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Does Intellectual Capital Influence a Firm's Financial Health?

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In the current economic era where knowledge-based intellect is a crucial skill, this study examines the impact of intellectual capital (IC) on the firm financial health of 503 construction and material firms across eight countries in developing markets (Bangladesh, India, Indonesia, Malaysia, Philippines, Pakistan, Thailand, and Vietnam) over the period of 2010 – 2017. Based on system GMM, two measures of IC were applied, namely VAIC and MVAIC. The result suggests a significant positive relationship between IC and firm financial health. Firm capital employed efficiency (CEE) and human capital efficiency (HCE) are the main components that contributed to financial health. It also reported that the previous year HCE has negatively influenced the financial health of construction and material companies. The result of this study is helpful for firm management and policymakers to further emphasise the importance of IC to ensure the company remains competitive in the market.

Key words: *Financial Health, Intellectual Capital, Sustainable Growth, Construction and Material Sector.*

Introduction

The role of knowledge in production has significantly changed over the years and most recently it has become the main factor behind maximising value and production in companies. In the current dynamic environment focusing on knowledge economy where companies' intellectual assets, knowledge, capabilities, and value are the key driver for company wealth, instead of tangible assets such as land, equipment, capital and others (Seetharaman, Zaini Sooria & Saravanan, 2002). Thus, the management of knowledge is

considered as a source of enhancing a company's performance, which triggered companies to put more attention to the importance of intellectual capital.

The concept of intellectual capital has evolved from different academic disciplines and has increasingly become an interdisciplinary field. Therefore, there is no single definition or categorisation of intellectual capital (Marr, 2007). By definition, intellectual capital is a non-transferable and intangible asset that has the power to generate wealth in an organisation because of the combination of elements of an intangible nature as well as its human and structural resources, while allowing capitalising experiences and transforming knowledge into a competitive advantage (Salazar and Villegas, 2019). However, this study adopts the definition of intellectual capital as the combination of human capital, structural capital and relational capital. Human capital represents the companies' knowledge in people, while structural capital relied on knowledge in the organisation and its systems and relational capital is knowledge regarding customers and other external relations in a company (Guthrie, Ricceri, Dumay, 2012). The integration of these three knowledges would help a company's future wealth. Titova (2019) argues that the main issue of IC is not related to the structure of IC but is more towards the implication of the components on the company. Intellectual capital will be able to drive company competitiveness and sustainability and finally to achieve financial health.

The construction and material sector plays a significant role in contributing to a country's economic development. The element of intellectual capital assessment is vital in the construction and material industries. This is because the construction industry is heavily dependent on intellectual capital especially in terms of human capital-related activities such as developing and retaining human capital. Further, the process of technical and mechanical aspects, as well as the required knowledge, is intensive. Past researchers mainly focus on the banking industry (e.g., Ozkan Cakan, & Kayacan, 2017; Poh, Kilicman & Ibrahim, 2018; Onumah & Duho, 2019), the insurance industry (e.g., Sherif & Elsayed, 2016; Asare, Alhassan, Asamoah & Ntow-Gyamfi, 2017), manufacturing industry (e.g., Chouaibi & Kouaib, 2015; Xu & Wang, 2018) and the technology industry (e.g.,Gan & Saleh, 2008; Shaban & Kavida, 2013); but less on the construction and material sector. This scarcity of research brings this study to fill the gap. Therefore, it is essential to examine the implication of construction and material sector IC on the company's financial health.

Literature Review

Resource Based View Theory

As examined by Barney (1991), intangible assets are the key for the company to achieve sustained competitive advantage. This included the intangible assets that must be unique,

perfectly inimitable and difficult to substitute. Hence, these resources lead the company to enjoy above-average returns and to preserve the sustainable competitive advantage (Peteraf, 1993). In the context of the company, it can be viewed as management skills such as organisational processes, routines, information, and knowledge. IC is related to the knowledge that can be transformed into value or intellectual material, for example, knowledge, information, intellectual property, and experience that helps to enhance wealth creation (Skaikh, 2004). Resource-Based Views (RBV) theory is important to explain IC regardless of geographical region (Kolachi and Shah, 2013). Henceforth this study relied on this theory to discuss the relationship between IC and financial health among selected emerging countries. In the current competitive markets with a focus on a knowledge-based economy, IC is a key factor for a company's survival and its continued success (Stieglitz & Heine, 2007).

Empirical Review

Several studies have associated IC with financial health performance of firms in which the studies have taken the probabilities of bankruptcy a proxy for the firms' financial health (Bakshani, 2014; Cenciarelli, Greco & Allegrini, 2018; Iazzolino & Laise, 2013; Mollabashi and Sendani (2014); Sriram, 2008). IC is a combination of human capital, structural capital and relational capital and the integration of these elements suggests enhancing a firm's financial health (Guthrie, Ricceri & Dumay, 2012). Firms with a higher added value of intellectual capital performance demonstrate a lower probability of bankruptcy. The study by Sriram (2008) explains the relationship in which the long-term financial stability depends on the ability to effectively and efficiently manage a firm's assets inclusive of both tangible and intangible assets. In addition, Cenciarelli, Greco and Allegrini (2018) suggest that firms with a higher value-added intellectual capital performance show a significantly lower probability of going bankrupt. The combined efficiency of intellectual, physical and financial capital contributes significantly to reducing the probability of bankruptcy.

Mollabashi and Sendani (2014) indicate that among all the variables, the intellectual capital and human capital are inversely related to the risk of bankruptcy. Baksahani (2014) suggests that a firm with higher IC performance has a higher risk of going bankrupt. Such a contradiction may suggest that IC is not an appropriate predictor for the food industry. The elements of IC, in particular, the structured capital does not show a significant association with bankruptcy due to the structure capital growth being much smaller than human capital growth (Cenciarelli, Greco & Allegrini, 2018). This finding could be consistent with Iazzolino and Laise (2013). Taken together, they suggest that the productivity of knowledge workers measured by human capital is fundamental to reducing the likelihood of bankruptcy. When there is no such productivity, there is value destruction, and structure capital is not relevant. These arguments lead to the following hypothesis:

H_1: Intellectual capital (VAIC) is associated to a better firm's financial health.

While IC is suggested as an important component for a better financial position of firms, the sustainability of profit growth is equally important for the firms' financial health (Nayak & Nahak, 2011; Brammer & Millington, 2008; McWilliams & Siegel, 2000; Brine, Brown & Hackett, 2007). Nayak and Nahak (2011) reported that the Altman model is very accurate in finding the financial health of public sectors Indian banks. Hence, it has led the state banks of India to possess a strong sustainability profile. Moreover, the evidence on a positive relationship reflects the assumption that corporate sustainability concerns will lead to company financial health that is not subject to diminishing returns (Brammer & Millington, 2008). It happens because of the company's capability of reducing costs or increasing revenues (McWilliams & Siegel, 2000), increasing demand level and production, as well as reducing price sensitivity (Brine, Brown & Hackett, 2007). In contrast, Kartadjumena and Rodgers (2019) found a direct negative significant influence of corporate sustainability concerns in 39 Indonesian commercial banking on firms' financial health. This is due to corporate sustainability concerns through corporate responsibility activities that do not always relate to higher corporate financial health, especially when it is not included as a part of a corporate strategic decision posture that requires sensitivity, responsiveness, and efficiency. Thus, this ultimately results in lower corporate financial performance. These arguments lead to the following hypothesis:

H_2: Sustainability growth associated to a better firm's financial health.

Data and Methodology

In order to examine the effect of IC and sustainability growth towards financial health of a firm, data of 503 construction and material firms across eight countries in developing markets (namely Bangladesh, India, Indonesia, Malaysia, Philippines, Pakistan, Thailand, and Vietnam) were gathered from Bloombergs database for the period of 2010 – 2017. The construction and material industry is one of the main contributors to economic growth in developing countries. The research is conducted using the balanced panel data analysis when all individual data are equal at the time they are collected and there are no missing data. Table l reports the final sample for each country after filtering missing data.

Table 1: Number of firms per country

Countries	Sample	% of sample
Bangladesh	9	1.79
India	171	33.93
Indonesia	19	3.77
Malaysia	82	16.27
Pakistan	22	4.37
Philippines	8	1.59
Thailand	40	7.94
Vietnam	153	30.36
Total	504	100

Dynamic panel data estimators will be used in this study to capture the dynamic characteristics of the dependent variables. Since sustainability growth and financial health is time persistent, we follow Arellano and Bover and Blundell and Bond (1998), using the system GMM to control lagged sustainability and lagged financial health in estimating the effect of VAIC on the financial health.

This study is based on Altman's Z score model developed by Edwards Altman in 1968 to measure financial health as of past literature for example Sriram (2008), Tyagi (2014), Zainuddin, Tapa and Abdul Rahim (2018). This statistical model is a combination of five financial ratios can be used to measure a firm's financial health. The model proposed as:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5 \quad (1)$$

In equation (2), Z is a discriminate function score of a firm. It is derived from working capital to total assets (X_1) as a measure of firm liquidity position relative to firm size; retained earnings to total assets (X_2) representing the cumulative profitability; earnings before interest and tax (EBIT) to total assets (X_3) estimates the earnings power allocate for creditor, government, and shareholders; the market value of equity to total liabilities (X_4) measures of long term solvency of a firm; sales to total assets (X_5) signifies a standard turnover that varies from one industry to another. The Z-score can be used to identify companies in different categories based on the cut-off point. On average, firms with Z-score 2.99 or above are healthy firms (safe zone), below 1.81 represents failure firms (distress zone) and Z-score falls between 1.81 and 2.99 is a grey area firm. The result of the Z-score model shows in Table 2.

Table 2: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
FHEALTH	2.487	5.156	-30.527	141.667
CEE	0.159	0.208	-2.869	8.095
HCE	3.697	10.791	-116.701	225.822
SCE	0.606	2.200	-70.524	18.680
RCE	1.759	20.362	-322.367	429.722
VAIC	4.423	11.098	-115.740	226.885
MVAIC	6.189	22.171	-306.168	419.350
FSIZE	10.208	1.387	6.578	13.690
FLEV	0.295	0.381	0.000	11.320
ROE	5.801	21.392	-278.599	137.013
SGR	-0.696	0.491	-8.646	3.689

Notes: Variable definition: $FHEALTH_{i,t}$ = Altman's Z score model; $SGR_{i,t}$ = sustainability growth rate; $VAIC_{i,t}$ and $MVAIC_{i,t}$ = intellectual capital (IC); $CEE_{i,t}$ is = VA/CE value-added to capital employed; $HCE_{i,t}$ = value-added to personnel expenses; $SCE_{i,t}$= value-added minus personnel expenses and divided firm value-added; $RCE_{i,t}$ = relational capital to value-added; $FHEALTH_{i,t-1}$, $SGR_{i,t-1}$, $VAIC_{i,t-1}$, $CEE_{i,t-1}$, $HCE_{i,t-1}$, $SCE_{i,t-1}$and $RCE_{i,t-1}$ is the previous period data; $FSIZE_{i,t}$ = natural log of total assets; $FLEV_{i,t}$ = total debt to total asset; $ROE_{i,t}$ = return on equity ratio.

Value-added intellectual coefficient (VAIC) developed by Pulic (1998) and Pulic (2004) is used to measure intellectual capital (IC). IC is stated as the economic value of two categories of intangible assets of a firm: (1) human capital and (2) organisational (structural) capital, it can be either in terms of knowledge, information or experienced (Stewart, 1997). It is used to measure a newly-created value per monetary unit invested in each source where the higher VAIC shows a rise in firm value-added (Pulic, 2004). The model received some criticism such as the absence of the RC component (Nimtrakoon, 2015), and the superimposition between human capital and structural capital, which rely on past strategy and decision making (Stahle et al., 2011). The model criticism highlights that it does not properly separate expenses from assets (Andriessen, 2004) and R&D investment should be a major source of structural capital (Keong Choong, 2008). Despite the critics, over the past two decades, various researchers and practitioners have adopted Pulic's VAIC model in measuring intellectual capital (IC) (Dzenopoljac et al., 2016). VAIC model provides a good indicator for ICE (Bontis et al., 2015), suitable for a knowledge-based economy (Sveiby, 1997), and its simplicity to determine the IC (Al-Musali and Ku Ismail, 2016). Lazzolino and Laise (2013) found that the critics on Pulic's model are suitable to use VAIC as performance measure as an alternative to Economic value Added (EVA) instead of VAIC calculation. In addition,

VAIC and EVA measure is not conflicting since it measures different aspects of the performance. Hence, we believe VAIC is reliable to be used to measure IC performance and test it in relation to firm financial health. Followed from Pulic, (1998, 2004), Nimtrakoon (2015), Ozkan, Cakan and Kayacan (2017), VAIC is calculated as follows:

$$VAIC_{it} = CEE_{it} + HCE_{it} + SCE_{it} \quad (2)$$

In equation (2), $VAIC_{it}$ is referred to the value-added intellectual capital coefficient of the firm i, as a sum of capital employed efficiency (CEE) plus human capital efficiency (HCE) plus structural capital efficiency (SCE). CEE_{it} obtained from VA_{it} to capital employed (CE_{it}) where VA is referred to total value-added created by firm as a sum of operating profit, employment cost, depreciation and amortisation of the firm i. HCE_{it} indicates the productivity of knowledge workers is derived from VA_{it} divided personnel expenses (HC). SCE_{it} is derived from the difference between VA and HC divided VA. Pulic (2008) stated that if the productivity of knowledge workers is HCE < 1, the firm value-added is unable to cover wages and salaries and SCE is negative. If HCE = 1 or if SCE = 0, firm value-added only cover employee costs and not value creation. If HCE > 1 or if SCE > 0, the firm can overcome employee cost and there is value creation.

The weakness of VAIC as IC measure it did not include the relational capital (RC) which is a very important factor contributing to the sustainable value creation of the firms (Vishnu & Kumar Gupta, 2014). The relationship with external stakeholders such as customer, suppliers and the government is the key to firm continuity (Sardo & Serrasqueiro, 2017). Ulum (2017) stated that modified value-added intellectual capital (MVAIC) is the comprehensive measure of IC. Considering this limitation, this paper includes MVAIC as a measure of IC. Thus, MVAIC is calculated as follow:

$$MVAIC_{it} = CEE_{it} + HCE_{it} + SCE_{ti} + RCE_{it} \quad (3)$$

RCE_i is derived from RC to VA, where RC refers to relational capital, measures as a sum of selling, marketing, and advertising expenses. The summary result of VAIC, MVAIC, and components is shown in Table 3.

Table 3: Z-Score Model

Rating	Safe zone	%	Grey zone	%	Distress zone	%
2017	137	27.2	105	19.8	262	47.6
2016	131	26.0	105	19.8	268	48.6
2015	128	25.4	118	22.2	258	46.8
2014	117	23.2	114	21.5	273	49.6
2013	111	22.0	121	22.8	272	49.4
2012	101	20.0	127	23.9	276	50.1
2011	91	18.1	149	28.1	264	47.9
2010	115	22.8	163	30.7	226	41.0

Sustainability growth rate (SGR) is the maximum rate the company can use internal funds to achieve its growth without incurred in external borrowing from a bank or financial institution (Higgins 1977). If the company is able to maintain the SGR, it can avoid investing in unprofitable growth. Widely measure of SGR model is based on Higgins (1977) and Van Horne and Wachowicz (2015). However, Fonseka, Romas and Tian (2012) stated that there is no significant difference between these two models. Hence, for this study, we based on Van Horne and Wachowicz (2015) to measure SGR. SGR is formulated as:

$$Sustainability\ \ growth\ rate = \frac{ROE\ x\ Retention\ Rate}{1 - ROE\ x\ Retention\ Rate} \quad (4)$$

Considering the objective of the study, four regression models were developed. Model (1) and model (2) are employed to examine the relationship between sustainability growth rates (SGR), VAIC, its three components towards firm financial health (FHEALTH), respectively. The models developed as follow:

$$FHEALTH_{i,t} = \propto_0 + \beta_1 FHEALTH_{i,t-1} + \beta_2 SGR_{i,t} + \beta_3 SGR_{i,t-1} + \beta_4 VAIC_{i,t} + \beta_5 VAIC_{i,t-1} + \beta_6 FSIZE_{i,t} + \beta_7 FLEV_{i,t} + \beta_8 ROE_{i,t} + \varphi_t d_t + \eta_i + \varepsilon_{i,t} \quad (5)$$

$$FHEALTH_{i,t} = \propto_0 + \beta_1 FHEALTH_{i,t-1} + \beta_2 SGR_{i,t} + \beta_3 SGR_{i,t-1} + \beta_4 CEE_{i,t} + \beta_5 HCE_{i,t} + \beta_6 SCE_{i,t} + \beta_7 CEE_{i,t-1} + \beta_8 HCE_{i,t-1} + \beta_9 SCE_{i,t-1} + \beta_{10} FSIZE_{i,t} + \beta_{11} FLEV_{i,t} + \beta_{12} ROE_{i,t} + \varphi_t d_t + \eta_i + \varepsilon_{i,t} \quad (6)$$

Model (3) and model (4) is formulated to investigate the connection between MVAIC, its three components and SGR towards firm financial health, respectively. The regression models show as follow:

$$FHEALTH_{i,t} = \propto_0 + \beta_1 FHEALTH_{i,t-1} + \beta_2 SGR_{i,t} + \beta_3 SGR_{i,t-1} + \beta_4 MVAIC_{i,t} + \beta_5 MVAIC_{i,t-1} + \beta_6 FSIZE_{i,t} + \beta_7 FLEV_{i,t} + \beta_8 ROE_{i,t} + \varphi_t d_t + \eta_i + \varepsilon_{i,t} \quad (7)$$

$$FHEALTH_{i,t} = \propto_0 + \beta_1 FHEALTH_{i,t-1} + \beta_2 SGR_{i,t} + \beta_3 SGR_{i,t-1} + \beta_4 CEE_{i,t} + \beta_5 HCE_{i,t} + \beta_6 SCE_{i,t} + \beta_7 RCE_{i,t} + \beta_8 CEE_{i,t-1} + \beta_9 HCE_{i,t-1} + \beta_{10} SCE_{i,t-1} + \beta_{11} RCE_{i,t-1} + \beta_{12} FSIZE_{i,t} + \beta_{13} FLEV_{i,t} + \beta_{14} ROE_{i,t} + \varphi_t d_t + \eta_i + \varepsilon_{i,t} \quad (8)$$

where η_i are non-observable individual effects, $\varepsilon_{i,t}$ is the error, and d_t correspond to the year dummies. The dependent variables used in this study were measured as follows: $FHEALTH_{i,t}$ is measured based on Altman's Z score model. The independent variables are presented as follows: $SGR_{i,t}$ is sustainability growth rate; $VAIC_{i,t}$ and $MVAIC_{i,t}$ are used as a proxy for intellectual capital (IC); $CEE_{i,t}$ is measured based on firm value-added to capital employed; $HCE_{i,t}$ is represent by firm value-added to personnel expenses; $SCE_{i,t}$ is measured as firm value-added minus personnel expenses and divided firm value-added; $RCE_{i,t}$ is measured as relational capital to value-added; $FHEALTH_{i,t-1}$, $SGR_{i,t-1}$, $VAIC_{i,t-1}$, $CEE_{i,t-1}$, $HCE_{i,t-1}$, $SCE_{i,t-1}$and $RCE_{i,t-1}$ is the previous period data. The measurement of control variables are as follow: $FSIZE_{i,t}$ is the natural log of total assets; $FLEV_{i,t}$ is measured based on total debt to total asset; $ROE_{i,t}$ is firm profitability represent by return on equity ratio.

Findings and Discussions

Descriptive statistics for the IC measures, sustainable growth rate, financial health and some variables related to firm characteristics presented in Table 2. The overall mean of a firm's financial health for the period of 2010 to 2017 is 2.49, which is a grey area firm with an average of -0.7 sustainable growth rate. The mean score of VAIC is 4.423 indicating that the construction and material firms across eight countries in developing markets created an average 4.423 for every 1 monetary unit utilised. The key driver of the firm's value creation is HCE with 3.697 compare to RCE (1.759), CEE (0.159) and SCE (0.606). This is consistent with earlier research by Rahman (2012), which found that human capital is the most effective driver of firm value creation compared to other IC components.

As presented in Table 3, throughout the years of study almost half (more than 46% except the year 2010) of construction and material companies are in a distress zone. The percentage of healthy companies and stable economic operations increased every year from 18.1% in 2011 to 27.2% in the year 2017.

Table 4 summaries the mean score of the IC components. It reported that throughout the year 2010 to 2017, around 0.151 to 0.164 of the firm's value is generated by one unit of physical

and financial capital. The combined means of intangible components of IC which are HCE and SCE are numerous times higher than the mean score of CEE. Hence, it shows that the company creates more value from intangible components from IC than the physical and financial capital (CEE).

Table 4: VAIC model

Year	CEE	HCE	SCE	RCE	VAIC	MVAIC
2017	0.151	3.343	0.591	1.977	4.071	6.018
2016	0.160	4.338	0.579	2.285	5.070	7.358
2015	0.164	4.132	0.403	2.007	4.692	6.723
2014	0.158	2.975	0.662	1.621	3.788	5.417
2013	0.161	3.608	0.598	1.887	4.355	6.236
2012	0.163	3.488	0.533	1.915	4.124	6.043
2011	0.159	3.996	0.799	1.011	4.864	5.878
2010	0.157	3.696	0.680	1.370	4.418	5.838

The result for the estimated model, regarding company financial health, is presented in Table 5 based on the GMM system (1998) dynamic estimator. The result from equation (5) and (6) show that the financial health of the previous year, VAIC, CEE, HCE and company profitability has a positive impact on company financial health. HCE of the previous period, size of company and leverage show a negative impact on company financial health. The finding also revealed that current and previous period sustainability growth of the company is insignificant to influence financial health.

Table 5: The relationship between VAIC and financial health

	Model 1	Model 2	Model 3	Model 4
$FHEALTH_{t-1}$	0.67***	0.68***	0.68***	0.68***
	(-0.106)	*(-0.104)*	*(-0.106)*	*(-0.103)*
SGR	1.448	1.048	1.358	0.962
	(-2.42)	*(-1.942)*	*(-2.355)*	*(-1.669)*
SGR_{t-1}	-0.22	-0.041	-0.208	-0.13
	-0.336	*-0.302*	*-0.371*	*-0.287*
VAIC	0.084**			
	(-0.036)			
$VAIC_{t-1}$	-0.026			
	(-0.016)			

MVAIC			0.064**	
			(-0.028)	
$MVAIC_{t-1}$			-0.041**	
			(-0.019)	
CEE		3.580***		3.538***
		(-1.289)		*(-1.305)*
HCE		0.062***		0.058**
		(-0.024)		*(-0.024)*
SCE		-0.193		0.007
		(-0.184)		*(-0.195)*
RCE				0.039
				(-0.035)
CEE_{t-1}		-0.161		-0.206
		(-0.388)		*(-0.4)*
HCE_{t-1}		-0.025**		-0.022*
		(-0.012)		*(-0.012)*
SCE_{t-1}		0.042		-0.042
		(-0.047)		*(-0.052)*
RCE_{t-1}				-0.043
				(-0.034)
FSIZE	-0.405	-0.54***	-0.456*	-0.497**
	(-0.261)	*(-0.2)*	*(-0.253)*	*(-0.194)*
FLEV	-1.886**	-1.484**	-2.128*	-1.750**
	(-0.898)	*(-0.708)*	*(-1.118)*	*(-0.829)*
ROE	0.030**	0.018	0.030**	0.015*
	(-0.015)	(-0.012)	*(-0.012)*	*(-0.009)*
AR_1	-1.75*	-1.75*	-1.75*	*-1.71
AR_2	1.44	1.45	1.43	1.4
Sarg-Hans	224.08***	263.34***	205.98***	281.94***
Diff-Sar	75.03***	67.98***	87.24***	77.09***
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1				

Regarding the MVAIC, the result of the equation (7) and (8) is reported in Table 5. The findings show that the financial health of the previous year, MVAIC, CEE HCE, and profitability are positively influenced by the company's financial health. Whereas, MVAIC of the previous year, HCE of the previous year, the size of the company and leverage show a negative impact on company financial health.

The result suggests that the company's financial condition is improving with efficient use of company intellectual capital (VAIC) and (MVAIC), thus reducing bankruptcy. Therefore, the hypothesis (H1) is not rejected where Intellectual capital is associated with better firm financial health. As the value of intellectual capital increases, it shows that the company is efficiently using their capital which creating value-added for the company (Miditinos et al., 2011), generating a competitive advantage for the firm (Barney, 1991), a strategic tool against competitors (Naquiyuddin & Heong, 1992), a driver for firm productivity (Suciu, 2006) and hence lower the probability of a firm entering bankruptcy (Sriram, 2008). Human capital efficiency (HCE) and capital employed efficiency (CEE) have contributed to value creation and positively towards the company's financial health. HCE and CEE would enhance the financial health of the company in line with the previous finding of Mohammad, Bujang, and Hakim (2018). This revealed that in the construction and material sector the skills of employees, experience, and knowledge is an essential factor to ensure the health of the company. In addition, the ability of financial capital to create value strengthens financial health. However, structural capital efficiency (SCE) shows an insignificant negative influence on financial health. This suggests that organisational routines, systems, strategies, and policies if not associated with company financial health in the construction and material sector. Relational capital efficiency (RCE) also shows an insignificant relationship with the company's financial health. The ability of the company to interact with business community members including customers, competitors, suppliers, and others would affect the financial health of the company.

Other than that, finding of this study suggest that lagged HCE is negatively influenced the company's financial health. With challenges ahead in the construction and material sector, the employee needs to keep updated with the latest skills, increase the capability of problem-solving, technology advancement, and innovative ideas to enhance the current company's financial health. This study reported that the sustainable growth of the company is insignificant to influence the financial health of the company; hence hypothesis (H2) is rejected. The influence of sustainability on the firm financial performance varies in accordance with time (Chang & Kuo, 2008). There is a positive relationship between sustainability and performance and appears to be reciprocal within the same periods and may disperse to a later period.

Conclusions

This study has found that Intellectual Capital is a significant component of a firm’s financial health. The efficient use of human capital and financial capital employed enhanced the firm’s financial position. Hence, we can safely say that in the construction industry the workers’ skill, experience, and knowledge are important elements that lead to the better financial health of a firm in the countries involved in this study. These include in the utilising of

contemporary technology and innovative techniques, updating skills, and increasing problem-solving capabilities. However, sustainable growth is not significant to the better financial health of a firm. A previous study (Chang & Koh, 2008) indicated that a temporal variation influenced its behaviour. As this study is inclusive of 2010 to 2017, we can therefore conclude that the time period is the limiting factor. Further studies in the future should expand the time period to capture the temporal behaviour of the sustainable growth of a firm. The findings of the study should provide an impetus to the construction firms in valuing their human capital by developing it with newer skills as well as training in employing the latest technology and innovative techniques. On the whole, the firms will be rewarded with better financial health after investing accordingly in their human capital.

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