

Intellectual capital and financial performance of entrepreneurs in the hotel industry

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Abstract: Intellectual capital is recognized as a key factor in creating value and gaining and maintaining a competitive advantage among service companies. Intellectual capital can be a useful tool for improving the entrepreneurial performance if it is managed properly. The existing literature does not provide enough insight about the role and importance of intellectual capital among entrepreneurs in the hotel industry. The main goal of the paper is to identify the relationship between intellectual capital and financial performance of entrepreneurs in the hotel industry. The descriptive statistics, correlation analysis and multiple regression analysis were applied. Based on the applied statistical methods, it is concluded that intellectual capital has an impact on operating profit and productivity of entrepreneurs in the hotel industry. The results also indicate that human capital had the greatest contribution to improving the financial performance of entrepreneurs in the hotel industry.

Keywords: intellectual capital, entrepreneurship, financial performance, hotel industry

JEL classification: O34, L25

Intelektualni kapital i finansijske performanse preduzetnika u hotelskoj industriji

Sažetak: Intelektualni kapital prepoznat je kao ključni faktor u stvaranju vrednosti i sticanju i održavanju konkurentske prednosti među uslužnim kompanijama. Intelektualni kapital može biti korisno sredstvo unapređivanja preduzetničkih performansi ako se njime pravilno upravlja. Postojeća literatura ne pruža dovoljan uvid u ulogu i značaj intelektualnog kapitala za preduzetnike u hotelskoj industriji. Osnovi cilj rada je da identifikuje odnos između intelektualnog kapitala i finansijskih performansi preduzetnika u hotelskoj industriji. U radu su korišćene deskriptivna statistika, korelaciona analiza i višestruka regresiona analiza. Na osnovu primenjenih statističkih metoda, zaključeno je da intelektualni kapital ima uticaj na poslovni dobitak i produktivnost preduzetnika u hotelijerstvu. Rezultati takođe ukazuju na to da ljudski kapital daje najveći doprinos unapređivanju finansijskih performansi preduzetnika.

Ključne reči: intelektualni kapital, preduzetništvo, finansijske performanse, hotelska industrija

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1. Introduction

Entrepreneurs are recognized as individuals who can create new ideas and innovative products/services. Today, entrepreneurship is essential for economic development (Paoloni et al., 2020), in both developed and developing countries. The development of entrepreneurship is especially encouraged through the development of knowledge that creates value by transforming human capital into intellectual property (Paoloni et al., 2020; Sayadi, 2013). In the modern economy, critical success factors in the hotel industry are becoming “innovative business model, sharing economy and collaborative commerce enabled by technological advancement of digital platform” (Kwiatek et al., 2021, p. 13), which increasingly requires the application of intellectual capital (IC). In that sense, there is a need to research the potential and achievements of entrepreneurs to build and use IC in the process of creating value in the hotel industry.

In the Republic of Serbia, in 2020, the hospitality sector recorded over 73 million visitors (Republic Bureau of Statistics, 2021). The Accommodation and Food sector in Serbia achieved the following results in 2020: 85,840 people were employed (which is 4% more than in 2019); the average salary was higher by 0.7% compared to 2019; the number of available accommodation facilities was 1,105 (which is 8% more than in 2019) (Statistical Pocketbook of the Republic of Serbia, 2021).

Several research gaps have been observed in the existing literature. First, few studies investigated the role and importance of IC in entrepreneurial activities. IC encompasses certain dimensions (human and structural capital), which together lead to innovation and entrepreneurial behavior (Allameh, 2018; Murray & Palladino, 2021). Therefore, it would be notable to study whether entrepreneurs have managed to build IC and how they use it. Additionally, some authors (Paoloni et al., 2020) believe that the contribution of literature to the relationship between entrepreneurship, IC and knowledge management (KM) is objectively scarce. Secondly, the literature has modest research on the role of IC in improving the financial performance of entrepreneurs. It is assumed that IC is an important driver of the organization’s intrapreneurial initiatives (Asiaei et al., 2020) as well as a driver of entrepreneurial performance (Paoloni et al., 2020). IC is recognized as the dominant asset in larger companies, so it is necessary to investigate the importance of this asset among entrepreneurs. Third, research on entrepreneurs in the hotel industry in the literature so far is scarce, which imposes the need to research the development of entrepreneurial activities within this industry. Some authors (Fu et al., 2019; Muskat et al., 2019) believe that the context of industry can influence the outcome of entrepreneurial activity; thus, it becomes essential to research and understand how important entrepreneurial activities are for the hotel industry. The existing literature does not provide information on the contribution of intellectual assets to the financial performance of entrepreneurs in the hospitality.

The main aim of the research is to determine the causalities in the relationship between the IC and the financial performance of entrepreneurs in the hotel industry. Accordingly, three indirect research objectives have been identified. First, exploring the role and importance of IC among hotel entrepreneurs. Second, examining the nature of the correlation between IC and financial performance among hotel entrepreneurs. Third, examining the contribution of IC to the financial performance of hotel entrepreneurs.

The paper contains the introduction, conclusion and three central parts. The second part of the paper provides a theoretical overview of the importance of entrepreneurial activities for the hotel industry, the relationship between entrepreneurship and IC as well as the contribution of IC to the performance of entrepreneurs. Based on the review of previous research, research hypotheses have been defined. The third part of the paper describes the sample and the

variables used in the research model. The fourth part of the paper presents the results of the research with the accompanying discussion of the obtained results.

2. Background

2.1. Entrepreneurship in hospitality

Entrepreneurship in hospitality is recognised as the main generator of innovative hotel services. A dynamic and competitive environment requires continuous invention and innovation, so it is assumed that the entrepreneurship in the hotel industry will expand in the future. Creating innovative programs to realize the desired results is becoming an increasingly popular topic (Čolović et al., 2021). Employees are the main drivers of innovation who use knowledge and skills to effectively deploy and manage available resources to create a profit (Murray & Palladino, 2021). The entrepreneur should be “able to recognize the commercial potential of the invention and organize the capital, talent, and other resources that turn an invention into a commercially viable innovation” (Audretsch et al., 2002, p. 157; Temouri et al., 2021, p. 175).

The traditional image of entrepreneurship is based on the idea developed by an individual, which is accordingly influenced by the identity of that person (Berglund et al., 2007). Creativity is added to this view, as an important characteristic of entrepreneurship, which allows individuals to discover opportunities that an average person is not able to perceive (Berglund et al., 2007; Muskat et al., 2019). Correia et al. (2019) emphasize the importance of competencies of entrepreneurs and hotel employees, such as operational experience, recognition of customer needs, and good relationships with distribution channels. Entrepreneurs in the hotel industry manage their ability as well as the ability of their employees to deliver a hotel service that meets or exceeds the expectations of guests (Muskat et al., 2019). Some authors (Correia et al., 2019) argue that the entrepreneurial attitudes of managers are important for the process of internationalization of Portuguese hotels. Some authors (Luu, 2017; Yeh et al., 2016) noted that employees need to develop and nurture entrepreneurial values in order to behave socially responsibly through the provision of green services.

The group of researchers noted that there is a specific entrepreneurial gene which determines entrepreneurial orientation and initiative (Usai et al., 2020). Other authors claim that entrepreneurial behavior is learned, primarily influenced by contingent factors and individual cognitive abilities (Usai et al., 2020). Berglund et al. (2007) point out that there is a need for constant research of new ways/approaches of observing the phenomenon of entrepreneurship. The so-far literature offers certain theories established to this purpose. Dynamic capacity theory explains “that organizations are competing not merely in terms of their ability to exploit their existing resources and capabilities but also on their ability to explore new resources and develop new capabilities” (Luu, 2017, p. 2872; Teece et al., 1997). Martins et al. (2021) have developed a strategic entrepreneurship theory based on establishing an appropriate way of thinking by finding a balance between exploitation, research and continuous innovation. Alvarez and Barney (2007) also contributed to the development of entrepreneurship by defining two consistent theories that describe how entrepreneurial skills are formed - discovery theory and creation theory. Discovery theory refers to the systematic scanning of the environment to discover possibilities for creating new products and/or services. Creation theory suggests that the “seed” of opportunities to produce something new does not necessarily lie in existing industries or markets, but should explore opportunities that already exist and observe how the market and consumers react to their actions.

In addition to obvious reasons for developing entrepreneurial activities in hotels, there are numerous barriers and challenges that entrepreneurs face in terms of resources and processes,

which creates the risk of support tools being misaligned to corporate and market goals (Murray & Palladino, 2021). Challenges also arise from the need to simultaneously harmonize the business development and provide customer service as well as the sensuality of business, which is considered a trademark of the hotel industry (Muskat et al., 2019). Such challenges and limitations can be overcome using IC, an intangible asset that has special value in service industries.

2.2. Entrepreneurship and intellectual capital

IC and knowledge are recognized as two of the most important attributes and resources of entrepreneurs in a dynamic environment (Paoloni et al., 2020). IC supports the development and creation of innovations. Thus, KM directs the use of IC among entrepreneurs (Mikic et al., 2021). Some authors (Paoloni et al., 2020; Ugalde-Blinda et al., 2014) have noted that, combined with the characteristics of entrepreneurs, IC can become a driver of innovation, whereby it follows that it can be grounded in the concept of entrepreneurship.

Some authors (Iyigun & Owen, 1998; Murray & Palladino, 2021, p. 683) viewed entrepreneurs as that part of IC that is defined “as human capital which nourishes the economy by developing new ideas for the production or exchange of goods and services, at the entrepreneurs’ own risk”. Talented individuals and entrepreneurs in the hospitality industry are needed to guide and motivate the employees to develop, create and commercialize new hotel services, to meet the demands of domestic and international markets, create value jointly, provide quality services, offer hospitality and manage emotional labor (Muskat et al., 2019). Paoloni et al. (2020) induced a new concept, intellectual entrepreneurship, which is beginning to gain the consensus of the academic community among the literature of strategic management through the development of intangible assets such as innovation, creativity, and knowledge.

Several papers indicate the importance of IC among entrepreneurs. Mikic et al. (2021) analyze the roles of entrepreneurship and IC in the development of a region. The research results of Paoloni et al. (2020) represent an underdeveloped vision of the relationship between IC, KM, and entrepreneurship. Temouri et al. (2021) concluded that investing in intangible assets and creating patents, as a result of R&D function efforts, is positively associated with high-growth of entrepreneurial firms. Usai et al. (2020) confirm “that happiness, along with creativity, fosters both entrepreneurial initiative and intellectual property” (p. 1229).

Some authors have analyzed the relationship between entrepreneurship and IC through a focus on human capital. Murray and Palladino (2021) identified 21 key human capital characteristics as support for the development of entrepreneurs. The same study noted barriers to developing human capital in entrepreneurs in terms of attention, process and resources. Research also suggests that developing entrepreneurial skills and human capital can be improved through education and training (Duodu & Rowlinson, 2019; Honig, 2004; Murray & Palladino, 2021). In this way, the knowledge of employees and consequently IC are improved. Paoloni et al. (2020) use the concept of efficiency that explains how to achieve success through establishing a rational link between limited resources and entrepreneurial skills of employees. Vujić et al. (2020) maintain that modern technology used in the performance of hotel activities, cannot reduce the importance of employees and their impact on the formation of final hotel offers.

2.3. Measuring intellectual capital by the VAIC method

One of the first steps in managing IC is to determine its value. Measuring IC provides hotel managers with information and knowledge about the drivers of organizational performance (Zigan & Zeglát, 2010). The following methods of measuring IC stand out in the literature: “return on assets methods; market capitalisation methods; direct intellectual capital methods;

and scorecard methods” (Zigan & Zeglat, 2010, p.604). Measuring IC in the hotel is based on the correct weight adjustment for each organization (Engström et al., 2003). The value added intellectual coefficient (VAIC) method is part of the return on assets methods. The application of the VAIC method provides information on the overall efficiency of a hotel and indicates its intellectual agility (Pulić, 2004). The application of the VAIC model involves a unified view of IC as a set of human capital and structural capital (Edvinsson & Malone, 1997).

Human capital efficiency. Creating knowledge in entrepreneurs is based on human capital (Mitra et al., 2011). Individual knowledge and experience “are the cornerstone of organizational innovation and intrapreneurial activities, inasmuch as creating new knowledge requires some level of existing knowledge” (Asiaei et al., 2020, p. 812; De Winne & Sels, 2010). Previous studies (Slavković et al., 2021) indicate a strong positive relationship between the KM process and organizational performance. The results of a study by Aboobaker & D. (2020) showed that entrepreneurial training and development play an effective role in strengthening entrepreneurial intent among surveyed students. They also found that human capital significantly mediates in this relationship. There are studies concluding that human capital is not related to entrepreneurial opportunity recognition (Rahman et al., 2021).

Structural capital efficiency. Structural capital is a key factor in driving innovation in the context of new products, systems or processes, which usually requires the integration and use of different types of knowledge (Asiaei et al., 2020; Fleming & Sorenson, 2004). Structural capital provides significant technological support to entrepreneurs as it affects business efficiency, reliability, accuracy and time savings. Rahman et al. (2021) concluded that “structural capital has significant relationships with entrepreneurial opportunity recognition” (p. 1).

Capital employed efficiency (CEE) refers to the efficiency of the use of engaged physical and financial capital of the entrepreneur. Capital employed helps companies to keep a good relationship with their external and internal stakeholders such as customers, government, employees, creditors, suppliers (Chowdhury et al., 2019). Weqar et al. (2021) concluded that CEE is the most vital element that contributes to a company’s financial performance.

2.4. Intellectual capital and financial performance in entrepreneurship

IC is a key resource for creating a profit and gaining a competitive advantage for hotels. These assets are also viewed as a type of resource with the help of which an entrepreneur can strengthen and expand his abilities, skills and knowledge. The synthesis of knowledge and intra-entrepreneurship resources can enable the firm to better organize, synchronize and support human capital and structural capital and put them in the function of improving the overall performance (Asiaei et al., 2020).

Financial performance is “a set of management and critical procedures that allows the management of an organization to accomplish one or more pre-selected goals” (Alkunsol et al., 2019, p. 28). The paper will consider the following financial performances: operating profit, return on equity (ROE), return on assets (ROA) and productivity.

Operating profit is sensitive to the variable cost rate and the rate at which fixed costs are incurred (Echevarria, 1997). The research of Buszko and Mroziewski (2009) indicates that companies with a higher value of IC have greater operating profit growth. Naidenova and Parshakov (2013) conclude that human capital grows with increasing operating profit. The growth of the operating profit of Serbian hotels is dominantly influenced by CEE (Bontis et al., 2015). The results of these studies apply to companies in different sectors. Therefore, there is a need to research the contribution of IC to the growth of operating profit among entrepreneurs in the hotel industry. Accordingly, the following hypothesis is defined:

Hypothesis 1: VAIC positively contributes to the operating profit of entrepreneurs.

ROE is considered “one of the most important financial indicators for investors” (Soewarno & Tjahjadi, 2020, p. 1089). ROE “represents the profit available for ordinary” shareholders (Tran & Vo, 2020, p. 7). Companies can use the ROE coefficient to compare equity with other companies and the financial success that comes from equity management. Research results obtained so far have showed that the efficiency of IC contributes positively to ROE (Dalwai & Salehi, 2021; Soewarno & Tjahjadi, 2020; Weqar et al., 2021). Since these studies conducted research among companies, the need arises as to look into the relationship between IC and ROE among entrepreneurs in the hotel industry. Accordingly, the following hypothesis is defined:

Hypothesis 2: VAIC positively contributes to the ROE of entrepreneurs.

ROA represents the ability of a company to build profitability by using total assets. Previous studies (Smriti & Das, 2018) have shown that IC contributes positively to ROA in both service and manufacturing companies. Kai Wah Chu et al. (2011) concluded that VAIC is a significant positive predictor of ROA. Other research indicates a positive relationship between ROA and efficiency of IC (Maji & Goswami, 2016; Nimtrakoon, 2015; Weqar et al., 2021). Some studies have not proven a relationship between IC and ROA (Singh et al., 2016). The research presented in the aforementioned studies was undertaken in companies, which imposes the need to study the relationship between IC and ROA among entrepreneurs in the hotel industry. Accordingly, the following hypothesis is defined:

Hypothesis 3: VAIC positively contributes to the ROA of entrepreneurs.

Productivity represents “the ratio of total revenue to book value of total assets” (Kai Wah Chu et al., 2011 p. 272; Machlup, 1972). Productivity is an important indicator of the work of employees, which in the case of specific research in the field of entrepreneurship shows whether IC contributes positively to the work of entrepreneurs and other employees. Research indicates a positive relationship between IC and productivity (Huang & Jim Wu, 2010; Kengatharan, 2019). Some studies have concluded that VAIC is a negative predictor of productivity with high significance (Kai Wah Chu et al., 2011) and that it had no impact on productivity (Xu & Li, 2020). Huang and Jim Wu (2010) concluded that “there are interactive effects between the components of IC and knowledge productivity” (p. 580). The results of these studies referred to companies in different sectors. Therefore, there is a need to research the contribution of IC to productivity among entrepreneurs in the hotel industry. Accordingly, the following hypothesis is defined:

Hypothesis 4: VAIC positively contributes to the productivity of entrepreneurs.

3. Materials and methods

3.1. The sample

The sample consists of 30 entrepreneurial hotels that were operating in the Republic of Serbia in 2020. Information on the number of active hotels was taken from the website of the Ministry of Trade, Tourism and Telecommunications. All observed entrepreneurs were registered within the activity code 5510 - Hotels and similar accommodation. The sample was analyzed in terms of category, size and type of hotel, as shown in Table 1.

Table 1: Sample descriptives

Category of hotel	No	%
*	1	3
**	9	30
***	16	53
****	4	14
Σ	30	100
Hotel's size	No	%
Micro	25	83
Small	5	17
Σ	30	100
Type of hotel	No	%
Garni	12	40
Hotel	17	57
Motel	1	3
Σ	30	100

Source: Author's research

In the sample dominate 3-star hotels (53% of the sample), while 2-star and 4-star hotels are represented by 30% and 14%, respectively. In terms of hotel size, the dominant group are entrepreneurs registered as micro subject (83%). In relation to the type of hotel, the largest part of the sample consists of hotels (57% of the sample).

3.2. Variables in research model

Testing research hypotheses first involves interpreting independent and dependent variables. Independent variables in the paper are components of VAIC: HCE, SCE and CEE. The calculation of these components is based on the data presented in the financial statements. Financial reports for the analysis in the article were obtained from the website of the Serbian Business Registers Agency.

The VAIC model was established by Pulic (2004). The basis for the calculation of VAIC components is the calculation of Value Added (VA), Pulic (2004):

$$VA = \text{Operating} + \text{Employee costs} + \text{Depreciation} + \text{Amortization} \quad (1)$$

Human capital efficiency (HCE) represents the ratio of value added and the value of human capital (HC), which represents the value of total wages and other costs for employees (Pulic, 2004):

$$HCE = VA/HC \quad (2)$$

Structural capital efficiency (SCE) is calculated as the quotient of the value of structural capital (SC) and value added. Value of structural capital is the difference between value added and value of human capital (Pulic, 2004):

$$SCE = SC/VA \quad (3)$$

Capital employed efficiency coefficient (CEE) represents “the ratio of value added and book value of the net assets of the company (CE)” (Pulic, 2004):

$$CEE = VA/CE \quad (4)$$

Value added intellectual coefficient (VAIC) is the sum of the following components:

$$VAIC = HCE+SCE+CEE \quad (5)$$

Dependent variables are noted as follows:

Operating profit is the difference between the income generated from business operations and the amount of funds spent on business activities.

Return on Assets (ROA) is calculated as the ratio of net profit and value of total assets.

Return on Equity (ROE) is the ratio of net profit and value of hotel's equity.

Productivity is calculated as the ratio of profit before tax to the number of employees.

3.3. Statistical tools used

Testing of the set research hypotheses was performed using the statistical package for social sciences IBM SPSS Statistics, Version 23. (Statistical Package for Social Sciences). A confidence interval $\alpha = 0.05$ was used to determine statistical significance. Descriptive statistics and correlation analysis were performed in the study, on the basis of which the direction and strength of connections were identified. The third step of the analysis involved the application of multiple regression analysis based on which the impact of VAIC components on financial performance was examined.

4. Results and discussion

4.1. Descriptive statistics

Descriptive statistics interpret the observed sample based on the values of the mean, standard deviation, kurtosis, and skewness of the sample. The results of descriptive statistics for the observed sample are shown in Table 2.

Table 2: Descriptive statistic

Variables	Mean	Std. Deviation	Kurtosis		Skewness	
			Statistic	Std. Error	Statistic	Std. Error
HCE	1.35	1.20	1.93	0.833	-0.26	0.427
SCE	-1.01	6.81	28.68	0.833	-5.31	0.427
CEE	1.81	5.29	26.24	0.833	5.01	0.427
Operating profit	3495.17	9024.86	4.82	0.833	1.60	0.427
ROE	0.46	1.97	16.37	0.833	3.46	0.427
ROA	-1.35	7.50	29.84	0.833	-5.46	0.427
Productivity	120.45	783.64	7.86	0.833	1.67	0.427

Source: Author's research

Among the analyzed components of the VAIC model, the highest mean is recorded by CEE (mean = 1.81). Observing the value of financial performance, a negative mean value of ROA was noted. Six out of 30 entrepreneurs have negative ROA values due to the net loss they achieved in 2020.

All values of kurtosis are positive, which means that the distribution is sharper than normal. The skewness results show that most of the observed indicators have a positive value (except HCE, SCE and ROA), which means that most of the values are positioned to the left of the arithmetic mean, i.e. closer to lower values.

The research of the relationship between IC and business performance of entrepreneurs is based on the examination of the normality of distribution. The sample included 30

entrepreneurs from the hotel industry (less than the threshold value of 50), which indicated the application of the Shapiro-Wilk test in the analysis of the normality of the distribution. The insight into the obtained results points to the conclusion that the normality of the sample distribution has not been proven since the significance is $p < 0.05$.

4.2. Correlation analysis

Correlation analysis tests the direction and strength of the relationship between the observed variables. Correlation analysis is performed using the value of the Spearman's rho coefficient since the normality of the distribution was not proven. The relationship strength was determined based on the value of this coefficient. The correlation coefficient in the range of 0.10 to 0.29 indicates a weak correlation between variables, in the range of 0.30 to 0.49 indicates a moderately strong correlation, while a coefficient greater than 0.50 indicates a strong correlation between observed variables (Pallant, 2016). Positive or negative values of the Spearman's rho coefficient indicate the direction of the relationship. The results of the correlation analysis are shown in Table 3.

Table 3: Correlation matrix

Variables	HCE	SCE	CEE	OP	ROE	ROA	Product.
HCE	1						
SCE	0.626**	1					
CEE	0.113	-0.261	1				
OP	0.841**	0.520**	0.207	1			
ROE	0.369*	0.129	0.090	0.324	1		
ROA	0.442*	0.135	0.248	0.444*	0.894**	1	
Produc.	0.606**	0.233	0.035	0.634**	0.758**	0.817**	1
* Correlation statistically significant at 0.05							
** Correlation statistically significant at 0.01							

Source: Author's research

Analysis of the relationship between VAIC components shows that the strongest correlation is present between HCE and SCE ($\rho = 0.626$; $p = 0.000$). Correlation analysis between financial performance indicates the strongest relationship between ROE and ROA ($\rho = 0.894$; $p = 0.000$). Observing the correlation between dependent and independent variables, it is concluded that only HCE has a positive and statistically significant relationship with financial performance. There is no statistically significant correlation between SCE and financial performance and CEE and financial performance. The strongest correlation was identified between HCE and operating profit ($\rho = 0.841$; $p = 0.000$).

4.3. Regression analysis

Testing the impact of IC on the financial performance of entrepreneurs in the hotel industry was done by applying multiple regression analysis. The application of this analysis included checking the conditions for its implementation through the value of two coefficients: autocorrelation and multicollinearity. Autocorrelation was analyzed by the value of Durbin-Watson statistics, while value 4 was taken as the cut-off value. Multicollinearity is acceptable when the value of the VIF coefficient is less than 10 (Field, 2009). For all four observed models, the prerequisites for conducting regression analysis were met.

Model 1 explored the relationship between the VAIC and operating profit. Based on the results shown in Table 4, it can be concluded that hypothesis **H1 is supported** ($p = 0.001$), i.e. VAIC

positively contributes to the operating profit of the observed entrepreneurs. The HCE and SCE components have a statistically significant impact on operating profit. The largest contribution to explaining operating profit is provided by the HCE component ($\beta = 0.534$, $t = 3.676$, $p = 0.000$). The coefficient of determination is $R^2 = 0.478$, which means that 48% of the operating profit variability is explained by the regression model, while the rest is influenced by other factors.

Table 4: Model 1 – VAIC and operating profit

VAIC components	β	t	Sig.	Tolerance	VIF
HCE	0.534	3.676	0.001**	0.953	1.050
SCE	0.331	2.276	0.031*	0.950	1.053
CEE	-0.096	-0.674	0.506	0.997	1.003

Dependent variable: Operating profit

Significant: ** $p \leq 0.01$; * $p \leq 0.05$

DW = 2.119

$R^2 = 0.478$

$F = 7.923$

$p = 0.001$

Source: Author's research

Based on the research results for Model 2 - VAIC and ROE, it can be concluded that hypothesis **H2 is not supported**, i.e. VAIC does not contribute positively to the ROE of the observed entrepreneurs ($p = 0.234$). The results for the regression Model 2 are shown in Table 5.

Table 5: Model 2 – VAIC and ROE

VAIC components	β	t	Sig.	Tolerance	VIF
HCE	0.018	0.098	0.923	0.953	1.050
SCE	0.322	1.736	0.094	0.950	1.053
CEE	-0.223	-1.233	0.229	0.997	1.003

Dependent variable: ROE

Significant: ** $p \leq 0.01$; * $p \leq 0.05$

DW = 2.240

$R^2 = 0.149$

$F = 1.514$

$p = 0.234$

Source: Author's research

The results of regression analysis for the observed Model 3 (VAIC and ROA) indicated that hypothesis **H3 is not supported**, i.e. that VAIC does not contribute positively to the ROA of the observed entrepreneurs. The values of the coefficient β and t are given in Table 6. The CEE component, whose value is negative ($\beta = -0.964$, $t = -19.298$, $p = 0.000$), contributes most to the explanation of the ROA of entrepreneurs. This means that an increase of one unit of CEE leads to a decrease in ROA by 0.964 units. The coefficient of determination R^2 is 0.935, which means that 94% of the variability of ROA of entrepreneurs is explained by the regression model.

Table 6: Model 3 – VAIC and ROA

VAIC components	B	t	Sig.	Tolerance	VIF
HCE	0.074	1.454	0.158	0.953	1.050
SCE	0.023	0.443	0.661	0.950	1.053
CEE	-0.964	-19.298	0.000**	0.997	1.003

Dependent variable: ROA

Significant: ** $p \leq 0.01$; * $p \leq 0.05$

DW = 1.794

$R^2 = 0.935$

$F = 125.259$

$p = 0.000$

Source: Author's research

Model 4 explored the relationship between VAIC components and productivity. Based on the results shown in Table 7, it can be concluded that hypothesis **H4 is supported** ($p = 0.000$), i.e. that VAIC positively contributes to the productivity of the observed entrepreneurs. The greatest contribution to explaining productivity is provided by the HCE component ($\beta = 0.716$, $p = 0.000$). The coefficient of determination is $R^2 = 0.518$, which means that 51.8% of productivity variability is explained by the regression model, while the rest is influenced by other factors.

Table 7: Model 4 – Value added intellectual coefficient and productivity

VAIC components	B	t	Sig.	Tolerance	VIF
HCE	0.716	5.133	0.000**	0.953	1.050
SCE	0.014	0.102	0.920	0.950	1.053
CEE	-0.001	-0.008	0.944	0.997	1.003

Dependent variable: Productivity

Significant: ** $p \leq 0.01$; * $p \leq 0.05$

DW = 2.580

$R^2 = 0.518$

$F = 9.302$

$p = 0.000$

Source: Author's research

4.4. Discussion

The study confirmed the contribution of IC on operating profit and productivity of hotel entrepreneurs, which is in line with the results of previous research (Buszko & Mroziewski, 2009; Huang & Jim Wu, 2010; Kengatharan, 2019; Naidenova & Parshakov, 2013). The results suggested that the effectiveness of entrepreneurship is associated with the development of various specific and nonspecific skills and knowledge that are directly related to motivation, creativity, enthusiasm and trust (Murray & Palladino, 2021). The results of Temouri et al. (2021) noted that the success factors of a company are the result of several interrelated concepts: IC, knowledge management and entrepreneurial efforts. According to the results of the study, it can be concluded that entrepreneurs use their IC efficiently (Smriti & Das, 2018). The results of the research agree with the conclusion of Murray and Palladino (2021) that human capital is a valuable resource that has a positive impact on successful entrepreneurship and at the same time provides a basis for growth, innovation and a competitive advantage. HCE is the most influential value driver for financial performance (Nimtrakoon, 2015). As

human capital is not the only resource, there is room to improve the competitive position of enterprises by “using the value creating ability of HC through adequate training for skill development, retention of talent and skills and maintenance of good industrial relation” (Maji & Goswami, 2016, p.425). The structural capital should provide a significant organizational support for operating human capital in entrepreneurial hotels.

The contribution of the paper to the literature of entrepreneurship is reflected in the identification and analyzes of the role of IC as insufficiently researched factors of business among entrepreneurs. Furthermore, the paper contributes to the literature of performance management by providing empirical evidence of the importance and role IC for improving the financial performance of entrepreneurs. The research was conducted among entrepreneurs of the hotel industry, which is otherwise recognized as an industry in which research on the management of IC is limited (Bontis et al., 2015). This research expands the knowledge and contribution of IC to the hotel industry.

5. Conclusion

5.1. Practical implications

The results of the study have revealed that entrepreneurs can achieve the improvement of their financial indicators through planned management of IC. Entrepreneurs should pay special attention to the development of human capital. In this case, they face the problem of supporting the management and development of IC, that is, the one of providing sufficient financial and material resources that will ensure the creation and efficient use of IC. Therefore, the development and management of IC should be based on an appropriate plan. In addition, the entrepreneurs should be an excellent example to their employees by permanently working on strengthening knowledge, skills and abilities, to influence the awareness among employees to continuously improve their human capital with the support of structural capital.

5.2. Limitations of the conducted research

The study has several limitations. The first limitation concerns the sample size. The number of entrepreneurs analysed is relatively modest for two reasons: most of the registered hotels operate as a limited liability company and financial statements were not available for numerous registered entrepreneurs. Another limitation relates to the methodological weakness of the VAIC method. By applying this method, IC is viewed as a set of human and structural capital. Relational capital as a significant component of IC is excluded from the application of this method. Maji and Goswami (2016) suggested that the VAIC method can be modified to include marketing and R&D costs as value creation factors, instead of the conventional accounting approach to cost treatment. By including these two factors in the added value, the existing imperfection of the VAIC method can be overcome. However, the modification of the VAIC method, in the case of observed entrepreneurs, was impossible because none of the observed entrepreneurs have stated marketing and R&D costs in the income statement.

5.3. Future research recommendations

Future research should be based on the analysis of IC with other components. Moreover, the number of financial performance indicators should be larger in future analysis. A comparative analysis should be used to compare the impact of IC components on the financial performance of hotels and the performance of restaurants or other related service activities.

Conflict of interest

The authors declare no conflict of interest.

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