THE IMPACT OF INTELLECTUAL CAPITAL ON CORPORATE SUSTAINABLE GROWTH: EVIDENCE FROM LISTED COMPANIES IN SRI LANKA

Banneheka, B.M.A.M[1], Uluwatta, K.[2], Mendis, M.O.S.[3]

[1,2,3,]Department of Accountancy, Faculty of Business Studies & Finance, Wayamba University of Sri Lanka.
[1]ayesha21madhubhashini@gmail.com, [2]uluwatta@wyb.ac.lk, [3]oshani@wyb.ac.lk

ABSTRACT

Companies' ultimate goal is to increase the wealth of their shareholders. To achieve this, the company should maintain a competitive marketplace. To stay competitive, a company should invest in both physical and intangible resources. Intellectual capital is a key value driver that helps to assure a business's long-term success. Making sure that the company works smoothly and achieves sustainable growth becomes the most essential part of resource management. This study's goal is to determine how intellectual capital affects long-term company success, with a focus on publicly traded companies on the Colombo Stock Exchange (CSE). Over seven years, from 2014 to 2019, the data for this study were taken from annual reports and gathered using pertinent websites for the chosen 164 listed companies. Van Hon's corporate sustainable growth model was used to calculate corporate sustainable growth. Intellectual capital was determined using the Modified Value-Added Intellectual Capital (M-VAIC) model. In this study, the effect of intellectual capital on long-term company growth was estimated using descriptive statistics, correlation analysis, and regression statistical approaches. The results of the regression analysis show that intellectual capital significantly enhances the long-term growth of corporations. The research's conclusions concur with those of Mukherjee and Sen's 2019 paper, Intellectual Capital and Business Sustainable Growth: The Indian Evidence. the M-VAIC Model is applied. It significantly affects the long-term expansion of businesses. In a framework of resource allocation that is evolving, especially in Sri Lanka, this study offers crucial evidence. In order to optimize their wealth and long-term growth, investors and financial managers will benefit from this research's guidance in making smarter financial decisions. This study also has practical ramifications because it will help end users comprehend how intellectual capital affects a company's long-term growth.

Keywords: Corporate Sustainable Growth, Intellectual Capital, M-VAIC

1. INTRODUCTION

During the past few decades, academics and professionals have been more and more interested in intellectual capital and how it affects a company's financial performance, market value, competitive advantage, innovations, and long-term growth. Intellectual capital, which focuses on personnel, expertise, and intellectual assets, ensures company growth in the knowledge-based economy. (Pulic, 2000).

Identification and measurement of IC are difficult; however, the concept has evolved over the last two decades and is gaining popularity in the business world (Stahle et al., 2011). Value creation is the process by which any business can achieve long-term growth. It is possible to do so using a variety of resources.

The value creation of intellectual capital is still hidden since the financial statement is not feasible enough to disclose business value, even though the manufacture of things is no longer the source of economic value. (Aruppala, et al., 2015; Stahle et al., 2011) In addition to the book value, there is an excess that generates value. An examination of the hidden value that is not shown by financial statements has been motivated by the discrepancy between the market value and book value of many companies (Maditinos et al., 2011).

Human capital, structural capital, and relational capital are the three components of intellectual capital. There is another perspective that has five dimensions of IC in addition to the above-mentioned three dimensions. It includes Innovation Capital and Process Capital. Today's businesses are more on training their employees, maintaining a separate department called Research and Development to find innovative products and add new features through new techniques, and giving priority to customer satisfaction while developing long-term relationships with them that can be seen in almost all larger-scale companies to achieve sustainable growth.

Previous studies have shown a strong correlation between intellectual capital and a company's long-term performance. Learn more about the effect of IC on CSG from listed firms on the Colombo Stock Exchange with the help of this study's objective.

There is little evidence in the literature from a developing nation like Sri Lanka in compared to their enormous contributions. Also, these studies on intellectual property and financial success across different businesses were carried out (Kehelwalatenna et al., 2010; Aruppala, et al., 2015; Jayasooriya and Gunawardana, 2016; Lakshan and Jayawickrama, 2020). The effect of IC on the financial performance of businesses in the hotel, manufacturing, finance, banking, and non-finance sectors has been thoroughly investigated by Sri Lankan academics.

The study's main research problem is to determine whether intellectual capital has an impact on a firm's corporate sustainable growth in Sri Lanka.

The research is guided by the following research questions.

Q1. What is the impact of intellectual capital on corporate sustainable growth among listed companies in Sri Lanka?

Q2. What is the impact of capital employed on corporate sustainable growth among listed companies in Sri Lanka?

Q3. What is the impact of human capital on corporate sustainable growth among listed companies in Sri Lanka?

Q4. What is the impact of structural capital on corporate sustainable growth among listed companies in Sri Lanka?

Q5. What is the impact of relational capital on corporate sustainable growth among listed companies in Sri Lanka?

The study's primary objective is;

- To examine the relationship between IC and corporate sustainable growth among listed companies in Sri Lanka.

The secondary objectives of the research are;

1. To examine the impact of capital employed on corporate sustainable growth among listed companies in Sri Lanka.
2. To study the impact of human capital on corporate sustainable growth among listed companies in Sri Lanka.
3. To identify the impact of structural capital on corporate sustainable growth among listed companies in Sri Lanka.
4. To examine the impact of relational capital on corporate sustainable growth among listed companies in Sri Lanka.

There is inconclusive evidence related to IC and corporate sustainable growth from global cases. Furthermore, (Mukherjee and Sen 2019; Xu et al., 2020; Xu and Wang 2018) studies on IC and corporate sustainable growth in a global context. As a result, this study has empirical significance.

2. LITERATURE REVIEW

According to Riahi-Belkaoui (2003), intellectual capital is a strategic asset that has the capacity to link IC and business success.

Similarly, Mukherjee and Sen (2019) stated that IC represents a collection of strategic assets that direct business toward growth and ultimate success. Furthermore, (Ovechkin *et al.*, 2020) mentioned that Intangibles are the core source of the production process that plays a significant role in the modern knowledge-based era.

In literature, there are many definitions available for defining sustainable growth. Xu and Wang (2018) defined sustainable growth as the ability to reach the growth of a business without borrowing funds and only using retaining profit. Mukherjee and Sen (2019,) defined sustainable growth as the firm can maintain future benefits using sustained profit. Sustainable growth is the continuous value enhancement of a firm (Xu *et al.*, 2020).

Xu et al. (2020) used a sample of listed agriculture companies in China's Shanghai and Shenzhen A-share markets from 2009 to 2018 to study the Effect of IC Efficiency on Corporate Sustainable Growth-Evidence from Smart Agriculture. The results demonstrate that capital employed efficiency and human capital employed efficiency have little impact on non-high tech agriculture enterprises but have a strong beneficial impact on corporate sustainable growth.

Mukherjee and Sen (2019) study IC and Business Sustainable Growth: The Indian Evidence using the M-VAIC model. It significantly affects the long-term expansion of businesses. Additionally, the results demonstrate that physical capital, relational capital, innovation capital, and process capital all significantly contribute to the explanation of long-term company growth.

390 manufacturing enterprises listed on the Korean Stock Exchange between 2012 and 2016 were used by Xu and Wang (2018) to study the evidence of IC, Financial Performance, and Companies' Sustainable Growth from the Korean Manufacturing Industry. IC has a favourable effect on businesses' financial performance and sustained growth, according to Xu and Wang (2018). Moreover, findings demonstrated a positive relationship between physical capital, human capital, and relational capital and business success and sustainable growth.

Data from 90 listed Chinese and Pakistani companies was collected between 2010 and 2017 to conduct a study of Chinese and Pakistani firms to determine the impact of competitive advantage on sustainable growth and Development. He evaluated Competitive Advantage as a mediating variable between them as well as the direct association between IC and Sustainable growth. The findings demonstrated that IC significantly influences the SG of Chinese and Pakistani enterprises.

Comparing the sectors of agriculture, tourism, and renewable energy, (Xu et al. 2021) conducted study on the relationship between business sustainability and IC efficiency. Results indicate that only renewable energy firms in the whole sample have a significantly favorable impact on corporate sustainable growth in terms of capital utilized efficiency, intellectual capital efficiency, and its components.
M-VAIC method is used to measure IC.

MVAIC = CEE + ICE ----------(1)
ICE = HCE + SCE + RCE ----------(2)
CEE= VA/CE----------(3)
HCE= VA/HC----------(4)
SCE= SC/VA ----------(5)
RCE = RC/VA ----------(6)

CEE: capital employed efficiency
ICE: intellectual capital efficiency
HCE: human capital efficiency
SCE: structural capital efficiency
RCE: relational capital efficiency
CE: capital employed by the equity of the owner
HC: human capital represents by salaries of employees
SC: structural capital represents by management expenditures
RC: relational capital represents by sales expenditures.

3. METHODOLOGY

A deductive approach and quantitative; archival research strategy was used throughout the study. For this study, the population was 281 listed companies with 4,142,575,868,156 market capitalization as of 2nd September 2021.

The Morgan table was used as the source of the 164 listed companies that made up the study's sample, which was chosen at random. In the six years from 2014 to 2019, this study gathered information from annual reports. Leverage and company size were the study's control variables.

CEE: Capital Employed Efficiency

HCE: Human Capital Efficiency

SCE: Structural Capital Efficiency

RCE: Relational Capital Efficiency

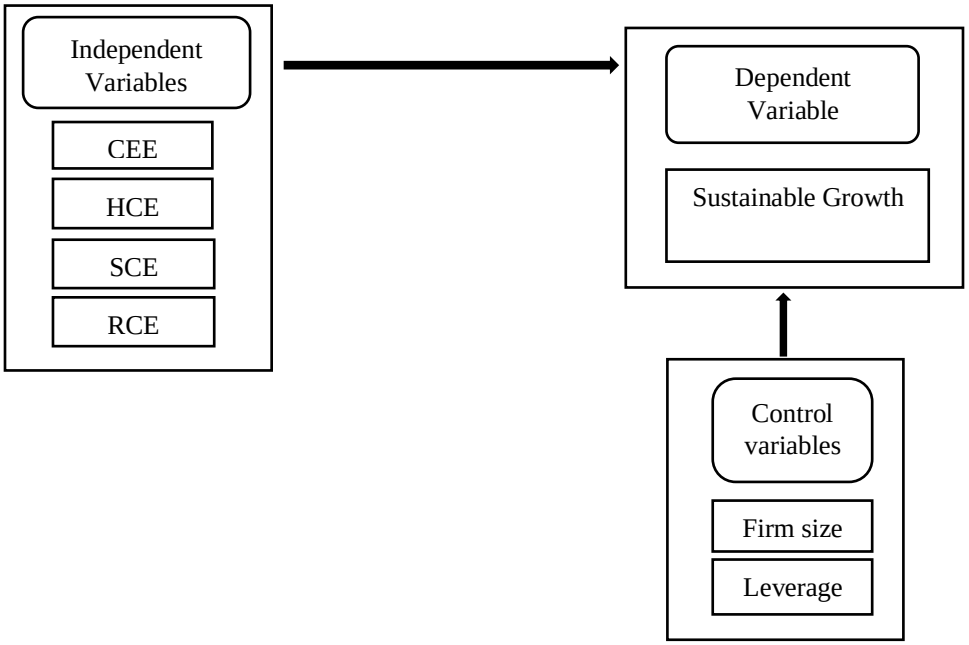

Figure 1. Conceptual Framework

The study's hypotheses were predicated on the notion that IC influences corporate sustainable growth. Empirical research suggests that there is a substantial positive link between IC and CSG (Xu and Wang 2018; Lu et al., 2021). By taking into account the prior findings, the following principal hypotheses are offered for this study:

H1: There is a significant positive effect of capital employed on corporate sustainable growth.

H2: There is a significant positive effect of IC on corporate sustainable growth.

H2a: There is a significant positive effect of human capital on corporate sustainable growth.

H2b: There is a significant positive effect of structural capital on corporate sustainable growth.

H2c: There is a significant positive effect of relationship capital on corporate sustainable growth.

These hypotheses were tested using descriptive statistics, correlation analysis, and regression analysis.

Table 1 depicts the sectors and the sum of listed corporations in the sample.

Table 1. Sectors and the total number of companies in sectors

Sector	Total companies in the sector	Total companies in the sample
Energy	02	01
Material	21	13
Capital Goods	29	20
Commercial and professional	05	04
Transportation	03	02
Automobiles and components	01	01
Consumer durables and apparel	12	06
Consumer service	36	20
Retailing	13	06
Food and staples retailing	04	03
Food, beverage, tobacco	47	24
Household and personal products	02	02
Healthcare equipment and service	08	05
Banks	12	06
Diversified financials	46	31
Insurance	10	06
Telecommunication service	02	01
Utilities	08	03
Real estate	20	10

Source: CSE.lk

4. FINDINGS AND DISCUSSION

The STATA econometrics programme was used to conduct the analysis. The central tendency of the model, or how the sample data is distributed from the range of minimum to maximum of the variables, was identified in the descriptive statistics portion. The study's descriptive data are displayed in Table 2.

The model as a whole is significant, as shown by the P-value of 0.003. Due to P-value being less than 5%, this is the case. The variances of the variables Capital Employed (CE), Human Capital (HC), Structural Capital (SC), Relationship Capital (ER), and Sustainable Growth (SG) account for 53% of the coefficient of determination's (R-

Square) value, with the remaining 47% explained by a variable that was not examined in this study.

Table 2: Descriptive Statistics of the Dependent and Independent Variables

Variable	Obs.	Mean	Std. Dec.	Min	Max
Capital Employed	920	0.40	2.85	(16.78)	76.53
Human Capital	920	8.63	31.48	(70.14)	297.64
Structural Capital	920	0.62	2.67	(27.93)	51.93
Relational Capital	920	0.37	2.46	(15.73)	55.13
Sustainable Growth	920	0.10	0.36	(3.17)	7.78
Firm size	920	20,421.61	76,223.90	1,342.21	962,350.50
Leverage	920	(0.28)	21.24	(643.87)	1.63

Table 3: Regression table

	Coefficient	Std. Err.	t	P > t
CEE	0.143	0.004	0.790	0.012
SCE	0.131	0.000	2.270	0.023
HCE	0.120	0.005	0.160	0.030
RCE	0.013	0.005	0.220	0.824
cons	0.091	0.013	6.920	0.698

Table 3 depicts the regression results. The hypotheses are tested as follows;

H1: There is a significant positive effect of Capital Employed on Corporate Sustainable Growth.

According to the findings, capital employed had a positive significant effect on corporate sustainable growth at a 5% level; as a result, a 1-unit increase in capital employed efficiency translates in a 0.143-unit rise in corporate sustainable growth. As a result, the alternative hypothesis is accepted and the null hypothesis is rejected.

H2: There is a significant positive effect of Intellectual Capital on Corporate Sustainable Growth.

By analyzing sub hypothesis results there is a significant positive effect of IC on SCG.

H2a: There is a significant positive effect of Human Capital on Corporate Sustainable Growth.

The Human Capital Efficiency Index score is 0.131, and the coefficient is positive (P = 0.023). Under the 0.05 level of significance, corporate sustainable growth has a significant positive effect. Hence, a 1-unit increase in human capital efficiency results in a 0.131-unit rise in corporate sustainable growth. The null hypothesis is disproved by the findings.

H2b: There is a significant positive effect of Structural Capital on Corporate Sustainable Growth.

As revealed by the beta coefficient value and P-value of ($\beta = 0.120$, P value = 0.030), Structural Capital Efficiency had a positive significant effect on Corporate Sustainable Growth at a 5% significant level. As a result, a one-unit rise in Structural

Capital resulted in a 0.120-unit increase in Corporate Sustainable Growth. As per the results, null hypothesis is rejected.

H2c: There is a significant positive effect of Relational Capital on Corporate Sustainable Growth.

As revealed by the beta coefficient value and P-value of (β= 0.013, P value = 0.824), Relationship Capital Efficiency had a positive insignificant effect on Corporate Sustainable Growth at a 5% significant level. As per the results null hypothesis is accepted due to the P-value being more than 0.05.

The multicollinearity assumption says that there is no relationship between the independent variables of the study. Multicollinearity occurs when the independent variables are significantly associated with one another. Using a matrix of correlations between the separate variables is the most basic technique to test the amount of multicollinearity.

Table 4: Multicollinearity Test

	SGR	CEE	SCE	HCE	RCE	F. ASSET	LEVERAGE
SGR	1						
CEE	-0.0258	1					
SCE	0.0053	-0.0045	1				
HCE	0.075	0.0028	0.0269	1			
RCE	0.006	0.0022	-0.3146	0.0018	1		
F. ASSET	0.0372	-0.0018	0.0082	-0.0234	-0.0094	1	
LEVERAGE	-0.0033	0.0026	-0.0025	0.0004	0.0021	0.0132	1

The results shown in table 4 has taken by correlation matrix for all the variables. According to the results, there is a statistically significant relationship between some variables. When looking for multicollinearity, a correlation of more than 80% between independent variables is normally required. This indicates that the data is not multicollinearity, as all variables correlate less than 80%. The normality and multicollinearity tests are the free tests for assessing the fundamental assumptions of regression analysis that must be satisfied before estimating the model. The Random effect model was used to regress the panel diagnostic tests, including heteroscedasticity, autocorrelation, and cross-sectional dependency, on balanced panel data.

5. CONCLUSION

Based on the regression results, the coefficient of determination, R2 = 0.532, indicates that the model explains nearly all of the variations in the dependent variable. That is, the independent variables account for 53.2% of the variability in corporate sustainable growth. According to the regression model, IC has a significant impact on corporate sustainable growth in Sri Lankan listed companies.

The study's findings add to the body of knowledge on IC and corporate sustainable growth by revealing the impact of IC and its components on corporate sustainable growth in Sri Lanka. This study provides a general framework for future research by researchers and management. The first beneficiaries of this study will be the management who will gain new insights into the factors that influence corporate sustainable growth within their organizations. It aids in understanding resource allocation decisions and long-term planning. It also provides insight measures about the value of human resources to ensure sustainable growth, which is useful for corporate managers making human capital decisions in the competitive business world.

This study only considered four components of Modified Value-Added Intellectual Capital to measure IC, but more components, such as Research and Development Efficiency and Process Efficiency, could be added. This study only used secondary data, but it could be expanded to include both primary and secondary data. As a result, researchers will be able to form a more accurate and reliable opinion about the impact of IC on corporate long-term growth.

The study was concerned only with the period from 2014 to 2019. So future researchers can do research in the future by expanding the sample and collecting data for more than seven years. Also, they can do research by using various sectors of Colombo Stock Exchange (CSE). The study can expand to reach the impact of intellectual capital on small and medium scale enterprises. Also, researchers can add a competitive advantage as a mediating variable for this study.

And they can add various measurements to measure the dependent variables. To measure intellectual capital can be done by adding more components of Modified Value-Added IC like Innovational Capital and Process Capital. This study concerned only secondary data but it can be expanded using both primary and secondary data. By that, they will be able to get a better and more reliable opinion about the impact of IC on corporate sustainable growth.

REFERENCES

Aruppala, D., Wickramasinghe, V. and Mahakalanda, I. (2015) 'Intellectual capital and financial performance in Sri Lankan Banks', *6th International Conference on Business & Information (ICBI – 2015),* (January), pp. 37–49.

Campisi, D. and Costa, R. (2008) 'A DEA-based method to enhance intellectual capital management', *Knowledge and Process Management*, 15(3), pp. 170–183. doi: 10.1002/kpm.312.

Herath, M. N. and Perera, P. (2021) 'Reporting Intellectual Capital in Annual Reports : Evidence from Sri Lanka', (June), pp. 0–1.

Herath, M. N., & Perera, P. (2021). Impact of firm characteristics on intellectual capital disclosure: Evidence from Sri Lanka. *6th International Conference on Contemporary Management (ICCM 2021),* Jaffna, Sri Lanka..

Jayasooriya, S. D. and Gunawardana, K. D. (2016) 'Managerial Perception of

Intellectual Capital Disclosure Practices of Listed Companies in Sri Lanka', *International Journal for Innovation Education and Research*, 4(12), pp. 206–214. doi: 10.31686/ijier.vol4.iss12.78.

Joshi, M., Cahill, D., Sidhu, J., & Kansal, M. (2013). Intellectual capital and financial performance: an evaluation of the Australian financial sector. Journal of intellectual capital, 14(2), 264-285.

Kamaluddin, A. and Rahman, R. A. (2013) 'The intellectual capital model: the resource-based theory application', *International Journal of Learning and Intellectual Capital*, 10(3–4), pp. 294–313. doi: 10.1504/IJLIC.2013.057427.

Lu, Y., Li, G., Luo, Z., Anwar, M., & Zhang, Y. (2021). Does intellectual capital spur sustainable competitive advantage and sustainable growth?: A study of Chinese and Pakistani firms. Sage Open, 11(1), 2158244021996702.

Mačerinskienė, I. and SURVILAITĖ, S. (2019) 'INTELLECTUAL CAPITAL IN THE LISTED COMPANIES OF THE BALTIC STATES', pp. 46–63.

Maditinos, D. *et al*. (2011) 'The impact of intellectual capital on firms' market value and financial performance', *Journal of Intellectual Capital*, 12(1), pp. 132–151. doi: 10.1108/14691931111097944.

Mukherjee, T., & Sen, S. S. (2019). Intellectual capital and corporate sustainable growth: The Indian evidence. Asian Journal of Business Environment, 9(2), 5-15.

Pulic, A. (2000) 'VAIC^{TM} – An Accounting Tool for Intellectual Capital Management', *International Journal Technology Management*, 20(5/6/7/8), pp. 702–714.

Ramanayake, S. S., (2022). National Innovation Systems and Technological Innovation Systems for Sustained Growth: A Way Forward to Sri Lanka. In *Innovation Systems, Economic Development and Public Policy* (pp. 105-130). Routledge India.

Ramezan, M. (2011) 'International Journal of Information Management Intellectual capital and organizational organic structure in knowledge society : How are these concepts related ?', *International Journal of Information Management*, 31(1), pp. 88–95. doi: 10.1016/j.ijinfomgt.2010.10.004.

Riahi-Belkaoui, A. (2003) 'Intellectual capital and firm performance of US multinational firms:A study of the resource-based and stakeholder views', *Journal of Intellectual Capital*, 4(2), pp. 215–226. doi: 10.1108/14691930310472839.

Sta˚hle, P., Sta˚hle, S. and Aho, S. (2011) 'Value added intellectual coefficient (VAIC): A critical analysis', *Journal of Intellectual Capital*, 12(4), pp. 531–551. doi: 10.1108/14691931111181715.

Xu, J., & Li, J. (2022). The interrelationship between intellectual capital and firm performance: evidence from China's manufacturing sector. Journal of

Intellectual Capital, 23(2), 313-341.

Xu, J., & Wang, B. (2018). Intellectual capital, financial performance and companies' sustainable growth: Evidence from the Korean manufacturing industry. Sustainability, 10(12), 4651.

Xu, X. L., Li, J., Wu, D., & Zhang, X. (2021). The intellectual capital efficiency and corporate sustainable growth nexus: Comparison from agriculture, tourism and renewable energy sector. Environment, Development and Sustainability, 1-19.

Xu, X. L., Chen, H. H. and Zhang, R. R. (2020) 'The Impact of Intellectual Capital E ffi ciency on Corporate Sustainable Growth-Evidence from Smart Agriculture in China', (Ic), pp. 1–15.

Ze´ghal, D. and Maaloul, A. (2010) 'Analysing value added as an indicator of intellectual capital and its consequences on company performance', 11(1), pp. 39–60. doi: 10.1108/14691931011013325.