy level in Sri Lanka. It can be found some literature in Sri Lanka addressing the impact of IC on another aspects, such as, innovation capability, business performance, etc. (Sivalogathan and Wu, 2015; Dulanjani and Priyanath, 2020). Therefore, another *contextual gap* can be identified within IC and VC literature in Sri Lanka to be filled.

The acceptability of IC as a conception is vulnerable, since there is a slight empirical indication and findings to illustrate that companies are employing the IC by means of a management strategy to support VC of the company (Dumay, 2012). This deficiency of empirical findings is caused by non-identification of the significance of the IC for organizational VC. Thus, this study offers a contribution to fill the said empirical gap as well by recognizing how IC is important in creating value for organizational stakeholders.

Moreover, Marti'n-de-Castro *et al.* (2011) identified that, IC is evolved through major two stages; its emergence and identification of measurement tools in the twentieth century; and academic proposals on IC in the twenty first century. These academic proposals on IC changed the focus of IC to identify the strategic evaluation of IC and its impact on organizational effectiveness. Thus, there is an academic interest to find this strategic assessment of IC and its impact towards effectiveness of the companies, which ultimately leads to companies' VC. This emerging interest provides an avenue for exploring the empirical evidence on the strategic assessment of IC and its effect on organizational VC. Therefore, this is identified as another empirical gap to be filled by undertaking research studies, which focus on to assess the strategic viewpoints regarding the IC and its impact towards organizational VC.

Another feature, which has not been adequately examined in the evaluation of the VC process, is the requirement of merging qualitative and quantitative methods and taking into consideration the managers' views, and also the specificity of the situation (Michele and Rogo, 2012). Most of the scholars in VC literature focused on either financial value drivers (Ujwary-Gil, 2017; Pandey, 2015; Iazzolino *et al.* 2014; Śledzik, 2013) or non-financial value drivers (Ashton, 2015; Laitinen, 2004; Skaret *et al.* 2002; Kalafut and Low, 2001; Low, 2000) in assessing the VC of companies. But none of them were focusing on either

both qualitative and quantitative aspects or both financial and non-financial aspects in assessing VC of companies. Therefore, a methodological gap can be observed.

Hence, the statement of problem of the current study is, does IC affect on VC of companies in Sri Lanka? And how do IC dimensions affect on VC of Sri Lankan companies? Accordingly, the current study aims to examine the effect of IC on VC of Sri Lankan companies and to investigate the impact of IC dimensions on VC of companies in Sri Lankan context.

This study is important to several stakeholders in several ways. First, although the IC plays an imperative role within an organization for value creation, awareness and comprehension of IC and research on IC are still greatly within its primary level in the developing countries such as Sri Lanka. Therefore, there is a research gap between new knowledge and existing knowledge on IC specially in Sri Lankan context. Hence, the current study can be considered as a bridge to fill the recognized research gap of intellectual capital literature in Sri Lanka.

Second, the research findings of the present study will be an aid for understanding the IC factors and VC mechanisms and the importance of IC on VC by the companies. Thus, the findings of the study becomes a motivator in disclosing non-financial information by the companies, which fulfil the information needs of the stakeholders and reflect a true picture about the VC of the companies. Third, this study will be an aid for making accounting regulations by the Sri Lankan Accounting Regulatory Bodies, specially, for the Institute of Chartered Accountants of Sri Lanka to explore the possibility of disclosing the non-financial information in the financial statements of Sri Lankan companies.

Fourth, this study will be helpful for all the stakeholders, specially for shareholders and owners of Sri Lankan companies to identify the different IC factors and VC mechanism of Sri Lankan companies enabling them to make their investment decisions effectively and to upgrade the awareness on IC and VC among them. Finally, the outcomes of the study would be beneficial to the future researchers in the field of IC and VC. The rest of the article consists with the sections, which deal with the relevant literature review in IC and VC; the methodology; the findings and discussion and the conclusion.

2. Literature Review

2.1 Stakeholder Theory, Knowledge based View (KBV) and IC based View (ICBV)

Explicated as the supporting theoretical base of the current study, which provide a strong foundation for the study. Windsor (2017) highlights according to the stakeholder theory developed by Freeman and friends in 1980, that the companies value creation is not only limited for their shareholders but also for various stakeholders. Jensen (2001) articulates that, according to the stakeholder theory, managers must do the decision making by considering the interests of *all* the organizational stakeholders. Stakeholders contain all individuals or groups who can considerably affect, or be affected by, the welfare of the firm. It is a group that includes not only the stockholders, but also employees, customers,

societies, and government. Thus, the value should be created for all these parties in the companies. Accordingly, the VC in the present study is this stakeholder VC and not merely limited to shareholders' VC.

According to KBV, a firm is a various knowledge-bearing object, which rather manages its knowledge assets to produce value in the aspects of economic, social, intellectual, and cultural. In the knowledge based theory, knowledge and IC are identified as the most significant strategic assets of a company (Asiaei *et al.* 2021; Seleim and Khalil, 2011). Equally KBV and ICBV ensure that intangible resources are linked with knowledge and its utilization (Ujwary-Gil, 2017). KBV is accompanied by ICBV wherein IC is classified into three dimensions: human capital, organizational (structural) capital, and social (relational) capital that are corresponding capitals. Both KBV and ICBV are built on the interpretation of unseen, knowledge-intensive dynamic forces that lay the foundation for a company's value and competitive advantage (Ujwary-Gil, 2017). When the development stage of ICBV, Reed *et al.* (2006) hypothesized that, the connection between each component of IC and financial performance of a firm is contingent with the values of other components.

2.2 Intellectual Capital

North and Kumta (2018) has described IC according to, Edvinsson and Sullivan (1996) and Edvinsson and Malone (1997) as; IC is the knowledge, which could be transformed into value. Further, North and Kumta (2018) extracted the ideology given for IC by Organization for Economic Co-operation and Development (OECD) (2008) as; IC is a resource, which can be employed in future value creation of companies without having a physical substance. These characterizations of IC reflect the importance of IC for VC of companies and these ideologies highlight the power of IC in creating value for companies.

The intangible resources, such as, knowledge, information and experience are together known as IC, which formulates the basis for triumph in the twenty-first century. These intangible assets are considered as the means of generating and continuing competitive advantage (Ghosh and Mondal, 2009). Three characteristics of IC are identified as; intangibility, ability to create value and the growth effect by Bontis and Cabrita (2008). IC is the total of all of the intangible and knowledge-related assets, which a firm is capable of using in its productive procedures in the effort of creating value (Kianto *et al.* 2014). According to Hejase *et al.* (2016), IC is the knowledge that people place for the improvement in their own companies; per se, it is a competitive advantage of an organization and assists for value creation in an organization.

2.3 Components of Intellectual Capital

IC has three components according to Michele and Rogo (2012); Human Capital (HC), Relational Capital (RC) and Structural Capital (SC). IC factors have been identified in this research for each of the IC elements as; (1). Human capital - technology exploration and evaluation, technical training for individuals, development of skills and professional skills, achievement of strategic leadership, accessibility to new technologies/innovations, interactions, business prospects, creativity of individuals, qualification and professional

development, engagement of individuals and commitment and achievement of flexibility.

- (2). Relational capital - interaction, image and growth of visibility for the company, exchange and sharing between companies, affiliations with universities and institutions, negotiating ability with funding organizations, bargaining power with customers, suppliers, competitors, customers relations, relationship with competitors and supplier relationship.
- (3). Structural capital - eco-friendly policies, liberation, team work, sense of belonging to company, systemic innovation, invention, managing information, developing a collective technical culture in the group, organized knowledge/best practices, brands, patents, and copyrights.

Ujwary-Gil (2017) identified three levels when identifying the components of IC and they are; Individual (In IC, human capital is the individual level), Organizational (In IC, structural capital is the organizational level), and Inter-organizational (Relational capital is the inter-organizational level in IC). According to Sveiby (1997), IC consists with three components; employee competence, internal structure and external structure, which other scholars (e.g. Bontis, 1998; Brooking 1997; Edvinsson and Malone 1997; Petrash, 1996; Sullivan, 2000) defined as the human capital, structural capital and relational capital (customer capital) respectively (Mouritsena, *et al.* 2001).

Cricelli *et al.* (2014) view three components of IC as; human capital, structural capital and relational capital. According to Cricelli *et al.* (2014), human capital denotes to people in a firm and tacit knowledge entrenched in the organizational employees, structural capital means, the explicit knowledge surrounded in the firm and relational capital includes organizational relationships and distribution of knowledge with outside stakeholders of the organization. Singh and Rao (2016) consider the taxonomy of IC as, human capital, social capital and organizational capital. Hejase *et al.* (2016) identify the components of IC as human capital, structural capital, and relational capital; spiritual capital; social capital; and, technological capital. Further, Kim *et al.* (2011), Seleim and Khalil (2011), Ghosh and Mondal (2009), and Nazari and Herremans (2007) identify three intellectual capital components based on preceding research studies as; human capital, structural capital and relational capital.

When reviewing the literature, it seems that, the classification of intellectual capital is elusive, but, whatever classifications exist, the features of intellectual capital are not diverse in such classifications. The main elements of intellectual capital such as, people, structures and relationships are included in all such classifications with slight differences in defining them. However, one classification of IC has to be selected as to facilitate the measurement of intellectual capital for the current study. The three categorization of IC into human, structural/organizational, and relational capital has been employed in many previous studies (Ali and Anwar, 2021; Hejase *et al.* 2016; Bchini, 2015; Cricelli *et al.* 2014; Demartini and Paoloni, 2013; Jardon and Susana, 2012; Molodchik *et al.* 2012; Kim *et al.* 2011; Seleim and Khalil, 2011). Therefore, this classification is used in the current study as well.

2.4 Value Creation

Deprived of keeping worthy relationships with customers, employees, investors, suppliers and communities, a business organization cannot create value (Jensen, 2001). Thus, it is pivotal to pay an extensive courtesy on all the stakeholders of the business organization when creating value. Therefore, the stakeholder value creation concept is important than the shareholder value creation conception. Argandona, (2011) tries to answer to the question of; What is the meaning of creating value not only for stockholders but also for all stakeholders? In his attempt, six types of value were identified. These types of value represent the value created by a company not only for shareholders, but also for all other stakeholders. Moreover, Windsor (2017) considers the role of value creation in future stakeholder research. The advantages of management for stakeholders comprise with a resilient obligation by stakeholders to the firm, enhanced firm's acceptability, superior prospective for value creation and competitive advantage, and more confidence in relationships between firm and different stakeholder groups (Tantalo and Priem, 2016).

2.5 Impact of Intellectual Capital and its Components on Value Creation

Anglo-Saxon literature mostly studied the matter of VC through IC. Nevertheless, this arena of research has been carried out in different countries, industries and companies, still the findings of the impact of IC on VC are indecisive (Bchini, 2015). Si, (2019) carried out a literature review to discover the various types of relations, exist in the literature of IC and organizational performance. Accordingly, he recognized three types of findings on IC and firm's performance in his study. They are; Research with positive association between IC and firm's performance, research with no significant or negative relationship between IC and firm's performance and research with different outcomes for the association between IC and firm's performance. The relationship among IC, financial capital, firm value and VC in different business cycles were investigated by Tseng *et al.* (2015) using 3,187 information technology companies listed in the Taiwan Stock Exchange covering the period of 11 years from 2001 to 2011. The results revealed that, VC is influenced by both IC and financial capital.

Further, a positive correlation between IC and company value was discovered by Berzkalnea and Zelgalve (2014) as an end result of the research done based on 65 Baltic listed companies during the period from 2005 to 2011. Moreover, Nuryaman (2015) explored a positive effect of IC on firm value and also a positive effect IC on financial performance in accordance with the study done using 93 manufacturing companies in Indonesia Stock Exchange. Prior literature excessively (Bontis, 1998; Bontis *et al.*, 2004) validated that, IC is significantly and positively correlated with organizational performance and VC.

Furthermore, Cabrita and Vaz (2005) as cited from Marr and Roos (2005), showed that there is a causal association between IC and VC of an organization. Moreover, IC is recognized as a critical resource and driver of company performance and VC in the modern business world (Marr *et al.* 2004). Tseng *et al.* (2015) discovered that VC of information technology companies is affected by IC. Further, Bontis, (1998) and Bontis *et al.*, (2004)

confirm that IC has a significant and positive impact over the performance and VC of companies. Mhedhbi (2013) found that IC positively affects to company's VC. Thus, the hypothesis one of the study can be framed as;

H1: Intellectual capital has a significant positive impact on value creation in Sri Lankan Companies

According to the views of Ujwary-Gil (2017), VC takes place as a consequence of the interrelationship between three IC dimensions: human, structural, and relational capital. The aim of a company's IC is to generate a basis for elucidating all the assets of the firm and how they interconnect for creating value. Furthermore, this author supported to the impact of human and structural capital on VC. Furthermore, the modern corporate finance theory articulates that intangibles are one of the most considerable roots of companies' surplus returns and value progression (Shakina and Molodchik, 2014). The capacity of a company to construct its "intangible assets" or "intellectual capital" has come to be an analytic success factor in generating and continuing competitive advantage (Ayed, 2007). Study of Mhedhbi (2013) to investigate the relationships between IC and VC of Tunisian companies indicated that, the IC positively influences the VC of a company and also human capital, organizational capital and customer capital also influence reciprocally.

Another study based on the Spanish firms with a staff of 25 employees or more by Díez *et al.* (2010) to explore the impact of human capital and structural capital on the creation of business value revealed that, there was a positive association between the human and structural capital and VC measured by sales growth. Further, a study of Bchini, (2015) to identify the association between the IC components and VC based on the views of managers or leaders and controllers of 104 Tunisian manufacturing companies exposed that, there is a positive and statistically significant association between IC components and VC.

Moreover, Liu *et al.* (2009) revealed that process capital, innovation capital, and human capital affect VC. Moreover, consistent with Walsh *et al.* (2008) as cited by Seleim and Khalil (2011), it is expected that the investments in HC, SC, and RC will enhance the value of a firm. Thus, it prove through the literature that, the dimensions of IC affect positively and significantly to VC. Therefore, based on the discussion on prior literature, it is fair to formulate the other hypotheses of the study as;

H2: Human capital has a significant positive impact on value creation in Sri Lankan companies

H3: Structural capital has a significant positive impact on value creation in Sri Lankan companies

H4: Relational capital has a significant positive impact on value creation in Sri Lankan companies

3. Methodology

3.1 Research Design

The current study is an explanatory type research, which follows the research philosophy of positivism, while following the deductive approach. The quantitative research method

and the survey strategy were adopted for the present study. And also, the study is a cross sectional nature study, which collects data at one point in time by the respondents.

3.2 Population and Sample

The population of the present study is all Sri Lankan companies, including Public Listed Companies (PLCs) listed in Colombo Stock Exchange (CSE) and private companies registered in Ceylon Chamber of Commerce (CCC). There were 297 PLCs as at 31st December 2019. The study was limited only to the private companies, which were registered under the CCC only since there was no formal methodology to identify the total number of private companies in Sri Lanka at the time of data collection. There were 625 registered members in CCC as at 31st December 2019 including both PLCs and private companies. There were 517 private companies registered in CCC after excluding the registered PLCs from 625 companies registered in CCC. Thus, the total population was 814 Sri Lankan companies. According to Krejcie and Morgan (1970), 263 Sri Lankan companies were selected as the sample from 814 companies. The sample was proportionately divided between PLCs and private companies. Accordingly, 95 PLCs and 168 private companies were selected based on the systematic sampling.

3.3 Conceptual Framework

According to the comprehensive literature in the arena IC, it was evidenced that, IC and its dimensions have an impact of organizational VC (Ali and Anwar, 2021; Iacuzzi *et al.* 2020; Bchini, 2015; Nuryaman, 2015; Tseng *et al.* 2015; Berzkalnea and Zelgalve, 2014; Mhedhbi, 2013; Choong, 2008; Ayed, 2007; Kamath, 2007; Cabrita and Vaz, 2005; Bontis *et al.* 2004; Stewart, 1999; Bontis, 1998 Barney, 1991; Edvinsson and Malone, 1997). Thus, following figure demonstrates the conceptual framework of the current study.

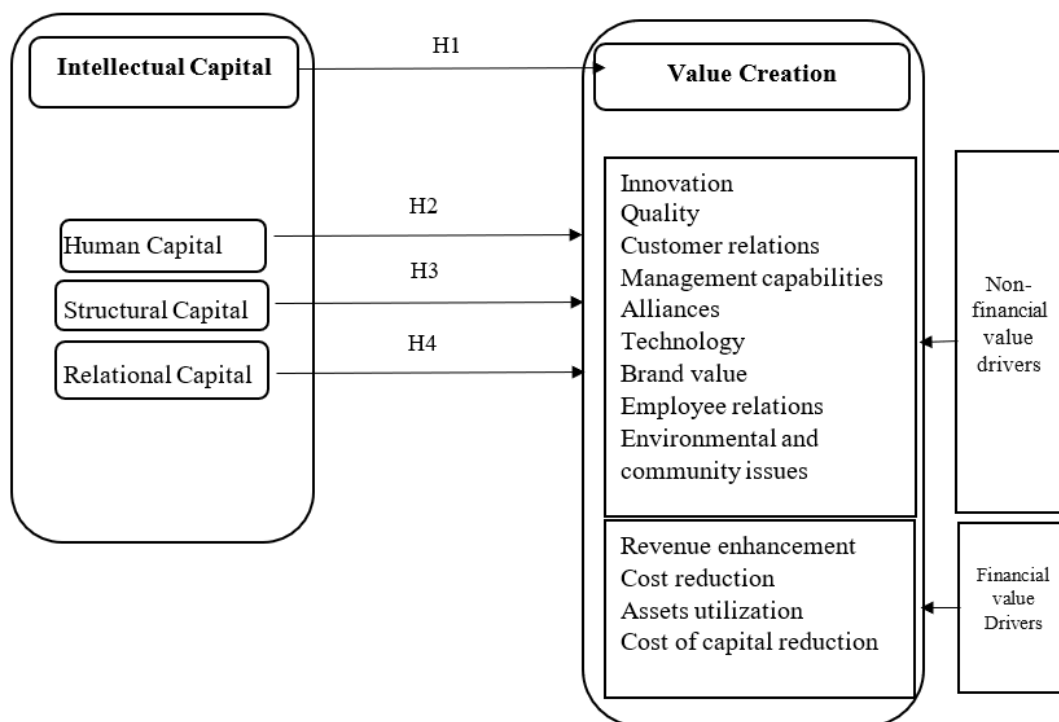


Figure 3: Conceptual Framework

3.4 Operationalization of Variables and Method of Data Collection and Analysis

IC, HC, SC, RC are the independent variables and VC is the dependent variable of the current study. All the variables are measured through the views obtained using the questions, according to the previous literature (Prasad *et al.*, 2019; OECD Oslo Manual, 2018; Annual Business Survey, 2017; Das, 2017; Ruiz-Jiménez and Fuentes-Fuentes, 2016; Ashton, 2015; Pandey, 2015; Tavassoli and Karlsson, 2015; Teti *et al.* 2014; Śledzik, 2013; Michele and Rogo, 2012; Seleim and Khalil, 2011; Gunday *et al.*, 2011; Carmeli and Tishler, 2004; Tencati *et al.* 2004; de Mortanges and Riel, 2003; Kale *et al.* 2001; Low, 2000; Bontis, 1999; Edvinsson and Malone, 1997; Sveiby, 1997; Anderson *et al.*, 1994; Hitt and Ireland, 1985; Srivastava, 1979; Westiwick, 1973). Self-administered questionnaire was employed for the data collection and the respondents of the study were the top personnel (Chief Executive Officer (CEO)/Chairman/Managing Director (MD)/General Manager (GM)) of 263 Sri Lankan companies.

The gathered data on IC, HC, SC, RC, and VC are coded before entering to the Statistical Package for Social Science (SPSS) version 25. After coding the data, data was entered into SPSS and data cleaning, including identifying missing values and treatment for outliers was done before the data are being used for the analysis. Further, the multivariate assumptions were also tested. The percentage analysis was done to describe the general information of the respondents. The main statistical tool used based on the objectives of the present study was regression analysis and it was done using Structural Equation Modeling (SEM) with SmartPLS 3.

4. Findings

4.1 Pilot Survey

A pilot survey was done using 40 Sri Lankan PLCs and private companies and 31 responses were received. The Cronbach's Alpha for all the indicators were calculated to identify the reliability of the questionnaire and they are illustrated in table 1.

Table 1: Results of Reliability Analysis – Pilot Survey

No.	Indicator	Cronbach's Alpha
1	Intellectual Capital	0.913
2	Human capital	0.859
3	Structural capital	0.580
4	Relational capital	0.730
5	Value Creation	0.932

Source: Compiled by authors based on survey data

All the indicators satisfy the very good reliability criteria according to Zikmund *et al.* (2010).

4.2 Main Survey and Data Cleaning

Main survey of the study was done using 263 companies and 227 responses were received indicating an 86.3 percent of response rate. According to Mugenda and Mugenda (2003) and Kothari (2004), it was a very good response rate. Further, independent samples test was done to ensure the homogeneity of the sample units. The results revealed that, there are no significant mean differences of variables of the study between two groups of sample, i.e. PLCs and private companies. Thus, the homogeneity in sampling is achieved. Missing value analysis and detection of outliers were done to clean the data set. However, no missing values (item nonresponse) were found in the current study based on the frequency analysis results. Therefore, no treatment was required for missing value in the study. But, there were 36 unit non-responses due to the rejection to respond by 16 companies and 20 non-responded questionnaires.

The boxplots and the Mahalanobis distance were used to detect the univariate outliers and multivariate outliers in the study respectively. According to the results of the outliers' detection, 5 univariate outliers and 3 multivariate outliers were detected and removed. Therefore, after removing 8 cases from the data set, 219 cases out of 227 were retained for the final data analysis.

4.3 Testing for Multivariate Assumptions

The normality, linearity, multicollinearity and homoscedasticity (Osborne and Waters, 2002; Krieger, (n. d.)) were tested. The results of the histograms, Normal Q-Q plots, Kolmogorov-Smirnov Test, Shapiro-Wilk Test, skewness and kurtosis were employed to test the normality assumption showed the non-normal distribution of data. The scatter plots were utilized to test the linearity and results indicated that the linearity was achieved for all the variables. The study examined the simple correlation among independent variables, the Variance Inflation Factor (VIF) and tolerance value for the independent variables (Pituch and Stevens, 2016; Hair *et al.* 2006) for diagnosing multicollinearity. All these criteria revealed that there is no multicollinearity issue among independent variables of the current study. Finally, the residual plots and the correlation between predicted values and absolute values confirmed the homoscedasticity of the current study's variables. Accordingly, all the multivariate assumptions are met except normality and hence, the study used Partial Least Square (PLS) SEM using SmartPLS 3, where the non-normal data can be entertained.

4.4 Analysis of General Information

The percentage analysis showed that the majority of the respondents was male (85.8%) and there was 14.2 percent of female respondents indicating that the leadership in Sri Lankan companies is rest in the arms of the males the most. The majority (51.1%) of top personnel in the companies in Sri Lanka is in the age category of 46 years and 55 years. 25.1 percent of respondents is in between 36 years and 45 years of age and 23.7 percent of respondents is more than 55 years of age. No respondents are found below the age of 35 years indicating that maturity in terms of age is a characteristic of top management in Sri Lankan companies. 46.1 percent of the respondents have the working experience in the positions of CEO/Chairman/MD/GM from 11 years to 15 years and the least percentage of respondents

(14.6%) has less than 5 years working experience. 74.4 percent of the respondents has a Master's degree and 0.5 percent of respondents has obtained PhD qualification as well. In addition to that, the first degree holders are 13.7 percent. Further, 52.1 percent of respondents has some kind of professional qualifications, while 47.9 percent of them does not have any professional qualifications.

And also, 37 percent of the respondent companies are PLCs, while 63 percent of them are private companies. In addition to that, the sample consists of 48.4 percent of companies, which are under the category of goods, 40.6 percent is in the service category and 11 percent of the companies are information related companies.

4.5 Results of Multivariate Data Analysis – PLS SEM

There are two steps in evaluation of results; evaluation of the measurement model and evaluation of the structural model (Hair *et al.* 2014; Ringle *et al.* 2014). Before evaluate the measurement model, formative and reflective constructs were distinguished using Confirmatory Tetrad Analysis (CTA) in PLS-SEM (Gudergan *et al.* 2008). CTA found that IC, HC, SC, RC and the most of the VC constructs except customer relations, technology, cost reduction and assets utilization are formative constructs. After distinguishing the formative and reflective constructs, internal consistency, indicator reliability, convergent validity, and discriminant validity were assessed to evaluate the reflective constructs, while collinearity among indicators and significance and relevance of outer weights were assessed to evaluate the formative measurement model of the current study. Further, structural model evaluation was done using the bootstrapping in SmartPLS, β coefficients, T statistics, p values, lower confidence interval at 5 percent and upper confidence interval at 95 percent.

4.6 Results of the Structural Model

Results of the structural model was used to test the hypotheses of the study. Figure 4 presents the effect of IC on VC of Sri Lankan companies and the relevant statistics are presented in table 2.

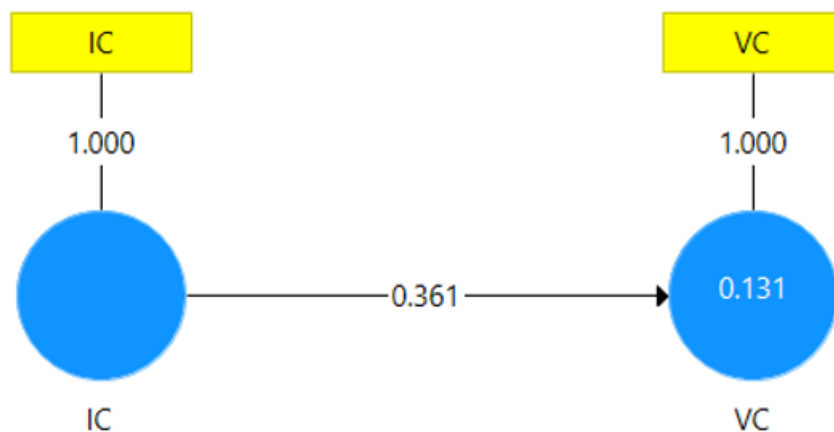


Figure 4: Path Model - Effect of IC on VC
Source: Survey Data – 2020/21

Table 2: Path Coefficients – Effect of IC on VC

Path	β Coefficient	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics	P Values	5%	95%
IC -> VC	0.361	0.362	0.049	7.358	0.000	0.277	0.439
R ²	13.1%						

Source: Survey Data – 2020/21

The effect of IC on VC is 0.361 ($\beta = 0.361$) and the explaining power of IC on the variance of VC is 13.1 percent. Further, the table indicates that the effect of IC on VC is significant ($t = 7.358$, $p = 0.000$, CI = 0.277 and 0.439). Thus, the hypothesis one of the study, Intellectual capital has a significant positive impact towards value creation in Sri Lankan Companies can be accepted. The figure 5 illustrates the effect of IC components on VC of Sri Lankan companies and the Table 3 depicts the statistics relevant to the impact.

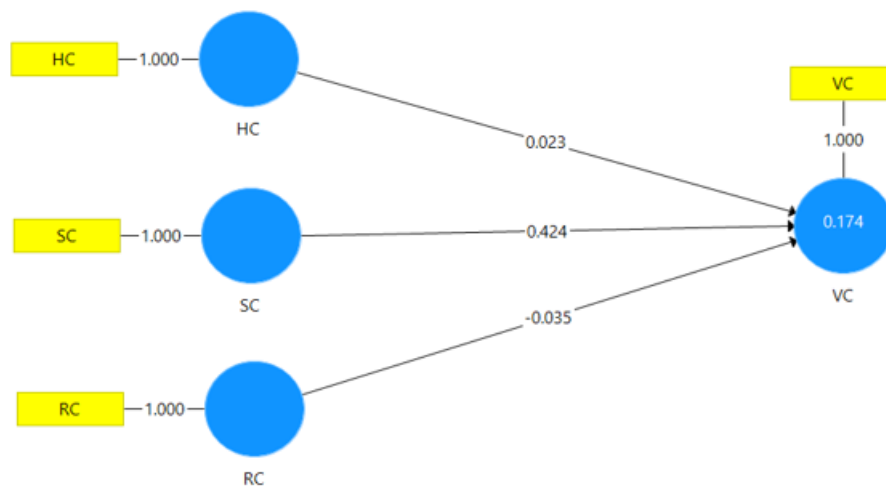


Figure 5: Path Model – Effect of IC components and VC

Source: Survey Data – 2020/21

Table 3: Path Coefficients – Effect of IC components and VC

Path	β Coefficient	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics	P Values	5%	95%
HC -> VC	0.023	0.027	0.082	0.281	0.389	-0.119	0.154
RC -> VC	-0.035	-0.038	0.092	0.379	0.352	-0.189	0.112
SC -> VC	0.424	0.423	0.084	5.043	0.000	0.277	0.555
R ²	17.4%						

Source: Survey Data – 2020/21

The path model and the statistics in relation with the hypotheses 2, 3, and 4 revealed that both HC ($b = 0.023$) and SC ($b = 0.424$) have a positive impact towards company's VC and the impact of RC on VC is negative ($b = -0.035$). However, the results revealed that only the impact of SC on VC is significant ($t = 5.043$, $p = 0.000$, CI = 0.277 and 0.555) and others

are not significant (HC - $t = 0.281$, $p = 0.389$, $CI = -0.119$ and 0.154 , RC - $t = 0.379$, $p = 0.352$, $CI = -0.189$ and 0.112). Further, the dimensions of IC altogether can explain 17.4 percent of variance of VC of a company indicating that the majority of the variance of VC (82.6%) is explained by other factors other than IC dimensions. Moreover, SC is the most influential dimension on VC. Nevertheless, based on the outcomes of the data analysis, H3 is accepted, but H2 and H4 have to be rejected. Further, the explaining power (R^2) of IC on VC is lower than to the explaining power of the components of IC on VC.

4.7 Important Performance Map Analysis

Moreover, the study performed the Important Performance Map Analysis (IPMA) to identify the low performance predecessors with high importance. Accordingly, IPMA was done to identify the all predecessors of VC and the results are as follows;

Table 4: Importance-Performance Statistics – VC – All Predecessors

Construct	Importance (Total Effects)	Performances
IC	0.312	68.944
RC	0.119	46.155
SC	0.051	85.074
HC	0.010	321.546

Source: Survey Data – 2020/21

When comparing all the predecessors of VC, the results infer that IC is the highest important (0.312) predecessor of VC with third highest performance among other predecessors (68.944). The highest performance is shown by HC (321.546), though HC's importance is the lowest (0.010). The second lowest important predecessor is SC (0.051) and it is also the second highest performer (85.074). RC's importance (0.119) is higher than to the importance of HC and SC, but lower than to the importance of IC. But RC has the lowest performance (46.155) among all other predecessors.

5. Discussion

The first objective was formed to recognize the effect of IC on Sri Lankan companies' VC. The prior literature support to a significant positive impact of IC on companies' VC (Tseng *et al.* 2015; Nuryaman, 2015; Shakina and Molodchik, 2014; Mhedhbi, 2013; Ayed, 2007; Bontis *et al.* 2004; Marr *et al.* 2004; Bontis, 1998). Accordingly, based on the literature support, the first hypothesis was formulated to achieve this objective of the study. The findings of the study statistically supported to accept this hypothesis, indicating a significant positive impact of IC on Sri Lankan companies' VC. Further, this finding is consistent with Tseng *et al.* (2015), Nuryaman, (2015), Shakina and Molodchik, (2014), Mhedhbi, (2013), Ayed, (2007), Bontis *et al.* (2004), Marr *et al.* (2004), and Bontis, (1998). Thus, there is a strong theoretical and conceptual support on this hypothesis.

The second objective of the study was “to recognize the impact of IC dimensions towards VC in Sri Lankan companies”. IC comprises with three dimensions, human capital, structural capital, and relational capital ((Hejase *et al.* 2016; Bchini, 2015; Cricelli *et al.* 2014; Demartini and Paoloni, 2013; Jardon and Susana, 2012; Molodchik *et al.* 2012; Kim *et al.* 2011; Seleim and Khalil, 2011; Choong, 2008). It was identified in the literature that, the IC dimensions affect significantly and positively to the organizational VC (Ujwary-Gil, 2017; Bchini, 2015; Díez *et al.* 2010; Liu *et al.* 2009). Thus, three hypotheses were constructed and by examining these three hypotheses, the study tried to achieve its second objective.

The findings of the study supported to accept only *H3*. It indicates that structural capital has a power of influence to the VC of a company positively and significantly. Structural capital of a company consists with company’s codified knowledge, policies, procedures, concepts, strategies, routines, databases, information systems, organizational culture, business processes, business development plans, concepts and models, which really retain within the company after employees go home. These components of companies have an ability to positively influence to the company’s VC. It means, the increase in structural capital leads to increase the VC and vice versa. Therefore, if companies can improve their structural capital, as an example; effective formulation of companies’ strategies, policies and procedures or proper maintenance of databases and information systems, the companies will be able to enhance the VC for their stakeholders.

However, *H2 and H4* were not accepted, but, human capital indicated a positive, insignificant impact on company’s VC. Thus, HC supports partially to the hypothesis, but there was no statistical significance to accept the hypothesis. Conversely, the impact of relational capital on VC was totally different from the theoretical and hypothesized impact. Thus, it showed an insignificant negative impact on VC. Due to the statistical insignificance of RC on VC, this negative impact can be ignored and does not require further elaboration. Furthermore, this is consistent with Liu *et al.* (2009), who discovered that customer capital (some defines relational capital as relationship with customers only) does not have a significant impact on corporate VC. Thus, the study was capable of achieving the objective two of the current study.

Further, the overall impact of IC on VC is lower than to the separate impact of IC components on VC. It is confirmed through the higher R^2 value of IC components on VC than the R^2 value of IC on VC. It implies that components of IC can influence separately than the overall IC on VC. However, further study needs to identify how it happens, where only the SC has a significant positive impact towards VC and other two components, HC and RC do not have a significant impact on VC. Then, there is a dilemma to see whether this higher explaining power of the components of IC is only contributed by the SC. This problematic situation is improved with the results of the IPMA as well since the SC is the second lowest important predecessor of VC among other predecessors, where the importance of IC and RC are higher than to the importance of SC. In this type of situation,

how does SC alone create a greater explaining power is questionable. Therefore, it opens up avenues for future researchers to explore more on this phenomenon.

6. Conclusion

This study attempts to explore the effect of intellectual capital on value creation and the effect of components of intellectual capital on value creation of Sri Lankan companies. The study was done based on the views of the top personnel of 263 Sri Lankan companies including both PLCs and private companies. Findings revealed that intellectual capital has a significant positive impact on value creation and also only one component of intellectual capital, i.e. structural capital has a significant positive impact on value creation, while other two components of intellectual capital, i.e. human capital and relational capital showed no significant impact on value creation.

Thus, it is concluded that the intellectual capital affects positively to stakeholder value creation of Sri Lankan companies. This is consistent with the prior findings of Hsu and Sabherwal, (2012); Seleim and Khalil, (2011); Marr *et al.* (2003); Wiig, (1997). IC as the most important intangible asset of the companies has a great positive impact on VC of these companies. Therefore, if a company takes actions to improve the intellectual assets, it will lead to improve the VC capacity of that company. This phenomenon is accepted both theoretically and empirically through the current study though accepting the H1.

It can be concluded next, the structural capital is the most influential intellectual capital dimension towards value creation of Sri Lankan companies. This finding is consistent with the conclusion of prior research studies of Ujwary-Gil, (2017); Bchini, (2015); Mhedhbi, (2013); Kamukama *et al.* (2010); Díez *et al.* (2010); Liu *et al.* (2009), which intellectual capital dimensions have a significant positive impact on value creation of companies. However, it was identified through the findings of the present study that other two dimensions (human capital and relational capital) do not effect significantly to the value creation of Sri Lankan companies and only structural capital has an ability to positively influence to the value creation of Sri Lankan companies.

This study supports to the theory as well to the practice in several ways. First, the findings of the study confirm the theory. The major theoretical underpinnings of this study were, stakeholder theory, knowledge-based theory, and intellectual capital-based theory. The stakeholder theory supports to the argument of which the company should create value to all the stakeholders. This study supports to this argument by considering value drivers (e.g. customer relations, employee relations, external relations, environmental and community issues), which cover all organizational stakeholders. Thus, the logic of stakeholder theory is accepted through the current study.

Second, the rationale for the knowledge-based theory and intellectual capital-based theory is that knowledge-based assets including intellectual capital are the basis for creating sustainable competitive advantages and hence for value creation of the company. The results

of the study explored and concluded that the intellectual capital influences positively to the value creation of companies. This supports to the rationale of the said theories.

Further, this study gives contribution to the practice also in numerous ways. First, findings of IPMA revealed a vital practical implication. It was identified intellectual capital, human capital, structural capital and relational capital as the major predecessors of value creation of Sri Lankan companies. Out of them, Intellectual capital and relational capital are recognized as the highly important predecessors for value creation. Out of these two, relational capital show low performance though it is highly important. Thus, it provided with Sri Lankan companies a valuable implication to think more on their relationship with stakeholders.

Second, the structural capital of Sri Lankan companies plays a prominent role in enhancing value creation. Because, structural capital is found as only the significant factor affecting to value creation when it considered the individual impact of intellectual capital dimensions on value creation. Therefore, it is a good indicator for the top management of Sri Lankan companies, since structural capital consists with mostly the consequence of the decision making process of companies and the ways the companies store their knowledge. Structural capital includes company's strategies, routines, business development plans, procedures, models, concepts, processes, etc. which are the outcome of company decision making process and also, information systems, technologies, databases, manuals, files, etc. which are the non-human storage of company knowledge. Further, structural capital consists with innovation capital including trademarks, patents, copyrights, etc. Hence, if Sri Lankan companies pay attention more on their structural capital improvement, they can create more value to their stakeholders. Thus, structural capital of Sri Lankan companies shows the way of success of companies in Sri Lanka.

Another important practical implication is, the study found that even though the human capital is highly performing factor for value creation, its relative importance is very low comparatively to other two intellectual capital dimensions (structural capital and relational capital). This less importance is also confirmed through the insignificant impact of human capital on value creation. Thus, if Sri Lankan companies try to enhance their company performance merely depending on its workforce, it would not be achieving the target objectives. Since the human capital is already performing in high level in its maximum, putting more and more effort on human capital might be not beneficial, because its relative importance is very low. Instead, the Sri Lankan companies is directed towards paying more attention on structural capital and relational capital in enhancing value creation.

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