AN ANALYTICAL STUDY OF INTELLECTUAL CAPITAL PERFORMANCE BETWEEN SELECTED INDIAN INDUSTRIES.

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Abstract

The purpose of the present study is to make an analysis of intellectual capital performance between Indian industrial and service sector industries. Further, the study also looks into how well intellectual capital performs in relation to financial results and sustainable growth rate. Data gathered from the annual reports of the selected companies were used in an empirical investigation. VAIC was calculated on the selected sample of eight companies from chemical industry, nine companies from construction material industry and two industries from textiles and media industry based on market capitalization listed under Nifty 200 indexed companies. Correlation and OLS regressions models are used on panel data for the analysis. The findings showed a favourable relationship between profitability and intellectual capital, but no real association was found between intellectual capital and productivity or market value in either industry. Although intellectual capital is becoming increasingly important, the financial performance of the chosen sample of enterprises does not reflect this proportionally.

1. Introduction

Corporate management has given increased consideration to the value of intellectual capital as technologically advanced enterprises have grown quickly in the knowledge-based economy (IC). IC is viewed as a driver of business competitiveness and financial sustainability. In accordance with the resource-based view (RBV), enterprises are more likely to acquire a sustained competitive advantage if their resources are valuable and constrained. These resources may assist businesses maintain their human capital, enhance their business operations, maintain in contact with their customers and suppliers, and generate more innovative ideas. In fact, the world is currently witnessing an information revolution, in which knowledge and information are the primary sources, compared to the agricultural and industrial revolutions, in which land, capital, and labour were thought to be the key sources of information. Intellectual capital is an important concern in the age of information, and as we move into the third millennium, it has become more valuable than physical strength, mechanical strength, or even technical power (Mojtahedzadeh, 2002) A transformation from an industrial to a knowledge-based economy, the dissolution of physical and material capitals, and the importance of non-material assets like human, knowledge, intellectual, and social capital are some of the most significant aspects of this era that have drawn researchers' attention more than other aspects. Nevertheless, most companies throughout the world still rely on archaic financial accounting practices that were developed decades ago for physical work and intangible asset-based organizations. Due to the growing significance of this unrecognized

capital (intellectual capital) in business profitability ratios, financial performance, and ultimately success or failure in today's complicated and competitive climate, the current research is both important and necessary. On the other hand, due to the significance of corporate life cycles and their impact on corporate performance, the impact of intellectual capital on earnings per share can be examined and analyzed over the life cycles of companies, as most information users should be aware of the stage of their life cycles and whether the interest payments or corporate dividend policy is correct or whether it should be in a way that the company does not (Chen et al., 2004).

2. Review of Literature:

Saraswati, N. K. (2022) was confirmed that, between 2015 and 2019, the financial performance of the property and real estate companies listed on the Indonesian stock exchange was influenced by intellectual capital. 34 companies were discovered using the study's purposive sampling technique out of a total of 170 observations. Value added structural capital, value added human capital, and value added capital employed were used in the study as independent variables, while return on assets was used as the dependent variable to quantify financial success. Finally, the outcomes showed that intellectual capital had influenced the chosen enterprises' financial success.

Sunarsih, N. M & Dewi N. P. S. (2019) studied how intellectual capital affected the value of manufacturing companies listed on the Indonesian stock exchange between 2015 and 2017. Based on the purposive sample strategy, 204 manufacturing companies were chosen for the study. Multiple linear regression analysis was the type of statistical analysis used. Thus, it was determined from the results that intellectual capital increased corporate value.

Xu, J., & Wang, B. (2018) empirical research on how intellectual capital affects financial performance and long-term growth in the Korean manufacturing sector. 390 manufacturing enterprises with shares listed on the Korean stock exchange during the years of 2012 and 2016 provided the data for this study. The findings of the multiple regression analysis revealed that, despite the positive correlation between a company's financial success and sustainable growth and its physical capital, it was human and relational capital that had the largest influence over these results.

3. Research Methodology

3.1 Objectives of the study:

 1. To empirically investigate the relation between IC and financial stability as well as the linkage between IC and sustainable growth on the selected industries.

2. To examine the effects of each IC component separately on the business performance and sustainable growth of the selected industries.

3. To compare the performance of intellectual capital and its components between the selected manufacturing and service sector industries.

3.2 Sample Selection:

- Four industries has been selected for the purpose of analysis i.e. Construction material, Chemical industry from manufacturing sector and Textiles and media industry from service sector.

- The statistical population of this research includes companies accepted in National Stock Exchange i.e. Nifty indexed between 2012 and 2021.

3.3. Variables

(1) **Dependent variables:** Based on previous literatures, **Return on assets (ROA) and Return on equity (ROE)** are usually applied to monitor financial performance. ROA is determined by dividing net income by the average total assets to reflect a company's effectiveness in using total assets. ROE, which stands for returns to shareholders of common stocks, is computed by dividing net income by the average shareholders' equity.

Sustainable growth rate (SGR) is commonly implemented to plan long-term, sustainable growth, capital purchases, cash flow estimates, and borrowing strategies. The formula, as recommended by Higgins and Zhang and Chen is as follows,

SGR = Net profit ratio× Asset turnover ratio× Retention rate× Equity multiplier

(2) **Independent variables:** CEE, HCE, and SCE, which constitute **Value added intellectual coefficient (VAIC)**, are considered as independent variables. The following are the requirements for calculating VAIC,
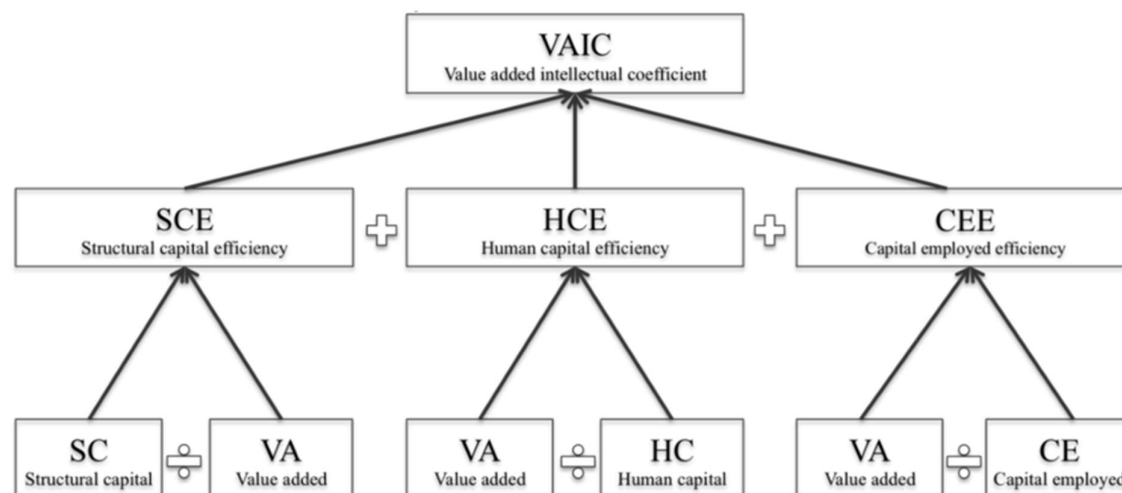
Source: (Stahle, 2011)

VA = C + D + A + OP, where VA is the net value a specific company generated over the course of the year; C stands for employee's salary, D for depreciation, A for amortisation, and OP for operating profit.

In addition to the three VAIC components, R&D and marketing expenses are introduced as stand-ins for innovative capital and Relational Capital. Innovative capital efficiency (RDE) and relational capital efficiency (RCE) are computed using the guidance of Chen et al. , Amin and Aslam , Tripathy et al. , Nazari and Herremans and Liang et al,

RDE = R&D expenditure/Value Added

RCE = Advertising expenditure/Value Added

(3) **Control variables**: According to prior studies, **the firm size (SIZE)** is calculated as the natural logarithm of total assets and **the debt ratio (LEV)** is calculated as the ratio of total debt to total assets.

3.4 Research Hypothesis:

- There is no significant association between intellectual capital and business performance.
- There is no significant association between the components of intellectual capital and business performance.
- There is no significant association between intellectual capital and sustainable growth.
- There is no significant association between the components of intellectual capital and sustainable growth.
- There is no significant difference between the performance of intellectual capital and its components between the selected manufacturing and service sector industries.

3.5. Models:

The association between financial success and the total measure of VAIC and its three components is examined using models (1) and (2), respectively. R&D and advertising expenses are added to model 3 as an indicator for innovative capital and RC.

$$PERF_{i,t} = \beta0 + \beta1 VAICi,t + \beta2 SIZEi,t + \beta3 LEVi,t + \varepsiloni,t \tag{1}$$
$$PERF_{i,t} = \beta0 + \beta1 CEEi,t + \beta2 HCEi,t + \beta3 SCEi,t + \beta4 SIZEi,t + \beta5 LEVi,t + \varepsiloni,t \tag{2}$$
$$PERF_{i,t} = \beta0 + \beta1 CEEi,t + \beta2 HCEi,t + \beta3 SCEi,t + \beta4 RDEi,t + \beta5 RCEi,t + \beta6 SIZEi,t + \beta7 LEVi,t + \varepsiloni,t$$

Source: Jian Xu and Binghan Wang

To determine whether the IC variables have an impact on businesses' sustainable growth, models (4) - (6) are implemented,

$$SGR_{i,t} = \beta0 + \beta1 VAICi,t + \beta2 SIZEi,t + \beta3 LEVi,t + \varepsiloni,t \tag{4}$$
$$SGR_{i,t} = \beta0 + \beta1 CEEi,t + \beta2 HCEi,t + \beta3 SCEi,t + \beta4 SIZEi,t + \beta5 LEVi,t + \varepsiloni,t \tag{5}$$
$$SGR_{i,t} = \beta0 + \beta1 CEEi,t + \beta2 HCEi,t + \beta3 SCEi,t + \beta4 RDEi,t + \beta5 RCEi,t + \beta6 SIZEi,t + \beta7 LEVi,t + \varepsiloni,t$$

Source: Jian Xu and Binghan Wang

where i=1,...n and t=1,...t stand in for the company and the year, respectively; 0; 1, 2; 3, 4; 5, 6; and 7; and; signifies the measurement error term.

4. ANALYSIS AND INTERPRETATION

4.1 Descriptive Statistics:

Table 1: Descriptive Statistics:

Variable	N	Mean	Maximum	Minimum	Standard deviation
ROA	200	10.48487	57.52000	0.330000	8.430247
ROE	200	16.13592	57.10000	0.340000	10.67248
SGR	200	24.00634	2727.916	0.000000	192.3187
VAIC	200	13.14111	57.38373	1.442979	11.57119
CEE	200	0.552666	5.328454	0.043092	0.697598
HCE	200	5.043597	26.67364	0.023669	5.051456
SCE	200	4.618407	41.24859	0.003315	9.419177
RCE	200	1.905618	16.94031	0.000000	3.958013

ICE	200	1.120203	9.271067	4.53E-05	2.164880
Firm Size	200	0.543844	2.984077	0.000000	0.688779
Leverage	200	0.296950	3.090000	0.000000	0.446678

Table 2 depicts descriptive statistics of the variables in this study. The mean value of ROA and ROE is 10.48 and 16.14, indicating that the profitability of companies selected under the Indian industries is relatively high. The mean of sustainable growth rate is 24.00635, which highlights that the Indian companies have relatively higher sustainable growth capability. The mean value of VAIC is 13.141 with a minimum of 1.4429 and a maximum of 59.38373. The positive VAIC value suggests that the contribution of intellectual capital towards the value creation of firm is more than that the costs incurred in possessing it. When compared to CEE and SCE, HCE's mean value is the highest, suggesting that human capital is the primary generator of value. It is been identified that RDE and ICE are at low levels, with mean values of 1.905 and 1.120 respectively. In addition, the mean values of SIZE and LEV are 0.543and 0.296 respectively

4.2 Correlation Analysis:

Table 2: Correlation Analysis

Variables	ROA	ROE	SGR	VAIC	CEE	HCE	SCE	RCE	ICE	Size	Leverage
ROA	1										
ROE	0.703**	1									
SGR	0.143*	.232**	1								
VAIC	-.042	-.005	-.030	1							
CEE	.144*	.316**	.225**	-.117	1						
HCE	.068	.136	-.013	.025	-.146*	1					
SCE	-.251**	-.318**	-.041	-.163*	.103	-.393**	1				
RCE	-.221**	-.281**	-.040	-.099	.189**	-.448**	.520**	1			
ICE	-.268**	-.378**	-.301**	-.264*	.319**	-.367**	.583**	.320**	1		
Size	.015	-.091	-.044	-.067	.108	-.026	.045	.097	.150	1	

Leverage	-.012	-.003	-.046	-.227**	-.145*	-.130	.004	.248**	.075	-.030	1
Note:***,**,* indicates significant at 1%,5% and 10% respectively											
Source: Self computation											

Table 2 highlights the correlation analysis for the dependent and independent variables. The correlation analysis shows that ROA and ROE are positively correlated with VAIC, CEE, HCE, and RCE. In terms of SGR, VAIC, CEE, HCE, SCE, and RCE have a positive impact. Similarly, there is no correlation between ROA and SCE or between ROE and SCE, while RDE is adversely associated with ROA, ROE, and SGR. When we calculate the variance inflation factors (VIFs), we determine that their values are less than 2, which suggests that multi-collinearity is not a significant problem in this study.

4.3 Panel data Regression results:

(A).Construction material industry

Table 3. Regression results of model (1)–(3)

Variable	Model 1		Model 2		Model 3	
	ROA	ROE	ROA	ROE	ROA	ROE
	p value		p value		p value	
Constant	0.0093	0.4059	0.5723	0.0002	0.6382	0.0002
	(2.887670)	(-2.083582)	(-3.830606)	(-34.97740)	(-3.262475)	(-36.73948)
VAIC	0.0000	0.0000				
	(0.372199)	(13.00883)				
CEE			0.2119	0.0306	0.2433	0.0223
			(-0.659056)	(-1.541008)	(-0.626319)	(-1.653030)
HCE			0.0000	0.0000	0.0001	0.0001
			(0.360248)	(0.465447)	(0.346269)	(0.435947)
SCE			0.2825	0.0000	0.3332	0.0000
			(8.282361)	(46.01226)	(7.774222)	(49.38907)
RCE					0.8871	0.2137
					(-3.627932)	(-42.46875)
ICE					0.3450	0.8341
					(-0.510169)	(0.149970)
Size	0.6106	0.2376	0.9573	0.3205	0.8832	0.2222
	(-0.458457)	(-1.576713)	(-0.048751)	(-1.212933)	(-0.138504)	(-1.537410)
Leverage	0.4845	0.0935	0.3435	0.7738	0.9017	0.6220
	(-0.900730)	(3.217640)	(-1.361271)	(-0.550087)	(-0.235335)	(-1.249906)
Adj R^2	0.220571	0.378451	0.264164	0.499981	0.253366	0.497317

F	8.452081	17.03395	6.672189	16.79881	4.829753	12.16526
D.W	0.935101	1.026686	0.965065	1.221581	1.011804	1.276838
N	80	80	80	80	80	80

The VAIC coefficients in model (1) are strongly positive, demonstrating that enterprises with higher IC perform more profitably under the construction material industry. Under model (2) all the intellectual capital components i.e. CEE, HCE and SCE are significantly positive, at the 5% level. This showcases that both physical and intangible factors affects the ROA and ROE of the Indian companies. The adjusted R^2 values in model (2) are notable higher than those in model (1). The three VAIC measure components are superior to the aggregate VAIC measure in explaining financial performance, according to the data. These findings also suggest that investors would give the VAIC components more emphasis. Significantly negative RDE coefficients are found in the model (3). This may be due to the fact that R&D expenses are considered expenditure items and should be written off as they are incurred, which reduces the firm's present profit and produces immediate and subpar financial outcomes. In terms of control variables, firm size and leverage indicates a significantly negative impact.

Table 4.Regression results of model (4)–(6)

Variable	Model 4 p value	Model 5 p value	Model 6 p value
Constant	0.1829 (-3.332304)	0.0941 (-16.66091)	0.1221 (-15.74706)
VAIC	0.0000 (9.987362)		
CEE		0.5594 (-0.446434)	0.6196 (-0.386732)
HCE		0.0003 (0.424971)	0.0003 (0.451411)
SCE		0.0612 (21.15707)	0.1042 (19.13040)
RCE			0.4178 (30.23994)
ICE			0.8572 (0.141241)
Size	0.2920 (-1.371902)	0.3138 (-1.339756)	0.4329 (-1.079291)
Leverage	0.0072 (5.103805)	0.0662 (-1.339756)	0.1729 (3.808978)
Adj R^2	0.220571	0.366289	0.354985
F	8.452081	10.13250	7.211121
D.W	0.935101	1.294102	1.315508
N	80	80	80

In model (4), the VAIC coefficient is significant and positive, whereas under model (5) among the components of intellectual capital except HCE all the remaining components coefficients are not significant at 5% level. Likewise the adjusted R^2 for model 6 is greater when compared to model 4 &5.

Adding ICE and ECE to model (6) marginally improves the model's explanatory power. The coefficient on RDE is not significant. The coefficient on RCE is significantly positive indicating that, although advertising expenditure is expensed as incurred; it is the most important for company's sustainable growth. In addition, size and leverage has an insignificant and positive impact on SGR.

Chemical Industry:

Table 5 . Regression results of model (1)–(3)

Variable	Model 1		Model 2		Model 3	
	ROA	ROE	ROA	ROE	ROA	ROE
	p value		p value		p value	
Constant	0.0039 (41.41686)	0.0013 (51.29566)	0.1250 (-93.83383)	0.0853 (-231.0929)	0.1731 (-65.45124)	0.0989 (-169.4532)
VAIC	0.0350 (-19.24756)	0.0558 (-0.967977)				
CEE			0.1155 (24.91181)	0.5915 (15.16870)	0.0958 (22.29343)	0.5598 (9.457630)
HCE			0.0813 (193.2142)	0.0343 (551.5785)	0.1263 (141.2926)	0.0500 (438.6431)
SCE			0.1197 (11.08674)	0.0634 (30.00363)	0.1746 (7.379842)	0.0781 (21.99903)
RCE					0.7618 (-0.059960)	0.6994 (-0.141174)
ICE					0.0907 (13.91957)	0.0684 (29.90318)
Size	0.2970 (-6.964858)	0.2315 (-18.36811)	0.1990 (-7.339104)	0.0569 (-26.52955)	0.1183 (-7.427821)	0.0352 (-26.70258)
Leverage	0.0014 (-8.927518)	0.1203 (-6.503267)	0.5564 (4.903977)	0.2353 (22.37787)	0.7232 (1.871551)	0.1999 (15.87579)

Adj R^2	0.811334		0.905833		0.253366	0.945150
	0.509411		0.791488			
F statistic	13.90112		18.31496	7.832586	4.829753	23.15499
	4.115104					
Durban Watson	1.654164	1.811835	2.065950	1.718433	1.011804	2.793083
N	10	10	10	10	10	10

Table 5 indicates the regression results showcasing the effect of intellectual capital (VAIC) on ROA and ROE for chemical industry. The result of this study revealed that a positive and a significant relationship at 5% level between IC and ROA and well as on ROE. Likewise, the influence of each components of VAIC on ROE and ROE after controlling the influence of Leverage, size is been showcased under model (2). Among the three components of intellectual capital the coefficients of HCE is found to be positive and significant at 5% level significance for both ROA and ROE and the remaining two components are positive yet insignificant. The control variables i.e. Size and Leverage are insignificantly associated with ROA and ROE.

Table 6.Regression results of model (4)–(6)

Variable	Model 4	Model 5	Model 6
Constant	0.0282 (64.96482)	0.4799 (-136.5239)	0.5191 (8.212723)
VAIC	0.0862 (-36.00308)		
CEE		0.7165 (-17.54108)	0.0060 (-32.16834)
HCE		0.2515 (404.0569)	0.0200 (130.2253)
SCE		0.3991 (19.17317)	0.1586 (2.642962)
RCE			0.0044 (-0.873093)
ICE			0.0008 (54.07136)
Size	0.9588 (-0.813120)	0.5438 (-11.44714)	0.0075 (-10.88216)
Leverage	0.2058 (-5.576063)	0.8221 (6.647342)	0.1009 (-4.488209)
Adj R^2	0.209183	0.154958	0.997488
F	1.793546	1.330072	511.5552
D.W	1.876279	2.124441	1.955268
N	10	10	10

Under table 6 model 4 and 5 presents the effects of IC as well as its components on the sustainable growth rate .The results reveals that no significant association yet positive is observed for all the components of IC . The coefficient estimates of leverage and firm size are observed to be positively associated with ROA and ROE and their results are insignificant at 5% level.

Textile industry:

Table 7. Regression results of model (1)–(3)

Variable	Model 1		Model 2		Model 3	
	ROA	ROE	ROA	ROE	ROA	ROE
	p value		p value		p value	
Constant	0.5752	0.0101	0.6724	0.1803	0.6593	0.2243
	(44.33875)	(-131.3635)	(69.65433)	(71.52274)	(144.6402)	(-105.9796)
VAIC	0.8101	0.0022				
	(-21.83719)	(189.3083)				
CEE			0.6919	0.3059	0.6422	0.0237
			(-8.778339)	(7.251446)	(-13.91633)	(19.41381)
HCE			0.7655	0.7527	0.8667	0.2231
			(3.365326)	(1.118216)	(2.110927)	(4.087560)
SCE			0.7760	0.1751	0.7056	0.3141
			(-46.37135)	(-71.78762)	(-109.0572)	(76.59877)
RCE					0.7885	0.0265
					(-38.12290)	(90.24238)
Size	0.8087	0.0078	0.9465	0.0168	0.9154	0.0165
	(0.776850)	(5.573480)	(0.289784)	(3.624352)	(0.482117)	(3.169071)
Leverage	0.2511	0.3734	0.2428	0.7909	0.2753	0.1287
	(-10.32104)	(4.611405)	(-9.661517)	(0.673196)	(-11.10888)	(4.099314)
Adj R^2	0.113699	0.793668	0.006860	0.932279	-0.063398	0.950783
F	1.812474	25.36158	1.026250	53.31239	0.811208	62.17404
D.W	1.591156	1.130461	1.650750	2.018773	1.656997	2.403633
N	20	20	20	20	20	20

Table 8 presents the panel data regression results with regard to the effect of VAIC on the corporate performance (ROA &ROE) of Textile industry after controlling the influence of leverage & firm size. The estimated coefficient of intellectual capital (VAIC) is observed to be positive and significant at 5% level. This highlights the presence of resource based view of the firm indicating the utilization of all the resources which can be a backbone for a firm on achieving the sustainable competitive advantage.

Apart from analysing the overall influence of IC, even its components have also been considered under model (2). The coefficient estimate of HCE, SCE and CEE are found to be

positive yet insignificant at 5% level. This clearly indicated that there is less dominance of skilled workers for enhancing the value creation ability of a firm as well as less influence of physical capital in enhancing the business value. A positive and a negative association between size, leverage and ROA and ROE has been identified for this study.

Table 8. Regression results of model (1)–(3)

Variable	Model 4	Model 5	Model 6
Constant	0.6531 (1408.946)	0.3237 (-6142.828)	0.5940 (6167.506)
VAIC	0.6534 (-1622.879)		
CEE		0.2294 (1015.447)	0.8700 (171.9493)
HCE		0.1820 (-578.6521)	0.0939 (-784.5854)
SCE		0.2257 (7542.658)	0.7865 (-2748.399)
RCE			0.2238 (-6258.589)
Size	0.0789 (235.0722)	0.0575 (327.1144)	0.0393 (358.6896)
Leverage	0.5958 (-186.1866)	0.5549 (-178.4477)	0.2471 (-416.0596)
Adj R^2	0.061623	0.074352	0.114342
F	1.415908	1.305234	1.408828
D.W	2.099835	2.087671	2.230193
N	20	20	20

The VAIC coefficient in Model 4 is considerable and positive, indicating that the enterprises with higher IC (overall) efficiency are better equipped to achieve sustainable growth. Capital Employed Efficiency (CEE), the first explanatory variable in Model 5, exhibits a substantial positive impact on corporate sustainable growth. This shows that the main source of corporate sustainable growth in India is physical capital. It has been established that human capital efficiency (HCE) has little bearing on the sustainability of company growth.

Media Industry:

Table 9. Regression results of model (1)–(3)

Variable	Model 1		Model 2		Model 3	
	ROA	ROE	ROA	ROE	ROA	ROE
	p value		p value		p value	
Constant	0.0000 (17.37441)	0.0002 (26.41781)	0.0002 (14.11293)	0.0018 (25.43140)	0.0024 (15.95416)	0.0444 (22.55934)

Variable						
VAIC	0.0014 (0.969031)	0.6361 (-2.847574)				
CEE			0.0680 (36.86430)	0.8175 (10.36417)	0.0785 (36.47909)	0.8134 (10.96503)
HCE			0.4534 (0.577462)	0.7330 (0.616424)	0.5465 (0.484817)	0.6900 (0.760938)
SCE			0.8428 (-1.951531)	0.6251 (-11.41190)	0.7571 (-3.196174)	0.7008 (-9.470429)
RCE					0.5675 (-2.035186)	0.7072 (3.174608)
Size	0.0569 (-19.23170)	0.6963 (-7.397758)	0.2776 (-10.96437)	0.8794 (-3.546598)	0.3605 (-9.657247)	0.8216 (-5.585528)
Leverage	0.5860 (7.476104)	0.7117 (9.986280)	0.4257 (10.19022)	0.6388 (14.09593)	0.3514 (13.35745)	0.7854 (9.155495)
Adj R^2	0.428742	-0.150019	0.556960	-0.283857	0.535184	-0.367109
F	5.753302	0.173821	5.777108	0.159831	4.646068	0.149656
D.W	1.838821	1.322397	1.906098	1.431131	1.921991	1.476798
N	20	20	20	20	20	20

Table 9 presents the panel data regression for model 1-3. It is found that VAIC has an significant positive association with ROA and insignificant association with ROE. The VAIC coefficient value can be interpreted as one percent increase in the value of VAIC leads to a corresponding 0.969 per cent change in ROA. Thus, the null hypothesis is been rejected thereby indicating a significant association between IC and corporate performance.

It can be observed that efficiency of all the components of intellectual capital has showcased an insignificant positive impact on business performance as measured by ROA and ROE. Likewise both control variables i.e. firm size and leverage are found to have a positive but an insignificant association with ROA &ROE.

Table 10: Regression results of model (4)–(6)

Variable	Model 4 p value	Model 5 p value	Model 6 p value
Constant	0.0030 (17.43464)	0.0039 (19.84450)	0.0756 (16.92325)
VAIC	0.0649 (-10.86366)		
CEE		0.2992 (-41.16631)	0.3214 (-40.55515)
HCE		0.9799 (-0.039353)	0.9478 (0.107636)

SCE		0.9079 (-2.331444)	0.9866 (-0.356718)
RCE			0.6588 (3.228984)
Size	0.4179 (14.36815)	0.8212 (4.578778)	0.9068 (2.504924)
Leverage	0.3914 (21.70816)	0.4397 (20.23825)	0.6020 (15.21319)
Adj R^2	0.086487	0.112441	0.058949
F	1.599611	1.481404	1.198364
D.W	1.690606	1.815217	1.836103
N	20	20	20

In model (4), the coefficient on VAIC is insignificant and positive. The results in model (5) show that all three components of VAIC are also insignificantly positive. Similar to the results in Table 4, the adjusted R^2 value is greater in model (5) than that in model (4). For example, the adjusted R^2 value increases from 0.086 to 0.112. In model (5), CEE, HCE, and SCE have an insignificant and positive impact on SGR. The coefficient on RDE is not significant. The coefficient on RCE is significantly positive, indicating that, although advertising expenditure is expensed as incurred, it is the most important for companies' sustainable growth. In addition, SIZE has a significant and positive impact on SGR, while LEV has an insignificant and negative impact

t test:

Table 11: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
vaicmanu	142	13.233	11.3339	.9511
vaicser	22	5.411	3.2187	.6862

Table 12: One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Vaic manu	13.913	141	.000	13.2326	11.352	15.113
Vaic service	7.886	21	.000	5.4114	3.984	6.838

Table 12 highlights a comparative analysis of intellectual capital performance between the selected manufacturing and service sector industries. This difference is found to be significant at 5% level of significance. It results in acceptance of H1 that there is a significant difference between values of VAIC of both the sectors.

Components of intellectual capital:

Table 13: One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
Cee manufacturing	160	.459	.5405	.0427
Cee service	40	3.486	3.0399	.4807
Hce manufacturing	160	5.335	5.4891	.4339
Hce service	40	3.878	2.3717	.3750
Sce manufacturing	160	5.601	10.3033	.8146
Sce service	40	.688	.3121	.0493

Table 14: One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Cee manufacturing	10.737	159	.000	.4588	.374	.543
Cee service	7.252	39	.000	3.4855	2.513	4.458
Hce manufacturing	12.294	159	.000	5.3350	4.478	6.192
Hce service	10.341	39	.000	3.8781	3.120	4.637
Sce manufacturing	6.876	159	.000	5.6010	3.992	7.210
Sce service	13.943	39	.000	.6880	.588	.788

Table 14 Likewise, when coming to the performance of each components of intellectual capital, a significant difference is found to be existed at 5% level of significance thereby accepting the alternative hypothesis.

5 Conclusions:

IC is becoming more widely acknowledged as a key factor in boosting company sustainability and competitiveness. This research confirms past findings and advances knowledge of IC's role in boosting financial performance and sustainable growth. The primary findings of this study,

which were based on information from the selected Indian industries listed under National stock exchange, are as follows:

(1). Greater profitability and higher sustainable growth are attained by Indian industries with better IC efficiency.

(2). Financial performance is positively impacted by physical capital, HC, and RC, whereas it is negatively impacted by innovative capital. The most important factor influencing the performance of Korean manufacturing enterprises is discovered to be Human Capital.

(3). The effects of physical capital, HC, SC, and RC are all favorable for businesses' sustainable growth, while the effect of innovative capital is hardly low.

The findings could have some significant practical significance,

(1). In order to preserve a competitive advantage, Indian firms should continue to recognize the value of IC and increase their investment in IC. Recognizing the functions of IC components, businesses must also create plans for investing in various IC components by judiciously allocating their constrained knowledge-based resources.

(2). To support internal business operations, Indian industries should create a favorable corporate culture and implement the appropriate management control systems.

(3). In order to improve the performance of technological innovation Indian industries should build networks. Managers should create plans to implement a variety of initiatives to strengthen their information technology skills.

(4). Indian industries currently operate in order to develop a company's reputation and preserve customer loyalty they should maintain tight relationships with its suppliers and clients.

(5). In order to secure long-term and sustainable development of the company, Indian enterprises should also maintain their scale of liabilities at a manageable level while financing intellectual property.

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