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INTANGIBLE ASSETS IMPACT ON SUSTAINABLE GROWTH RATE OF ENTERPRISES IN THE REPUBLIC OF SERBIA

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Abstract. *The digital economy unites a dual typology of resources in enterprises, which can be tangible and intangible. In the language of accounting, it is about tangible and intangible assets. Due to the involvement of digital technologies in companies, intangible assets or intellectual capital became prominent. The sustainable growth of companies in Serbia has great importance for both management and external stakeholders. The presented paper examines the impact of intangible assets, formatted with the VAIC model, on the Sustainable growth rate (SGR) of companies in Serbia. The selected list of companies refers to the most profitable industry sector of the Serbian economy, assessed according to the Serbian Business Registers Agency for 2018. In order to confirm the hypothesis, the synthesis method, the analysis method, and the correlation analysis method were used. There was a significant positive impact of intangible assets on the sustainable growth rate of enterprises and a negative impact of physical assets, which, however, is not statistically significant. Since no research has been recorded in our country that sheds light on the correspondence between intangible assets and SGR, the study has a strong practical significance for this purpose. These results represent at the same time a reference point for our economy and for future entrepreneurs on the way to intensive involvement of intangible assets in companies.*

Key words: *intangible assets, digital economy, sustainable competitive advantage, sustainable growth rate*

JEL Classification: Q56

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1. INTRODUCTION

The role and importance of intangible assets strongly correspond to the emergence of the digital economy or Industry 4.0. In other words, Industry 4.0 is determined by the process of digitization and the connection of digital and physical objects (so-called cyber-physical systems). It was first promoted by the German government in 2012 (germ. Industrie 4.0) as a progressive step in the digitalization of German society (see more Cagle et al., 2020, p. 106; Pozdnyakova et al., 2019, p. 12, 17; Sukhodolov, 2019, pp. 3-10). Industry 4.0 is characterized by extensive automation, robotization in the production and service sphere, increasing workforce efficiency and efficiency in companies in general, reducing the anthropological impact on the environment through the use of economical technology, and increasing demand for high intellectually capable workforce, especially in information technology (Prokofyev et al., 2019, p. 95).

Current technology of the digital economy refers to Big Data, Blockchain, Cloud technology, Internet of Things (IoT) or a network of various devices where data is an object of exchange, and artificial intelligence (AI), which refers to computer systems capable of performing tasks that require human intelligence. In addition, the digital economy involves Virtual Reality or computer-simulated environment technology and Ubiquitous Computing technology. Ubiquitous computing is defined as connected computer systems in the environment in which we live and work, such as devices in smart houses (Popkova & Haabazoka, 2019, p. 8). However, employees still represent the main carriers of economic activities, whose knowledge converges towards digital knowledge (Popkova & Haabazoka, 2019, p. 7).

This makes it clear that knowledge and information represent the starting point for creating the resources and values of today's economy. Accordingly, the assets of business entities are increasingly knowledge-intensive (Ghosh & Mondal, 2009, p. 369). In other words, in the digital knowledge economy, economic value is mainly derived from intangible assets, to a much greater extent than from physical assets (Chu et al., 2011, p. 249). This is particularly attributable to the European economic context (Sardo & Serrasqueiro, 2017, p. 771). It is, according to Stewart, "something that cannot be touched, yet slowly makes you rich" or, according to Sullivan, "knowledge that can be converted into profit" (Ghosh & Mondal, 2009, p. 370).

The competitiveness of the company is therefore established in the patterns of intangible assets exploitation. Sustainable competitive advantage is largely determined by a company's sustainable growth rate (SGR). SGR can be also associated with economic, environmental, and social initiatives to secure the future (Xu et al., 2020, p. 2).

The work is organized as follows. After the introduction, a review of the literature was presented, followed by a theoretical explanation of the relationship between intangible assets and sustainable enterprise growth rates, and research hypotheses were proposed. The next part is dedicated to the empirical analysis of the data, followed by a discussion of the obtained results. The final part of the paper includes concluding remarks.

2. LITERATURE REVIEW

2.1. Intangible assets

Knowledge resources have rapidly become important in many disciplines such as accounting, economics, and strategic management (Asiaei, Jusoh & Bontis, 2018, p. 294). The literature noted relatively early texts on the importance of intangible assets. Swedish economist Westerman (1768) points out that the Swedish transport industry at that time lagged behind the main competitors due to lack of professional knowledge (Serenko & Bontis, 2013, p. 478).

Clear guidelines for the development of intangible assets were established by Penrose as the founder of resource-based theory in 1959 (although the name resource-based theory is mentioned in 1984 in Wernerfelt's work, "Resource Based View of the Firm") in her work "The Growth of the Firm". Instead of perceiving companies as administrative units, Penrose described the company as a resource base made available to managers. Hence, it was concluded that competitive advantage is provided by ownership of certain key resources that are rare (Pike, Fernström & Roos, 2005, p. 490).

Increased corporate investments in intangible assets include, in addition to investments in pure forms of intangible assets, the intangible enrichment of the value of manufactured products and provided services (Mehta & Madhani, 2008, p. 11). According to the methodology of resource-based theory, intangible assets are viewed as equal to physical and financial assets (Gupta & Raman, 2020, p. 51). For creating value that is a consequence of investments in intangible assets, and in order to achieve a competitive advantage of the company, extraction of the given value is also required. By extraction, or extraction of the value of intangible assets, is meant primarily its conversion into monetary value.

Thus, achieving a competitive advantage in the digital economy has been redefined by the impact of digital technology and market globalization. In the new circumstances, there is a vertical disintegration, accentuation of innovations, and intensive use of informatics technologies. In other words, this process has produced the accumulation of intangible assets reflected in innovations, employees, and organization (Ciprian et al., 2012, p. 683). Finally, it is pointed out that intangible assets represent the most potent position of assets that affect value creation (Đuričin & Janošević, 2009, p. 10).

In the context of creating and using knowledge, companies in order to achieve a competitive advantage, focus on the following areas (adapted to Novićević, Antić & Stevanović, 2006, p. 9):

i. Computer and communication technologies (AI, Big Data, IoT, Blockchain, Cloud technology, virtual reality, versatile computing and 3D printing),
ii. Analytical methods (which involve intelligent analytical softwares).

Intangible assets, or in management terminology "intellectual capital", are in the literature, albeit unofficially, divided into three parts: human capital, structural capital, and relational capital (Cabrilo & Dahms, 2018, pp. 621–648; Wang et al., 2016 pp. 1861–1885). Gupta and Raman (2020) emphasize that the term "intangible assets" is attributable to accounting, while the term "intellectual capital" is present in the science of human resources management. The term "knowledge resources" exists between economists in general (Gupta & Raman, 2020, p. 49). The separation of terms according to the field of study has been respected in academic texts (Naidenova & Parshakov, 2013, p. 640).

According to Bontis *et. al.*, human capital is manifested as an individual stock of knowledge in an organization that results from employees (Bontis et al., 2000., p. 87). Also,

Bontis *et. al.*, indicate that human capital is the primary component of intangible assets as a value creator. The management of this capital is attractive in the sense of its conversion into a sustainable competitive advantage through increased business performance (Bontis & Fitz-enz, 2002, pp. 225, 227). We also notice that these assets are profiled in economics textbooks as “Key competencies” or as “Core competencies” as the main strategic determinant for achieving a sustainable competitive advantage (Michalisin et al., 1997, p. 374; Novićević, Antić & Sekulić, 2006, p. 41).

Capital that supports infrastructure for employees is interpreted as structural capital (Chowdhury, Rana & Azim, 2019, p. 787). Structural capital refers to databases, software platforms, algorithms, codes, organizational structure, documentation, and business processes or "everything of knowledge that remains in the company, after the end of the working day" (Bontis et al., 2000, p. 88). Relational capital refers to the company's relations with consumers and suppliers, includes distribution channels, brand and everything that creates and maintains the company's intangible assets by involving the company in interaction with the external environment. It "includes knowledge materialized in all the relationships that a company develops with suppliers, trade associations or the government." (Bontis et al., 2000, pp. 88-89).

The question is, how to calculate intangible assets and how to quantify their impact? Among many models that exist, the frequently cited model for calculating intangible assets is the VAIC model (VAIC is an abbreviation for Value Added Intellectual Coefficient). The model represents one of the most significant contributions in the valuation of intangible assets (Gupta & Raman, 2020, p. 50).

The VAIC model is based on the fact that the exploitation of physical and intangible assets creates added value (VA). VA implies the difference between output and input values. The output value, represents the value of total income, and the input value includes all costs except employee costs, which are treated as intangible assets of the enterprise (Andriessen, 2004, p. 365).

Specifically, VA can be determined as the sum of operating profit, investments in human resources, and depreciation costs (of fixed assets and intangible assets) (Dzenopoljac et al., 2017, p. 888):

$$VA = Operating\ profit + Employee\ costs + Depreciation \tag{1}$$

One of the weak points of the VAIC model is the condition that the company that is involved in the calculation needs to have a positive profit. If there are losses, according to the VAIC model it means that the company doesn’t create new added value (for more see Chu et al., 2011, p. 252-253).

Capital employed (CE) refers to the value of net assets and includes physical and financial capital, or in other words, tangible capital. CE is used to start and maintain a business. Tangible assets in this sense play a fundamental role in determining the value of a company (Dzenopoljac et al., 2017, p. 888). Capital Employed Efficiency (CEE) is calculated as the ratio of balance sheet net assets and value-added VA (Dzenopoljac et al., 2017, p. 888):

$$CEE = \frac{CE}{VA} \tag{2}$$

HCE (Human Capital Efficiency) is calculated as ratio between VA and investments in human resources (employee costs) (Dzenopoljac et al., 2017., p. 888):

$$HCE = \frac{VA}{HC} \tag{3}$$

Structural Capital Efficiency (SCE) is calculated as ratio between SC and VA. For the calculation of SC, the value of HC is subtracted from VA (Dzenopoljac et al., 2017, p. 889):

$$SCE = \frac{SC}{VA} \tag{4}$$

$$SC = VA - HC \tag{5}$$

Dzenopoljac *et. al.* (2017) state that it is not difficult to notice that the sum of HCE and SCE represents the total efficiency of intangible assets (ICE, Intellectual Capital Efficiency). The rationalization of the model is based on the assumption that companies with a higher ICE ratio exploit intangible assets more efficiently and, consequently, have a higher amount of intangible assets (Dzenopoljac et al., 2017., p. 889).

2.2. Sustainable growth rate of the company

The sustainable growth rate of the company is a very important business and financial performance of the company, especially in situations of economic imbalance. Otherwise, SGR refers to the maximum and consistent growth rate that a company can achieve without mobilizing additional funds in the form of borrowing. Growth below a sustainable growth rate can affect the loss of a company's competitive advantage due to reduced business efficiency. Growth above a sustainable growth rate involves additional borrowing by the company, which can worsen its financial health (Stanić, 2015, p. 118). In other words, this represents a short-term expansion of sales growth because such a goal is ultimately unsustainable. Accelerated growth overloads corporate resources and requires new borrowing in order to prevent corporate insolvency (Xu et al., 2021).

An increase in debt while maintaining the same level of insolvency can only be implemented if the increase in the percentage of debt in total sources is equivalent to the increase in the percentage of capital. The growth rate is therefore a complex long-term indicator that belongs to the business and financial performance of the company. Any growth that deviates from a sustainable growth rate can be considered unsustainable growth (Xu et al., 2021).

The expression of SGR is clarified through several modalities, among which the most famous is the first, Higgins model of SGR. In a more concise edition, according to Higgins (1977), SGR is expressed as (Arora, Kumar & Verma, 2018).

$$SGR = ROE \textit{ (Return on Equity)} \times b \textit{ (Retention Rate)} \tag{6}$$

ROE indicator is an indicator with a long tradition and is calculated as:

$$ROE = \frac{Net\ profit}{\text{Shareholders' equity}} \tag{7}$$

On the other hand, as we know, retention rate b indicates the number of funds remaining for the company to reinvest in business activities after the payment of dividends. It is calculated as:

$$b = \frac{Net\ profit - payed\ dividends}{Net\ profit} \tag{8}$$

2.3. Intangible assets and SGR

Studies have concluded that intangible assets are a key element in achieving competitive advantage (Sardo & Serrasqueiro, 2017; Mention & Bontis, 2013; Zéghal & Maaloul, 2010). In other words, intangible assets significantly correspond to the business and financial performance of the company. These studies, which involve researches of relationship between intangible assets and business-financial performance, shed light on the impact of intangible assets on short-term indicators of performance in companies. SGR, however, is an accounting measure that covers a longer period of time and business-financial expansion of the company. Consequently, for the realization of SGR and, ultimately, sustainable competitive advantage, it is necessary for companies to create value by exploiting intangible assets.

A study by Xu, et. al. (2020) examined the impact of intangible assets on the sustainable growth rate of agricultural smart high-tech and non-high-tech enterprises in China. The results obtained suggest that human capital reflects the main impact on the SGR. In another study (Xu et al., 2021), a sample based on Chinese companies in the field of tourism, agriculture, and renewable energy industry was selected. The study concludes that physical and intangible assets reflect a positive impact on the sustainable growth of the company. In the context of intangible assets, the intensity of the positive impact is distributed primarily on human capital, then structural and to a lesser extent relational capital.

A study that covers India's evidence investigated the impact of intangible assets in India's enterprises on their sustainable growth rates. The results of the study indicate a positive significant impact of all variables of intangible assets on a sustainable growth rate. Intangible assets in this study are represented in a slightly modified edition. Intangible assets in this study are constituted from physical capital, human capital, relational capital, innovation capital, and process capital (Mukherjee & Sen, 2019).

A study from 2008, conducted in China, proved the positive significant impact of intangible assets (intellectual capital) on SGR, where, according to results of this study, "human capital is the root of the momentum of enterprise growth" (Shui-ying & Ying-yu, 2008).

The study, which covers Korea's evidence, also demonstrated the positive impact of intangible assets, more specifically human and relational capital, on the sustainable growth of manufacturing companies. The positive impact of physical assets on the sustainable growth of these companies has also been proven (Xu & Wang, 2018). Investments in physical assets are inseparable from investments in intangible assets. In other words, it is necessary to involve physical assets in this consideration when we are trying to measure the impact of intangible assets on sustainable growth.

Although SGR has not been the subject of such studies, according to previous studies related to other business and financial performance, companies in Serbia are still insufficiently exploiting intangible assets, materialized in innovation, employees and organization of the company, to achieve a sustainable competitive advantage (Dženopoljac et. al., 2016).

2.4. Proposed hypotheses

According to the previous text, using the mathematical formats listed above, the impact of intangible assets on SGR can be explained through the main and auxiliary hypotheses:

Hypothesis H1. There is a positive impact of intangible assets on SGR;

H1a. Companies with a higher ICE ratio have a higher rate of sustainable growth SGR;

H1b. Companies with a higher CEE ratio have a higher rate of sustainable growth SGR.

Or if we draw an overview of these relations (Figure 1):

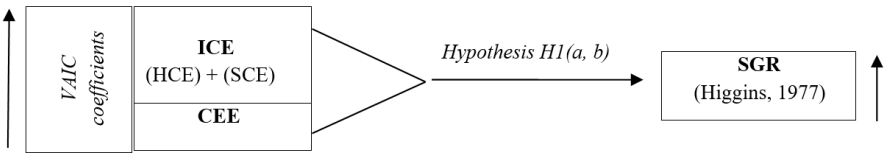

Fig. 1 Overview of Hypothesis H1
Source: Authors own drawings

Finally, this research aims to find a valid conclusion about Hypothesis 1. Precisely, the aim is to verify how much the intangible assets of the company, formatted by the VAIC model, are an influential predictor of the sustainable growth rate, formatted by Higgins (1977), of the company.

3. METHODOLOGY

3.1. Data source

To check the validity of Hypothesis 1, it is necessary to select the data source and select a suitable sample. In obtaining a suitable sample of companies to test Hypothesis 1, we were guided by the following prerequisites:

- sample needs to contain companies that reported significant net profit result during the observed period, that is, the leaders are in their branch;
- companies in the sample are knowledge-intensive with a relatively high share of balance sheet reported intangible assets, such as labor costs, development investments, and research and development costs;
- the financial statements of the selected companies in the sample were previously audited.

Considering these preconditions, the database for sample selection, which is published by the *Serbian Business Registers Agency (SBRA)* in its annual publication for 2018, is suitable.

These publications are reports of the "100 most companies" (Serb. „*Izveštaj o sto naj privrednih društava*") which are issued for each year. At the time of making this research, we were not able to download the publication for 2019, and we used a list of companies in this publication published for 2018 including their financial statements for 2019. There is a database in the form of a list that involves companies that have achieved the highest

annual net profit for the period. With the elimination of companies that do not have complete financial statements for the period, a sample of 67 companies that achieved the highest net profit in 2018 is selected (Table 1).

Table 1 Selected list of companies

1. Naftna Industrija Srbije, NIS	23. Farmina Pet Foods	45. Delta Agrar
2. Telekom Srbija	24. Imlek	46. Apatinska Pivara
3. Telenor, Beograd	25. Koteks Viscofan	47. Luxury Tannery
4. Javno preduzeće Srbijagas	26. Frikom	48. Fabrika Hartije
5. Tigar Tyres	27. JP Elektroprivreda Srbije	49. Impol Seval
6. JKP Beogradske elektrane	28. CRH Srbija	50. JP Srbijašume
7. Coca-Cola	29. Agromarket	51. Milan Blagojević-Namenska
8. Philip Morris	30. Heineken Srbija	52. Pharmaswiss
9. SBB	31. Titan Cementara	53. Phuket
10. Hemofarm	32. Karin Komerc	54. Marbo
11. Matijević	33. Sport Vision	55. OMV
12. Real Knitting	34. Contitech Fluid	56. Atlantic Grand
13. Delhaize	35. Ball	57. Naftagas
14. JP Jugoimport	36. Almex	58. HD-Win
15. Elektromreža Srbije	37. Pink	59. Zdravlje
16. Tetra Pak	38. Peštan	60. Elixir
17. JP Pošta Srbije	39. Yugoroskaz	61. Galenika
18. Henkel Srbija	40. RZD International	62. Phiacademy
19. Lafarge	41. Direct Media	63. Forma Ideale
20. Mozzart	42. Metalfer	64. Knjaz Miloš
21. Bambi	43. Soko Štark	65. Sport Time Balkans
22. Messer Tehnogas	44. Drenik	66. Mladost
		67. Auto Čačak

Source: Authors made a suitable list of companies according to SBRA – The Serbian Business Registers Agency. (2020). STO NAJ... privrednih društava u 2018. godini [The top hundred enterprises in 2018]. Retrieved from https://www.apr.gov.rs/upload/Portals/0/GFI%202019/STO_NAJ/STO_NAJ_2018_16102019.pdf

The sample includes financial statements (balance sheets and income statements) of these companies for the period 2015-2019. We collect relevant financial statements for this period manually inputting identification numbers or names of companies in the SBRA (2020) search engine. Companies that didn't publish financial statements for the given period or realized negative operating profit were eliminated from the study.

3.2. Construction of the regression model

To test Hypothesis H1, it is necessary to construct a regression model. Constructing a regression model requires the involvement of a dependent variable and independent variables in a regression equation with a specific constellation of relationships between variables. The dependent variable refers to the SGR. The independent variables are formatted with the VAIC model and refer to ICE and CEE. The construction of the regression model according to the equation looks like:

$$SGRi, t = \beta_0 + \beta_1 ICEi, t + \beta_2 CEE\ i, t + \varepsilon\ i, t \quad (9)$$

More precisely, using the technique of multiple standard regression analysis based on specified regression model, it is possible to determine (adapted according to Pallant, 2009, p. 147):

- how well the variables ICE and CEE can predict the outcome of the SGR in the sample;
- which variable (ICE or CEE) best predicts the SGR in the sample;
- after eliminating the impact of other variables, how much particularly, the selected intangible asset, can predict an outcome of the SGR enterprise.

3.3. Research results

3.3.1. Descriptive statistics and correlation analysis

According to Table 2, the average SGR value is 16.74. When we talk about intangible assets efficiency coefficient (ICE), it is 4.24. However, this is higher than the efficiency coefficient of physical assets (CEE), which is 0.84. This actually mildly shapes the initial impression in our analysis that intangible assets have a stronger impact on VA creation.

Table 2 Descriptive Statistics

	Mean	Std. Deviation	N
SGR	16.742801	62.6553640	335
ICE	4.2374	2.34498	335
CEE	.844540	1.5264232	335

Source: Authors own calculations

As an integral element of the preliminary analysis, Table 3. checks the normality of the distribution for the given variables. The values of the variables were found not to be normally distributed. Further, this will shape our next analysis.

Table 3 Normality test results

	Tests of Normality					
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
SGR	.307	335	.000	.344	335	.000
ICE	.159	335	.000	.766	335	.000
CEE	.305	335	.000	.384	335	.000

a. Lilliefors Significance Correction

Source: Authors own calculations

Correlation is a more suggestive technique, in that way, it doesn't give definitive answers. It suggests the existence of a possible relationship between variables (Barrow, M. 2009, p. 231). Since the values of the variables are not normally distributed, the correlation analysis was performed based on the Spearman coefficient (*rs*).

Table 4 contains correlation findings between presented variables in the regression model and reports the following:

- A weak positive relationship between the ICE coefficient and the dependent variable SGR was identified, where rs = 0.122 (p <0.05). In other words, this is the first indication that a higher ICE coefficient also means a higher SGR;
- A medium-strong positive relationship between CEE and SGR was identified, rs = 0.432 (p <0.05). This also indicates that the higher CEE coefficient also means a higher SGR.

Table 4 Normality test results

Correlations					
			SGR	ICE	CEE
Spearman's rho	SGR	Correlation Coefficient	1.000	.122*	.432**
		Sig. (2-tailed)	.	.025	.000
		N	335	335	335
	ICE	Correlation Coefficient	.122*	1.000	-.034
		Sig. (2-tailed)	.025	.	.533
		N	335	335	335
	CEE	Correlation Coefficient	.432**	-.034	1.000
		Sig. (2-tailed)	.000	.533	.
		N	335	335	335

*. Correlation is significant at the 0.05 level (2-tailed).
**. Correlation is significant at the 0.01 level (2-tailed).

Source: Authors own calculations

3.3.2. Analysis of the regression model

The results of the regression analysis according to Table 5. indicate that the model significantly affects the variability of the variable SGR. According to the amount of the adjusted coefficient of determination (Adjusted $R^{2)}$ is 2.9%, this model explains 2.9% of the variability of SGR. In other words, regression model with the coefficients of intangible assets efficiency (ICE) and invested capital efficiency (CEE) explains 2.9 % of changes in SGR.

Table 5 Explanatory power of the model

Model Summary[b]									
					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.187[a]	.035	.029	61.7301839	.035	6.043	2	332	.003

a. Predictors: (Constant), ICE, CEE
b. Dependent Variable: SGR

Source: Authors own calculations

The explanatory power (2.9%) is not high. However, the model is statistically significant for p <0.05 (Table 6).

Table 6 Statistical significance of the model

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	46057.627	2	23028.814	6.043	.003[b]
	Residual	1265124.382	332	3810.616		
	Total	1311182.010	334			

a. Dependent Variable: SGR
b. Predictors: (Constant), ICE, CEE

Source: Authors own calculations

The next typical step in interpreting the results of regression analysis is to interpret whether the independent variables (ICE, CEE) in the model make an individual and isolated contribution to the change in SGR (Table 7).

Table 7 Individual contribution of independent variables (ICE, CEE) to SGR in the model

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients			95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta	t	Sig.	Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1 (Constant)	.046	7.231		.006	.995	-14.177	14.270					
ICE	4.563	1.440	.171	3.168	.002	1.729	7.396	.171	.171	.171	1.000	1.000
CEE	-3.123	2.213	-.076	-1.411	.159	-7.476	1.230	-.077	-.077	-.076	1.000	1.000

a. Dependent Variable: SGR

Source: Authors own calculations

Standardized beta coefficients for independent variables indicate their individual and isolated contribution to the dependent variable. In the given model, the standardized beta coefficient for ICE is $\beta_1 = 0.171$. In other words, intangible assets compressed in the ICE reflect a significant positive impact on the SGR variable. The *Hypothesis 1a* is confirmed. In other words, a higher ICE also means a higher SGR.

The impact of CEE on SGR is negative, but not statistically significant. *Hypothesis 1b* is not confirmed. In other words, a higher CEE does not necessarily mean a higher SGR, but lower SGR. Additionally, this relationship is negative, but this is not confirmed with statistical significance.

Finally, we can state that *Hypothesis H1* is partially confirmed, because ICE reflects the positive impact on SGR and CEE does not reflect a positive statistically significant impact on SGR.

3.3.3. Useful implications of research results

The results unequivocally indicate a statistically significant positive relationship between the efficiency of intangible assets usage (ICE) and the sustainable growth rate SGR of companies. These findings are consistent with research that Xu et al. (2021) conducted. However, the impact of CEE on SGR is negative and not statistically significant, which is not consistent with research that Xu et al. (2021) and Xu & Wang, 2018) conducted because they

proved positive impact of CEE on SGR. The usefulness of these conclusions can be converted into instructions for business entities.

Management structures in companies are advised to be more aware of intangible assets and increase their investments, especially in human and structural capital (ICE). As Xu et. al. (2021, p. 11) stated, the sustainable growth of modern enterprises should rely more on intellectual capital than on capital employed. Specifically to each company, managers should strengthen the logic of creating intangible assets like developing more employee supportive corporate culture and promoting R&D activities to build innovations. Also, managers need to incorporate information technology through different initiatives. On the other side, because capital employed is synergistically connected with intellectual capital, managers should also improve the efficiency of CEE in order to make an additional positive impact on SGR. Additionally, managers should reduce the scale of liabilities in companies. To cover these processes, developed management accounting infrastructure is necessary for the assessment of the intangible assets exploitation efficiency. In this way, management is further referred for corrective actions in order to optimize these processes related to intangible assets.

3.3.4. Limitations of the conducted research

Despite the best intention to proceed the research in the absence of certain limitations, the obtained results are acceptable having in mind certain limitations. The limitations, however, do not undermine the essentials to which the results of the analysis refer. The first limitation relates to sample size. We believe that with a larger sample in the analysis, results will more strongly emphasize found links between ICE, CEE, and SGR. Second, the VAIC model has its limitations, which are also involved in the given research. VAIC model doesn't cover relational capital, also, the VAIC model doesn't include R&D costs within structural capital (for more see Chen, Cheng & Hwang, 2005, p. 162). Third, intangible assets can be hardly represented by a simple sum of components due to their synergistic nature.

4. CONCLUSION

Intangible assets strongly correspond to the digital economy and Industry 4.0. and with the development of AI, Big Data, Cloud computing, Virtual Reality, etc. Thus, knowledge becomes the main source of value creation in companies. The sustainable competitive advantage of an enterprise is established on the patterns of intangible assets exploitation rather than on the exploitation of physical assets. Sustainable competitive advantage is closely related to the sustainable growth rate of the company. The sustainable growth rate of a company is also associated with economic, environmental, and social initiatives in securing the future.

In this paper, research was conducted which sheds light on the impact of intangible assets of 67 most profitable companies in Serbia on their sustainable growth rate. Results involves significant positive impact of intangible assets on the sustainable growth rate of the companies. The intangible assets impact is predominant in relation to the impact that reflects physical assets on the sustainable growth rate of the observed companies. This identification represents a contribution in relation to previous research conducted in relation to intangible assets. Also, it represents an incentive for managers of companies in Serbia to focus more intensively on intangible assets creation and exploitation. This is especially due to the evidence in this research that intangible assets provide a better sustainable growth rate for companies.

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UTICAJ NEMATERIJALNE AKTIVE NA ODRŽIVU STOPU RASTA PREDUZEĆA U REPUBLICI SRBIJI

Digitalna ekonomija objedinjuje dvojaku tipologiju resursa u preduzećima, koji mogu biti materijalni i nematerijalni. Jezikom računovodstva, reč je o materijalnoj i nematerijalnoj aktivi. Usled involviranja digitalnih tehnologija u preduzećima do izražaja dolazi nematerijalna aktiva ili intelektualni kapital. Održivi rast preduzeća u Srbiji je od izuzetnog značaja kako za menadžment, tako i za eksterne interesente. U predstavljenom radu se ispituje uticaj nematerijalne aktive, formatirane VAIC modelom, na održivu stopu rasta (eng. Sustainable growth rate, u daljem tekstu SGR) preduzeća u Srbiji. Odabrana lista preduzeća odnosi se na najprofitabilniji sektor naše privrede ocenjen prema Agenciji za privredne registre za 2018. godinu. U cilju potvrđivanja hipoteza, sintetički metod, metod analize i metod korelacije je upotrebljen. Dokazan je značajan pozitivan uticaj nematerijalne aktive na održivu stopu rasta preduzeća i negativan uticaj fizičke aktive, koji međutim nije statistički značajan. Budući da u našoj zemlji nije zabeleženo istraživanje koje rasvetljava korespondiranje nematerijalne aktive i SGR, studija u ovu svrhu ima snažan praktični značaj. Navedeni rezultati predstavljaju ujedno i orijentacionu tačku našoj privredi i budućim preduzetnicima na putu ka intenzivnom involviranju nematerijalne aktive u preduzećima.

Ključne reči: *nematerijalna aktiva, digitalna ekonomija, održiva konkurentska prednost, održiva stopa rasta*