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Intellectual Capital and **Financial Performance** of Portuguese Tourism Sector

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Abstract | According to the literature, intellectual capital is a critical element of value creation in organizational performance that is capable of contributing to sustainable and higher financial income. The objective of this paper is to identify the added value and efficiency of intellectual capital in its three dimensions - (i) human capital, (ii) structural capital and (iii) relational capital - in the tourism sector and assess its impact on organizational performance. The data was obtained from the Simplified Enterprise Information System (IES) based on the Iberian Balance Analysis System (SABI). The study was conducted with a sample of balance sheets and financial reports of 46,951 Portuguese companies in the tourism sector between 2007 and 2016. The results showed that all dimensions of intellectual capital have a positive and significant impact on the business performance of the Portuguese tourism sector. Human capital is the most effective dimension of intellectual capital and value added. The application of the Value Added Intellectual Coefficient (VAIC) model provides practical implications for the management and valorization of intellectual capital. Therefore, the empirical results with the present analysis are relevant for the future strategy for the development of the tourism sector in Portugal.

Keywords | Intellectual capital, human capital, tourism sector, Value Added Intellectual Coefficient (VAIC)

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1. Introduction

Tourism is a human process that goes beyond understanding it as a function of an economic system. It is an open, organic system that cannot be studied as a radically isolated entity, hence its interdisciplinary and transdisciplinary content (Beni & Moesch, 2016).

Tourism has presented itself as one of the most important sectors of the various economies. The year 2018 continued to be a growth booster in job creation, as it contributed to about one in of ten global jobs, equivalent to about 319 million jobs (World Travel & Tourism Council, 2019).

Currently, organizations including the entire corporate structure of the tourism sector, are facing with the challenge of strategic and policy changes in response to social, demographic trends (Obeidat, Abdallah, Aqqad, Akhoershiedah, & Maqableh, 2017). In this sense, according to the authors, organizations need to adopt new forms of management to ensure their competitiveness, which can happen through investments in areas such as employee training, customer relations, research and development. These investments fall under the Intellectual Capital (IC) approach.

For Obeidat et al. (2017), the literature has confirmed the influence of IC in such important areas as economic growth (Huang & Liu, 2005), value creation (Kateb, Swies Masa'deh & Maqableh, 2014; Nazari & Herremans, 2007), competitiveness (Jardon & Martos, 2009), business performance (Kommenic & Pokrajcic, 2012), workplace performance (Vratskikh, Masadeh, Al-Lozi & Maqableh, 2016) and sustainability (Sherif & Elsayed, 2016). Moreover, the IC, shows that organizations composed of employees with certain skills enable superior organizational outcomes.

Organizations differ in performance depending on the variation of organizational resources. Improving organizational performance depends on the successful use of tangible as well as intangible resources such as the effective management of employee knowledge and behavior. Knowledge and intelligent management of all human resources, which are the knowledge capital of organizations, help them to maintain a competitive advantage and to achieve high levels of performance.

The tourism industry encompasses a variety of businesses, offers different types of tourist experiences, and provides a variety of utilities to tourists. In addition, the companies are mainly microenterprises, with a small number of employees. The talent of human capital in this sector proves to be a much greater challenge than in any other sector (Sainaghi, Phillips, & Zavarrone, 2017).

Considering the importance of this topic, this paper has contributed with a study for tourism sector, to understand the human capital, and identify the efficiency and value addition. The main objective of this study is to evaluate and compare IC, within the tourism sector, by applying the VAIC method (Pulic, 1998) and analysing the relationship between IC and financial performance.

2. Theory

The IC has become a topic of great interest in the study. The new knowledge-based economy has shifted attention to the intangible assets of organizations and their management, with IC being considered valuable because intangible assets are more important than tangible assets. To remain competitive organizations should take a systematic approach to these assets. The components of IC are Human Capital (HC), Structural Capital (SC) and Relational Capital (RC). The HC is the knowledge and skills of individual employees, the SC is a strategic asset that includes infrastructure, information systems, and internal processes, and the RC is the value of relationships built with stakeholders. These components of IC are the drivers of value creation that contribute most to innovation and the sustained achievement of competitive ad-

vantage.

Pulic (1998, 2000, 2003 and 2005) was one of the first authors to focus research on the perspective of IC in order to explicitly on the relationship between IC and economic performance. For the design of the VAIC model, part of the author's goal was to find a way to measure the knowledge economy that is able to indicate the extent of value creation (Flores, García & Adame, 2017). According to the authors, the main argument of Pulic (2008) is based on the knowledge of human resources that transform and incorporate knowledge into products and services that create value. In this sense, the author interprets the costs with knowledge workers as an investment in human capital, that expects a return.

Several studies analyse the relationship between the components of IC and value creation using the VAIC model to evaluate the level of value creation efficiency of intellectual capital indicated by Human Capital Efficiency (HCE), Structural Capital Efficiency (SCE), Efficiency of Capital Employed (CEE) and VAIC (Kujansivu & Lönnqvist, 2007; Muhammad & Ismail, 2009; Laing, Dunn & Hughes-Lucas, 2010; Zéghal & Maaloul, 2010; Chang & Hsieh, 2011; Rehman, Rehman, Rehman & Zahid, 2011; Paknezhad & Ahmadkhani, 2012; Shaban & Kavida, 2013; Fitz-Patrick, Davey, Muller & Davey, 2013; Sumedrea, 2013; Piri, Alghyani, Sadaghiani & Nejad, 2014; Bontis, Janoševic & Dženopoljac, 2015; Matinfard & Khavari, 2015; Svanadze & Kowalewska 2015; Maji & Goswami, 2016; Flores, García & Adame, 2017; Hasan, Mohammad & Alam, 2017; Shawtari, Saiti, Mohamad & Rashid, 2017; Kamath, 2017; Ozkan, Cakan & Kayacan, 2017; Pradana, Nidar & Aripin, 2018; Khairiyansyah & Vebtasvili, 2018; Yilmaz & Acar, 2018).

VAIC is the value added per unit of money invested in IC. The higher the value of VAIC, the better management exploits the company's value creation potential. Laing et al. (2010) use the VAIC model to analyse the extent to which IC adds value to a service provider over a four-year period (2004-2007) two companies in the Australian hotel industry. The conclusions are that the correlation between the HCE and ICE is very much significant. This suggests that reliance on HC is a key element of firm performance, at least in the hospitality sector. Zéghal and Maaloul (2010) use the VAIC model in 300 UK companies divided into three groups of industries: high-tech, traditional and services. The results show that CEE has a significant positive relationship with a company's financial and stock market performance.

Shaban and Kavida (2013) analyse 22 Information Technology companies listed in the BSE 500 and conclude that the relationships between a company IC's performance and conventional performance indicators are diverse and show that profitability and IC are positively associated, while no significant relationship is observed between IC with productivity and market valuation but CEE. Bontis et al. (2015) confirmed that after controlling for firm size and advantage, employee productivity and, to some extent, profitability were influenced by human and structural capital. The research confirms that the financial performance of hotels in Serbia continues to be predominantly influenced by efficient use of physical capital. Matinfard and Khavari (2015) use companies listed on Tehran Stock Exchange over the period 2006-2012 and the results show a positive and significant relationship between IC and financial performance of companies and a positive effect of the size of the company on the availability of IC and financial performance. In Hasan et al. (2017) study VAIC and its components have significant relationship with profitability. Kamath (2017) studied the impact of IC efficiency on financial and export performance of firms in India. The results further confirmed that productivity and export performance of all firms is strongly influenced by human capital efficiency.

Ozkan et al. (2017) find that the IC performance of the Turkish banking sector is generally

influenced by HCE. CEE and HCE have a positive effect on bank's financial performance. However, CEE has a greater impact on the financial performance of banks compared to HCE. The study of Khairiyansyah and Vebtasvili (2018) aims to investigate the influence of intellectual capital on profitability and productivity and the research results show that intellectual capital has a positive influence on ROA. The higher the value of VAIC, the higher the profitability of the banking firm. This indicates that the firm becomes better in managing the assets, which leads to increased return of assets owned firms as measured by ROA. He firms were able to use the physical capital to improve the efficiency of the firm.

The empirical studies on IC tourism pointed to the relevance of the approach. "The current debate argues that working with IC enhances business performance" (Engstrom, Westnes & Westnes, 2003, p. 5). In this sense, it becomes critical to measure the performance of knowledge application in creating value, because it is one of the mechanisms that "support and enhance an organization's intellectual capital"(Bilhim, 2007, p. 51).

After reviewing the literature of IC and financial performance, we expect to investigate the relationship between IC and the financial performance of the hospitality and tourism sector in Portugal.

3. Method

In order to align the research objectives with the methodology, a quantitative study was conducted using secondary data. The dataset is based on secondary data in the Portuguese hospitality and tourism industry, which includes companies whose main classification of economic activity (CAE) integrates the economic activity subsegments of transport and logistics, hotels and restaurants and recreational and cultural Activities, according to the Bank of Portugal (2014) classification. This study is based on secondary data on Portuguese companies, collected from the Simplified Business Information (IES) through SABI (Iberian Balance Sheet Analysis System) database. Therefore, the economic and financial information was collected from balance sheets and financial reports of 46 951 Portuguese companies in the tourism sector, between 2007 and 2016. SPSS statistical software was to perform this analysis.

The VAIC model aims to measure efficiency and heat generation and, in this sense, to evaluate the information about the efficiency of processes and people related to value creating by measuring the coefficients of efficiency in the use of financial and intellectual capital (Martins, Morais & Isidro, 2012). In this model, the measurement of intellectual capital is based on the relationship between four main components: (I) capital employed (CE); (II) human capital (HC); (III) structural capital (SC); (iv) relational capital (RC).

In this sense, the VAIC model is intended to measure the extent to which a company creates added value based on the use of IC and is measured by the sum of the metrics that incorporate the three components on which the model is based. Based on these definitions and assumptions, VAIC is calculated as the direct sum of the main indices of efficiency, which are calculated as the ratio of the efficiency coefficient of capital employed (CEE), the efficiency coefficient of human capital (HCE), the efficiency coefficient of structural capital (SCE) and efficiency coefficient of relational capital (RCE). While the form performance through Return on Asset (ROA) is considered as a measure of profitability.

Following Pulic (1998), the model of this study denotes all of the given variables that may affect firm's performance (Figure 1).

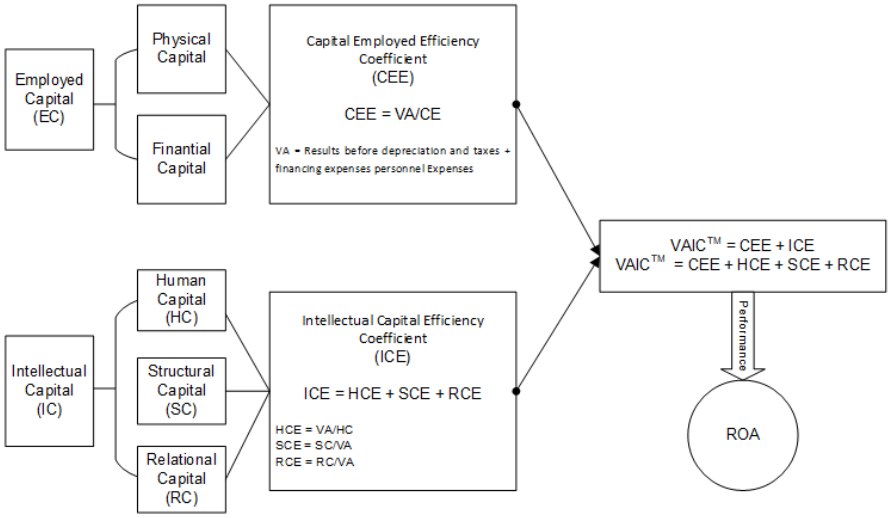

Figure 1 | Model
Source: own elaboration

Given the objective of the present investigation, the economic and financial indicator were selected, which allow quantification of performance.

$$ROA_{it} = \beta 0 + \beta 1\,(CEE)_{it} + \beta 2\,(HCE)_{it} + \beta 3\,(SCE)_{it} + \beta 4\,(RCE)_{it} + \varepsilon it$$

$$ROA_{it} = \beta 0 + \beta 1\,(VAIC)_{it} + \varepsilon it$$

Where, β_0 = Intercept and Coefficients of Slope or Slope of Line β_1, β_2, β_3, β_4 and ε = Error Term.

To measure the empirical impact of intellectual capital amount on ROA, the following hypotheses were formulated:

H1: HCE has a positive and significant association with ROA of tourism sector?

H2: SCE has a positive and significant association with ROA of tourism sector?

H3: RCE has a positive and significant association with ROA of tourism sector?

H4: CEE has a positive and significant association with ROA of tourism sector?

H5: VAIC has a positive and significant association with ROA of tourism sector?

The formulated research hypotheses were obtained considering previous studies in this field and considering the sector on which we focus our analysis.

4. Results

The results of VAIC evolution between 2007 and 2016 and of CEE, HCE, SCE and RCE show that the average CEE declined slightly between 2007 (.58) and 2016 (.52) (Table 1). The minimum value was reached in 2013 (.35) and the maximum value (.64) was reached in 2009. The HCE shows average values between 1.98 in 2007 and 1.56 in 2016, the minimum values were reached in 2016 (1.56) and the maximum values were reached in 2010 (3.13).

Table 1 | Average coefficient of efficiency of intellectual capital in the tourism industry in Portugal

	CEE	HCE	SCE	ICE	RCE	VAIC	ROA
CEE	1						
HCE	.040**	1					
SCE	-.054**	-.001	1				
ICE	-.003	.770**	.637**	1			
RCE	.019**	.009	-.205**	-.197**	1		
VAIC	.238**	.722**	.397**	.810**	.370**	1	
ROA	.325**	.033**	-.015**	-.003	.005	.081**	1

** sig<.01; * sig<.05

Source: Own graphics elaboration

Regarding SCE, notes that the average amount kept throughout the period under review, from .33 (2007 and 2016). Reached the minimum value in 2011 and the maximum value in 2012. The ICE in 2007 was around the average value of 2.26 and 1.95 in 2016, has reached the maximum value in 2010 the minimum value in 2011. The RCE ranged from .58 in 2007 and .47 in 2016, has reached the minimum value of .29 in 2013 and the maximum value of .69 in 2009.

Finally, analysing the VAIC, it has a minimum value in 2011 (2.66) and a maximum value in 2010 (4.36). On the other hand, the VAIC varied between 3.47 in 2007 and 3.03 in 2016. In 2007 the tourism sector created €3.47 for each €1.00 invested, of which capital used accounted for €0.58 (16.7%), human capital (57%), entry €1.98 the capital €0.33 (9.5%), structural and relational capital €0.58 (16.7%).

In 2016, the tourism sector created €3.03 for every €1.00 invested, slightly less than in 2007. In the same year the HCE is €1.56, making it the component of IC with the highest share in value creation (51.5%). On the other hand, structural capital represents €0.33 (10.9%) and physical and financial capital, which translates the value generated for each unit invested in tangible assets, represents €0.52 (17.1%) and relational capital €0.47 (15.5%).

Human capital is the most effective dimension of IC and value creation, suggesting that the tourism sector has created a much more efficient value of IC than the financial component. The results are consistent with some studies in the literature (Kujansivu & Lönnqvist, 2007; Zéghal & Maaloul, 2010; Laing et al., 2010; FitzPatrick et. al., 2013; Shaban & Kavida, 2013; Matinfard & Khavari, 2015; Maji & Goswami, 2016; Flores et al., 2017; Kamath, 2017; Lopes, 2017; González, Calzada & Hernández., 2017; Yilmaz & Acar, 2018).

However, some studies have reached slightly different results, especially when analyzing the statistical evidence for the relative importance of human capital in performance management (Díez, Ochoa, Prieto & Santidrián, 2010; Paknezhad & Ahmadkhani, 2012; Pradana et al., 2018). Therefore, between 2007 and 2016 sense a decreased VAIC of 12.7% (3.47 in 2007 and 3.03 in 2016), representing a decrease in the efficiency of capital employed (-10%), human capital (-21%) and relational capital (-19%). It should be noted that in 2011 there is a sharp decline in VAIC, largely resulting from the economic crisis in 2011, as between 2011 and 2012, there was a reduction of 6.4% in the direct contribution of tourism to the Gross Domestic Product at current prices in Portugal. In 2016, there is a slight increase of 4.8% compared to the VAIC of 2015 and most of its components.

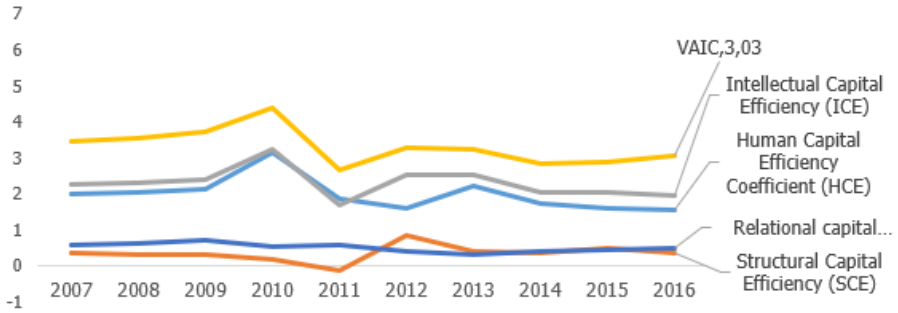

Figure 2 | Evolution of the average coefficients of efficiency of intellectual capital in the tourism industry in Portugal
Source: Own elaboration

The correlation analysis revealed several results regarding he relationship between the independent and dependent variables in the research model. The correlation results presented in Table 2 showed a statistically relationship between all variables except between SCE and HCE, RCE and HCE, ROA and ICE, ROA and RCE.

Table 2 | Correlation Analysis among Variables

	CEE	HCE	SCE	ICE	RCE	VAIC	ROA
CEE	1						
HCE	.040**	1					
SCE	-.054**	-.001	1				
ICE	-.003	.770**	.637**	1			
RCE	.019**	.009	-.205**	-.197**	1		
VAIC	.238**	.722**	.397**	.810**	.370**	1	
ROA	.325**	.033**	-.015**	-.003	.005	.081**	1

** sig<.01; * sig<.05

Source: Own elaboration

As can be seen, the HCE showed a high and statistically significant association with the ICE and with the VAIC, which shows that human capital is the key element that contributes to the competitiveness and business success of companies in this sector. Laing et al. (2010) believe that this can be interpreted as an indication of high dependence on human capital, which is consistent with the core business of a hotel resort chain. However, although with a low association, it is CEE dominant in terms of value creation when ROA are used as indicators of value creation (Chang & Hsieh, 2011; Bontis et al. 2015; Hasan et al. 2017).

The negative sign of the correlation means a change in the opposite direction in the variables. In this way, the component SCE has a negative correlation with the profitability indicators, which shows that the larger the structural capital of a companies, the lower its profitability, as in the study of Chang and Hsieh (2011); Hasan et al. (2017); Ozkan et al. (2017) and in contrast by Farrukh and Joiya (2018).

The results show that in Portugal the profitability of the tourism sector is more influenced by the value of HCE than SCE and RCE (as in the study of Al-Musali & Ismail, 2014). Physical and financial capital or CEE has a relatively low average as well as a low standard deviation compared to the other indicators.

Correlation has a strong influence in regression analysis, and the current results are expected to exert their influence on the ROA model. It was

found that none of the VAIC components have strong correlations with each other, which proves that the model does not suffer from homogeneity problems.

Table 3 summarizes the linear regression results for the regression analysis. The regression Model 1 result of ROA has as statistically significant variables to justify the variance of ROA indicators such as CEE, HCE, RCE and SCE.

Table 3 | Regression Results

	Dependent variables	
	ROA	
Independent variables	Coefficients	t-Statistics
Model 1		
Constant	-1.042	-32.638**
CEE	.921	66.039**
HCE	.021	4.709**
SCE	-.034	-6.363**
RCE	-.009	-1.394
Adjusted R^2		.115
F-value		1128.137**
Prob>F		.000
Model 2		
Constant	-.617	-18.625**
VAIC™	.051	15.034**
Adjusted R^2		.006
F-value		226.017
Prob>F		.000**

** sig.<.01

Source: Own elaboration

The CEE and HCE have a positive association with ROA, and it is expected that the entities analyzed while having a high efficiency of physical and financial capital and high efficiency of human capital, have high profitability of assets (as the result obtained by Díez et al. 2010). The CEE is what shows greater relationships with the company's ROA (as the result obtained by Muhammad & Ismail, 2009).

These results lead to the confirmation of the first hypothesis that HCE has a positive and significant relationship with the business performance (ROA) of hospitality and tourism sector and hypothesis 4: CEE is positively and significantly associated with the ROA of the hospitality and tourism sector.

On the other hand, SCE shows a negative association with profitability. These results are consistent with those of Bontis et al. (2015), in hotels in Serbia and are contrary to the hypothesis formulated in the (SCE) that it is positively and significantly associated with ROA of hospitality and tourism sector. The results related to the RCE variable are not statistically significant (Kamath, 2017), which does not confirm hypothesis 3.

The VAIC indicator is also statistically significant to justify the ROA variance, which proves hypothesis 5. This indicator is associated with high value added value of intellectual capital. The multiple regression models indicate the influence that VAIC have on the financial performance of companies (as the studies of Gosh & Mondal, 2009 in Indian software and pharmaceutical sector; Muhammad & Ismail, 2009 in Malasian financial sector; Ting & Lean, 2009 of financial institutions in Malaysia: Sumedrea, 2013 in non-financial companies listed on Bucharest Stock Exchange; González et al., 2017 in the industrial sector of Mexico; Khai-

riyansyah & Vebtasvili, 2018 in banking companies listed on Indonesia Stock Exchange; Farrukh & Joiya, 2018 in various textile companies operating in Pakistan).

However, a limitation of this model is the low explanatory power of the variance of the asset's profitability (about 11.5%). Taking into account the results of the statistical analysis, conclusions can be drawn regarding the acceptance and rejection of the hypothesis. In particular, there is a significant and positive relationship between ROA and VAIC, HCE and CEE.

5. Conclusions

The IC is recognized in the literature as the most important productivity factor in today's economy. We have seen a dramatic growth of intangible development factors in the world in the last decades of the twentieth-first century decades of the twenty-first century, with major mergers and acquisitions, expansion in the service sector, refinement of technologies and markets and strong customer orientation being responsible for this situation (Rodrigues, 2011). Pulic (1998), through the VAIC model, attempted to measure firm performance in the knowledge economy by quantifying intellectual efficiency in the value creation context.

The results of this study support the concept that IC has the potential to become the new source of wealth in the Portuguese hospitality and tourism sectors, and support that IC has a direct and positive impact on business performance.

This study attempted to analyse the efficiency of IC value creation in the tourism sector in Portugal from 2007 to 2016. The results showed a positive and significant impact of all dimensions of IC on business performance. Specifically, in 2016, the tourism sector in Portugal created €3.03 for every €1.00 invested, lower than the 2007 value (which was 3.47). In 2016, the efficiency of human capital is the component with the largest share in value added creation (51.5%), followed by SC (10.9%), physical and financial capital or CE (17.1%) and RC (15.5%). Considering the results of the statistical analysis, conclusions can be drawn regarding the acceptance and rejection of the hypothesis. In particular, there is a significant and positive relationship between ROA and VAIC, HCE and CEE, thus accepting hypotheses 1, 4, 5. On the other hand, SCE shows a negative association with profitability, rejecting hypothesis 2. Finally, the results of the relationship between the variable RCE and ROA do not show statistical significance, thus not confirming hypothesis 3.

Considering the importance of this topic, this study contributed to identify the creation of efficiency and value in the Portuguese tourism sector. However, a limitation of this model should be pointed out, considering that it has a low explanatory power for the variance of the asset profitability (about 11.5%). Future research on this topic should be undertaken, can be done by testing, dividing the sample by tourism subsectors and by different regions, analysing the differences between these groups and including new control variables to increase the robustness of the model.

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