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How Does Intellectual Capital Affect the Financial Performance of Micro, Small, and Medium-Sized Hotel Companies?

Keywords: intellectual capital; MVAIC; hotel companies; financial performance

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Abstract

Theoretical background: Intellectual capital is often considered a critical resource, especially for micro, small, and medium-sized, as well as service companies. Human, structural, and relational capital are often listed as the main components of intellectual capital. This study complements the studies on the impact of intellectual capital and its components on the financial performance of hotel companies in developing economies.

Purpose of the article: The study aims to examine the impact of the efficiency of intellectual capital and its components on the financial performance of micro, small, and medium-sized hotel companies in Serbia. The results of the study can be of importance for hotel managers in their efforts to make adequate business decisions and improve the financial performance of hotel companies.

Research methods: The sample includes 100 micro, small, and medium-sized hotel companies from Serbia with the highest operating revenues in 2019. The efficiency of the intellectual capital and its components is measured by using the modified value-added intellectual coefficient (MVAIC). Financial performance is measured by using the natural logarithm of earnings before interest, taxes, depreciation, and amortization (EBITDA), EBITDA margin, return on assets (ROA) and return on equity (ROE). Ordinary least squares regression is used to examine the impact of intellectual capital and its components on the financial performance of sample hotel companies from 2015 to 2019.

Main findings: The results of the study show that intellectual capital efficiency has a positive impact on all four measures of financial performance. They also show that structural capital has the greatest impact on financial performance and that only this component of intellectual capital has a positive impact on all four measures of financial performance. Capital employed has a positive impact on the natural logarithm of EBITDA and ROE, while human capital has a positive impact on the EBITDA margin and a negative on the natural logarithm of EBITDA. Relational capital has a positive impact only on ROA.

Introduction

In the knowledge-based economy, intellectual capital (IC) is the critical resource (Chen et al., 2005), while traditional factors of production (land, labour, and capital) have taken on a secondary character (Vidotto et al., 2017). In other words, the competitiveness of individual companies and entire economies is not primarily determined by the material resources at their disposal, but by the way of using IC (Pucar, 2012). Dalwai and Mohammadi (2020, p. 1126) point out that "IC is responsible for transforming tangible and financial capital into added value and wealth". As IC is recognized as an important asset in the creation of competencies, financial success, and company value (Mondal & Ghosh, 2012; Złoty, 2018; Pantelić et al., 2020), it has become an important research topic in the field of management and accounting (Martín-de Castro et al., 2019).

Although micro, small, and medium-sized (MSM) companies have an important role in the national economy and some studies suggest that IC is a more important source of competitive advantage in MSM companies compared to large (Demartini & Berreta, 2020), a small number of studies analyze the impact of IC on their financial performance (Marzo & Scarpino, 2016). Some authors point out that IC is not managed in the same way in MSM and large companies (Marzo & Scarpino, 2016), which may indicate the different importance of IC for these two groups of companies. Due to limited access to material and financial resources, MSM companies have to rely more on IC when creating value (Demartini & Berreta, 2020).

Additionally, IC has different significance for the manufacturing and service industries (Kianto et al., 2010). According to Gomezelj Omerzel and Smolčić Jurdana (2016), IC is more important for the service industry. The competitive advantage of service companies stems more from intangible than material resources (Chien & Chao, 2011). Ognjanović (2020) points out that IC and its components represent an important factor in business process and financial performance improvements of hotel companies, as service industry companies. In a knowledge-based economy, the sustainability and competitive position of hotels depend to a large extent on investment in human resources, information technology, advertising, and research and development (Cañibano et al., 2000), i.e. new opportunities in the hotel industry are dependent on IC (Nemec-Rudež & Mihalič, 2007; Sardo et al., 2018).

Kuźmicki (2019) points out that hotel owners believe that the Internet can facilitate access to potential customers, while Eckstein (2004) argues that employees and customer relationships increase the value of service companies as much as technology investment and process improvements. The performance of hotels, as labour-intensive companies, largely depends on human capital (Kim et al., 2012), but also structural and relational capital (Ognjanović, 2016). Although IC has been identified as a key resource in the business of hotel companies (Engström et al., 2003), a relatively small number of studies have addressed the impact of IC on their financial performance (Bontis et al., 2015).

The study aims to examine the impact of the efficiency of IC and its components (human, structural and relational capital) on the financial performance of MSM hotel companies in Serbia. The sample includes 100 MSM hotel companies from the developing Serbian economy with the highest operating revenues in 2019. The efficiency of the intellectual capital and its components is measured by using the modified value-added intellectual coefficient (MVAIC). Financial performance is measured by using the natural logarithm of earnings before interest, taxes, depreciation, and amortization (EBITDA), EBITDA margin, return on assets (ROA) and return on equity (ROE). Ordinary least squares regression is used to examine the impact of intellectual capital and its components on the financial performance of sample hotel companies from 2015 to 2019.

The study offers several theoretical contributions to the existing literature. First, it complements the studies on the impact of IC on the financial performance of hotel companies (Sardo et al., 2018; Costa et al., 2020; Vale et al., 2022), which are especially rare for samples of MSM hotel companies (Sardo et al., 2018) and hotel companies in developing countries, like Serbia (Zeglat & Zigan, 2014; Bontis et al., 2015). Second, MVAIC takes into account the impact of relational capital on the financial performance of companies and to the knowledge of the authors, this is the first study of this relationship on a sample of companies from Serbia. The previous studies (e.g. Bontis et al., 2015), applying the VAIC model, did not take into account the impact of this component of IC on the financial performance of companies. In addition, the results of the study can be of importance for hotel managers in their

efforts to make adequate business decisions and improve the financial performance of hotel companies.

The paper consists of five parts. The introduction is followed by the literature review explaining the components of IC and summarizing previous empirical research on the impact of IC and its components on the performance of companies from different industries and countries. The third part explains the research methodology. The results of the research are presented in the fourth part and the conclusions and limitations of the research are in the last part of the paper.

Theoretical background and literature review

Although IC has been the subject of research in the last few decades, there is no consensus on its definition and classification (Mondal & Ghosh, 2012). Also, many terms (synonyms) are used to denote IC, such as intangible assets, invisible assets, intellectual property, etc. Sullivan (2000) points out that IC represents the knowledge that can be turned into profit, while Stewart (1997) similarly stresses that IC represents intellectual material, such as knowledge, information, intellectual property, and experience, that can be used to create wealth. IC is also considered as a set of intangible resources that interact to create added value (Bontis et al., 1999), that is intangible assets that have a significant impact on company performance (Mondal & Ghosh, 2012). According to Marr and Moustaghfir (2005), IC encompasses all intangible resources gained through experience and learning.

Buallay et al. (2019) point out that most authors agree that IC is a multidimensional concept used to describe intangible assets that reflect the knowledge contained in a company. Engström et al. (2003) came to the following four conclusions: 1) there is no single definition of IC, 2) IC is not useful unless it leads to the creation of some form of value in the company, 3) most definitions contain the following words: knowledge, skills, know-how, experience, intangible assets, information, processes, and value creation, and 4) the difference between human, structural, and relational capital is widely accepted.

Components of IC

Three main components of IC have been identified in the literature – human, structural, and relational capital (Buallay et al., 2019). The human capital of a company is the basis for the design, increase, and development of other forms of intellectual capital and other material resources (Krstić, 2009, p. 30). It includes knowledge, skills, talents, innovativeness, work habits, motivation, dedication to work, ability to learn, leadership skills, etc. (Chen et al., 2005; Krstić, 2009; Maditinos et al., 2011; Dženopoljac et al., 2017). It is not owned by the company owner, and employees

carry it with them when they leave the business at the end of working hours or permanently (Krstić, 2009; Mondal & Ghosh, 2012).

Unlike human capital, structural capital belongs to the company and its owners, because it remains in the company even after the departure of employees at the end of working hours or permanently (Maditinios et al., 2011; Mondal & Ghosh, 2012; Bontis et al., 2015). It includes organizational capabilities, databases, IT infrastructure, applications, processes, digital products/services, patents, trade secrets, copyright, industrial design, etc. (Chen et al., 2005; Krstić, 2009; Meditinos et al., 2011; Bontis et al., 2015; Dženopoljac et al., 2017; Peković et al., 2020). It represents the necessary infrastructure for human capital in the process of value creation (Xu & Wang, 2018), which makes it more productive (Krstić, 2009). Mondal and Ghosh (2012) point out that by developing and using structural capital a company can reduce its costs and increase its profitability.

Relational capital refers to the company's ability to establish fair business relationships with external stakeholders, thereby actualizing the potential for wealth creation through the use of assets contained in human and structural capital (Kianto et al., 2010). It encompasses all of a company's relationships with its customers, suppliers, creditors, community, and other external stakeholders, with customer relationships being considered the most important form of relational capital (Kianto et al., 2010).

IC and financial performance of hotel companies

Most studies indicate a positive impact of human capital on companies' financial performance (Zéghal & Maaloul, 2010; Maditions et al., 2011; Mention & Bontis, 2013; Ginesti et al., 2018; Haris et al., 2019; Xu & Li, 2019; Xu & Wang, 2019; Li et al., 2021; Peković et al., 2020). In other words, by investing in human resources, companies improve their financial performance. However, some studies indicate that human capital has a negative (Firer & Williams, 2003; Pantelić et al., 2020) or no impact on the financial performance of the company (Maria Diez et al., 2010; Dženopoljac et al., 2017).

Most studies also indicate that companies contribute to business processes' efficiency and financial performance by building and investing in organizational processes, databases, IT infrastructure, and other forms of structural capital (Chen et al., 2005; Zéghal & Maaloul, 2010; Dženopoljac et al., 2017; Ginesti et al., 2018; Xu & Wang, 2019; Xu & Li, 2019; Peković et al., 2020). On the other hand, Xu and Wang (2018) and Haris et al. (2019) find that structural capital negatively impacts a company's financial performance, while Firer and Williams (2003), Ting and Lean (2009), Maditinos et al. (2011), and Mention and Bontis (2013) find that this impact is not statistically significant.

When it comes to the influence of relational capital on the financial performance of the company, in contrast to the previous two forms of IC, there is a very small

number of empirical studies. The reason for this lies in the fact that most studies to date have used the VAIC model, which neglects relational capital, to measure the impact of IC components on financial performance. Also, few studies that have included the impact of this form of IC on the financial performance of companies, have come to different results. Bianchi Martini et al. (2016), Xu and Li (2019), and Xu and Wang (2019) find that relational capital has a positive impact on a company's financial performance. Pantelić et al. (2020), however, find a negative impact on a company's financial performance, while Chen et al. (2005) and Mention and Bontis (2013) find that this impact is not statistically significant.

Most studies on hotel companies indicate that IC components have a positive impact on their financial performance. A positive impact on the financial performance of hotels was found by Zeglat and Zigan (2014), Bontis et al. (2015), Sardo et al. (2018), Costa et al. (2020), and Vale et al. (2022) for human capital, by Kim et al. (2012), Zeglat and Zigan (2014), and Sardo et al. (2018) for structural capital, and by Nemec-Rudež and Mihalič (2007), Kim et al. (2012), Zeglat and Zigan (2014), and Sardo et al. (2018) for relational capital. In addition, Gomezelj Omerzel and Smolčić Jurdana (2016) point out that IC components have a positive impact on hotel growth through innovation, Kim et al. (2012) reveal that human capital has a positive impact on financial performance through both structural and relational capital, while Ruiz-Fernández et al. (2023) find that the influence of IC on hotel performance is more likely to be positive in hotels managed by women. Some studies, however, indicate that IC components have a negative (Bontis et al., 2015; Costa et al., 2020) or no impact (Slavković & Ognjanović, 2018) on the financial performance of hotel companies.

The majority of presented studies are conducted on samples of hotel companies from developed economies (Nemec-Rudež & Mihalič, 2007; Kim et al., 2012; Gomezelj Omerzel & Smolčić Jurdana, 2016; Sardo et al., 2018; Costa et al., 2020; Vale et al., 2022; Ruiz-Fernández et al., 2023), leaving the influence of IC and its components in developing economies largely unexplained. We set out to investigate this influence in the specific environment of a developing economy to contribute to a better understanding of its dimensions relevant to academicians, practitioners, and policymakers. Smuda-Kocoń (2022) points out that the research in the field of IC continues to evolve and attract interest in various scientific fields and that the environment of the company has a strong influence on the approaches used in the research on IC. We believe that our results will point the attention of researchers to dimensions of IC influence requiring more analysis in hotel companies of developing economies. This is even more the case given some previous papers pointing to the necessity of more research on specificities of technological advances in companies operating in developing and transitional economies, like Serbian (Todorović & Čupić, 2017, 2023).

Research methods

The sample includes 100 MSM hotel companies in Serbia with the highest operating revenues in 2019. These are companies with activity code 5510 – Hotels and similar accommodations. According to the data of the Serbian Business Registers Agency (SBRA), there were 580 MSM companies with a business code of 5510 in 2015, 791 in 2016, 864 in 2017, 904 in 2018, and 854 in 2019. The data were collected from individual financial reports of the sample companies from 2015 to 2019, which are publicly available on the official website of the SBRA.

Table 1. Share of sample companies in operating revenues, total operating assets, and equity in the population of MSM hotel companies

Year	Operating revenue	Total operating assets	Equity
2015	71.82%	56.65%	70.93%
2016	72.35%	59.48%	73.79%
2017	71.11%	58.19%	76.22%
2018	64.92%	57.67%	74.07%
2019	57.87%	54.32%	71.46%

Notes: Operating revenue, total operating assets, and equity of the population are estimated for all MSM companies in Serbia with activity code 5510, which operated in the observed year.

Source: Authors' own study based on the data from the Serbian Business Registers Agency.

Table 1 shows the share of sample hotel companies in operating revenues, total operating assets, and equity of the entire population of MSM companies with activity code 5510 in Serbia. The sample is representative despite the relatively small share in the total number of MSM companies with activity code 5510. Figure 1 shows the structure of the sample according to the legal form and size of the companies. The sample is dominated by small and limited liability companies.

The financial performance of hotel companies is measured by the natural logarithm of earnings before interest, taxes, depreciation and amortization (EBITDA), EBITDA margin, return on assets (ROA), and return on equity (ROE). Dženopoljac et al. (2017), and Xu and Wang (2019) use EBITDA, while the present study employs the natural logarithm of EBITDA. EBITDA margin, as the ratio of EBITDA and total sales, allows comparisons of companies of different sizes and different industries because it shows EBITDA as a percentage of total sales. Dženopoljac et al. (2017) also use the EBITDA margin as an indicator of financial performance.

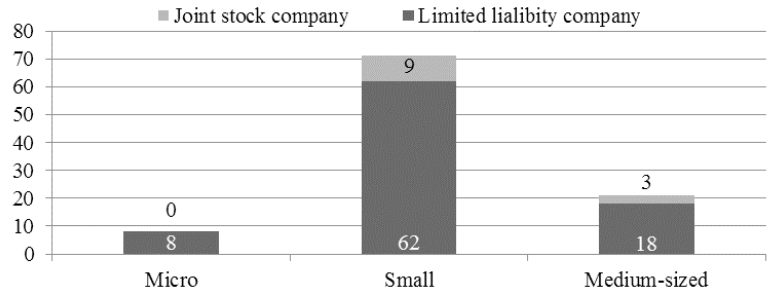

Figure 1. Structure of the sample

Note: The classification by size is based on the information from the 2019 financial reports and following the Law on Accounting from 2013.

Source: Authors' own study based on the data from the Serbian Business Registers Agency.

Many previous studies (Firer & Williams, 2003; Komnenić & Pokrajčić, 2012; Bontis et al., 2015; Vale et al., 2022) use ROA as a measure of financial performance. ROA is calculated as a ratio of net profit to total operating assets. Also, another often-used measure is ROE (Maditinos et al., 2011; Xu & Wang, 2018; Komnenić & Pokrajčić, 2012; Bontis et al., 2015; Peković et al., 2020; Vale et al., 2022). ROE is calculated as the ratio of net profit to equity of the company.

Modified Value Added Intellectual Coefficient (MVAIC) is used as a measure of the IC efficiency of sample companies. This model was developed to eliminate the problem of not including the efficiency of relational capital in the *Value Added Intellectual Coefficient* (VAIC) developed by Ante Pulić. The MVAIC coefficient is made up of components of intellectual (human, structural, and relational) and physical capital. MVAIC, as well as VAIC, is based on value added (VA) and is calculated as follows (Xu & Li, 2019; Li et al., 2021):

$$VA = OP + EC + AD$$

where *OP* is the operating profit, *EC* is employee costs, and *AD* is amortization and depreciation. *Human Capital Efficiency* (HCE), as the first element of the MVAIC, represents the ratio of value-added and human capital (HC):

$$HCE = VA/HC$$

where *HC* is the total salaries and wages of the company. *Structural Capital Efficiency* (SCE) is the ratio of value-added and structural capital (SC):

$$SCE = SC/VA$$

where *SC* is the difference between value-added and *HC* (i.e. SC = VA - HC). *Relational Capital Efficiency* (RCE) is the ratio of relational capital (RC) to value added:

$$RCE = RC/VA$$

where *RC* refers to marketing, selling, and advertising costs. *Capital Employed Efficiency* (CEE) is the ratio of value-added and capital employed (CE):

$$CEE = VA / CE$$

where *CE* is the difference between total assets and total liabilities. Finally, MVAIC is calculated as follows:

$$MVAIC = HCE + SCE + RCE + CEE$$

This model has advantages and disadvantages that are characteristic of the VAIC model, except for the inclusion of relational capital. The advantages include ease of use, availability of data and the possibility of comparison with other companies. Although the availability of data from financial statements is considered an advantage of this model, it also has certain disadvantages. This indicates that MVAIC is a measure of value created in the past and not a measure of the capacity to create value in the future. Additionally, MVAIC does not take into account the synergies between IC components and cannot be used when the value added is negative.

Following previous studies (Dženopoljac et al., 2017; Sardo et al., 2018), the present study uses company-specific control variables. These are company size (*SIZE*) measured as the natural logarithm of total assets, leverage (*LEV*) measured as the ratio of total liabilities to total assets, and liquidity (*LIQ*) measured as the ratio of current assets to current liabilities. The real GDP growth rate (*GDP*) and the inflation rate (*INFL*) proxied by the consumer price index are used as macroeconomic control variables.

To examine the impact of IC and its components on the financial performance of hotel companies in Serbia, the study relies on the ordinary least squares regression as a widely used method in previous studies with a similar topic (Bontis et al., 2015; Dženopoljac et al., 2017; Xu & Wang, 2018; Peković et al., 2020). Accordingly, the following two regression models are estimated:

$$FP_{it}=\beta_0 + \beta_1 MVAIC_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 LIQ_{it} + \beta_5 BDP_{it} + \beta_6 INFL_{it}$$

$$FP_{it}=\beta_0 + \beta_1 HCE_{it} + \beta_2 SCE_{it} + \beta_3 RCE_{it} + \beta_4 CEE_{it} + \beta_5 SIZE_{it} + \beta_6 LEV_{it} + \beta_7 LIQ_{it} + \beta_8 BDP_{it} + \beta_9 INFL_{it}$$

where *FP* represents the natural logarithm of EBITDA, EBITDA margin, ROA or ROE.

Results and discussion

Table 2 shows descriptive statistics of research variables from 2015 to 2019. The mean of all four measures of financial performance of MSM hotel companies in Serbia is positive. When it comes to IC components, the largest maximum and mean are found for HCE. On the other hand, the smallest mean is found for RCE. On average, the debt ratio of the sample MSM hotel companies is 42.75% and every unit of short-term liabilities is covered by 1.68 units of current assets.

Table 2. Descriptive statistics

Variable	Obs.	Minimum	Maximum	Mean	Standard deviation
Dependent variables					
EBITDA	436	2.2648	5.6098	4.1650	0.6154
EBITDA margin	482	-0.2684	0.6967	0.1635	0.1503
ROA	482	-0.1473	0.3931	0.0326	0.0609
ROE	482	-0.8166	0.9816	0.0996	0.2294
Independent variables					
MVAIC	482	-1.2815	18.1249	3.2641	2.3955
HCE	482	0.3737	7.5794	1.8735	1.0237
SCE	482	-1.6761	0.8681	0.3290	0.3229
RCE	482	0.0000	0.2284	0.0216	0.0296
CEE	482	0.0113	15.5642	0.9514	1.7786
Enterprise-specific control variables					
SIZE	482	8.9984	15.5446	12.5578	1.3828
LEV	482	0.0205	0.9906	0.4275	0.2844
LIQ	482	0.0251	22.7425	1.6845	2.6505
Control macroeconomic variables					
Year	2015	2016	2017	2018	2019
GDP	0.0181	0.0181	0.0334	0.0210	0.0425
INFL	0.0139	0.0112	0.0313	0.0196	0.0185

Note: EBITDA is the natural logarithm of EBITDA. Since the natural logarithm can only be calculated for positive numbers, negative values of EBITDA are excluded from its calculation, which explains the smaller number of observations. 1% of upper and lower extreme values for each of the variables was eliminated from the sample, as well as observations with a negative VA.

Source: Authors' own study based on the data from financial statements of companies and the World Bank (2022).

The results of Spearman's and Pearson's correlation analysis are shown in Table 3. Cohen's guidelines are followed when determining the strength of the correlation (Pallant, 2007). Focus is placed on Pearson's correlation coefficients when interpreting the results. As can be seen from Table 3, there is a medium positive statistically significant correlation between MVAIC and the financial performance of the observed MSM hotel companies in Serbia. There is also a medium positive

statistically significant correlation between HCE and financial performance, except for the EBITDA margin where the correlation is strong. The correlation between SCE and financial performance is statistically significant and positive – it is strong for the natural logarithm of EBITDA and EBITDA margin, but a medium for ROA and ROE. RCE, however, has a statistically significant correlation only with EBITDA margin, which is negative and weak. CEE has a statistically significant and positive correlation only with ROA (weak) and ROE (medium).

Table 3. Spearman (below the diagonal) and Pearson (above the diagonal) correlation coefficients

	EBITDA	EBITDA margin	ROA	ROE	MVAIC	HCE	SCE	RCE	CEE	SIZE	LEV	LIQ	GDP	INFL
EBITDA		+	+		+	+	+			+	-	+		
EBITDA margin	+		+	+	+	+	+	-		+				
ROA	+	+		+	+	+	+		+	-				
ROE	+	+	+		+	+	+		+	-	+			
MVAIC	+	+	+	+		+	+		+	-	+			
HCE	+	+	+	+	+		+	-		+	+			
SCE	+	+	+	+	+	+		-		+				
RCE		-									+			
CEE	-		+	+	+			+		-	+	-		
SIZE	+	+	-	-	-	+	+		-		-	+		
LEV	-	-		+	+			+	+	-		-		
LIQ					-				-		-			
GDP														+
INFL													+	

Note: EBITDA is the natural logarithm of EBITDA. Cells with signs "+" or "–" represent Spearman's or Pearson's correlation coefficient higher than 0.1 and significant at 5%. Sign "+" represents positive and sign "–" negative Spearman's or Pearson's correlation coefficient. Cells marked with dark grey represent relationships with statistically significant Spearman's or Pearson's correlation coefficient higher than 0.5. Cells marked with light grey represent relationships with statistically significant Spearman's or Pearson's correlation coefficient higher than 0.3 but lower than 0.5.

Source: Authors' own study.

Table 4 presents the results of the regression analysis of the impact of MVAIC on the financial performance of MSM hotel companies in Serbia. VIF values are less than 10, indicating the absence of multicollinearity in the sample (Hair et al., 2005). As can be seen in Table 4, the independent variables explain 13.3% to 50.9% variations in financial performance. MVAIC has a positive impact on all four measures of financial performance. This is similar to Xu and Wang (2019) and Xu and Li (2019). Of the five control variables used, only company size and leverage have a statistically significant impact on financial performance. Company size has a positive impact on the natural logarithm of EBITDA and EBITDA margin and a negative impact on ROA and ROE. Leverage has a negative impact on the natural logarithm of EBITDA, EBITDA margin and ROA, and a positive impact on ROE.

Table 4. Impact of intellectual capital on financial performance

	EBITDA	EBITDA margin	ROA	ROE
Constant	-0.058 (-0.257)	-0.408 (-7.663)**	0.112 (3.975)**	0.368 (4.078)**
MVAIC	0.317 (8.067)**	0.659 (16.117)**	0.323 (6.525)**	0.420 (9.760)**
SIZE	0.696 (19.208)**	0.387 (10.452)**	-0.184 (-4.030)**	-0.232 (-5.874)**
LEV	-0.072 (-1.658)**	-0.289 (-6.450)**	-0.074 (-1.368)**	0.145 (3.067)**
LIQ	0.036 (0.956)	-0.007 (-0.186)	0.053 (1.099)	0.058 (1.358)
GDP	-0.009 (-0.219)	-0.036 (-0.851)	-0.090 (-1.723)	-0.033 (-0.731)
INFL	0.034 (0.826)	0.022 (0.518)	0.099 (1.899)	0.058 (1.277)
R^2 Adj.	0.509	0.428	0.133	0.337
F statistic	(72.256)**	(56.943)**	(12.392)**	(38.869)**
Durbin–Watson	1.374	1.734	1.633	1.848

Note: EBITDA is the natural logarithm of EBITDA. ** statistically significant at the level of 0.01; * statistically significant at the level of 0.05.

Source: Authors' own study.

Table 5 presents the results of the regression analysis of the impact of IC components on the financial performance of MSM hotel companies in Serbia. VIF values were found to be less than 10, indicating the absence of multicollinearity in the sample (Hair et al., 2005). Independent variables can explain 30.1% to 80.4% of the variation in financial performance.

Although human resources are vital for the business of hotel companies (Ognjanović, 2020) and most previous studies find a positive impact on the financial performance of hotels (Gomezelj Omerzel & Smolčić Jurdana, 2016; Sardo et al., 2018; Costa et al., 2020), the results show that this component of IC has a statistically significant impact on only two financial indicators – positive on the EBITDA margin and negative on the natural logarithm of EBITDA. The explanation for this can be found in the fact that investing in IC and its components does not always have a positive impact on the financial performance of the company (Kaplan & Norton, 2004) and that the effects of such investments may not always appear immediately (Bontis et al., 2015).

The explanation for the relatively weak impact of human capital can be found in the insufficient commitment to improving the acquired knowledge and skills, as well as in the fact that companies in the hotel industry hire a large number of seasonal workers and workers with lower levels of qualification. This can result in a lower level of productivity, which negatively affects financial performance (Ruiz-Valenzuela, 2020). The positive impact of human capital on hotel performance was also found in Zeglat and Zigan (2014) who investigated hotel companies in the developing Jordanian economy. However, unlike Zeglat and Zigan (2014), results of correlation analysis reveal a negative and weak relationship between human and relational capital, indicating a low level of motivation and knowledge, and inadequate attitude of employees in Serbian hotels and explaining the relatively weak impact of human capital.

Table 5. Impact of intellectual capital components on financial performance

	EBITDA	EBITDA margin	ROA	ROE
Constant	0.253 (1.378)	-0.197 (-6.038)**	0.163 (6.007)**	0.393 (4.268)**
HCE	-0.365 (-6.425)**	0.267 (7.081)**	-0.096 (1.395)	-0.001 (-0.016)
SCE	0.833 (14.546)**	0.635 (16.765)**	0.593 (8.637)**	0.391 (6.213)**
RCE	0.09 (0.684)	0.038 (1.705)	0.114 (2.701)**	0.014 (0.315)
CEE	0.229 (6.307)**	0.008 (0.287)	0.044 (0.814)	0.309 (6.319)**
SIZE	0.584 (19.013)**	0.151 (6.133)**	-0.296 (-6.443)**	-0.238 (-5.673)**
LEV	-0.111 (-2.937)**	-0.080 (-2.719)**	-0.032 (-0.576)	0.116 (2.270)*
LIQ	0.018 (0.612)	0.016 (0.663)	0.023 (0.507)	0.033 (0.791)
GDP	0.021 (0.665)	-0.003 (-0.137)	-0.065 (-1.376)	-0.027 (-0.613)
INFL	0.027 (0.874)	-0.014 (-0.569)	0.071 (1.509)	0.055 (1.268)
R^2 Adj.	0.716	0.804	0.301	0.409
F statistic	(113.812)**	(201.695)**	(21.812)**	(34.617)**
Durbin–Watson	1.179	1.935	1.740	1.970

Note: EBITDA is the natural logarithm of EBITDA. ** statistical significance at the level of 0.01; * statistical significance at the level of 0.05.

Source: Authors' own study.

When it comes to structural capital, the results show that it has a positive impact on all four measures of financial performance of the observed hotel companies in Serbia. This is similar to Kim et al. (2012), Gomezelj Omerzel and Smolčić Jurdana (2016), and Sardo et al. (2018) who investigated this relationship in developed economies. This implies that the investments of MSM hotel companies in the structural capital lead to the improvement of their financial performance. More specifically, the application of improved business processes, IT equipment, and databases can result in increased productivity and reduced costs, which has a positive impact on the financial performance of hotel companies.

We find that structural capital has the strongest impact, compared to other IC components, on the financial performance of hotel companies, which is similar to Zeglat and Zigan (2014). However, unlike Zeglat and Zigan (2014), the results of correlation analysis reveal a positive and significant relationship between human and structural capital in our study (see Table 3) indicating that the hotel employees have the competencies necessary to effectively use hotel capabilities and infrastructure and allow structural capital to increase hotel performance. This is in line with Sardo et al. (2018) who explain that structural capital is sometimes found to have a very strong and positive impact because it can help employees improve efficiency and efficacy.

Unlike previous studies (Kim et al., 2012; Zeglat & Zigan, 2014; Nemec-Rudež & Mihalič, 2017; Sardo et al., 2018) finding the positive impact of relational capital on the financial performance of hotels, the results show that it has a positive impact only on ROA, while the impact on the other three measures of financial performance is statistically insignificant. The reason for such a result can be found in insufficient investments in advertising activities. More specifically, some hotel companies in the sample did not invest in advertising during the analyzed period or they invested

negligibly. It should be also noted that the results of advertising investments made in one year are often not immediately visible.

It is usually considered that the best form of promotion in the hotel industry is word-of-mouth conducted by satisfied guests, rather than investing in advertising through television, radio and similar mediums. Given that hotel companies increase guest satisfaction and loyalty and improve their financial performance by investing in relational capital (Kim et al., 2012), it is necessary to increase the commitment of MSM hotel companies to this form of IC. Furthermore, deviation of research results compared to the findings of previous studies in the hotel industry can also occur as a result of using different dependent variables. Specifically, prior research conducted on hotel companies (Kim et al., 2012; Zeglat & Zigan, 2014; Nemec-Rudež & Mihalič, 2017), for instance, employed dependent variables such as revenue, revenue per employee, value added per employee, value-added growth per employee, return on investment, gross operating profit, occupancy rate, revenue per available room, sales growth, and profit growth.

CEE positively and statistically significantly influences the natural logarithm of EBITDA and ROE. Of the five control variables, only company size and leverage have a statistically significant impact on the financial performance of the observed MSM hotel companies in Serbia. The results show that size has a positive impact on the natural logarithm of EBITDA and EBITDA margin and a negative impact on ROA and ROE. Leverage has a negative impact on the natural logarithm of EBITDA and EBITDA margin and a positive impact on ROE.

Conclusions

As IC is often recognized as the main driving force of a company in a knowledge-based economy, a large number of studies aimed at determining the impact of its components on the financial performance of companies. The study aims to identify the impact of IC components on the financial performance of MSM hotel companies in the developing Serbian economy. Ordinary least squares regression is used to examine this relationship on the data collected from 2015 to 2019 financial reports. The results of the study show that IC efficiency has a positive impact on all four measures of financial performance. They also show that structural capital has the greatest impact on financial performance and that only this component of intellectual capital has a positive impact on all four measures of financial performance. Capital employed has a positive impact on the natural logarithm of EBITDA and ROE, while human capital has a positive impact on the EBITDA margin and a negative impact on the natural logarithm of EBITDA. Relational capital has a positive impact only on ROA.

The results confirm the findings of previous studies in developing economies that there is no complete consensus on the impact of IC components on financial performance and that the influence of the economic and business environment should

be taken into account. The results have several practical implications for MSM hotel companies in developing economies. They imply that the MSM hotel companies should focus their attention on structural capital to improve their financial performance. More specifically, MSM hotel companies should invest in business process improvements, IT equipment, and databases to increase productivity and reduce costs, and consequently improve their financial performance. They should also commit to the improvement of knowledge and skills of employees to improve productivity and financial performance. Finally, they should also increase their commitment to relational capital to increase guest satisfaction and loyalty if they intend to further improve their financial performance.

There are several limitations of the study, from which the directions of future research arise. First are limitations of the MVAIC model, calling for the application of other models of IC measurement. Also, the study does not examine hotel companies during and after the COVID-19 pandemic. The pandemic left significant consequences on the tourism and hotel industry in Serbia (Mandarić et al., 2022), and further research studies should examine whether there is a significant difference in the impact of IC components on the financial performance of hotel companies before and after the pandemic. Also, future research studies should investigate the impact of IC components on the non-financial performance of hotel companies, such as service quality and guest satisfaction. As the study covers only MSM hotel companies in Serbia, future studies should involve a comparative analysis of the impact of IC components on the financial and non-financial performance of these companies in Serbia and other developing economies.

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