Impact of Intellectual Capital on Financial Performance of Firms : A Study on Tourism and Hospitality Firms in India

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Abstract

This paper assessed the relationship existing between intellectual capital (IC) and financial performance of tourism and hospitality services firms in India. Data comprising of 720 firms were sourced from Prowess database for a period of 12 years. The study measured IC efficiency using the value added intellectual coefficient (VAIC) model developed by Pulic (2000). The study applied fixed and random effect models to account for differences (unobserved effects) across firms. The results confirmed the existence of a positive relationship between VAIC and performance of firms operating in the tourism and hospitality industry in India. Furthermore, unlike the dicey results of physical and structural capital, human capital was found to be the most influential component of IC, which had a significant impact on both return on assets and sales growth, suggesting that human capital is still the most important tool driving financial performance. Therefore, managers of such firms can manage their performance by investing in their human resources through training and development programs to enhance their skills needed to be more functional in this knowledge economy.

Keywords: **intellectual capital, financial performance, panel data, tourism and hospitality industry, India**

JEL Classification : C12, C23, G3, M41, O34, L83

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The past few decades have witnessed an increased interest in knowledge as the main differentiator in a modern competitive economy. Fundamentally, for every firm, intangible assets are available at their doorsteps, therefore, the initial perceived means to success has changed its direction towards knowledge assets, more precisely intangibles. Resources such as knowledge are the underpinning stones for gaining a competitive advantage (Vargo & Lusch, 2016). The concept of knowledge (intangible assets) has established theory that grew out of firms' resource based view (RBV) (Barney, 1991) and thereby reveals the fact that modern competitive advantage is no more coming from traditional labor/capital, but rather from unique knowledge possessions of a firm. That is, the extension of RBV to knowledge is known to be based on the ideal formation of strategies using intangibles to earn a competitive advantage. Since unique knowledge resources earn competitive advantage, the apparent conclusion is that a firm would benefit if it better managed its intangible assets also

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known as intellectual capital (Schulz & Jobe, 2001). It is one of the resources within the firm that provide additional value to stakeholders (Shakina & Barajas, 2014).

Defining intellectual capital (IC) is one of the most important steps in understanding its nature and importance. de Pablos (2004) defined IC as knowledge accumulation that is inside an organization, including all the resources that are based on knowledge and excluding those found in the traditional financial reports. These intellectual resources, although have no agreed taxonomy, but Pulic's (2000) model decomposed IC into capital employed - human and structural capital - forming the conceptual framework. A combination of these three components gives the value added intellectual coefficient (VAIC) model, which is the most widely accepted measurement method of intellectual capital (Ghosh & Mondal, 2009). This means, out of the numerous measurement models such as the balanced scorecard by Kaplan and Norton (1997) and Skandia method by Edvinsson and Malone (1997), the VAIC model developed by Pulic (2000) is the most convincing model in quantifying intangible assets of firms. The model is an essential analytical tool that is simple to calculate because of its standardized, consistent, and verifiable data derived from audited financial statements.

Using this model, a number of empirical works have been undertaken in Western and Asian countries in measuring IC and financial performance. Studies (Bontis, Janošević, & Dženopoljac, 2015 ; Pal & Soriya, 2012) preferably focused on banking, IT, and pharmaceutical industries. However, none has attempted in assessing the simple relationship that IC has with financial performance, most specifically for firms engaged in the tourism and hospitality industry in India. Dumay (2009) stated that firms gain better insights of their performance when they address their intangibles. For this reason, the main aim of the study is to exhibit the nature and existing relationship between IC and financial performance of tourism and hospitality service industry in India. Choosing this industry as an area to base the research is due to its prevailing role in the social - economic development of India. Also, hospitality firms depend not on large fixed assets to succeed, but upon managing their intellectual assets (Krambia - Kapardis & Thomas, 2006). Therefore, it is imperative to elucidate on how the industry performs financially upon using its intellectual assets.

In this case, this research would represent the first effort towards obtaining a comprehensive view of the derived benefits of IC in the tourism and hospitality service industry in India. We used *VAIC*^{TM} developed by Pulic (2000) in quantifying IC and data were sourced from all publicly registered firms in the Indian hospitality industry from 2005 - 2006 to 2015 - 2016.

Literature Review

The foundations for exploring the significance of IC on firms' financial performance has been extensively done, therefore, it needs no further explanation (Bontis et al., 2015). However, the measurement part of it has been the undefined question in recent papers. Amid this, there is no doubt that the VAIC measurement method is widely used in most papers, establishing a relationship between IC and firms' financial performance (Bontis et al., 2015 ; Kamath, 2007; Pal & Soriya, 2012 ; Thiagarajan, Baul, & Sekkizhar, 2018). The model has been used in different fields and areas of IC in assessing its relationship with financial efficiency and productivity of firms across the globe (Dzenopoljac, Yaacoub, Elkanj, & Bontis, 2017 ; El - Bannany, 2008 ; Tandon & Purohit, 2015), and is preferred in banking, pharmaceutical, IT, hotel, and other financial services. For instance, in the banking and insurance sector, one of the pioneering studies from Mavridis (2005) assessed the relationship between human capital (HC) and capital employed (CE) of banks in Greece and Japan. Among these IC components, their results revealed that banks with the utmost performance value had high HC and concluded that human capital was vital in achieving higher financial performance in banks, and on the other hand, CE was less to be concerned about.

Addressing results from Asian countries from an intellectual capital perspective, Young, Su, Fang, and Fang

(2009) conducted a study on banks in eight Asian economies ; Maji and Goswami (2016) conducted a study on Indian banks and showed the existence of a strong correlation between IC and financial performance. In Malaysia's financial sector, Ting and Lean (2009) similarly found that VAIC and its components had positive coefficients with financial performance. Similarly, on European economies, studies by El - Bannany (2008) in UK major British banks' group and Joshi, Cahill, and Sidhu (2010) on Australian banks - all found IC to be significant with financial performance, more specifically with HCE as the main driver. Inconsistently, a study on Turkish banks by Ozkan, Cakan, and Kayacan (2017) and Tran and Vo (2018) on Thailand banks revealed that IC significantly impacted the financial performance.

In the IT industry, the early pioneers are Firer and Williams (2003), who studied IC and its impact on the performance of 75 capital - intensive firms operating in South Africa and found CE as the most significant component of IC on corporate performance. Results of Shiu (2006), after applying the VAIC model in measuring impact of IC on the performance of IT firms operating in Taiwan, revealed a significant positive correlation. Similar convincing results were found by Gan and Saleh (2008) in their investigation on IC and performance of IT firms in Malaysia. In addition, Janošević and Dženopoljac (2014) found human capital efficiency (HCE) to be the most influential IC component followed by capital employed efficiency (CEE), but for structural capital efficiency (SCE), there was no significant relationship found. Chen, Cheng, and Hwang (2005) also found that both CEE and HCE had strong positive relations with the four proxies of financial performance, but STVA had significant value with ROA but insignificant with SG. In the same IT sector, Kavida and Sivakoumar (2010) found IC to be significant with financial performance of technological firms in India.

As noted earlier, the pharmaceutical industry has attracted the interest of many researchers like Kamath (2015), who studied IC and its relationship with the performance of Indian firms. The study found IC to be efficiently utilized. This was similarly confirmed in the results of Ghosh and Mondal (2009) in the same pharmaceutical industry in India, but contrary to what Pal and Soriya (2012) found in their study. The results were similar to that of Tandon and Purohit (2015), who found no or weak relationship between IC and financial performance measures of both pharmaceutical and IT firms except the CEE component, which was significant with firms' market value. In the scenario of Jordon pharmaceutical firms, Sharabati, Naji Jawad, and Bontis (2010) observed that IC was successfully managed and ,therefore, it positively influenced the business performance.

Finally, while addressing IC and financial performance of firms operating in the tourism and hospitality industry, Malhotra and Birks (2003) stated that the hospitality industry consists of establishments providing basically travel & tourism and leisure services. Rudež and Mihalič (2007), one of the pioneering scholars, assessed the relationship of VAIC and financial performance of Indonesian firms in the hospitality industry between the years of 2007 and 2011 and found that IC had a limited role in driving profitability of a firm. When the components of IC were taken into consideration, the most dominant component of IC remained the capital employed efficiency, which was highly related to financial performance of firms in the hospitality industry, whilst human capital was the weakest link in value creation of the firms in the same industry in Indonesia. Dissimilar to this, a study in Australia investigated the financial performance of hotels from 2004 to 2007 and found IC to have a significant positive role in performance (Laing, Dunn, & Hughes - Lucas, 2010). According to their findings, human capital was the IC component that was dominant in improving performance and the authors concluded that the observed hotels demonstrated growth in their performance. However, Erickson and McCall (2008) stated in their study that firms looking for higher competition in the hospitality industry were increasing their investments on HC, SC, and CE. This was a revelation from their study on the hospitality service industry where food services were taken as a study area. Their study revealed the relevance of IC as it significantly impacted the financial performance of firms. Zeglat and Zigan (2013) also found all IC dimensions to be positive and significant with the financial performance of hotels operating in Jordan. Though all the components of IC were significant, SCE was seen as the highest contributor to business performance. Additionally, in Serbia, Bontis et al. (2015) observed that

all the three components of IC had a significant influence on financial performance, more precisely physical capital which remained predominant. Similarly, based on a sample of 934 Portuguese hotels, Sardo, Serrasqueiroa, and Alves (2018) analyzed the effect of IC on financial performance and the findings suggested that IC components significantly affected the performance of the Portuguese hotels.

From the review of literature, it is obvious that research interest in IC and financial performance has been extended across industries, where the majority focus being the service sectors. More so, industries like banking and finance, pharmaceutical, insurance, and IT are the most highlighted areas for investigating how IC impacts financial performance. However, there have been few studies conducted on hospitality service sector firms (Bontis et al., 2015 ; Laing et al., 2010 ; Sardo et al., 2018 ; Ting & Lean, 2009 ; Rudež & Mihalič, 2007 ; Zeglat & Zigan, 2013). Among the few studies on the hospitality service industry, it was found that none of the studies were conducted on Indian tourism and hospitality. Therefore, given the above literature gap regarding IC investigations on financial performance of the hospitality service industry, particularly in India, the present paper analyzes this relationship based on emphasis on firms providing tourism and hospitality services in India. The present study focuses on hotels, tourism, and transportation firms in India, which form a part of the tourism and hospitality industry. This would contribute to the existing literature and also help firms in this industry to understand how IC influences their performance.

Development of Hypotheses

The early foundation of the resource-based view (RBV) of a firm is found in the work of Barney (1991), which identified a firm to be an administrative organization involving a pool of resources, both human and physical. The resources are the main basis forming the theory as they explain how a combination of these resources can reflect in the performance of firms and give a competitive advantage. According to the theory, it is perceived that IC is one of the resources of a firm which creates value. Similar to Pulic's theory on intellectual capital of firms, when prudently used, the outcome is seen in an increase in performance yielding competitive advantage. This is a clear indication that IC of firms creates value, which reflects in their financial performance. Evidently, some studies have found IC to be correlated with financial performance (Bontis et al., 2015 ; Thiagarajan et al., 2018 ; Zeglat & Zigan, 2013). Therefore, along with this, we also expect that IC of firms would positively affect the firms' financial performance. Hence, the below mentioned hypotheses are developed :

- **H1a:** Intellectual capital is positively correlated with financial performance measured by return on assets.
- **H1b:** Intellectual capital is positively correlated with financial performance measured by sales growth.

Barney (1991) classified a firm's resources into human resources, organizational resources, and physical resources. That is, as per the theory of the RBV of a firm, organizations possessing these valuable resources become the elite, and the difference in performance is what differentiates them from others who do not have these resources (Wernerfelt, 1984). Similar to the VAIC model by Pulic (2000), IC of a firm consists of human, structural, and physical capital, which is the foundation for financial performance achievement. Therefore, it would be relevant for firms to detect the IC components which influence their financial performance the most in order to focus attention on their strengths and compensate for their weaker side.

Moreover, other studies also investigated how different the IC components are in influencing financial performance. Most of these studies (Bontis et al., 2015 ; Dzenopoljac et al., 2017 ; Ghosh & Mondal, 2009 ; Rudež & Mihalič, 2007; Sharabati et al., 2010; Tandon & Purohit, 2015 ; Zeglat & Zigan, 2013) found significant results where the components of IC drove financial performance of firms. Therefore, in line with this, we also expect

human physical and structural capital to positively affect financial performance of firms in the tourism and hospitality service sector. Hence, the following hypotheses are developed :

- **H2a :** Human capital efficiency is positively correlated with financial performance measured by return on assets.
- **H2b :** Human capital efficiency is positively correlated with financial performance measured by sales growth.
- **H3a:** Capital employed efficiency is positively correlated with financial performance measured by return on assets.
- **H3b:** Capital employed efficiency is positively correlated with financial performance measured by sales growth.
- **H4a:** Structural capital efficiency is positively correlated with financial performance measured by return on assets.
- **H4b:** Structural capital efficiency is positively correlated with financial performance measured by sales growth.

Research Methodology

(1) Sample and Selection : The study used the annual financial data of 720 sample firms operating in the Indian tourism and hospitality industry. Data were sourced from the Prowess database, which is maintained by Centre for Monitoring Indian Economy for a period of 12 years, that is, from 2005 - 2006 to 2015 - 2016. The time period was taken in order to capture the influence of 2016's demonetization on the performance of the sample firms. The panel data sample comprised of tourism, hotels, and transportation service firms in India. The main motivation behind using this industry as an area to base the research is its prevailing role in the socioeconomic development of India, and as classified as hospitality firms, they depend not on large fixed assets to succeed, but upon managing their intellectual assets (Krambia - Kapardis & Thomas, 2006). Hence, their performance in a knowledge economy relies more on their IC than on the hard assets (Patton, 2007). The selection criterion for firms to be included in our sample was strictly based on the availability of financial data for the entire study period. Again, firms which had not commenced operation before the 2005 financial year and with missing values were also excluded from our sample. We used panel data, which includes both time series and cross sections, as this combination enhances the quality of data and enabled us to study the dynamics of change among our sample groups.

(2) Variables : Value added intellectual coefficient™ (VAIC™) established by Pulic (2000) comprising of capital employed efficiency (CEE), structural capital efficiency (SCE), and human capital efficiency (HCE) are the main dependent variables used as shown in Table 1. According to Pulic (2000), VAIC™ is analytically designed to help managers to effectively monitor and to assess the value added by a firm's available resources. Pulic (2000) stated that a higher value of VAIC™ coefficient indicates how efficiently a firm's resources are being used. Accordingly, the first step in arriving at CEE, HCE, and SCE is to fish out the value added from the firm's resources. This calculation may be done as follows :

$$\text{Value Added } (VA) = \text{Output} - \text{Input}$$

where, output refers to income by revenue that a firm generated during the fiscal year whilst input refers to firms' operating expenses, which excludes their personal costs.

Table 1. Description of Variables Used and Their Measurement

Variable	Variable Name	Variable Abbreviation	Measurement Method
Dependent	Return on Assets	*ROA*	Net income/Total assets
	Sales Growth (SG)	*SG*	Current year sales/prior year sales - 1*100.
Independent	Human Capital Efficiency	*HCE*	*HCE = VA/HC*
	Capital Employed Efficiency	*CEE*	*CEE = VA/CE*
	Structural Capital Efficiency	*SCE*	*SCE = SC/VA*
	Value Added Intellectual Capital	*VAIC*	*VAIC = HCE + CEE + SCE*
Control	Firm Size	*SIZE*	Log (Total assets)
	Leverage	*LEV*	Total debt / total assets
	Physical Capital Intensity	*PCI*	Fixed assets/total assets
	Employee Productivity	*EP*	Total revenue/Total asset
	GDP Growth	*GDP*	An economic indicator of growth sourced from World Bank (2016)
	Inflation	*INF*	An economic indicator sourced from World Bank (2016)
	Demonetization	*DEM*	A dummy variable taking the value of 1 for the years of 2016 and the value of 0 otherwise.

Capital Employed *(CA)* = financial assets + physical capital
Human Capital *(HC)* = wages and salaries
Structural capital *(SC)* = *VA – HC*

Therefore, the following are the major components of IC which are calculated on the basis of the efficiency they create :

$$HCE = VA/HU$$
$$SCE = SC/VA$$
$$CEE = VA/CE$$
$$VAIC = HCE + CEE + SCE$$

(3) Regression Models : Panel data is known to be characterized by two dimensions, which are time and cross sections (Kennedy, 2008). In this particular work, both time and cross sectional observations are taken into consideration. Due to the nature of this study, using panel data methods will allow for controlling the unobserved variables like industry type, age of firms, and firms' cultural factors. According to Baltagi (1995), the panel data econometric method has different advantages as it : (a) controls for possible heterogeneity; (b) decreases multicollinearity between the independent variables ; (c) permits identifying and measuring effects which either time series or cross sectional data cannot.

In panel data models, two strands are used, that is, fixed effects (FE) model and random effects (RE) model. The FE model controls the effect of unobserved variables (not included in the model), which varies among individuals/entities and remains constant over time. Similarly, the RE model has the same assumptions considered in the FE model, however, the RE model estimates parameters which are constant for all subjects and all time periods. In this study, both FE and RE models are estimated in order to explain IC on financial performance. The

Hausman specification test is then applied to choose the best between FE and RE models depending on the significance level. If the Hausman test is found to be significant, the FE model is used in explaining that particular model and vice versa.

The following are the equations of FE and RE used for explaining the impact of the independent variables (*VAIC, HCE, CEE, SCE*) on financial performance :

$$PF = f(VAIC, HCE, CEE, SCE)$$

$$FP_{it} = \alpha_i + \beta_1 VAIC_{it} + \beta_2 Control\ variables_{it} + \varepsilon_{it} \quad (FE) \qquad (1)$$

$$FP_{it} = \alpha + \beta_1 VAIC_{it} + \beta_2 Control\ variables_{it} + \varepsilon_i + \varepsilon_{it} \quad (RE) \qquad (2)$$

$$FP_{it} = \alpha_i + \beta_1 HCE_{it} + \beta_2 CEE_{it} + \beta_3 SCE_{it} + \beta_4 control\ variables_{it} + \varepsilon_{it} \quad (FE) \qquad (3)$$

$$FP_{it} = \alpha + \beta_1 HCE_{it} + \beta_2 CEE_{it} + \beta_3 SCE_{it} + \beta_4 control\ variables_{it} + \varepsilon_i + \varepsilon_{it} \quad (RE) \qquad (4)$$

where, FP_{it} it is the vector of dependent variables - ROA and SG ; α_i is the unidentified intercept for each company ; ε_i is the error term varying across individuals but not across time; ε_{it} is the error term varying for each individual at each point in time ; the independent variables are *VAIC, HCE, CEE,* and *SCE*.

Analysis and Results

(1) Descriptive Statistics and Correlation Matrix : The study first presents an overview of the values for mean, maximum, minimum, and standard deviation for each variable used in this research, which is shown in Table 2. From the results, it is seen that the mean value of VAIC is 2.246, which indicates that tourism and hospitality firms in India are able to create a mean value of 2.246 rupees out of every one rupee they employ or invest on their intellectual assets. Among the components of intellectual capital, HCE is the highest contributor with a mean of 1.300. This shows that sample firms add value from HCE than CEE = 0.193 and SCE = 0.480, depicting that human capital is the key driver of firms' value creation. Regarding the two financial performance indicators, ROA's mean value is 1.270, which means that firms were able to generate 1.270 returns from their available assets.

Table 2. Descriptive Statistics of the Variables

Variables	Obs	Mean	*SD*	Min	Max
ROA	8640	1.270	1.282	-3.912	5.000
SG	8640	0.188	0.582	-1.922	3.992
HCE	8640	1.300	1.769	-7.923	8.995
CEE	8640	0.193	0.500	-2.949	4.938
SCE	8640	0.480	0.871	-4.986	5.923
VAIC	8640	2.246	2.267	-8.936	9.810
EP	8640	0.824	0.723	-0.103	3.940
SIZE	8640	3.247	1.120	-0.227	6.985
PCI	8640	0.434	0.266	-0.966	1.783
LEV	8640	3.403	3.139	-3.759	8.994
INF	8640	7.797	2.512	4.246	11.992
GDP	8640	7.674	1.812	3.891	10.260

Table 3. Spearman Correlation Among Variables

Variables	*ROA*	*SG*	*VAIC*	*HCE*	*CEE*	*SCE*	*EP*	*SIZE*	*PCI*	*LEV*	*INF*	*GDP*
ROA	1.000											
SG	0.036*	1.000										
VAIC	0.168*	0.129*	1.000									
HCE	0.115*	0.108*	0.682*	1.000								
CEE	0.154*	0.062*	0.211*	0.332*	1.000							
SCE	0.283*	0.063*	0.427*	0.164*	-0.139*							
EP	0.216	0.002*	-0.096*	0.091*	0.409*	-0.313*						
SIZE	-0.031	0.013*	0.153*	0.194*	0.203*	0.072*	-0.061*					
PCI	0.021*	0.091	-0.015	-0.141*	-0.091*	0.073*	-0.143*	-0.052*				
LEV	0.178*	-0.092*	-0.110*	0.096*	0.314*	-0.240*	0.670*	0.005	-0.484*			
INF	-0.032*	-0.057*	-0.005	-0.002	0.014	-0.013	-0.049*	0.134*	-0.060*	0.021*		
GDP	0.039*	0.131*	0.009	0.019	0.006	0.005	0.042*	-0.022*	0.000	0.012	-0.189*	1.000

Note. * represents level of significance at 1%.

For SG, the sample firms generated a mean value of 0.188, implying that on an average, firms' sales grew by 0.188 units annually over the entire study period.

To analyze the correlation between the variables used in this study, Spearman correlation analysis was carried out and the results are presented in Table 3. Before running correlation matrix, Brooks (2014) stated that the normality assumption is also important to conduct single or joint hypothesis tests regarding the model parameters. We used the Shapiro - Wilk test, and the results show that the data is not normally distributed. The results warranted the use of Spearman's correlation to check the correlation among the variables, more specifically the independent variables. Spearman's correlation for determining the relationship between all variables, most specifically the independent variables, shows that correlation among the independent variables is not above 0.8 in any specification. Hence, multicollinearity is not a problem in our data (Gujarati, Porter, & Gunasekar, 2012). Further, the variance inflation factor (VIF) is also checked for multicollinearity, and our untabulated results show no multicollinearity since none of the VIF results generated are below 10.

(2) Results of Panel Data Estimation : The results of the panel data estimation identify the relationship of IC with financial performance measures, and these are estimated using FE and RE models. For each model, Hausman test that allows choosing between FE and RE estimations was applied. Throughout, Hausman X^2 results are found to be significant as $p > .05$; hence, informing that firm specific effects correlate with one or more explanatory variables, therefore, the fixed effects (FE) model controls these time invariant characteristics of firms. We used option 'robust' to obtain heteroscedasticity - robust standard errors using White standard robust errors estimator. The results of the FE model are only presented in Table 4 for analysis. Models 1& 3 explain IC, HCE, and SCE effects on firms' ROA ; whilst, Models 2 & 4 explain the effects on SG.

In Table 4 of Model (1), the coefficient of VAIC is positive and significant at 1%, indicating a strong correlation with firms' ROA. The coefficient of 0.068 indicates an increase in ROA of sample firms for every monetary value invested on IC holding all control variables constant, supporting the hypothesis H1a. This confirms that VAIC positively increases the financial performance of firms measured by ROA and is in conformity to the RBV theory as well as the literature (Alhassan & Asare, 2016 ; Laing et al., 2010). More so, the coefficient of VAIC in Model (2) exhibited in Table 4 is 0.015, which is positive and significant at 1%. The results indicate how firms create

Table 4. Fixed Effect Regression Results

ROA		SG		
Variables	**Model 1**	**Model 3**	**Model 2**	**Model 4**
_Cons	0.991 (0.191)*	0.933 (0.186)*	-0.290 (0.076)*	-0.274 (0.077)*
VAIC	0.068 (0.110)*		0.015 (0.004)*	
HCE		0.024 (0.014)***		0.022 (0.005)*
CEE		0.007 (0.045)		0.041 (0.023)***
SCE		0.267 (0.024)*		0.016 (0.008)**
EP	0.321 (0.054)*	0.345 (0.055)*	0.095 (0.021)*	0.081 (0.020)*
SIZE	-0.031 (0.038)	-0.038 (0.038)	0.028 (0.014)**	0.020 (0.014)
PCI	0.234 (0.145)	0.210 (0.141)	0.051 (0.055)	0.056 (0.056)
LEV	-0.048 (0.031)	-0.030 (0.030)	0.057 (0.015)*	0.058 (0.015)*
INF	-0.007 (0.006)	-0.006 (0.006)	-0.010 (0.003)*	-0.010 (0.003)*
GDP	0.012 (0.006)**	0.011 (0.006)**	0.019 (0.003)*	0.018 (0.003)*
DEM	-0.167 (0.050)*	-0.170 (0.049)*	-0.061 (0.025)**	-0.058 (0.024)**
Adj R^2	0.286	0.304	0.075	0.078
F-stats	13.10	18.94	21.72	18.76
χ^2	(8) 25.34*	(10) 32.64*	(8) 140.92*	(10) 140.94*
Obs	8,640	8,640	8,640	8,640

Notes.

(i) Fixed effect model is presented in the Table 4 based on the Hausman χ^2. In order to deal with heteroscedasticity, robust standard error values are used and these are provided in parenthesis next to the coefficient estimates.

(ii) *, **, and *** represent level of significance at 1%, 5%, and 10% levels, respectively.

0.015 increase in their SG for every unit of IC they invest. This result also supports hypothesis H1b, attesting that VAIC is positively associated with sales growth of firms. The study results corroborate to the findings of Clarke, Seng, and Whiting (2011), whose study revealed a significant impact of IC on sales growth of Australian firms. Comparing the R^2 value in Models 1 & 2, it is seen that the dependent variables in Model 2 have a very low explanatory power of 8% variance on the dependent variable SG, whilst the overall power of all independent variables in Model 1 explains 29% variance in the dependent variable (ROA). This indicates that VAIC along with the control variables is better in explaining firms' ROA than SG.

To investigate the relationship between IC components and financial performance, Model 3 and Model 4 are presented in the sample Table 4. In Model 3, both HCE and SCE have positive and significant coefficients of 0.024 and 0.267, respectively; whilst CEE has a positive coefficient of 0.007, but it is found to be insignificant. The result is in concordance to the findings of Zeglat and Zigan (2013) and Kamath (2015), confirming the hypotheses H2a and H4a, whilst H3a is rejected. Among these IC components, SCE influences firms' ROA the most since every one unit invested on structural capital increases ROA by 0.267 units, which is a higher figure than that of HCE (0.024). SCE takes the form of unique organizational processes, manuals, strategies, database charts, and routines of an organization (Roos & Roos, 1997) continue to provide a supportive environment for employees, which in turn help in building up productivity (Bozbura, 2004).

Interestingly, in Table 4, the coefficient of SCE in Model 4 is insignificant, unlike HCE and CEE, which are all positive and significant in influencing firms' SG by 0.022 and 0.041, respectively. This confirms both hypotheses

H2b and H3b, which are supported whilst H4b is rejected. Comparing the two significant components of IC, it is evident that CEE has a greater impact on firms' SG than HCE.

Similarly, the findings of Dženopoljac, Janošević, and Bontis's (2016) study on 2137 ICT firms in Serbia and Ozkan et al.'s (2017) study on Turkish banks affirmed that CEE is the most influential component of IC which significantly impacts performance. According to the RBV theory, material resources such as physical capital can provide useful services to a firm and earn returns above average (Makhija, 2003).That is to say, any additional unit of physical and financial capital (CEE) would increase firms' SG by 0.041 units, which is higher than human capital (HCE) which increases firms' SG by 0.022 units. Factoring R^2 value of 0.304 in Model 3 is a clear indication that overall, the model is capable of explaining 30% change in the dependent variable than that of Model 4, whose explanatory power is 0.078, which is very low.

Discussion

The present study examines the relationship between IC and financial performance where the value creation efficiency of intellectual capital is measured using the VAIC model developed by Pulic (2000). The empirical study is carried out on firms providing hotel, tourism, and transportation services in India, which form a part of the tourism and hospitality industry. The results from this study confirm the existence of a positive relationship between VAIC and financial performance measured by return on assets and sales growth. The study findings commensurate with other findings revealed in the literature (see Alhassan & Asare, 2016 ; Laing et al., 2010 ; Ting & Lean, 2009), whose findings depict the relevance of IC in improving firms' financial performance, giving firms an advantage as investors definitely value firms with higher intellectual capital and it automatically contributes to a firm's financial performance (Ting & Lean, 2009). The current economic scenario of every country has changed, and tangible assets (physical capital) alone are not enough in this knowledge economy. This is why Indian firms have invested much in blending tangible with intangible assets (human and structural capital) to sustain their competitive edge. More so, the increasing awareness of IC might be the reason why most firms in India are keen on using IC to reach such performance. A study on Australian firms by Joshi, Min, Deshmukh, and Jaffar (2016) confirmed that the level of IC disclosure has increased in recent years.

With the components of IC, human capital is significantly and positively related to the two financial performance measures and it is in conformity with the results of Zeglat and Zigan (2013) and Kamath (2015). This is a true reflection of the resource-based theory which places emphasis on assets, which cannot be imitated nor substituted such as the human intellectual capital (Barney, 1991). No wonder that HC is viewed as the most important component of IC (Pulic, 2000). The findings posit that Indian firms providing hospitality services have realized the importance of their human force and probably invest much in them by providing training and development programs to enhance their innovative skills.

Furthermore, the relationship of CEE with financial performance shows mixed results. It is positive and significant, with sales growth proving that adding more of financial and physical capital by means of expanding the quality of services provided could result in sales growth (similar to the findings of Chen et al., 2005; Kamath, 2007). On the opposite, CEE is insignificant when it comes to improving firms' ROA, signaling that physical and financial capital is not a relevant component of IC in addressing ROA, and these findings are in line with the results of Kamath (2015). One possible reason might be that companies in India are facing stiff competition due to the emergence of globalization, and relying on heavy physical capital is not enough for firms providing hospitality services. Finally, for SCE, a strong positive relationship between ROA of firms is revealed in the study (similar to the findings of Kamath, 2015 ; Zeglat & Zigan, 2013). It is then to be noted that a strong SC possesses supportive environment for its human resources, which improves productivity and thus increases the returns on assets and decreases the total cost of the product/service (Bozbura, 2004).

Overall, the empirical findings of our study clearly prove that to some extent, IC is vital for growth and profitability in the tourism and hospitality industry. Based on panel data modeling, the findings on a sample of 720 firms from the tourism and hospitality industry reveal that firms can enhance their sales growth and returns on assets invested. This is because the industry (hospitality) depends not on large fixed assets to succeed, but upon managing its intellectual assets (Krambia - Kapardis & Thomas, 2006). Hence, managing and taking care of its intellectual ability is the key to gain a competitive advantage.

Research Implications

The concept of knowledge resources growing out of the resource - based theory of a firm suggests that firms benefit from better managing their knowledge assets mostly comprising of IC (Choi & Lee, 2003). In this study, we have demonstrated the salient impact of IC in improving the sales growth and profitability of hospitality service providers in India. It is found that investing in IC economically increases profitability and sales growth. However, firm intangible assets such as human and structural capital are the main components of IC driving performance. Therefore, managers of such firms can manage their performance by investing in training and development programs to enhance the sophisticated skills needed to be more functional in this knowledge economy. Doing this will make their employees more innovative in designing products and providing quality services to customers/ clients/guests. More so, structural capital is a significant factor ; hence, managers and policy makers can capitalize on their structural capital to improve their performance. The hospitality industry depends more on structures and quality of services, so managers can achieve this by increasing their R&D to provide the latest and modern services to sustain competitive advantage.

Overall, the study has deepened the relevance of investing in intellectual capital by showing how it can direct management behavior in decisions that increase the value of a firm (Wijaya, Tandelilin, Rahayu, & Hermeindito, 2016).

Limitations of the Study and Directions for Future Research

One main limitation of this study is that the study only focuses on firms representing a particular industry, that is, hospitality services, leaving out the other industries. There has been the problem of requisite data availability for such firms, which is inherent to our data source (Prowess database). More so, the study uses Ante Pulic's VAIC model, which has received a lot of criticism such as the way SC is calculated as well as insufficient results for the firms having negative values of 'Value Added' (Mehralian, Rajabzadeh, Reza Sadeh, & Reza Rasekh, 2012). Therefore, further research can use other measurement methods and also involve all industries that provide hospitality services to give clearer insights for a better understanding of IC and performance.

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