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EDITOR'S LETTER

Respected reader public,

It is our great honor to present you the eighteenth edition of the Journal under the title: BH ECONOMIC FORUM, whose structure is composed of original scientific papers, preliminary communications, review articles, professional articles, and book reviews. In this issue of the Journal, five papers were published focusing on the diversity of proposed topics in line with the demands of new challenges, trends and the market, and offering new ideas, models, and concepts. The papers are thematically oriented in five scientific areas: economic theory and politics, marketing, management, finance and accounting and quantitative economics.

In this issue, the papers are diversified, which certainly represents a great advantage compared to previous numbers, because there is no deepening of the paper in one scientific field on the one hand, and on the other hand, the importance of all scientific areas is almost the same. In this issue, we have some papers of colleagues from abroad, more accurately the papers of colleagues from Serbia and Croatia which gives importance to the Journal on an international level.

The paper by colleague Radojko Lukić, titled: Economic performance of the economy of Bosnia and Herzegovina, investigates the dynamics of the economic performance of the economy of Bosnia and Herzegovina in the period 2013 - 2022 based on the LMAW-DNMA method. This research can serve as an incentive to apply these multi-criteria decision-making methods in the evaluation of the performance of individual countries in their ranking in order to improve in the future.

The focus of the paper entitled: Influence of customer-based brand equity on neo-luxury brand purchase intentions: Are there distinctions among income groups written by colleagues Nedžla Maktouf and Adi Alić is research on how consumer income affects the established relationship in the conceptual research model, i.e., how the market value of the brand affects consumer purchase intentions. The results show that, for neo-luxury brands, consumer purchase intentions are positively impacted by the brand's market value. Also, the results show that the income level of customers is not statistically significant, which leads to the conclusion that there are no significant differences between how customers from various income groups perceive various brand value components or how these components affect their intentions to purchase neo-luxury brands.

Emina Resić and Edita Habibović-Čagalj in the paper entitled: Clusterization of banks in the Federation of B&H based on different criteria, explain how the evaluation of user satisfaction in addition to the analysis of financial statements of banks can have an impact on the stability of the banking system.

Vladimir Šimić in the paper entitled: The impact of government consumption on growth – Global evidence explains how the effects of government spending affect the economic growth of world economies. This paper also applies the panel analysis technique to a sample of over 178 world economies in the period from 1990 to 2020. The research results show that government spending and tax revenues have a negative impact on economic growth.

Nenad Brkić and Esmeralda Marić in their paper entitled: Differences in brand naming process between B2B and B2C companies in Bosnia and Herzegovina, investigate the differences in the process of naming brands in companies that operate in business and consumer markets, such as the market of Bosnia and Herzegovina. The research was conducted on 50 companies from B&H using an online survey. The results indicate that B2B companies are more likely to use the company (family) brand name and that B2C companies test ideas more often than B2B companies.

In these turbulent times, the editorial board of the BH Economic Forum managed to hold all regular sessions and with their brilliant decisions influenced the extraordinary selection of submitted papers and ultimately the publication of the eighteenth edition of the Journal. I would like to take this opportunity to thank all members of the Journal editorial board.

What we especially consider important to note is that at the end of December 2022 and at the beginning of January 2023, the editor-in-chief of the journal Professor Almir Alihodžić applied for the inclusion of the journal in two very relevant databases such as CEJSH and INDEX COPERNICUS, where the journal BH ECONOMIC FORUM included in given databases, which will increase visibility in the upcoming period, and the number of authors as well.

On this occasion, I would like to thank Vlatko Bodul for the enormous and selfless technical and graceful help and support, without which we can hardly be able to perform all the activities. Also, I take the opportunity to thank Ilma Dedić-Grabus, the journal secretary for hard work and huge technical support. Also, I would like to thank all the reviewers who, with their brilliant suggestions and ideas, helped this number to be published.

I warmly thank all members of the editorial board for their successful cooperation and excellent synergy in making crucial decisions. Also, I would like to thank the top management of the Faculty, primarily the dean dr.sc. Ajla Muratović-Dedić and the Rector of the University of Zenica prof.dr. Jusuf Duraković who have provided moral support all the time. The vision of the editorial board and publisher is to develop BH ECONOMIC FORUM as a scientific journal publishing highly relevant articles, with the major objective to be indexed on various journal lists in the forthcoming period. On this occasion, we would like to thank all the authors who

pointed out the high level of confidence by publishing their work, and we hope that the cooperation will continue continuously in the forthcoming period.

Zenica, autumn/winter, 2023. Editor-in-Chief

Dr.sc. Almir Alihodžić, full professor

Radojko Lukić[1]

ECONOMIC PERFORMANCE OF THE ECONOMY OF BOSNIA AND HERZEGOVINA

ABSTRACT.

The issue of analyzing factors of the dynamics of the economic performance of every economy, which means Bosnia and Herzegovina as well, is continuously very current, challenging, significant, and complex. Adequate control of key factors can significantly influence the achievement of the target economic performance of the economy of Bosnia and Herzegovina. The application of multi-criteria decision-making methods enables adequate control of the key factors of the economic performance of the economy of Bosnia and Herzegovina. Bearing that in mind, this paper analyzes the dynamics of the economic performance of the economy of Bosnia and Herzegovina in the period 2013 - 2022 based on the LMAW-DNMA method. The top five years according to the economic performance of the economy of Bosnia and Herzegovina according to the LMAW-DNMA method are in order: 2018, 2019, 2017, 2016, and 2015. The worst economic performance of the economy of Bosnia and Herzegovina was achieved in 2020. Lately, in general, it has significantly improved the economic performance of the economy of Bosnia and Herzegovina. This was influenced by adequate management of the analyzed statistical variables (gross domestic product, inflation, agriculture, industry, export, import, capital, income, taxes, time required to start business - days, and domestic loans provided by the financial sector). Likewise, the geopolitical situation, the economic climate, foreign direct investments, the COVID-19 pandemic, the energy crisis, the digitalization of the company's entire operations, and other factors. In any case, their adequate control can greatly influence the achievement of the target economic performance of the economy of Bosnia and Herzegovina.

Keywords*: performance, economy, Bosnia and Herzegovina, LMAW-DNMA method*

JEL*: C61, L32*

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1. INTRODUCTION

Research into the factors of the dynamics of the economic performance of every economy, which means Bosnia and Herzegovina as well, is very challenging, significant, complex, and continuously current. It indicates the critical factors and what measures should be taken to achieve the target economic performance of the economy of Bosnia and Herzegovina. Bearing that in mind, this paper analyzes the dynamic factors of the economic performance of the economy of Bosnia and Herzegovina using the LMAW-DNMA method. LMAW-DNMA is a newer multi-criteria decision-making method. Based on a complex analysis using the given methodology, the real situation in terms of the achieved economic performance of the economy of Bosnia and Herzegovina can be viewed and, in the context of this, relevant measures for improvement in the future can be proposed, such as effective management of the growth of the gross domestic product, inflation, industry, agriculture, import, export, income, taxes, time required to start a business - days and domestic loans provided by the financial sector, etc.

There is no doubt that permanent control of key factors is a basic assumption for improving the economic performance of the economy of Bosnia and Herzegovina. In addition to the application of ratio analysis, statistical analysis, DEA analysis, and the use of multi-criteria decision-making methods, including the LMAW-DNMA method, a significant role is played in this. About the classic analysis, the integrated application of multi-criteria decision-making methods, in the specific case of the LMAW and DNMA methods, gives more accurate results of the achieved economic performance of the economy of Bosnia and Herzegovina as a basis for improvement in the future by applying adequate measures. In this paper, considering that the analysis of factors of the dynamics of the economic performance of the economy of Bosnia and Herzegovina is based on ratio analysis, statistical analysis, and, in particular, on the use of the LMAW-DNMA method, which enables the ranking of alternatives (in this particular case, the alternatives are the observed years) based on the simultaneous use of several selected relevant economic criteria. Knowing the positioning of the observed alternatives - year is a prerequisite for improvement in the future by applying relevant economic and other measures.

The literature devoted to the analysis of the economic performance of each economy is very rich. In classical literature, the analysis of the economic performance of the economy is mainly based on financial analysis, ratio analysis, and statistical analysis. In modern literature, DEA (Data Envelopment Analysis) models are increasingly used in the world when analyzing the efficiency of companies (Park, & Kim, 2022; Zohreh Moghaddas et al., 2022; Amirteimoori et al., 2022; Alam et al., 2022; Fotova Čiković & Lozić, 2022; Sala-Garrido, 2023; Andersen, & Petersen, 1993; Banker et al., 1984; Chen et al., 2021, Chang et al., 2020; Guo, & Cai, 2020; Lee et al., 2011;

Lin et al., 2020; Pendharkar et al., 2021; Tone, 2002; Dobrović et al., 2021; Podinovski et al., 2021; Rostamzadeh et al., 2021; Fenyves, & Tarnóczi, 2020; Amini et al., 2019; Tsai et al., 2021; Cooper et al., 1999; Amin, & Hajjami, 2021; Chen et al., 2018, 2020, 2021a,b; Stević et al., 2022; Rasoulzadeh et al., 2021). The same is the case with the analysis of the efficiency of companies in Serbia (Đurić et al., 2020; Mandić et al., 2017; Martić, & Savić, 2001; Radonjić, 2020; Lukic et al., 2017, 2020; Lukic, 2018, 2022a, b,c, 2023c; Lukic & Kozarevic, 2019; Lukic & Hadrovic Zekic, 2019; Vojteški Kljenak & Lukić, 2022). DEA models give a realistic picture of which companies are efficient and which are not, and what measures should be taken to increase efficiency.

As far as we know, there are no works in the literature that analyze the performance of individual countries using the LMAW-DNMA method. This study can be an incentive to apply these methods of multi-criteria decision-making in the evaluation of the performance of individual countries in their ranking.

As far as we know, there are no works in the literature that use these multi-criteria decision-making methods for companies in the region. This study can serve as an incentive to apply the given methods of multi-criteria decision-making to companies in the region.

In recent times, in the world literature, in addition to the DEA model, multi-criteria decision-making methods (ARAS, MARCOS, PROMETHEE, TOPSIS, WASPAS, etc.) are increasingly being applied when analyzing company performance (Ayçin & Arsu, 2021; Popović et al., 2022; Ecer & Aycin, 2022; Mishra et al., 2022; Nguyen et al., 2022; Rani et al., 2022; Toslak et al., 2022). The situation is the same with literature in Serbia (Stojanović et al., 2022; Lukic, 2021, 2023a,b,e,f,g,h, j,k). Because multi-criteria decision-making methods lead to more realistic results compared to classic methods (such as financial analysis, and ratio analysis) as a basis for improvement in the future by applying relevant eco-friendly and other measures. Based on that, this paper analyzes the factors of economic performance dynamics of the economy of Bosnia and Herzegovina by using, in addition to ratio analysis and statistical analysis, the LMAW-DNMA method. LMAW-DNMA is a newer method of multi-criteria decision-making, and compared to the classical method, for example, ratio analysis, it gives more accurate results considering that it simultaneously integrates several indicators. This enables the selection of adequate economic and other measures to improve the economic performance of the economy of Bosnia and Herzegovina in the future.

2. RESEARCH METHODOLOGY

By applying the LMAW and DNMA methods, we will evaluate the dynamic factors of the economic performance of the economy of Bosnia and Herzegovina based on statistical data from the World Bank. In the following, we will present the basic characteristics of the given methods.

The **LMAW** (Logarithm Methodology of Additive Weights) method is the latest method used to calculate criteria weights and rank alternatives (Liao, & Wu, 2020; Demir, 2022). It takes place through the following steps: m alternatives $A = \{A_1, A_2, \dots, A_m\}$ is evaluated in comparison with n criteria $C = \{C_1, C_2, \dots, C_n\}$ with the participation of k experts $E = \{E_1, E_2, \dots, E_k\}$ and according to a predefined linguistic scale (Pamučar et al, 2021).

Step 1: Determination of weight coefficients of criteria Experts $E = \{E_1, E_2, \dots, E_k\}$ set priorities with criteria $C = \{C_1, C_2, \dots, C_n\}$ about previously defined values of the linguistic scale. At the same time, they assign a higher value to the criterion of greater importance and a lower value to the criterion of less importance on the linguistic scale. By the way, the priority vector is obtained. The label γ_{cn}^{e} represents the value of the linguistic scale that the expert $e(1 \leq e \leq k)$ assigns to the criterion $C_t(1 \leq t \leq n)$.

Step 1.1: Defining the absolute anti-ideal point γ_{AIP}

The absolute ideal point should be less than the smallest value in the priority vector. It is calculated according to the equation:

$$\gamma_{AIP} = \frac{\gamma_{min}^{e}}{S}$$

where is γ_{min}^{e} the minimum value of the priority vector and S should be greater than the base logarithmic function. In the case of using the function Ln, the value of S can be chosen as 3.

Step 1.2: Determining the relationship between the priority vector and the absolute anti-ideal point

The relationship between the priority vector and the absolute anti-ideal point is calculated using the following equation:

$$n_{Cn}^{e} = \frac{\gamma_{Cn}^{e}}{\gamma_{AIP}} \quad (1)$$

So the relational vector $R^e = (n_{C1}^{e}, n_{C2}^{e}, \dots, n_{Cn}^{e})$ is obtained. Where n_{Cn}^{e} represents the value of the relation vector derived from the previous equation, and R e represents the relational vector $e(1 \leq e \leq k)$.

Step 1.3: Determination of the vector of weight coefficients

The vector of weight coefficients $w = (w_1, w_2, \dots, w_n)^T$ is calculated by the expert $e(1 \le e \le k)$using the following equation:

$$w_j^e = \frac{\log_A(n_{Cn}^e)}{\log_A\left(\prod_{J=1}^n n_{Cn}^e\right)}, A > 1 \quad (2)$$

where w_j^e represents the weighting coefficients obtained according to expert evaluations e^{th} and the n_{Cn}^eelements of the realization vector R. The obtained values for the weighting coefficients must meet the condition that $\sum_{j=1}^n w_j^e = 1$.

By applying the Bonferroni aggregator shown in the following equation, the aggregated vector of weight coefficients is determined $w = (w_1, w_2, \dots, w_n)^T$:

$$W_j = \left(\frac{1}{k.(k-1)} . \sum_{x=1}^{k} \left(w_j^{(x)}\right)^p . \sum_{\substack{y=1 \\ y \neq x}}^{k} \left(w_{ij}^{(y)}\right)^q \right)^{\frac{1}{p+q}} \quad (3)$$

The values of p and q are stabilization parameters and $p, q \ge 0$. The resulting weight coefficients should fulfill the condition that $\sum_{j=1}^n w_j = 1$.

The **DNMA** (Double Normalization-based Multiple Aggregation *)* method is a newer method for showing alternatives (Demir, 2022). Two different normalized (linear and vector) techniques are used, as well as three different coupling functions (Complete Compensatory Model - CCM, Uncompensatory Model - UCM, and Incomplete Compensatory Model - ICM). The steps for applying this method are as follows (Liao & Wu, 2020; Ecer, 2020):

Step 1: Normalized decision matrix

The elements of the decision matrix are normalized with linear $\left(\hat{x}_{ij}^{1N}\right)$ normalization using the following equation:

$$\hat{x}_{ij}^{1N} = 1 - \frac{\left|x^{ij} - r_j\right|}{max\left\{\max_i x^{ij}, r_j\right\} - min\left\{\min_i x^{ij}, r_j\right\}} \quad (4)$$

The vector $\left(\hat{x}_{ij}^{2N}\right)$ is normalized using the following equation:

$$\hat{x}_{ij}^{2N} = 1 - \frac{\left|x^{ij} - r_j\right|}{\sqrt{\sum_{i=1}^m (x^{ij})^2 + \left(r_j\right)^2}} \quad (5)$$

The value r_j is the target value for c_j the criterion and is considered $\max_i x^{ij}$ for both utility and $\min_i x^{ij}$ cost criteria.

Step 2: Determining the weight of the criteria

This step consists of three phases:

Step 2.1: In this phase, the standard deviation (σ_j) for the criterion c_j is determined with the following equation where m is the number of alternatives:

$$\sigma_j = \sqrt{\frac{\sum_{i=1}^{m}\left(\frac{x^{ij}}{\max\limits_i x^{ij}} - \frac{1}{m}\sum_{i=1}^{m}\left(\frac{x^{ij}}{\max\limits_i x^{ij}}\right)\right)^2}{m}} \quad (6)$$

Step 2.2: Values of the standard deviation calculated for the criteria se normalize with the following equation:

$$w_j^{\sigma} = \frac{\sigma_j}{\sum_{i=1}^{n}\sigma_j} \quad (7)$$

Step 2.3: Finally, the weights are adjusted with the following equation:

$$\widehat{w}_j = \frac{\sqrt{w_j^{\sigma}.w_j}}{\sum_{i=1}^{n}\sqrt{w_j^{\sigma}.w_j}} \quad (8)$$

Step 3: Calculating the aggregation model

Three aggregation functions (CCM, UCM, and ICM) are calculated separately for each alternative.

The CCM (Complete Compensatory Model) is calculated using the following equation:

$$u_1(a_i) = \sum_{j=1}^{n}\frac{\widehat{w}_j.\hat{x}_{ij}^{1N}}{\max\limits_i \hat{x}_{ij}^{1N}} \quad (9)$$

The UCM (Uncompensatory Model) is calculated using the following equation:

$$u_2(a_i) = \max_j \widehat{w}_j\left(\frac{1-\hat{x}_{ij}^{1N}}{\max\limits_i \hat{x}_{ij}^{1N}}\right) \quad (10)$$

The ICM (Incomplete Compensatory Model) is calculated using the following equation:

$$u_3(a_i) = \prod_{j=1}^{n}\left(\frac{\hat{x}_{ij}^{2N}}{\max\limits_i \hat{x}_{ij}^{2N}}\right)^{\widehat{w}_j} \quad (11)$$

Step 4: Integration of utility values

The calculated utility functions are integrated with the following equation using the Euclidean distance principle:

$$DN_i = w_1 \sqrt{\varphi \left(\frac{u_1(a_i)}{\max_i u_1(a_i)} \right)^2 + (1-\varphi) \left(\frac{m - r_{1(a_i)+1}}{m} \right)^2} - w_2 \sqrt{\varphi \left(\frac{u_2(a_i)}{\max_i u_2(a_i)} \right)^2 + (1-\varphi) \left(\frac{r_2(a_i)}{m} \right)^2} + w_3 \sqrt{\varphi \left(\frac{u_3(a_i)}{\max_i u_3(a_i)} \right)^2 + (1-\varphi) \left(\frac{m - r_3(a_i) + 1}{m} \right)^2} \quad (12)$$

In this case, the means $r_1(a_i)$ and $r_3(a_i)$ represent the ordinal number of the alternative a_i sorted by CCM and ICM functions in descending value (higher value first). On the other hand, $r_2(a_i)$ shows the sequence number in the obtained order according to the increasing value (smaller value first) for the UCM function used. The label $\varphi$is the relative importance of the child value used and is in the range [0.1]. It is considered that it can be taken as $\varphi = 0.5$. The coefficients w_1, w_2, w_3 are obtained weights of the used functions CCM, UCM, and ICM, respectively. The sum should be equal to $w_1 + w_2 + w_3 = 1$. When determining the weights, if the decision maker attaches importance to a wider range of performance alternatives, he can set a higher value for w_1. In case the decision maker is not willing to take risks, ie. to choose a poor alternative according to some criterion, he can assign a higher weight to w_2. However, the decision maker may assign a greater weight to w_3 if he simultaneously considers overall performance and risk. Finally, the DN values are sorted in descending order, with the higher-value alternatives being the best.

3. RESULTS AND DISCUSSION

The key issue in the application of the LMAW-DNMA method in the evaluation of the economic performance of the economy of Bosnia and Herzegovina is the selection of appropriate criteria and the determination of their weight coefficients, as well as alternatives. In this paper, the selection of criteria was made according to the nature of the research of the treated problem. Table 1 shows the descriptive statistics of the initial data. Figure 1 shows a ratio analysis of the observed economic performance indicators of the economy of Bosnia and Herzegovina for the period 2013-2022.

Table 1. *Descriptive statistics*

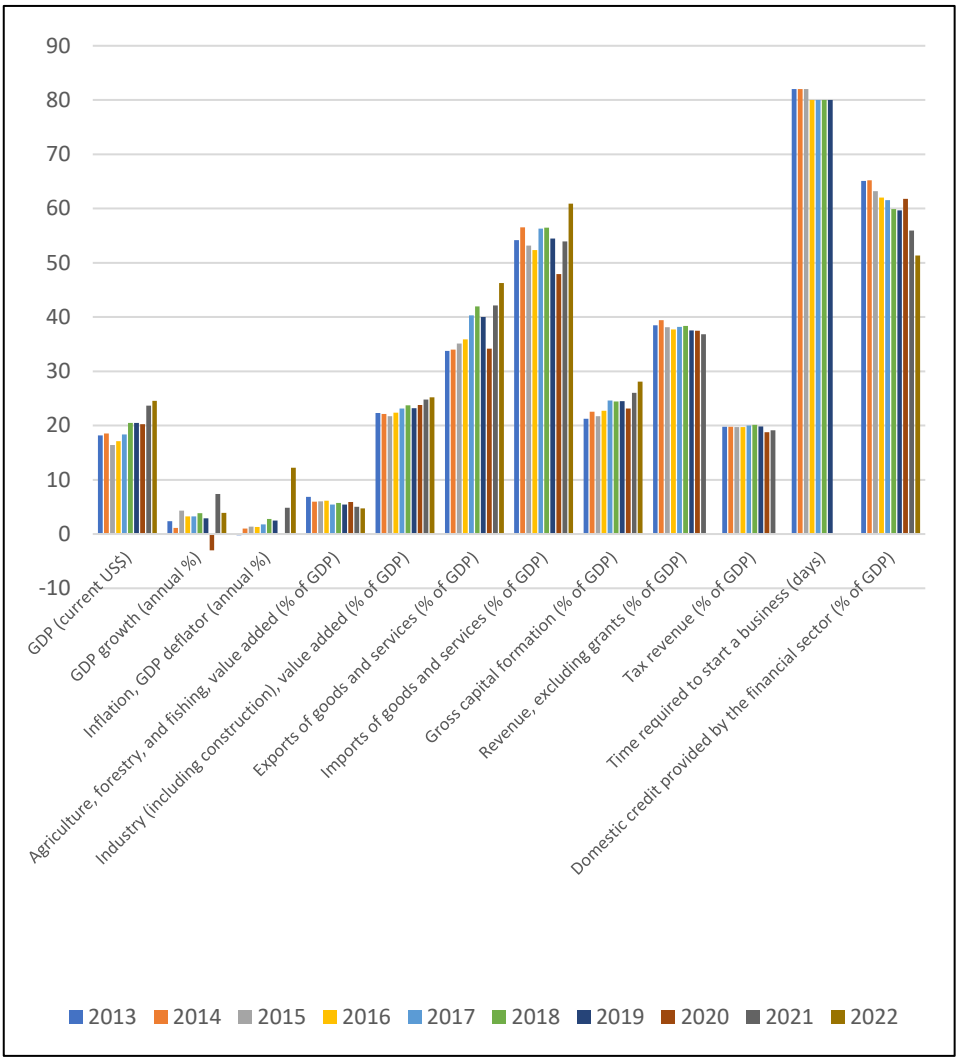
Statistics												
	GDP (current US$)	**GDP growth (annual %)**	**Inflation, GDP deflator (annual %)**	**Agriculture, forestry, and fishing, value added (% of GDP)**	**Industry (including construction), value added (% of GDP)**	**Exports of goods and services (% of GDP)**	**Imports of goods and services (% of GDP)**	**Gross capital formation (% of GDP)**	**Revenue, excluding grants (% of GDP)**	**Tax revenue (% of GDP)**	**Time required to start a business (days)**	**Domestic credit provided by the financial sector (% of GDP)**
	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
Mean	19.79	2.92	2.76	5.72	23.23	38.36	54.62	23.89	34.20	17.67	56.60	60.56
Std. Deviation	2.65	2.63	3.63	.60	1.14	4.35	3.36	2.09	12.03	6.22	39.06	4.22
Minimum	16.40	-3.02	-.22	4.71	21.73	33.74	47.93	21.23	.00	.00	.00	51.36
Maximum	24.53	7.39	12.24	6.84	25.21	46.25	60.89	28.12	39.42	20.14	82.00	65.20
CAGR Calculator (Compound Annual Growth Rate)	3.04 %	5.20 %	49.46 %	-3.64 %	1.23 %	3.20 %	1.17 %	2.85 %	-0.48 %	-0.36	-0.35	-2.34 %

Source: *The World Bank, World Development Indicators*. https://databank.worldbank.org/reports.aspx?source=2&country=SRB#

Note: *Author's statistics*

According to the analysis of the indicators, in 2021 the values of most indicators of the economic performance of the economy of Bosnia and Herzegovina are higher compared to 2020. In 2022, the values of most indicators of the economic performance of the economy of Bosnia and Herzegovina are also higher compared to 2021. They are also higher in statistical average. This leads to the conclusion that the economic performance of the economy of Bosnia and Herzegovina has improved to some extent recently.

Figure 1. *Economic performance indicators of the economy of Bosnia and Herzegovina*



Source: *Author's picture*

According to the analysis of the indicators, in 2021 the values of most indicators of the economic performance of the economy of Bosnia and Herzegovina are higher compared to 2020. In 2022, the values of most indicators of the economic performance of the economy of Bosnia and Herzegovina are also higher compared to 2021. They are also higher in statistical average. This leads to the conclusion that the economic performance of the economy of Bosnia and Herzegovina has improved to some extent recently.

Table 2 shows the correlation matrix of the initial data.

Table 2. *Correlations*

Correlations													
		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
C1	Pearson Correlation	1	.269	.792 **	-.795 **	.959 **	.782 **	.398	.885 **	-.651 *	-.647 *	-.787 **	-.884 **
	Sig. (2-tailed)		.453	.006	.006	.000	.008	.254	.001	.041	.043	.007	.001
C2	Pearson Correlation	.269	1	.428	-.402	.220	.564	.487	.393	-.145	-.107	.042	-.437
	Sig. (2-tailed)	.453		.218	.249	.541	.089	.153	.262	.690	.769	.909	.206
C3	Pearson Correlation	.792 **	.428	1	-.809 **	.763 *	.852 **	.705 *	.891 **	-.927 **	-.914 **	-.565	-.930 **
	Sig. (2-tailed)	.006	.218		.005	.010	.002	.023	.001	.000	.000	.089	.000
C4	Pearson Correlation	-.795 **	-.402	-.809 **	1	-.810 **	-.872 **	-.493	-.947 **	.609	.593	.590	.882 **
	Sig. (2-tailed)	.006	.249	.005		.005	.001	.147	.000	.061	.071	.073	.001
C5	Pearson Correlation	.959 **	.220	.763 *	-.810 **	1	.813 **	.312	.908 **	-.635 *	-.627	-.822 **	-.902 **
	Sig. (2-tailed)	.000	.541	.010	.005		.004	.380	.000	.049	.052	.004	.000
C6	Pearson Correlation	.782 **	.564	.852 **	-.872 **	.813 **	1	.668 *	.943 **	-.654 *	-.622	-.407	-.908 **
	Sig. (2-tailed)	.008	.089	.002	.001	.004		.035	.000	.040	.055	.244	.000
C7	Pearson Correlation	.398	.487	.705 *	-.493	.312	.668 *	1	.579	-.629	-.611	.077	-.486
	Sig. (2-tailed)	.254	.153	.023	.147	.380	.035		.079	.051	.061	.832	.155
C8	Pearson Correlation	.885 **	.393	.891 **	-.947 **	.908 **	.943 **	.579	1	-.731 *	-.712 *	-.623	-.952 **
	Sig. (2-tailed)	.001	.262	.001	.000	.000	.000	.079		.016	.021	.054	.000
C9	Pearson Correlation	-.651 *	-.145	-.927 **	.609	-.635 *	-.654 *	-.629	-.731 *	1	.998 **	.542	.795 **
	Sig. (2-tailed)	.041	.690	.000	.061	.049	.040	.051	.016		.000	.105	.006
C10	Pearson Correlation	-.647 *	-.107	-.914 **	.593	-.627	-.622	-.611	-.712 *	.998 **	1	.560	.775 **
	Sig. (2-tailed)	.043	.769	.000	.071	.052	.055	.061	.021	.000		.092	.008
C11	Pearson Correlation	-.787 **	.042	-.565	.590	-.822 **	-.407	.077	-.623	.542	.560	1	.695 *
	Sig. (2-tailed)	.007	.909	.089	.073	.004	.244	.832	.054	.105	.092		.026
C12	Pearson Correlation	-.884 **	-.437	-.930 **	.882 **	-.902 **	-.908 **	-.486	-.952 **	.795 **	.775 **	.695 *	1
	Sig. (2-tailed)	.001	.206	.000	.001	.000	.000	.155	.000	.006	.008	.026	
**. Correlation is significant at the 0.01 level (2-tailed).													
*. Correlation is significant at the 0.05 level (2-tailed).													

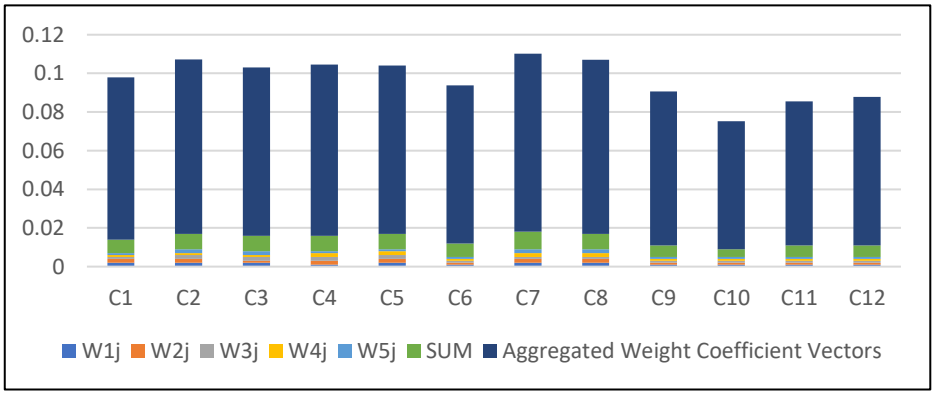
Source: *Author's statistics*

The correlation matrix shows that inflation is a significant factor in the economic performance of the economy of Bosnia and Herzegovina. Adequate control of inflation can influence the achievement of the target economic performance of the economy of Bosnia and Herzegovina.

In the annex, Tables 1 and 2 show the linguistic terms and the calculation of the weighting coefficients of the criteria using the LMAW method.

Figure 2 shows the evaluation and weighting coefficients of the criteria determined by applying the LMAW method. (All calculations and results are the author's.)

Figure 2. *Weight coefficients of criteria*



Source: *Author's picture*

So, in this particular case, the most important criterion is C7 - Imports of goods and services (% of GDP). This means, in other words, that the economic performance of the economy of Bosnia and Herzegovina can be improved to a certain extent with adequate control of the import of goods and services.

In the annex, Tables 3-8 show the calculation using the LMAW-DNMA method. Table 3 shows the results of the LMAW and DNMA methods. (All calculations and results are by the authors.)

In the specific case, therefore, the top five years in terms of the economic performance of the economy of Bosnia and Herzegovina according to the LMAW-DNMA method are in order: 2018, 2019, 2017, 2016, and 2015. In the period 2013 - 2022, the worst economic performances of the economy of Bosnia and Herzegovina were achieved in 2020. Among other things, this was influenced by the Covid-19 pandemic. Taken as a whole, it can be concluded based on the results of the given empirical analysis that the economic performance of the economy of Bosnia and Herzegovina has improved to a certain extent recently. The factors that influenced it were: adequate management of the analyzed statistical variables (gross domestic product, inflation, agriculture, industry, import, export, capital, income, taxes, time

required to start business - days, and domestic loans provided by the financial sector). Likewise, the geopolitical situation, the economic climate, foreign direct investments, the energy crisis, the digitalization of the company's entire operation, etc. The target economic performance of the economy of Bosnia and Herzegovina can be achieved by adequate control of these and other critical factors of business success (price, costs, time, quality, innovation, and growth).

Table 3. *Rank Order*

											w1	w2	w3	
											0.6	0.1	0.3	
		CCM		φ	UCM		φ	ICM		φ	Utility Values			Rank Order
		u1(ai)	Rank	0.5	u2(ai)	Rank	0.5	u3(ai)	Rank	0.5				
2013	**A1**	0.5169	7	0.6378	0.0752	1	0.4098	0.0000	7	0.2828	0.5085	0.5085		**9**
2014	**A2**	0.5140	8	0.6068	0.1218	9	0.9120	0.8000	6	0.7476	0.6796	0.6796		**6**
2015	**A3**	0.5004	9	0.5712	0.1179	8	0.8485	0.8338	4	0.8464	0.6815	0.6815		**5**
2016	**A4**	0.5221	6	0.6770	0.1178	7	0.8029	0.8301	5	0.8045	0.7278	0.7278		**4**
2017	**A5**	0.5831	4	0.8129	0.1131	6	0.7407	0.8373	3	0.8918	0.8294	0.8294		**3**
2018	**A6**	0.6394	1	1.0000	0.1024	4	0.6178	0.8588	1	1.0000	0.9618	0.9618		**1**
2019	**A7**	0.5928	2	0.9137	0.1054	5	0.6669	0.8458	2	0.9434	0.8979	0.8979		**2**
2020	**A8**	0.3370	10	0.3793	0.1318	10	1.0000	0.0000	7	0.2828	0.4125	0.4125		**10**
2021	**A9**	0.5922	3	0.8654	0.0799	3	0.4785	0.0000	7	0.2828	0.6519	0.6519		**7**
2022	**A10**	0.5580	5	0.7489	0.0759	2	0.4313	0.0000	7	0.2828	0.5773	0.5773		**8**
	MAX	0.6394			0.1318			0.8588						

Source: *Author's statistics*

In the specific case, therefore, the top five years in terms of the economic performance of the economy of Bosnia and Herzegovina according to the LMAW-DNMA method are in order: 2018, 2019, 2017, 2016, and 2015. In the period 2013 - 2022, the worst economic performances of the economy of Bosnia and Herzegovina were achieved in 2020. Among other things, this was influenced by the Covid-19 pandemic. Taken as a whole, it can be concluded based on the results of the given empirical analysis that the economic performance of the economy of Bosnia and Herzegovina has improved to a certain extent recently. The factors that influenced it were: adequate management of the analyzed statistical variables (gross domestic product, inflation, agriculture, industry, import, export, capital, income, taxes, time required to start business - days, and domestic loans provided by the financial sector).

Likewise, the geopolitical situation, the economic climate, foreign direct investments, the energy crisis, the digitalization of the company's entire operation, etc. The target economic performance of the economy of Bosnia and Herzegovina can be achieved by adequate control of these and other critical factors of business success (price, costs, time, quality, innovation, and growth).

The research in this paper, using the example of the LMAW-DNMA method, demonstrated the justification of applying, in addition to the classical methodology, the method of multi-criteria decision-making in the evaluation of the economic performance of the economy of Bosnia and Herzegovina, as well as the DEA model. Because they give more accurate results. Therefore, it is recommended that they be used as much as possible in the analysis of the economic performance of the economy of Bosnia and Herzegovina.

4. CONCLUSION

Empirical research of the problem treated in this paper using the LMAW-DNMA method showed that the top five years in terms of the economic performance of the economy of Bosnia and Herzegovina are in order: 2018, 2019, 2017, 2016, and 2015. In the period 2013 - 2022, the worst economic performance of the economy in Bosnia and Herzegovina was achieved in 2020, partly due to the negative impact of the COVID-19 pandemic. Overall, recently the economic performance of the economy of Bosnia and Herzegovina has improved to a certain extent. Adequate management of analyzed statistical variables as factors (gross domestic product, inflation, agriculture, industry, import, export, capital, income, taxes, time required to start business - days, and domestic loans provided by the financial sector) contributed to this.).

Significant determinants of the economic performance of the economy of Bosnia and Herzegovina also include geopolitical situation, economic climate, foreign direct investments, digitization of the entire business of companies, energy crisis, and so on. To a certain extent, the negative effects of the COVID-19 coronavirus pandemic on the economic performance of the economy of Bosnia and Herzegovina have been mitigated by the application of digitization. The economy of Bosnia and Herzegovina can, all in all, achieve the target economic performance by adequately controlling the critical factors of business success (price, costs, time, quality, innovation, and growth).

There are no works in the literature, as far as we know, that analyze the performance of the economy of individual countries using the LMAW-DNMA method. This study can serve as an incentive to apply these multi-criteria decision-making methods in the evaluation of the performance of individual countries in their ranking to improve in the future. The performance ranking of individual countries can be done according

to different criteria depending on the purpose and goal of the research. At the same time, different methods of multi-criteria decision-making can be used in an integrated manner to obtain the best possible representation of the performance position of the observed countries.

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Radojko Lukić

EKONOMSKE PERFORMANSE EKONOMIJE BOSNE I HERCEGOVINE

SAŽETAK

Pitanje analize faktora dinamike ekonomskih performansi svake privrede, a to znači i Bosne i Hercegovine, kontinuirano je veoma aktuelno, izazovno, značajno i kompleksno. Adekvatna kontrola ključnih faktora može značajno uticati na postizanje ciljanog ekonomskog učinka privrede Bosne i Hercegovine. Primjena višekriterijumskih metoda odlučivanja omogućava adekvatnu kontrolu ključnih faktora ekonomskog učinka privrede Bosne i Hercegovine. Imajući to u vidu, ovaj rad analizira dinamiku ekonomskih performansi privrede Bosne i Hercegovine u periodu 2013. - 2022. godine na osnovu LMAW-DNMA metode. Prvih pet godina prema ekonomskom učinku privrede Bosne i Hercegovine prema LMAW-DNMA metodi su: 2018., 2019., 2017., 2016. i 2015. Najlošije ekonomske performanse privrede Bosne i Hercegovine su bile postignute u 2020. U posljednje vrijeme, generalno gledano, značajno su se poboljšale ekonomske performanse Bosne i Hercegovine. Na to je uticalo adekvatno upravljanje analiziranim statističkim varijablama (bruto domaći proizvod, inflacija, poljoprivreda, industrija, izvoz, uvoz, kapital, prihod, porezi, vrijeme potrebno za početak rada – dani i domaći krediti koje daje finansijski sektor). Isto tako, geopolitička situacija, ekonomska klima, strane direktne investicije, pandemija COVID-19, energetska kriza, digitalizacija cjelokupnog poslovanja kompanije i drugi faktori. U svakom slučaju, njihova adekvatna kontrola može u velikoj mjeri uticati na postizanje ciljanih ekonomskih performansi privrede Bosne i Hercegovine.

U literaturi nema radova, koliko nam je poznato, koji analiziraju performanse privrede pojedinih zemalja metodom LMAW-DNMA. Ova studija može poslužiti kao poticaj da se primjenjuju ove višekriterijumske metode odlučivanja u evaluaciji učinka pojedinih zemalja u njihovom rangiranju u cilju poboljšanja u budućnosti. Rangiranje učinka pojedinih zemalja može se vršiti prema različitim kriterijumima u zavisnosti od svrhe i cilja istraživanja. Istovremeno, različite metode višekriterijumskog odlučivanja mogu se koristiti na integrisan način kako bi se dobila najbolja moguća zastupljenost pozicije učinka posmatranih zemalja.

Ključne riječi: *ekonomija, performanse, Bosna i Hercegovina, LMAW-DNMA metoda*

JEL: *C61, L32*

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INFLUENCE OF CUSTOMER-BASED BRAND EQUITY ON NEO-LUXURY BRAND PURCHASE INTENTIONS: ARE THERE DISTINCTIONS AMONG INCOME GROUPS?

ABSTRACT

This study investigates the direct effect of brand market value on consumer purchase intentions of neo-luxury brands. Additionally, this study examines how the consumer's income affects the established relationship in the conceptual research model, i.e. how the market value of the brand affects consumer purchase intentions. The data was collected through an online survey of a representative group of evenly distributed respondents, observed by different income categories. In order to validate the suggested conceptual model, we used structural equation modeling. The results show that, for neo-luxury brands, consumer purchase intentions are positively impacted by the brand's market value. Furthermore, our results show that the level of customer income is not statistically significant, leading us to draw the conclusion that there are no significant differences between how customers from various income groups perceive various brand value components or how these components affect their intentions to purchase neo-luxury brands. This research expands the knowledge about consumer purchase intentions of neo-luxury brands.

Keywords: *Neo-luxury brands, brand equity, purchase intention, income groups*

JEL: *M0, M30, M31, M37*

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1. INTRODUCTION

When we look at luxury brands, we can conclude that their characteristics stand out compared to brands of the same category in terms of features such as design, exclusivity, quality, status features, and the like. Additionally, compared to non-luxury brands, luxury brands can be identified by certain connotations (Tynan et al., 2010). Beverland (2004), Okonkwo (2009), and Petina et al. (2018) claim that associations like (a) authenticity, heritage or pedigree, (b) stylistic consistency, (c) commitment to quality, (d) unique aesthetic symbolism, and (e) hedonic and emotional promotional appeals are used by companies to create their luxury brand identities.

In the past, luxury brands were often associated with high-income consumers, who were more willing to pay higher premium prices than low- or middle-income consumers. But in the modern era, buyers from various socioeconomic backgrounds all over the world are getting more and more interested in luxury brands since these brands are becoming more popular (Kapferer and Michaut, 2015). Such changes, accompanied by changes in consumption patterns, lead to the need to develop a completely new category of luxury brands, called neo-luxury brands (Kumar et al., 2020). Neo-luxury brands emerged from the concept of luxury brands, and in the literature, they are also called "masstige" brands. As stated by Silvestein et al. (2003), neo-luxury brands can be defined as more affordable luxury brands that possess a higher level of quality, taste, and aspiration than non-luxury brands. The target consumer category for neo-luxury brands is middle-income consumers who want a high-quality, creative, innovative and authentic product at an affordable price. In this sense, a huge research potential is opened related to the category of neo-luxury brands in general, and especially for research with a focus on the market value of these brands, as the most comprehensive model of brand consideration acknowledged in the literature.

As an intangible variable and resource of every company, the market value of a brand is one of the most important determinants of a company's competitive advantage. Although brand value is one of the most controversial topics in marketing, the ultimate goal of marketing managers is to create and maintain high brand value. The market value of a brand can be defined from a consumer-based perspective as the distinction between the customer response to a branded product versus an unbranded product, assuming both items have the same amount of marketing stimuli and product qualities (Keller, 1993). This different consumer reaction shows the effects of a long-term investment in brand marketing. The concept of brand market value is of particular importance for luxury and neo-luxury brands because these brands are distinguished from non-luxury brands by their characteristics. Despite an increase of the number of studies on neo-luxury brands, this area is still insufficiently

researched. In this context, this research is focused on the context of the market value of the brand and the relationship between the consumer and the brand, viewed in the context of non-luxury brands (Kumar et al., 2020).

2. THEORETICAL BACKGROUND

Neo-luxury brands have emerged from the concept of luxury brands, and are defined as affordable luxury brands that possess a higher level of quality, taste, and aspiration than non-luxury brands (Silverstein et al., 2003). Although neo-luxury brands have a number of common characteristics with traditional luxury brands, the key distinction is that neo-luxury brands reflect the transformative aspects of luxury consumption where worthiness and belonging merge with the hedonic needs of consumers (Cristini et al., 2017). The target population for purchasing neo-luxury brands is middle-income consumers. Such consumers, for the most part, do not have an established habit of buying and consuming luxury brands, and their expectations from the purchased service or product are lower (Seringhaus, 2002).

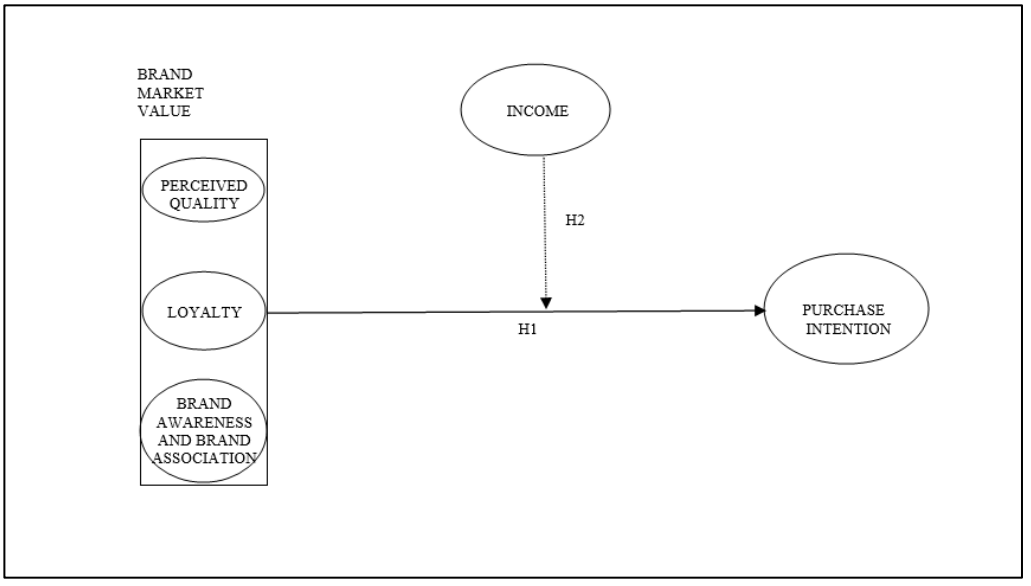
A new brand positioning sub-plan, known as a "mass prestige strategy" in the literature, was required with the rise of neo-luxury brands. Silvestein and Friske (2003) introduced the concept of mass prestige ("Mass Prestige") for the first time in the literature, describing it as "a strategic expression for entering the market of premium brands, which are based on high-value brand and price acceptability, thereby targeting a prestigious niche based on the knowledge, likeability, and love of consumers." The innovativeness of this marketing and branding strategy is reflected in the fact that neo-luxury brands offer lower prices than traditional luxury brands, yet higher than mid-range brands. As a result, neo-luxury brands are guaranteed to be more accessible than traditional luxury brands and therefore exclude the characteristic dimension of traditional luxury brands - their inaccessibility to a large consumer base. By introducing this innovative strategy, luxury brand companies actually deviate from traditional methods for marketing and branding and introduce a new innovative approach of "Mass Prestige" marketing, as a brand positioning strategy that combines prestige with reasonable prices in order to attract middle-class consumers (Paul, 2018).

Companies can perfectly plan, adapt and implement business strategies, but the final success is determined by consumers, through their decisions whether to buy a product or service of a certain brand or not. Each consumer makes their own unique buying decision, according to Kotler and Armstrong (2006). According to Crosno, Freling, and Skinner (2009), purchase intentions are the likelihood that a consumer would select a particular brand within a particular product category. The research focused on consumer purchase intentions decades ago is of great importance to researchers. The literature states that one of the most common predictors of consumer purchase intentions is the market value of the brand (Aaker, 1991). The

market value of the brand has special importance because it represents a comprehensive concept and is defined as the additional value that the brand provides to the product, i.e. the value with which it "enriches" the product (Farquhar, 1989) and thus can play a key decision in establishing purchase intentions among consumers (Ashil and Sinhe, 2004; Chang, Hsu and Chang, 2008; Liu et al., 2017).

The role that the brand plays in the context of luxury goods should not be particularly emphasized, and neither should the role of the market value of these brands for consumer purchase intentions, which has been confirmed by numerous studies (Jung and Shen, 2011; Godey et al, 2016; Husain, Ahmad and Khan, 2022). Given that the phenomenon of neo-luxury brands is relatively recent, there is not a large number of empirical studies conducted in this context, so it is of scientific and practical importance to examine this relationship in the context of neo-luxury brands. Accordingly, a conceptual research model was established that observes the market value of the brand as an indicator of consumer purchase intentions in the context of neo-luxury brands. In addition, within this research, we start from the point of view that consumers with different levels of income may have different purchase intentions of neo-luxury brands. Therefore, the influence of the market value of the brand on the purchasing intentions of consumers of neo-luxury brands is investigated, along with the testing of the moderating influence of the level of consumer income on the above-mentioned relationship.

Image 1: *Conceptual research model*



2.1. MARKET VALUE OF THE BRAND AND CUSTOMER'S INTENTION TO PURCHASE NEO-LUXURY BRANDS

One of the key and comprehensive concepts through which the importance of the brand is expressed is the concept of brand value. Brand value can be viewed from the financial and consumer perspective. Accountants tend to view brand value through financial contributions, i.e. in the context of monetary value. In this regard, brand value can be defined as the incremental cash flow resulting from the association of the brand name with the product (Kim, Kim, and An, 2003). On the other hand, marketers define this concept in terms of the relationship between the customer and the brand (consumer-oriented definitions), or as something belonging to the brand owner (company-oriented definitions) (Wood, 2000). Given the dominant marketing nature of this work, we look at the brand market value from the consumer-based perspective.

Aaker (1991) suggests that the market value of a brand is a set of assets, but also promises, associated with the brand name and sign in such a way as to result in an increase or decrease in the value that the product/service represents to the company or its customers. Market value of a brand implies "the effect of brand awareness as a consumer's response to brand marketing" (Keller, 1993). The stronger the brand's market value, the greater the preference for the brand that exists in the consumer's mind, which leads to a higher market share and higher profits. As a result, brand equity is considered to have numerous advantages. After Keller (1993) published one of the seminal works in this field, brand market value has been extensively studied for physically tangible products.

In the literature, there are different models of conceptualizing brand market value. According to Aaker's Managerial Brand Equity, the categories that make up brand equity are brand loyalty, brand familiarity, perceived quality, brand associations, and other assets of the protected brand (Aaker, 1996). A very important reference in the scientific marketing community is Keller's (1993) model of the market value of the brand, which is also based on the context of the consumer perspective and has a great similarity with Aaker's model. Unlike Aaker's model, Keller's model takes brand knowledge as a starting point. According to this model, brand knowledge is defined by two components: brand awareness and brand image. Brand awareness is determined by brand recognition by consumers. On the other hand, within this model, brand image is defined as the consumer's perception of the brand.

Based on Aaker's (1991) conceptual model, Yoo, and Donthu (2001) developed a model that is most often used in empirical research when measuring brand market value. Since this model was derived from the aforementioned Aaker's conceptualization of brand value, it is clear that it is a multidimensional model of brand market value, as it includes the following dimensions: perceived quality, brand

loyalty and familiarity, and brand association. In their research, Yoo and Donthu (2001) come to the conclusion that it is justified to merge the dimensions of brand familiarity and brand association into one construct.

The main reasons for buying luxury brands go beyond functionality. Customers buy luxury brands to gain exclusivity (Berthon et al., 2009), status, and prestige (Amaldoss and Jain, 2005). Fionda and Moore (2009) explain the importance of the concept of luxury brands in the context of a status symbol that has deep psychological value for consumers, stating that purchasing a luxury brand is a "highly involved consumption experience that is strongly congruent with a person's self-concept". Given that consumers use luxury as a status symbol, the higher price of these brands compared to other brands in the same category is not crucial in the purchase intention but can be seen as an indicator of prestige (Veblen, 1899). In fact, brand equity is what will differentiate consumer choice between identical products (Yoo et al., 2000). Among other things, high brand value can result in a higher intention to purchase a given brand (Chang, Hsu, and Chung, 2008; Liu et al., 2017; Husain et al., 2022; Rojas-Lamorena et al., 2022). Starting from the assumption that consumers of neo-luxury brands (which are strategic variants of luxury brands) are oriented towards the features that these brands provide them in the context of a different or significantly higher level of functionality and psychological-sociological values, high market value can be seen as a relevant indicator of the buyer's intention for buying neo-luxury brands. In accordance with the above-mentioned, we propose the following research hypothesis:

H1: *There is a positive influence of the market value of the brand on the customer's intention to purchase neo-luxury brands.*

2.2. INCOME

Demographic variables (income, age, gender, education, etc.) can influence consumer purchase intentions (Lee, 2010; Madahi and Sukati, 2012). Yang et al. (2011) state that demographic characteristics affect purchase intentions in such a way that consumers with different demographic characteristics show different purchase intentions. Consumer income, as a demographic variable, is viewed as total personal income on a monthly basis. There is a large number of studies that show different influences of consumer income on consumer purchase intention. Hyun, Cho, Xu, and Fairhurst (2010) suggest that there is an indirect relationship between the level of income and the customer's intention to purchase a product. Consumers with a higher level of income have a greater tendency to deal with self-image and thereby show more interest in goods and services that reflect the consumer's purchasing ability (Alam, 2006). In the context of this research, the income variable can be of great importance for research, because the strategies of neo-luxury brands are aimed at attracting consumers who prefer authentic products of high quality, but

with affordable prices. These strategies are much closer to the strategies used by luxury brand companies than to the strategies used by non-luxury brand companies. Since neo-luxury brands emerged from the concept of luxury brands, the branding strategy of neo-luxury brands, known in the literature as the "Mass Prestige" strategy, includes a large number of common elements as the branding strategy of traditional luxury brands. The key difference is that Mass Prestige strategies exclude the "unattainable dream" function by offering lower prices than luxury brands, yet higher than mid-range products. Taking into account the statements of the author Alam (2006) and the nature of neo-luxury brands, which possess a higher level of quality, taste, and aspiration than non-luxury brands, with an affordable price (Silverstein et al., 2003), the observation of consumer income can be of particular interest, and challenge, as a potentially determining moderator in the context of the relationship between the consumer and the neo-luxury brand. In this regard, we propose the following research hypothesis:

H2: *There are different effects of the market value of the brand on the buyer's intention to purchase neo-luxury brands among consumers with different levels of income.*

3. RESERCH METHOD

3.1. PRODUCT CATEGORY AND BRAND

The research was conducted in Bosnia and Herzegovina, a European developing/emerging country (IMF, 2021) with an approximate population of 3.3 million. Emerging markets provide an ideal context for studying the value of neo-luxury (Paul, 2015; Kumar et al., 2019). In the context of neo-luxury brands, there is no precise report in the domain of evaluating the value of brands, nor their market shares. In this sense, the existing research can serve as a basis for choosing a specific brand for this research. In the research conducted so far, empirical analyses were most often based on the category of electrical devices (Kumar and Paul, 2018; Baber et al., 2020; Kumar, 2020; Kumar et al., 2021). Baber et al. (2020) measured the prestige coefficient of Apple, Xiaomi, and Samsung mobile phones in the emerging market of India and came to the conclusion that the highest degree of prestige can be associated with the Apple brand. Subsequently, Kumar et al. (2021) also investigated the degree of prestige of mobile phone brands in the Serbian market as well as developing markets, taking into account Apple, Samsung and Huawei brands, and identified only Apple as a non-luxury brand. In this sense, the focus of this research is the category of electrical devices, with a focus on the Apple brand, as a typical representative of the mass luxury strategy. It is of great importance that the Apple brand is known to consumers since brand awareness is of great importance in examining the market value of the brand. In addition, Apple brand products are used

by different income categories of respondents, which is an important aspect according to the objectives and hypotheses of this research.

3.2 SAMPLE AND PROCEDURE

Research hypotheses were tested by conducting quantitative research. The primary data was collected online, through a GoogleForms questionnaire, and included respondents from Bosnia and Herzegovina of different genders, ages, levels of education, and different levels of income. Invitations to participate in the survey, including a URL that directed respondents to the survey website, were sent via email or private messages via social media platforms. The final usable sample included a total of 354 respondents. The data obtained from the research were analyzed using the SEM analysis, using the AMOS 24.0 statistical program. An overview of the demographic characteristics of the respondents is presented in Table 1.

Table 1: *Demographic characteristics*

Variables	%	Variables	%
Sex		Education	
Female	68.4	High school or lower	0.6
Men	31.6	College or vocational school	33.9
Age		Bachelor	48.3
20 - 24 years	15.9	Master of Science/Profession or higher	17.2
25 - 29 years	16.3	Generations	
30 - 34 years	22.2	X-generation (40 - 60)	26.3
35 – 39 years	19.3	Y-generation (30 - 39)	41.5
40 – 49 years	14.4	Z-generation (20 - 29)	32.2
50 – 60 years	11.9		
Monthly income			
BAM 1,000 or less	35.0		
BAM 1,001 – 1,500	33.3		
BAM 1,501 – 2,000 BAM 2,000 +	20.9 10.7		

Source: *The author's findings*

Table 1 shows that out of 354 respondents, 242 respondents (68.4%) were women, and 112 respondents (31.6%) were men. The majority of respondents 147 (41.5%) belong to the age group between 30 and 39 year olds. When it comes to personal income, it can be seen that it is a fairly even distribution of respondents, observed by different income categories. Only the category of respondents with incomes greater than 2,000 BAM (38 respondents) has a more significant deviation. A total of 124 respondents (35.0%) belongs to the income group below 1,000 BAM. Then, 118

respondents have an income of 1,001 to 1,500 BAM. There are 74 (20.9%) respondents from income groups of 1,501 to 2,000 BAM. Most respondents have a university degree.

3.3. QUESTIONNAIRE DESIGN

The questionnaire used for this research consists of two parts. The first part of the questionnaire includes the demographic characteristics of respondents in terms of gender, years of education and personal income. The second part of the questionnaire includes previously validated scales measuring brand market value and purchase intentions measured on a seven-point Likert scale. The construct of brand market value implies a second-order variable, which includes three first-order variables: perceived quality, consumer loyalty, and brand awareness and brand association. In this regard, perceived quality was measured using a scale from previous research by Yoo and Donthu (2001) and Thong and Hawley (2009). Loyalty was measured using scales from the Yoo and Donthu (2000, 2001) research, and brand familiarity and brand association using scales from the Yoo and Donthu (2000), Washburn and Plank (2002), and Thong and Hawley (2009) research. To measure consumers' purchase intentions, scales from previous research conducted by Sweeney et al. (1999) and Liljander et al. (2009) were used. The scales used were translated and adapted to the research context in Bosnia and Herzegovina.

The answer to each question in the questionnaire was mandatory. Given that we wanted to include in the research only those respondents who considered the Apple brand a neo-luxury brand, a filter question was asked at the very beginning of the questionnaire: "Do you consider the Apple brand a neo-luxury brand?". All respondents who provided an affirmative response were included in the further research. Also, since the variables in the conceptual model can only be assessed in individuals who own or have owned a specific Apple brand product, the following filter question was asked at the beginning of the questionnaire: "I use or have used the Apple brand". Only the respondents who confirmed the answer to this question were included in the further of the research.

4. RESEARCH RESULTS

With the aim of testing the set research hypotheses and drawing appropriate conclusions, the collected data were analyzed in three phases. First, the internal reliability of the used scales was assessed by determining the Cronbach alpha coefficient and the correlation of individual items within the used scales (Hair et al., 2010). As can be seen from Table 2, all used scales show a satisfactory level of reliability.

In the second step, the structural equation modeling (SEM) technique was applied to test the hypotheses from the proposed research model. Following the methodological

suggestions of Anderson and Gerbing (1988), a two-step approach was used to estimate the model. The first step includes the evaluation of the measurement model, while the second step involves testing the structural relationships (hypotheses) among the latent constructs. The two-step approach eliminates the interaction between measurement and structural models and re-specification error (Hair et al., 2010).

4.1. QUESTIONNAIRE DESIGN

First, the reliability of all constructs was verified using Composite Reliability (CR) and Average Variance Extracted (AVE). All constructs were found to be highly consistent and reliable as their composite reliability (CR) scores were above the required cut-off value of 0.7 (Bagozzi and Yi, 2012) and the average variance extracted (AVE) values above 0.5 (Hair et al., 2010) (Table 2).

Table 2: *Measures properties*

Second order	Construct (number of items)	Items (Codes)*	Mean	Standard deviation	Cronbach alph(N=354)	Item-total correlation	Standardised factor loading (λ)	CR	AVE
Customer-based brand equilty (CBE)	Perceived quality (PQ)	I trust the quality of products from 'Apple'. (PQ1)	5.88	.754	.767	.576	.698	.793	.562
		Products from 'Apple'would be of very good quality. (PQ2)	5.25	1.097		.593	.711		
		Products from 'Apple'offer excellent features. (PQ3)	5.79	.792		.694	.833		
	Brand loyalty (BL)	I consider myself to be loyal to brand 'Apple'. (BL1)	5.59	1.321	.927	.906	.940	.924	.846
		'Apple'would be my first choice. (BL2)	5.69	1.256		.933	.983		
		I will not buy other brand if 'Apple' is available at the store. (BL3)	6.01	.852		.810	.829		
	Brand awareness and brand associations (BAA)	I can recognize 'Apple'among other competing brands. (BAA1)	6.29	.554	.906	.791	.836	.915	.684
		I am aware of 'Apple'. (BAA2)	6.08	.751		.757	.822		
		Some characteristics of 'Apple'come to my mind quickly. (BAA3)	6.16	.641		.833	.883		
		I can quickly recall the symbol or logo of 'Apple'. (BAA4)	6.28	.555		.776	.809		
		I have difficulty in imagining 'Apple' in my mind. (r) (BAA5)	6.00	.816		.740	.781		
	Purchase intentions (PI)	I will definitely consider buying an 'Apple' branded products (PI1)	5.62	.870	.994	.985	.988	.994	.982
		There is a strong likelihood that I will buy an 'Apple' branded product (PI2)	5.64	.871		991	.989		
		I prefer another brand. (r) (PI3)	5.36	.859		.985	.996		

Source *Analysis of data obtained by primary research*

Note: ** Items reflect respondents' opinions measured on a Likert scale (1-7), where 1 means significantly worse, and 7 means significantly better, compared to the competition*

Also, as shown in Table 2, the standardized factor loading of items (manifest variables) and first-order constructs ranged from 0.698 to 0.996, and all were statistically significant ($p<0.001$). These findings suggest that convergent validity is satisfied.

Discriminant validity was evaluated by comparing the square root AVE of each construct to its correlations with other constructs (Fornell and Larcker, 1981). The results showed that the constructs' discriminant validity is supported because each construct's square root AVE is higher than its correlations with any other construct in the model. Table III shows CR, AVE, square root AVE, and correlation values, supporting constructs' reliability and convergent and discriminant validity.

Table 3: *Reliability, convergent and discriminant validity of constructs*

Composite reliability and convergent validity			**Discriminant validity**			
Construct	**CR**	**AVE**	**PQ**	**BL**	**BAA**	**PI**
Perceived quality (PQ)	0.793	0.562	**0.750**[a]			
Brand loyalty (BL)	0.924	0.846	0.515	**0.920**		
Brand aw. and brand ass. (BAA)	0.915	0.684	0.647	0.378	**0.827**	
Purchase intentions (PI)	0.994	0.982	0.244	0.191	0.304	**0.991**
Note: [a] Square root AVE values are in diagonals (bold) and correlations (r) are off-diagonal values						

Source: *Author's own results*

Finally, the model fit was tested using several fit indices. The measurement model was estimated using the maximum-likelihood method (MLM). According to the model evaluation criteria, the overall fit of the measurement model to data was acceptable: $\chi2$ =211.246 ($p<0.001$); $\chi2/df$ = 2.975; RMSEA = 0.075, SRMR = 0.0395; CFI = 0.974; TLI = 0.967; GFI = 0.920; AGFI = 0.882.

4.2. STRUCTURAL MODEL AND HYPOTHESES TESTING

Structural equation modelling (SEM) analyses were conducted to support the proposed model and to test the hypotheses. The fitting indices of the structural model are as follows: $\chi2$ = 512.730 ($p<0.001$); $\chi2/df$ = 3.913; RMSEA = 0.091, SRMR = 0.0728; CFI = 0.949; TLI = 0.940. In comparison with values suggested in the prior discussion, findings demonstrate that the model's fit is satisfactory. Thus, it was deemed appropriate to test the hypothesized paths. (Table 4).

Table 4: *Hypotheses testing*

Variable	Hypotheses	Model 1	Model 2	Full model
Main effects				
BE → PI (β_1)	**H1**	0.328^{***}	0.328^{***}	0.338^{***}
Moderator				
Income → PI (γ_1)			0.006^{ns}	0.006^{ns}
Interaction effect				
BExIncome → PI (ζ_1)	**H2**			0.014^{ns}
Random effects				
Gender		0.057^{ns}	0.057^{ns}	0.056^{ns}
Age		0.027^{ns}	0.029^{ns}	0.029^{ns}
Education		-0.023^{ns}	-0.025^{ns}	-0.027^{ns}
N (number of observations)		354	354	354
Notes: ***p < 0.001; **p < 0.01; *p < 0.05				

Source: *Author's own results*

As predicted by hypothesis H1, a positive relationship between consumer-based brand equity and purchase intentions was supported ($\beta = 0.338$; $p < 0.001$), which is in line with the general assertion that consumer brand equity ultimately influences purchase intention (Dodds, Monroe, and Grewal, 1991; Moradi and Zarei, 2011; Tolba and Hassan, 2009; Chang et al., 2008; Chen and Chang, 2008). According to Swait et al. (1993), brand equity is thought to be a significant factor in customers' decisions to purchase one brand over another.

On the other hand, the moderating influence of income on the mentioned relationship is not statistically significant ($\beta = 0.014$; $p = 0.780$), which leads us to the conclusion that the second research hypothesis has not been confirmed. In other words, there are no significant differences in the way consumers belonging to different income groups perceive elements of brand value or in their influence on their purchase intentions for these brands. So, although by their nature neo-luxury brands possess a higher level of quality, taste, or aspirations than non-luxury brands (Alam, 2006), their second strategic determinant—an affordable price for a wider audience of consumers (Silverstein et al., 2003)—indicates a clear orientation and accessibility of these brands to consumers of different income groups. This is also the basis of their differentiation compared to traditional luxury brands, so the name of this

strategy "mass" prestige is fully justified. Purchase intentions were explained by 27.4% of the variances.

5. CONCLUSION

The current study investigates the relationship between customer-based brand equity and purchase intentions for masstige brands. This study also examines the impact of CBBE on intentions to buy masstige brands across different income segments of customers. According to our research, masstige brand companies can elicit favorable responses from their target audiences by improving the prestige, distinctiveness, and appeal of their masstige brands, as is the case with traditional luxury brands. But what is particularly characteristic and different in comparison to the niche strategies of traditional luxury companies is that masstige brand companies are able to direct their "mass" marketing strategies to a much wider base of consumers without treating them as separate market groups.

5.1. THEORETICAL AND MANAGERIAL IMPLICATIONS

A thorough theoretical framework for explaining purchase intention for mass brands is still absent despite the substantial body of academic research on mass marketing (e.g., Kumar and Paul, 2018; Kumar et al., 2020; Das et al., 2021). This gap is filled in the current study by looking at how CBBE influences purchase intentions for mass-prestige brands. Our research confirms the fundamental process through which customer perceptions of brand equity may influence their decision to buy a brand. However, the current study advances the fundamental mass-prestige hypothesis by contending that consumers from different socioeconomic (income) backgrounds do not have different opinions about mass-prestige brands, which affects their propensity to purchase these products. The significance of such findings stems from the fact that they indicate the complete justification of the mass luxury strategy and, consequently, the masstige theory as a separate discipline of brand management and marketing in general.

From a managerial standpoint, the current study offers masstige brand producers some crucial insights. A first managerial implication is that those who develop masstige brands must build strong brands that will forge strong, memorable, and favorable associations in the minds of consumers, trying to develop and achieve above-average aspects of masstige brand equity (e.g., perceived quality, brand awareness, brand associations, and brand loyalty). The expectations of prestige and luxury that come with masstige brands are crucial, regardless of the consumer's income possibilities.

5.2. LIMITATIONS AND FUTURE RESEARCH

The current study contains a number of limitations. First, only one well-known neo-luxury brand of long-lasting electronic products, Apple, is included in the data set. Although the findings and recommendations can theoretically be extended to other neo-luxury brands, care should be used when extrapolating the findings to different situations. Therefore, it will be helpful for future research with other product/service brands to confirm the results of this study. The second limitation has to do with the number of important factors used in this study to analyze customers' intentions to purchase a neo-luxury brand. In this sense, future research that will cover many other contextual, psychographic, and behavioral aspects significant for the formation of consumer perception of these brands is desirable. Finally, bearing in mind the used research methodology, which mainly draws on self-report measurements, future research could employ observational techniques to measure the subjects' emotional and behavioral responses to masstige brands.

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Nedžla Maktouf

Adi Alić

UTICAJ TRŽIŠNE VRIJEDNOSTI BRENDA NA KUPOVNE NAMJERE POTROŠAČA NEO-LUKSUZNIH BRENDOVA: POSTOJE LI RAZLIKE IZMEĐU DOHODOVNIH SKUPINA POTROŠAČA?

SAŽETAK

Ova studija istražuje direktan uticaj tržišne vrijednosti brenda na kupovne namjere potrošača, posmatrano u kontekstu neoluksuznih brendovova. Studija, također ispituje moderirajući uticaj razine dohotka potrošača na uspostavljeni odnos između tržišne vrijednost brenda i kupovnih namjera potrošača. Podaci su prikupljeni putem online ankete, od reprezentativne grupe ispitanika, posmatranih po različitim kategorijama dohotka. U cilju analize predloženog konceptualnog modela istraživanja, korištena je statistička metoda modeliranja putem strukturalnih jednačina (SEM). Rezultati pokazuju da kod neoluksuznih brendova tržišna vrijednost brenda pozitivno utječe na kupovne namjere potrošača. Međutim, rezultati pokazuju da razina dohotka kupaca nema statistički značajan moderirajući efekat, što nas navodi na zaključak da ne postoje značajne razlike u smislu toga kako kupci različitih dohodovnih grupa percipiraju uticaj tržišne vrijednosti brenda na njihove namjere o kupoviti neoluksuznih brendova. Ovo istraživanje proširuje postojeća saznanja o neoluksuznim brendovovima i odnosu potrošača prema njima, sa značajnim naučnim impikacija u kontekstu same teorije neoluksuza, tako i, itekako, praktičnim implikacijama za uspješan marketing ovih brendova.

Ključne riječi: *Neoluksuzni brendovi, vrijednost brenda, namjera kupovine, dohodovne skupine*

JEL: *M0, M30, M31, M37*

Emina Resić [1]

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CLUSTERIZATION OF BANKS IN THE FEDERATION OF B&H BASED ON DIFFERENT CRITERIA

ABSTRACT

The evaluation of customers of banking services should be seen as an additional tool for analyzing the performance of banks in addition to the analysis of financial indicators. Considering the impact that customer satisfaction and trust can have on the stability of the banking system, it is desirable to include them in reports on the banking sector. The evaluation of customer satisfaction can also anticipate certain market trends and is a useful tool for the management of banking institutions to take corrective measures before the negative expectations of customers reflect on the financial statements. The evaluation of customers of banking services and the analysis of financial indicators must be placed in the context of the size of the banks so that the results can be properly interpreted. Cluster analysis is a method that can be used to perform clustering based on these three criteria. The results of the research for the Federation of B&H banks show the importance of bank clusters based on customer evaluation, financial indicators and the size of banks.

Keywords*: cluster, bank, indicators, customer evaluation.*

JEL: *G2, C3*

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1. INTRODUCTION

The environment in which banks operate has always been one of the most dynamic ones, and as we can see from the example of the past few years, where due to external influences (of which we single out technological changes, the impact of the Covid 19 pandemic and the current crisis caused by the war in Ukraine) the way of which banks meet the needs of users has changed significantly. It is clear that the biggest challenges are, on the one hand, how to manage to maintain balance between quality risk management in a period of crisis and at the same time maintain competitiveness, and, on the other hand, how to respond to the growing needs of the bank's clients. Timely reaction, timely recognition of user needs and timely response to them are extremely important for preserving the market position. Bearing in mind the above-mentioned, as well as the fact that banking companies are one of the largest financial institutions, the focus of attention of the shareholders of banking companies is the reputation that arises from the opinions of service users, which is basically based on some kind of evaluation, regardless of whether it is a legal or natural persons. The above-mentioned becomes more important if we take into account that the evaluation of the user is determined to the greatest extent by the service provided by the banks, then by the behavior of the user, trust and finally the online service (Ansari, 2019).

Cluster analysis enables banks to make data-driven decisions by uncovering meaningful patterns and relationships within complex datasets. It provides a holistic view of customer behavior, risk profiles, and market dynamics, empowering banks to develop targeted strategies and respond swiftly to changing market conditions (Galante, 2023).

The success of banking companies' operations is most often observed through the prism of the main financial indicators of operations at the level of one bank or through comparison with other banks that have similar characteristics (Pavković, 2004). The analysis of the above-mentioned indicators serves as a basis for making decisions on future strategic issues. However, as one of the most important tasks of banks is to ensure the safety and the satisfaction of their users, we believe that the opinion of users or the evaluation of banks by users of banking services should have a significant place next to other indicators of the success of banking companies, which is also the main reason to study of this issue.

The research of the literature dealing with the financial market, and banks as the largest participants in it, has shown that only a few studies directly treat the issue of ranking banking companies in Bosnia and Herzegovina, mostly taking into account only the most significant financial indicators published in the regular reports of the Banking Agency of the Federation of Bosnia and Herzegovina and the report of the Banking Agency of the RS. Therefore, the existing groupings and rankings of banks are basically based on official financial performance indicators. In this way, ranking

lists were created in terms of profitability, number of employees, amount of assets, market share, and the like.

The aim of this research is to compare the results of bank clustering in the Federation of Bosnia and Herzegovina based on different criteria, with a special focus on custumer evaluation. In the context of all of the above, the following hypotheses were defined:

- Banking companies with the largest market share are not necessarily the ones which service users are most satisfied with.
- Monitoring global trends, primarily from the aspect of technological development, has a significant role in satisfying and providing a timely response to the needs of consumers/users of services.

2. THEORETICAL FRAMEWORK

Developing a model for bank clustering has its own purpose and significance, moreover, the selection of appropriate clusters for commercial banks represents valuable information for investors, regulators from the aspect of security evaluation, and managers from the aspect of performance observation or mergers. Ultimately, clusters have greater power to explain influences in regression models (Cyree, Davidson and Stowe, 2020). On the other hand, by clustering banks on the basis of user evaluation, service users themselves will benefit the most.

Hnatiienko et al (2021) propose to use an analysis based on the construction of clusters from the main indicators that characterize the activities of banks instead of analyzing the risks of banks, based on the calculation of economic standards.

The relationship towards the user of banking services can be observed in the context of the quality of the service provided, the price that the service users pay for the specified service and the satisfaction of the service user. According to one of the studies that examined the significance of the relationship between service quality, service price, customer satisfaction and loyalty, using the example of the domestic banking market, it was found that there was a statistically significant relationship between the aforementioned variables (Činjarević, Tatić and Avdić, 2010). If users of banking services are dissatisfied with the service, it is possible for them to turn to other options that represent an alternative to keeping deposits and lending. For example, in cases of negative or low interest rates on savings deposits, service users may decide to keep cash with them or to invest it in real estate or shares. On the other hand, in cases of high interest rates on loans, service users may turn to other sources of financing such as microcredit organizations, leasing companies, in some countries to savings and credit cooperatives, while legal entities, among other things, can obtain funds by issuing shares. The decision of the user of the bank's services whether to be loyal in the future depends mostly on their satisfaction, while other

variables such as the cost of switching to another bank, time and effort do not have a significant impact on his decision (Ozer and Zuhal, 2018). The above-mentioned implies that the banking sector must follow market trends and maintain competitiveness in terms of the cost of financing in order to retain service users and that it is necessary to adapt to the needs of customers when it comes to technological innovations and new trends in the field of internet and mobile banking, without which the dynamics of payments would practically slow down significantly. Continuous monitoring and improvement of mobile and Internet applications for payment transactions, review of balances and spending on user accounts, as well as other options offered by these applications ultimately determine customer satisfaction with this segment of banking services, which records daily growth. Monitoring technological innovations is something that contributes to the quality of service and is one of its determinants. The objective of the study Kolodiziev et al (2022) was to find a new tool for clustering banks according to the level of digitalization, i.e. to develop a model for clustering banks according to the level of digitalization in the context of the COVID-19 pandemic. They applied factor analysis and dendogram. A clear differentiation of all indicators into activators/deactivators will enable banks to develop a long-term strategy and short-term measures to increase their level of responsibility in terms of digitalization to all stakeholder categories.

Small amount of research deals with the grouping of banks based on evaluation by users of banking services. There are only annual reports on the work of the Ombudsman for the banking system of the Federation of Bosnia and Herzegovina, which represent a certain type of evaluation of banks by users, but only from the aspect of complaints regarding the work of banks and banking services. With the SERVQUAL method, one of the studies measured the level of service quality based on user perception of the example of domestic financial market, and the cluster method was also used in the study, but the results were intended for group users and not for financial institutions based on user perception. The result of the research established the division of users into traditionalists and visualists, that is, those who formed their opinion based on the friendliness of employees and the number of branches, and those whose opinion stemmed from the appearance, quality of equipment, position and reputation of the financial institution (Bevanda, 2008).

The second study grouped banking institutions using cluster analysis and the example of the domestic banking market, but only on the basis of financial indicators. The result is four clusters of banks based on profitability (Puška and Beganović, 2016).

Abdić (2013) applied multivariate statistics with the aim of determining the key determinants for the ranking of insurance companies in Bosnia and Herzegovina.

3. DATA

With the aim of carrying out the clustering of banks in FB&H based on different criteria (performance indicators, on the one hand, and evaluation of users of banking services, on the other), secondary data from the Banking Agency (FBA) report and the Ombudsman's report for banking operations are used, as well as primary data related to for evaluation by the user, which was carried out in the form of a survey questionnaire. Performance indicators considered in this research are balance sheet positions, ROA and ROE. The survey questionnaire for the evaluation of banks by users contained 27 questions with a Likert scale of 1-5.

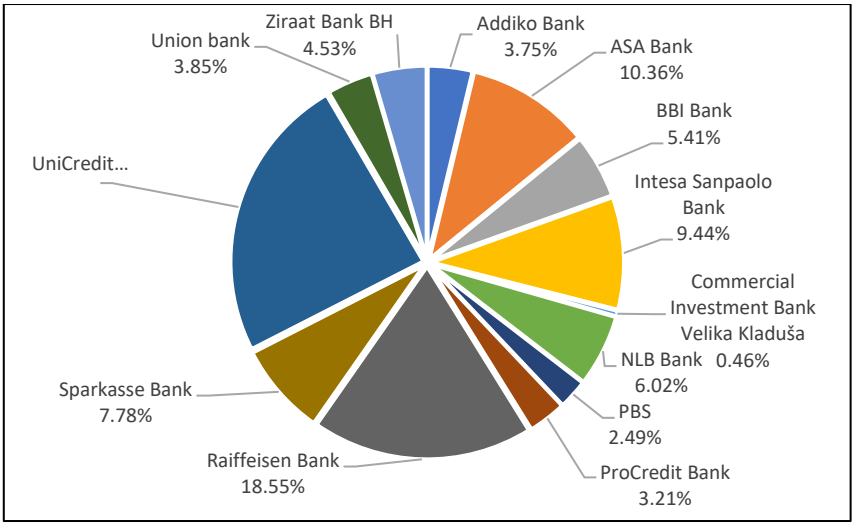
4. RESEARCH METODOLOGY

The statistical program SPSS, descriptive statistics and k means clustering methods were used to test the hypotheses. The ANOVA test was used to test the significance of the cluster analysis results. "ANOVA aims to test whether there is a difference between the arithmetic means of more than two populations and to compare their variances" (Resić et al., 2010).

5. RESULTS

According to the Report of the Banking Agency of the Federation of Bosnia and Herzegovina, 13 commercial banks have a banking license in FB&H and all banks are members of the Deposit Insurance Agency of Bosnia and Herzegovina.

Graph 1. *Market share by asset size in 2022*.



Source: *Author's calculation based on FBA data*

Compared to the year 2021, the number of banks is lower by one bank due to the case of Sberbank, where we had to implement a status change of merger with another bank. According to the ownership structure in the FB&H, as of December 31, 2022, we have 12 banks in private and predominantly private ownership, and one bank in state and predominantly state ownership. The largest participation is held by shareholders from Austria (39.4% of foreign capital), followed by Turkey (21.8%), Croatia (15%) and Germany (8.9%), while other countries do not have significant participation. Total capital of the banking sector in the FB&H as of 12/31/2022 increased by 129.2 million BAM or 4.2% compared to 2021 (FBA, 2023). Graph 1 shows market share of individual banks by asset size in 2022.

In 2022, according to the size of assets, the leading banks are Raiffeisen Bank d.d. and Unicredit Bank d.d., which make up almost half of the banking market. Given that loans are the largest item of assets, it is clear that these two banks have the largest share in loans given to households and the economy. Application of the k means clustering method resulted in three clusters of banks according to balance sheet positions (table 1).

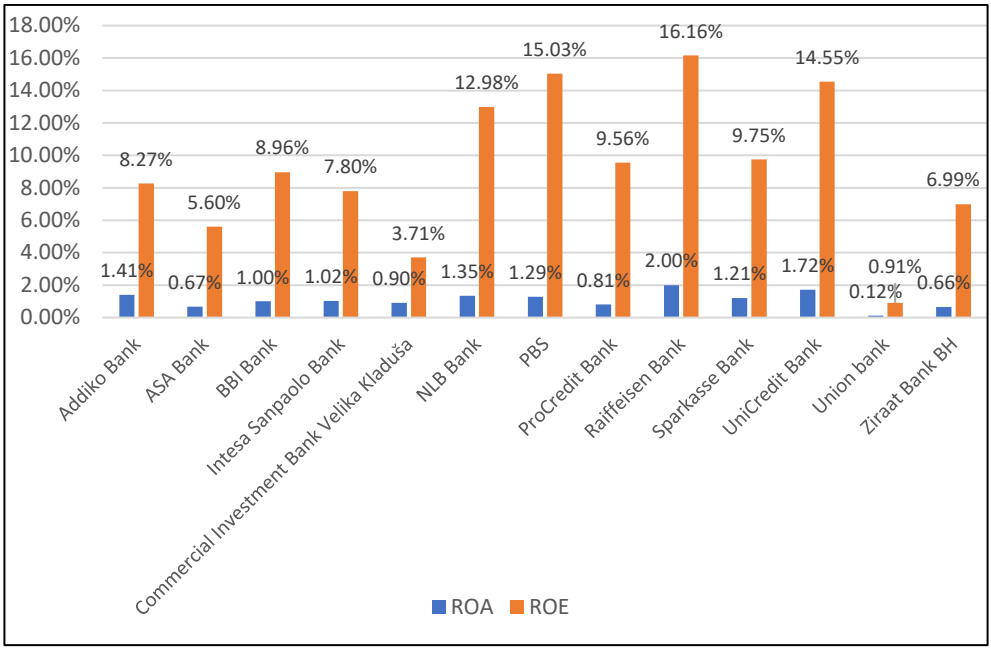
Table 1. *Clusters of banks according to the balance sheet position*

Cluster 1	Cluster 2	Cluster 3
Addiko Bank	ASA Bank	Raiffesien Bank
BBI Bank	Intesa Sanpaolo Bank	Unicredit Bank
NLB Bank	Sparkasse Bank	
PBS		
Procredit Bank		
Union Bank		
ZiraatBank		

Source: *Calculation in SPSS (2023)*

According to the ANOVA test, the clusters have significance ($p<.005$). The first cluster contains the largest number of banks, it is the cluster of banks with the smallest assets, loans and deposits and the weakest financial result. The second cluster is the medium-performing banks, and the third cluster is the banks that are the most successful in terms of financial position and performance. Also, the two banks that are the most successful in terms of financial position and performance had a leading role in 2022 in terms of the ROA and ROE profitability indicators (graph 2).

Graph 2. *Overview of ROA and ROE indicators for 2022*



Source: *Author's calculation based on FBA data*

ROA averaged 0.95% in 2021, and 1.09% in 2022, which implies growth for the entire sector. In 2021, NLB Bank played a leading role when it comes to the ROA and ROE indicators. Right behind it was PBS, followed by Unicredit Bank d.d. and Raiffeisen Bank d.d., leading by all other parameters. Given that there were no responses for Commercial Investment Bank d.d. Velika Kladuša in the user survey, it was not considered in the clustering models.

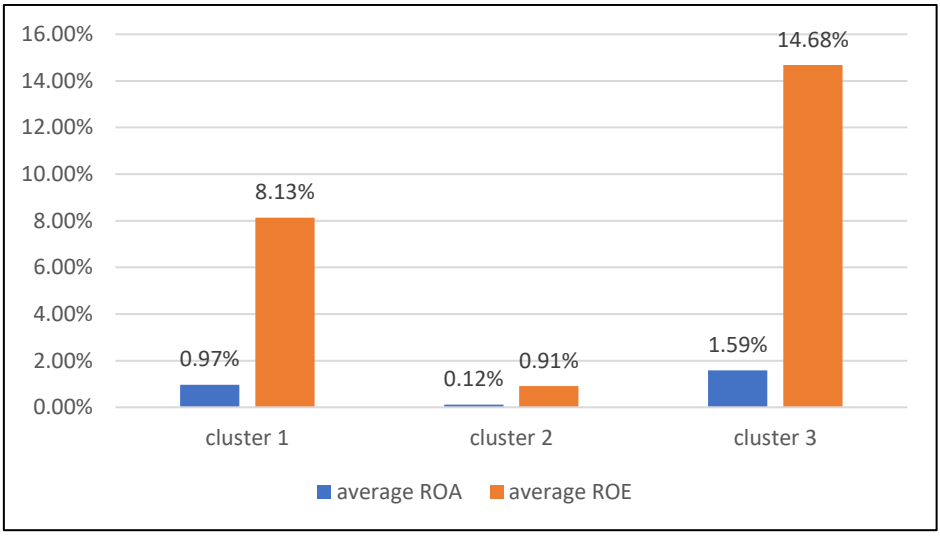
Table 2. *Clusters of banks according to ROA and ROE*

Cluster 1	Cluster 2	Cluster 3
Addiko Bank	Union bank	NLB Bank
ASA Bank		NLB Bank
BBI		PBS
Intesa Sanpaolo Bank		Raiffeisen Bank
Procredit Bank		Unicredit Bank
Sparkasse Bank		
Ziraat Bank		

Source: *Calculation in SPSS (2023)*

Application of the k means clustering method resulted in three clusters of banks according to the ROA and ROE indicators. According to the ANOVA test, the clusters had significance (p<.005), which is enough to determine that ROA and ROE indicators, viewed together, are significant for distinguishing these three clusters (table 2).

Graph 3. *Average values for ROA and ROE per clusters*



Source: *Author's calculation based on FBA data*

According to the above-mentioned results, we can say that there are clusters of banks that are highly profitable (cluster number 3), medium profitable (cluster number 1) and low profitable (cluster number 2). The cluster of highly profitable banks (graph 3) includes NLB Bank, PBS, Unicredit Bank and Raiffeisen Bank. The low-profit cluster consists of only one bank, i.e. Union bank. Other banks are in the medium-profitable cluster.

In the survey for the evaluation of banks by users of banking services, we received 306 answers to the 27 questions. A total of 12 banks were analysed. The majority of answers were expectedly related to Unicredit Bank and Raiffeisen Bank. More precisely, the participation of these two banks in the sample was 62.74%, and their market share was 42.7%. The ratings of all responses at the bank level were used as a variable in the cluster analysis. Overall rate is 3.87, which is a sign that there is room for improvements (table 3).

Table 3. *Number of responses and average rating score according to banks*

Bank	N	Participation of banks in user responses	Descriptive statisics for overall customer evaluation			
			Min.	Max.	Average	Standard deviation
Addiko Bank	4	1.31%	4.0	4.5	4.28	0.28
ASA Bank	16	5.23%	2.7	4.8	3.68	0.48
BBI Bank	18	5.88%	2.5	5.0	3.76	0.71
Intesa Sanpaolo Bank	19	6.21%	3.0	4.8	3.89	0.45
NLB Bank	12	3.92%	3.1	4.9	4.05	0.49
PBS	3	0.98%	3.3	4.3	3.80	0.48
ProCredit Bank	1	0.33%	4.0	4.0	4.00	/
Raiffeisen Bank	74	24.18%	2.1	5.0	3.58	0.62
Sparkasse Bank	16	5.23%	2.1	4.7	3.81	0.68
UniCredit Bank	118	38.56%	2.6	5.0	3.94	0.58
Union bank	8	2.61%	3.7	5.0	4.23	0.48
Ziraat Bank BH	17	5.56%	2.4	4.2	3.45	0.54
Total	**306**	**100**			**3.87**	

Source*: Survey (2023)*

The average score for the statement from the evaluation questionnaire "The bank follows modern trends" is 4. We can conclude that users are well aware of the role and importance of technological development and its application in banking business, since it significantly facilitates the use of banking services. Also, customers rate the usability and availability of ATMs as one of the main reasons for choosing a particular bank. Out of 304 responses, 105 respondents (34.5%) stated "Availability of the network of ATMs and branches" as the reason for choosing a bank. Therefore, we confirm the hypothesis of the paper: "Monitoring global trends, primarily from the aspect of technological development, has a significant role in satisfying and providing a timely response to the needs of consumers/users of services."

According to the survey for evaluation by users, the ANOVA test for clusters showed a significant difference between the three clusters (table 4). Clusters were formed using the k means method.

Table 4. *Clusters of banks according to evaluation by users*

Cluster 1	Cluster 2	Cluster 3
Addiko Bank	ASA Bank	BBI
Union Bank	Raiffeisen Bank	Intesa Sanpaolo Banka
	Ziraat Bank	NLB Bank
		PBS
		Procredit Bank d
		Sparkasse Bank
		Unicredit Bank

Source: *Calculation in SPSS (2023)*

It is possible to assign the following names to clusters: cluster 1, i.e. the cluster of banks which service users are satisfied with, cluster 2, i.e. the cluster of banks which users are least satisfied with, and cluster 3, the cluster of banks which users are moderately satisfied with.

6. COMPARISON BETWEEN CLUSTERS

In accordance with the principle that banks should be compared with their closest competitors, an overview was formed based on the criteria of size, indicators and, finally, user evaluation. Within this review, it is possible to make a comparison between large, medium and small banks. The positions of banks in clusters are different if different criteria according to which the clusterization was carried out are observed. Cluster number 3, formed according to the positions of the balance sheet and income statement, represents the most represented banks in the market and includes Unicredit Bank and Raiffeisen Bank (table 5). According to the second criterion, the financial indicators of ROA and ROE, these two banks also belong to the same cluster, that is, to the cluster of banks with the best performance indicators, however, from the aspect of user evaluation, Unicredit Bank belongs to the cluster of banks which users are moderately satisfied with, while Raiffeisen Bank is in the cluster of banks which service users are least satisfied with. Therefore, Unicredit Bank is more successful than Raiffeisen Bank. If we do not use the mentioned criteria when interpreting the cluster analysis, we can very easily draw wrong conclusions, therefore a comprehensive approach to clustering is important in interpreting the results of this analysis.

Table 5. *Clusters of banks with the largest market share*

	CLUSTERING ACCORDING TO:		
BANK	**Balance sheet position**	**ROA/ROE**	**Evaluation by users**
Raiffeisen Bank	3	3	2
UniCredit Bank	3	3	3

Table 6 presents banks with medium market share, i.e. cluster number 2 according to the positions of the balance sheet and profit and loss. Also, according to the ROA and ROE indicators, the banks are in the same cluster, however, from the aspect of user evaluation, ASA Bank is the bank which users are least satisfied with and belongs to the specified cluster of banks.

Table 6. *Clusters of banks with the middle market share*

	CLUSTERING ACCORDING TO:		
BANK	**Balance sheet position**	**ROA/ROE**	**Evaluation by users**
ASA Bank	2	1	2
Intesa Sanpaolo Bank	2	1	3
Sparkasse Bank	2	1	3

Table 7 shows the most banks and those are the banks with the smallest market share, that is, the smallest amount of assets, given loans, deposits and the weakest financial result. In case of these banks, there is a variation in terms of belonging to the cluster based on ROA and ROE, given that some banks belong to the cluster with the best indicators, others to the middle and the third cluster is the banks with the weakest indicators. In case of user evaluation, Ziraat Bank belongs to the lowest ranked cluster and therefore we can rate it as the least successful. But considering the small number of responses for some other banks such as ProCredit Bank, PBS and Union Bank, we should interpret the results with caution.

Table 7. *Clusters of banks with the lowest market share*

	CLUSTERING ACCORDING TO:		
BANK	**Balance sheet position**	**ROA/ROE**	**Evaluation by users**
Addiko Bank	1	1	1
BBI Bank	1	1	3
NLB Bank	1	3	3
PBS	1	3	3
ProCredit Bank	1	1	3
Union Bank	1	2	1
Ziraat Bank BH	1	1	2

All of the above confirms the hypothesis "Banking companies with the largest market share are not necessarily the ones which service users are most satisfied with." It is important to note that clusters formed on the basis of user evaluation and clusters formed on the basis of financial indicators are not comparable, but they are complementary and it is possible to draw certain conclusions about the market position of banks. Of course, the sample size for the observed bank should also be taken into account. Considering the number of user responses and the representativeness of the sample, Raiffeisen Bank is a good example of the aforementioned complementarity, namely because it belongs to the cluster of highly profitable banks and at the same time to the cluster of those banks which service users are least satisfied with. The above implies that the bank is not able to respond in the best way to the growing needs of its clients, even though it has a significant market share and good financial indicators. In a certain way, the high market representation of this bank represents pressure on its operations, because judging by the evaluation in the selected sample, it is not able to respond to the needs of all clients on time. Therefore, bank management can use information about the expectations and opinion of users and react on time before the opinion of users is more significantly reflected on financial results and indicators. This example shows the importance of clusterization in the business and regulatory environment. Also, similar conclusions can be drawn if we take other banks as an example, of course, first of all, it is necessary to take into account the size of the bank and the number of respondents' answers, because they affect the representativeness of the sample. Business indicators and user evaluation must also be placed in the context of market representation and the size of the bank, as shown by the example of one of the studies presented earlier, where the importance of evaluating managerial effectiveness from the aspect of comparison with competitors belonging to the same group or cluster was highlighted so that by comparing banks with different characteristics, the performance of the management is masked in relation to the comparison with the respective competitors, i.e. those with similar characteristics.

7. RECOMMENDATIONS AND CONCLUSIONS

The clustering of banks based on indicators or on the basis of evaluation by users, in principle, is done in order for banks to identify their position on the market and to improve it over a certain period of time. In the end, the greatest benefit from clusterization will be service users themselves, because the only way banks can improve their financial position is by improving the services which they offer to service users and thereby influence the increase in user satisfaction.

Clusterization provides opportunities for banks to evaluate the performance and perception of service users within the cluster to which they belong, as presented in the research. It is sometimes necessary to create input clusters according to a certain

main criterion in order to compare banks with similar characteristics. The above-mentioned results in a clear ranking of banks according to their performance in terms of financial indicators and user evaluation.

By identifying which banking companies belong to which cluster, it is possible to anticipate the direction in which the market is moving, as well as to minimize the possible losses that come with the aforementioned changes. The agencies responsible for the operation and supervision of banks can, by looking at the clusters, see which banks are stable, both from the financial point of view and from the aspect of bank evaluation by service users, because, essentially, service users are the first to feel changes in the operations of a bank and thus their "feedback" can be a certain indicator for the authorities to act on time, as well as for investors who are looking for quality investment opportunities.

The recommendation for future research is to conduct a survey on a larger number of respondents for banks with a smaller market share, so that the sample is more representative and an unambiguous conclusion can be drawn regarding the opinions of users about the mentioned banks. Also, it is recommended that subsequent research should also cluster banks for a larger number of years in order to determine the movement of banks from one cluster to another. Given that this is one of the limitations of this research, one of the recommendations is that in future research, banks from the entire territory of B&H, not only FB&H, be included in the analysis. In addition to the above, it is also recommended to survey only legal entities regarding the satisfaction with banking services, given that the survey conducted in this research contains only a few responses from legal entities.

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KLASTERIZACIJA BANAKA U FEDERACIJI BIH NA BAZI RAZLIČITIH KRITERIJA

SAŽETAK

Evaluaciju korisnika bankarskih usluga treba posmatrati kao dodatni alat za analizu uspješnosti banaka pored analize finansijskih pokazatelja. Obzirom na uticaj koji zadovoljstvo i povjerenje korisnika može imati na stabilnost bankarskog sistema, poželjno je isto uvrstiti u izvještaje o bankarskom sektoru. Evaluacija zadovoljstva korisnika također može anticipirati pojedina tržišna kretanja i predstavlja koristan alat za menadžment bankarskih institucija da donesu korektivne mjere prije nego što se negativna očekivanja korisnika reflektuju na finansijske izvještaje. Evaluaciju korisnika bankarskih usluga i analizu finansijskih pokazatelja je potrebno staviti u kontekst veličine banaka kako bi se rezultati mogli pravilno interpretirati. Klaster analiza je metoda kojom se na adekvatan način može izvršiti klasterizacija na bazi ova tri kriterija. Rezultati istraživanja za banke iz Federacije BiH pokazuju značajnost klastera banaka na bazi evaluacije korisnika, finansijskih pokazatelja i veličine banaka.

Ključne riječi:. *cluster, banka, pokazatelji, evaluacija korisnika.*

JEL: *G2, C3*

Vladimir Šimić[1]

THE IMPACT OF GOVERNMENT CONSUMPTION ON GROWTH – GLOBAL EVIDENCE

ABSTRACT

The effects of government consumption on economic growth are investigated in this study in a panel of world economies. Renewed attention has been recently paid to exploring this important relationship, especially in the aftermath of the global economic and financial crisis which resulted in unprecedented fiscal interventions globally. Despite the numerous attempts at investigating it, the literature still seems lacking in providing a unison answer to the question on the appropriate role of government in an economy. Theoretically the effects of government consumption on growth may be both positive and negative, with a lot of ambiguity also present in empirical studies. Given this uncertainty supplementary evidence is needed to further investigate the link between government consumption and economic growth. To tackle this important question this paper applies panel data techniques in a broad sample of as many as 178 world economies covering the period since 1990 until 2020. Overall, this study reports consistent and robust evidence on the negative impact of government consumption and tax revenues on economic growth.

Keywords: *government consumption, economic growth, panel data*

JEL: *F43, H11, O47*

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1. INTRODUCTION

The appropriate role of government in an economy has been a hot and long standing issue in economic literature. Despite the numerous attempts at investigating it, the literature still seems lacking in providing a unison answer to this important question. This question gains in importance in particular with public expenditure increasing strongly in the last 60-70 years, practically in all countries around the world. Global economic and financial crisis in 2008 and the COVID 19 pandemics only add to this importance with huge fiscal interventions and new rounds of government involvement in the economies globally. Not surprisingly renewed attention was paid to exploring the relationship between government spending and economic growth. Theoretical and empirical literature provide evidence supporting both the positive as well as the negative impact of government on economic growth. Theoretically the positive effects on growth might be realized through the so called productive public expenditures (e.g. infrastructure projects) or contribution to human capital through government financed education. The negative effects might be coming through distortions caused by higher taxes or the often cited crowding-out effects. Empirically the effects related to government spending and its impact on economic growth are also mixed. Given the uncertainty present in the theoretical and empirical literature supplementary evidence is needed to further investigate the link between government consumption and economic growth. Therefore, the main research question investigated in this paper is how government consumption affects economic growth, positively or negatively and whether at all. To tackle this important question this paper applies panel data techniques in a broad sample of world economies covering the period since 1990 until 2020. With as many as 178 countries application of advanced econometric techniques allows this study to provide an important contribution to the empirical literature investigating the role of government consumption in economic growth. The empirical findings from this study also have important policy implications further adding to its significance.

This paper has the following structure. A brief review of related literature and paper background are presented in Section 2. Section 3 outlines the research methodology and describes the data used in empirical investigation. Econometric results and their discussion follows in Section 4. Section 5 provides the concluding remarks and outlines policy implications and avenues for future research.

2. RELATED LITERATURE AND PAPER BACKGROUND

Theoretical arguments can be found to provide both the positive and negative effects of government spending on economic growth. In their survey of the literature on the relationship between government spending and growth Marica and Piras (2018) suggest that at the theoretical level an increase in government spending may result in positive, negative or no effect on growth. Thus, within the neoclassical growth

setting in which the long-run growth rate is determined by exogenous technological progress there is no role for government and its policies in affecting growth. However, the works by Romer (1986), Barro (1990) and the subsequent class of endogenous growth models resulted in many applications which produce strong effects of government on long-term growth. Usually, the relationship in the literature is graphically depicted by the inverted-U shaped curve (see for example Asimakpoulos and Karavias, 2016). On one hand, the channel for positive effects on growth are related to the so called productive public spending (e.g. infrastructure projects, better enforcement of property rights and stronger institutions), whereby public spending might result in higher private capital marginal productivity. Human capital accumulation, as financed by public spending might be an additional channel. On the other hand, government consumption which is financed by higher taxes may play a distortionary role. Taxes distort the incentives in market economies, thus producing less effective allocation of resources and hindering long-term economic growth. It should be added that the positive effects of higher government spending are possible if the government is successful in correcting market failures, but it should be also noted that higher public spending may also result in state failures and the net result may be overall negative. Additional reasons resulting in the negative effects of higher public spending could be related to crowding-out effects, effect of tax on market transaction costs, rent-seeking, political transaction costs and bureaucratic costs (Marica and Piras, 2018). Thus, theoretically it is possible that higher public expenditure leads to different outcomes and empirical studies will have to step in to bridge the gap in theoretical arguments. Unfortunately, a lot of ambiguity is also present in empirical studies, some finding positive and some finding negative effects, or no effects at all. A recent study by Arawatari et al. (2023) provides a consistent framework based on endogenous growth models strongly accounting for R&D activities which relates to the inverted-U shaped curve and allows the theoretical explanation for both the positive and negative effects found by empirical studies. Thus, in their model high government expenditure increases monopolistic profits and thereby stimulates the entry of intermediate-good firms suggesting the positive effect on growth. Conversely, high government expenditure indicates a high tax rate, depressing the R&D activity and in consequence results in negative effect on growth. A particular additional feature of this R&D-based model of endogenous growth is an extension allowing for an inverted-U shaped curve with a flat top which also provides an explanation for no effects between government size and growth.

As mentioned previously, empirical literature is rather mixed on this important relationship. Early literature on the topic predominantly reported the negative effects of government size on economic growth (see for example Romer, 1990 or Folster and Hendrekson, 1999). However, the studies finding also the positive effects of government spending should be mentioned. Among the earlier studies is Ram (1986)

who investigated 115 countries and concluded that government size has a positive effect on economic performance and growth. Kneller et al. (1999) find for the sample of OECD economies that an increase in public productive expenditures raises GDP growth. At the same time, they find that increasing distortionary taxes decrease growth. Colombier (2009) finds also positive effects of government size for the sample of OECD countries. Bose et al. (2007) find a positive relationship between public expenditure and economic growth for developing countries. Among the more recent studies, with the focus on the studies published after 2010, Bergh and Hendrekson (2011) conclude from their review of the literature that empirical studies typically report the negative link between government size and growth. For a panel of 108 countries from 1970-2008 Afonso and Jalles (2011) also report the negative effect of the size of government on growth and government consumption is consistently detrimental to output growth irrespective of the country sample considered, be it OECD or emerging and developing countries. This study is also interesting as it accounts for the importance of institutional quality for growth finding positive effects, but more importanly it has found that the negative effect of government size on growth is stronger the lower institutional quality. Gemmel et al. (2016) also find that total government expenditures affect GDP negatively. Nguyen and Bui (2022) find the negative effects of government expenditures and corruption control on economic growth for the 16 Asian economies, but do suggest that the interaction between government expenditure and corruption control can reduce the negative impact. At the other spectrum reporting the positive effects Morozumi and Veiga (2016) find in the sample of 80 countries that when institutions make governments to be accountable to citizens public capital spending promotes growth. Kimaro et al. (2017) also find the positive effects of government expenditure on economic growth for low income Sub-Saharan African countries. Additional positive effects are reported in Arestis et al. (2021) and Arvin et al. (2021).

The intention of this section was to present only a brief review of theoretical and empirical studies to provide an introduction to the empirical study conducted in this paper. It should be, however, noted that a number of additional studies could be listed and commented upon, but we refrain from doing so. To summarize this brief review of related literature it appears that both the negative as well as the positive effects of government consumption on economic growth can be found in empirical literature. This also suggests that it might take a while until a consensus is reached and until that happens new studies investigating this important relationship are needed.

3. RESEARCH METHODOLOGY AND THE DATA

In order to investigate the relationship between government consumption and economic growth the starting growth model in our paper is set quite broadly. Building on the simple Solow growth model, which explains growth with accumulation of physical capital and exogenous labour and technological progress, Mankiw et al. (1992) suggest that when this model is extended with human capital and population growth, majority of growth experiences around the world can be well explained with this type of a growth model. This model serves as a basis in many empirical studies investigating growth, but typically additional determinants are allowed for. To show the variety of growth determinants that may be used in empirical studies Durlauf et al. (2008) recognise almost 150 possible determinants. These range from the basic determinants mentioned above like physical and human capital, demographics, (trade) openness to monetary and financial conditions, fiscal policy (government spending and taxes), quality of institutions, as well as geographical factors, natural resources and so on. Following this literature in addition to government consumption we also allow for the impact of investment, population growth, human capital as represented by years of schooling, openness (as represented by trade openness), and institutions as potential growth determinants. As an addition to government consumption, we also use tax revenues as percent of GDP as our alternative government variable. The data are annual and are collected for the period from 1990 to 2020. As a robustness check we also employ the 5-year averages of our data starting also in 1990. Depending on the available dataset and the chosen model we cover a broad sample of world economies mounting from 97 to 178 countries.

The baseline model of the following form is econometrically estimated:

$$GDPgit = \beta 1INVit + \beta 2POPit + \beta 3SCHOOLit + \beta 4OPENit + \beta 5GOVit + \beta 6\ INSTit + \varepsilon it \qquad (1)$$

where i denotes a country and t a time period. In this model GDP growth (GDPg) is potentially determined by investment as percent of GDP (INV), population growth (POP), expected years of schooling (SCHOOL) as a representative of human capital, government consumption as percent of GDP (GOV), trade openness as represented by trade as percent of GDP (OPEN), and institutions (INST). As an alternative the impact of government on economic growth is estimated by substituting government consumption with tax revenues as percent of GDP (TAX). The variables used in our empirical estimations are described in Table 1 below.

Table 1: *Description of variables*

Variable	Explanation	Source
GDPg	GDP growth rate (%)	World Bank World Development Indicators
INV	Investment - Gross fixed capital formation (% of GDP)	World Bank World Development Indicators
POP	Population growth (%)	World Bank World Development Indicators
SCHOOL	*Schooling* - Expected years of schooling	UNDP - Human development report
SEC	*Secondary education* - Secondary education completed, percent of population aged 25 and over	Barro and Lee (2013), v. 2.2, 2018
GOV	General government final consumption expenditure (% of GDP)	World Bank World Development Indicators
TAX	Tax revenue (% of GDP)	World Bank World Development Indicators
OPEN	*Trade openness* – Exports plus imports (% of GDP)	World Bank World Development Indicators
INST	*Institutions* Autocracy-democracy index (polity2) ranging between -10 (total autocracy) and 10 (total democracy)	Polity IV dataset (Marshall et al. 2014)

The model explained above is estimated econometrically using the panel data estimation techniques. Before reporting the results each model was estimated and the Hausman test was calculated to decide about the appropriateness of the fixed or random effects. The chosen model is reported at the bottom of each column in tables reporting the main findings in the next section.

4. ECONOMETRIC RESULTS AND DISCUSSION

In this section we report our econometric results. The importance of government for economic growth is first estimated by the model which focuses on government consumption as an indicator representing government. Later on we substitute government consumption with tax revenues to provide additional evidence on this important relationship. We first estimate the effects of government consumption on economic growth and these results are reported in Table 2.

Table 2 reports three models presented in columns (1) to (3). In each model the dependent variable is the rate of GDP growth which is regressed on different determinants among which we are primarily interested in the government variable. In this table that variable is government consumption as percent of GDP. Model 1 (Column 1) is the most comprehensive one and in accordance with our discussion at the beginning of this section the growth regression is broadly set to account for the effect of physical capital (investment) and human capital (population growth and schooling), but in addition we allow for the impact of trade openness, government consumption and institutions. Columns 2 and 3 are set less broadly excluding the impact of institutions and schooling. The reason for these exclusions lies in the fact

that it is rather difficult to measure institutions, the same applying to human capital, and different proxies are used in empirical investigations to allow for their impact. Often these effects are imprecise and are not too reliable. In addition, we also check whether the impact of government consumption on growth is affected by exclusion of these variables (proxies) which further strengthens our findings if the effect of government consumption is robust and consistent across different specifications. Furthermore, if this effect is consistent it puts us at the safe side that our models are not misspecified.

Table 2: *Econometric results 1 - Government variable: Government consumption (% of GDP)*

	Government variable: Government consumption (% of GDP)		
	(1)	(2)	(3)
Investment	0.121*** (0.016)	0.112*** (0.014)	0.099*** (0.014)
Population growth	0.346*** (0.085)	0.465*** (0.084)	0.519*** (0.085)
Schooling	0.034 (0.062)	-0.109* (0.056)	
Trade openness	0.019*** (0.005)	0.021*** (0.004)	0.021*** (0.004)
Government consumption	-0.267*** (0.026)	-0.295*** (0.0.23)	-0.290*** (0.023)
Institutions	0.102*** (0.034)		
Countries (observations)	153 (3931)	171 (4643)	178 (4798)
Hausman test (p-value)	73.29 (0.00)	105.62 (0.00)	109.68 (0.00)
Fixed effects/Random effects	FE	FE	FE

*Standard errors in parentheses; *** - 1 % statistical significance, ** - 5 % statistical significance, * - 10 % statistical significance*

As for the results reported in Table 2 we can see that across all three models investment is found to exert a positive and statistically significant effect on GDP growth, as theoretically expected and in accordance with previous studies. The same applies to population growth and trade openness with both being statistically significant and exerting also positive impact on growth. In Model 1 institutions are found to have a positive and statistically significant effect on growth. Expected years of schooling, as a representative of human capital, on the other hand, is found to be positive in Model 1, but this effect is not statistically significant. In Model 2 schooling is estimated to have a negative effect, but being statistically significant only at 10% of statistical significance. Now we turn our attention to the main variable of interest and in Table 2 it is the government consumption. Across all three models government consumption is estimated to have a negative effect on growth and is

strongly statistically significant. This effect is consistent across different specifications (Models 1 to 3) and suggests that a stronger government (higher share of government consumption in GDP) impedes growth. A look at the bottom of Table 2 indicates that the size of the sample varies from 153 (Model 1) to 178 (Model 3) countries suggesting evidence representative of the whole world. The data start in the beginning of 1990s and having 30 years of data only add to the confidence of our findings. Although the evidence so far suggests that government consumption has detrimental effects on economic growth, we want to be on the safe side and check further whether these effects can be additionally confirmed. To that end we first estimate the same models as in Table 2 but substitute government consumption with tax revenues expressed as percent of GDP. Tax revenues can be seen as an additional variable representing the role of government in an economy and we check for the importance of this in an empirical investigation reported below in Table 3.

Table 3: *Econometric results 2 - Government variable: Tax revenues (% of GDP)*

	Government variable: Government consumption (% of GDP)		
	(1)	(2)	(3)
Investment	0.145*** (0.018)	0.154*** (0.017)	0.127*** (0.017)
Population growth	0.035 (0.119)	0.215* (0.119)	0.409*** (0.126)
Schooling	-0.142** (0.060)	-0.408*** (0.058)	
Trade openness	0.021*** (0.005)	0.029*** (0.004)	0.019*** (0.004)
Tax revenues	0.008 (0.026)	-0.052*** (0.0.18)	-0.041*** (0.019)
Institutions	-0.057 (0.036)		
Countries (observations)	122 (2438)	135 (2874)	136 (2912)
Hausman test (p-value)	20.30 (0.00)	36.69 (0.00)	10.45 (0.00)
Fixed effects/Random effects	FE	FE	FE

*Standard errors in parentheses; *** - 1 % statistical significance, ** - 5 % statistical significance, * - 10 % statistical significance*

Table 3 provides additional evidence on the impact of government on economic growth. Before commenting on the estimated effects of tax revenues on GDP growth, let us briefly mention the other estimated coefficients. Investment is again estimated positively and the effect is statistically significant. Population growth is estimated positively, but in Model 1 it loses statistical significance, whilst in Model 2 and Model 3 the positive effect is statistically significant at 10 % and 1 % of statistical significance, respectively. Schooling is estimated negatively and the effect is statistically significant. This is contrary to expectations, and this effect will be

additionally investigated later. Trade openness remains statistically significant and the effect on growth is positive across all models as was the case earlier. This suggests that trade openness is consistently beneficial for growth. The coefficient on institutions changes sign, but the effect is not statistically significant. As for our main variable of interest, tax revenues as percent of GDP in Model 1, it is estimated with the positive sign but the effect is not statistically significant. In Model 2 and Model 3 the tax revenues appear to impact on growth negatively and in both cases the effect is statistically significant. Given the evidence in Table 3, where the government (as represented by the tax revenues as percent of GDP), in two out of three cases, has a negative and statistically significant effect on growth, and also given the evidence from Table 2 where in all models government consumption was found to have a negative and statistically significant effect on growth, the findings so far appear supportive of the detrimental effects of government on economic growth.

4.1. TESTS OF ROBUSTNESS

The evidence presented so far suggests that government exerts a negative impact on economic growth in a broad sample of countries. In what follows we test our findings for robustness in two ways. First, we repeat our estimations using the five-year averages of our data and compare these new findings with those based on the annual data reported above. Second, with the outburst of the global financial crisis in 2008 the governments around the world intervened heavily, possibly outlining a new and stronger role played by the government in the post-crisis world. To check this we run new estimations of our models using the annual data but focusing on the 2008-2020 period and we check if the governments' effects on economic growth might be different.

Let us start with the first test of robustness. Table 4 reports the new estimations based on the data averaged over five year periods. This exercise is not only relevant as a robustness check, but it is also relevant in its own right. This is because economic growth should be treated as a long-run phenomenon and using the five-year averages might be helpful in possibly smoothing the short-run fluctuations and depicting important long-run relationships, in particular when we are interested in the determinants of economic growth. An additional reason might be listed here and it deals with the problems spotted above related to the human capital variable. When found to be statistically significant, the expected years of schooling was of a wrong sign, suggesting that the effect of human capital on growth might be negative. This is contrary to expectations and might raise a few eyebrows. In addition, this variable may suffer from shortcomings which could be circumvented if we use the typically employed human capital variable as for example elaborated and provided by Barro and Lee (2013, version 2018). Among other variables, Barro and Lee (2013) provide a rich database on secondary school education completed around the world and the

data are reported in five-year intervals. Hence, we organize our data averaged over five years and set the database to include 1990 (average 1990-1994), 1995 (average 1995-1999), and so on. The estimations based on five-year averages are reported in Table 4 below.

Table 4: *Econometric results 3 - Government variable: Government consumption (% of GDP) and Tax revenues (% of GDP) – five year averages*

	Government variable: Government consumption (% of GDP)			**Government variable: Tax revenue (% of GDP)**		
	(1)	(2)	(3)	(4)	(5)	(6)
Investment	0.139*** (0.032)	0.151*** (0.020)	0.139*** (0.016)	0.257*** (0.037)	0.182*** (0.023)	0.172*** (0.020)
Population growth	1.265*** (0.223)	0.697*** (0.013)	0.600*** (0.085)	-0.047 (0.241)	0.594*** (0.137)	0.450*** (0.100)
Secondary education	0.035 (0.024)	0.006 (0.009)		-0.020 (0.020)	-0.004 (0.010)	
Trade openness	-0.001 (0.008)	0.002 (0.002)	0.003 (0.002)	-0.002 (0.008)	0.005* (0.003)	0.004* (0.003)
Government variable	-0.143** (0.060)	-0.113*** (0.024)	-0.050*** (0.016)	-0.058 (0.056)	-0.036* (0.020)	-0.035** (0.018)
Institutions	0.185*** (0.057)			0.167** (0.066)		
Countries (observations)	126 (577)	138 (635)	175 (921)	97 (367)	106 (395)	134 (552)
Hausman test (p-value)	24.73 (0.00)	8.59 (0.13)	2.12 (0.71)	26.75 (0.00)	9.21 (0.10)	8.24 (0.08)
Fixed effects/Random effects	FE	RE	RE	FE	RE	RE

*Standard errors in parentheses; *** - 1 % statistical significance, ** - 5 % statistical significance, * - 10 % statistical significance*

Table 4 provides additional evidence on the importance of government variables for economic growth. In order to preserve space, the estimations are organized across two sets of results – columns 1 – 3 related to government consumption as percent of GDP, and columns 4 – 6 related to tax revenues as percent of GDP as the main variables of interest. From the evidence based on five-year averages we are particularly interested in the government variables. Other variables are only briefly commented in comparison to our previous evidence reported in Table 2 and Table 3. The comparison with these two tables confirms the positive and statistically significant effects of investment and population growth. Institutions are also confirmed as a statistically significant variable and the effect is positive. Secondary education completed (the human capital variable from Barro and Lee, 2013, version 2018) is estimated with the positive sign in the first set of results (columns 1 - 3) and with the negative sign in the second set of results (columns 4 – 6), but in no case the effect is statistically significant. Trade openness loses statistical significance in most cases, and in cases where it is statistically significant it is only at the 10 %, the effect

remains positive. Now we turn our attention back to the effects of government on economic growth. It appears that in all three cases (the first set of results – columns 1 – 3) government consumption is estimated to have a statistically significant effect and it is negative. The variable tax revenues remains negative as before but the effect is statistically significant in two out of three cases. Overall, this additional evidence based on five-year averages suggests that our baseline findings (as reported in Table 2 and Table 3) passes the robustness test successfully and confirms the distorting effects of government effects on economic growth reported previously.

An additional robustness test is conducted focusing on the estimations based on annual data but covering the period after the outburst of the global financial crisis. This robustness check is meant to provide supplementary evidence on the role of government in economic growth, especially given the huge fiscal expansion that took place globally. Following these interventions there is a possibility that this also impacted on the relationship between government consumption and economic growth. It should be, however, noted that this exercise is conducted to provide an additional robustness test, and not to investigate the nature of the government-growth nexus after the crisis. That investigation is out of scope of this paper and should be conducted more deeply. Notwithstanding these caveats, the results are reported in Tabele 5 below as to provide an additional robustness check.

Table 5: *Econometric results 4 - Government variable: Government consumption (% of GDP) and Tax revenues (% of GDP) – annual data; post-crisis period*

	Government variable: Government consumption (% of GDP)			**Government variable: Tax revenue (% of GDP)**		
	(1)	(2)	(3)	(4)	(5)	(6)
Investment	0.058** (0.029)	0.062*** (0.023)	0.037 (0.024)	0.035 (0.025)	0.076*** (0.023)	0.034 (0.026)
Population growth	-0.041 (0.136)	0.137 (0.127)	0.174 (0.131)	0.038 (0.162)	0.354** (0.165)	0.454** (0.185)
Schooling	0.202 (0.193)	-0.356** (0.170)		0.178 (0.166)	-0.490*** (0.010)	
Trade openness	0.081*** (0.010)	0.102*** (0.009)	0.102*** (0.009)	0.090*** (0.009)	0.115*** (0.009)	0.114*** (0.010)
Government variable	-0.249** (0.042)	-0.384*** (0.036)	-0.440*** (0.037)	-0.000 (0.022)	-0.084*** (0.022)	-0.048* (0.025)
Institutions	0.263*** (0.082)			0.0,19 (0.078)		
Countries (observations)	150 (1591)	168 (2075)	174 (2141)	116 (1160)	129 (1504)	130 (1520)
Hausman test (p-value)	85.80 (0.00)	213.58 (0.13)	237.37 (0.71)	107.56 (0.00)	162.49 (0.10)	134.67 (0.08)
Fixed effects/Random effects	FE	RE	RE	FE	RE	RE

*Standard errors in parentheses; *** - 1 % statistical significance, ** - 5 % statistical significance, * - 10 % statistical significance*

Evidence in Table 5 appears generally supportive of our findings reported previously. In particular, we are interested here in and comment only on the variables representing government. The first set of results (columns 1 – 3) related to government consumption as percent of GDP indicates that the effects of a larger government consumption on economic growth are negative and statistically significant. This is in accordance with our evidence reported in Table 2 and Table 4, but it should be noted that the estimated coefficients are larger. This might be recognized as a stronger negative effect, but we refrain from interpreting this that powerfully as we have a shorter sample and less observations and there is a possibility that the coefficients are estimated less precisely. Probably this invites a whole new study and we leave this for some future research project. As for the second set of results (columns 4 – 6) the tax revenues are estimated to exert a negative effect, but the effect is in two out of three cases statistically significant, albeit only in one case with 5 % of statistical significance. These findings again confirm the findings from earlier estimations concerning the impact of tax revenues on economic growth. To summarize the evidence presented, it appears that both the larger government consumption (as percent of GDP) and larger tax revenues (as percent of GDP) have detrimental effects on growth. This general finding is robust and consistent across different time periods and different models tested and provides an important contribution to the empirical literature.

5. CONCLUDING REMARKS, POLICY IMPLICATIONS AND AVENUES FOR FUTURE RESEARCH

Investigation of the effects of government consumption on economic growth was in the focus of this study. A novel empirical evidence was provided on this important relationship. The review of the main theoretical arguments suggested that the effects may be both positive and negative and thus from a purely theoretical point of view we could not reach a unison conclusion as to how desirable the government involvement in the economy is. Empirical studies therefore seemed the next step to look for the answer to our research questions. Although numerous studies exist in the empirical literature again no clear conclusion could be reached, with studies providing both positive and negative effects. This ambiguity in theoretical and empirical literature invites additional studies on the relationship between government and economic growth.

The present study's contribution is the contribution to the empirical literature. We do it in several ways. First, we collected a very broad data base covering as many as 178 countries around the world. Coverage of so many countries coupled with the data starting in 1990 provide a strong basis on which we can draw our conclusions. Application of advanced econometric techniques and the use of panel data add to reliability of our findings. As for the findings we provide strong evidence on the

negative effects of government consumption on economic growth. Different models were tested and in all of them the coefficients on government consumption were found to be statistically significant and negative. Regarding the other growth determinants, investment, population growth, trade openness and institutions were found to be statistically significant and exerting positive effects on economic growth. An additional set of results further supporting the negative effects of government consumption is based on an alternative government variable which is tax revenues as percent of GDP. In large majority of models tested tax revenues were also found to be statistically significant and negative.

To check consistency of our findings two tests of robustness were conducted. The first one was based on using five-year averages of our data which is a sensible approach when investigating the growth determinants. The results reported previously were confirmed also with the data organized as five-year averages. Another robustness check was applied on the annual original data but covering the period after the global economic and financial crisis. Again our findings related to the negative effects of government consumption and tax revenues on economic growth were supported. Overall, this study thus reported consistent and robust evidence on the negative impact of government consumption and tax revenues on growth in a wide sample of countries.

These findings have strong policy implications directing the policy makers to approach the decision to increase government consumption and tax revenues with extreme caution. Based on the findings from this study increases in overall government consumption (as percent of GDP), as well as increases in tax revenues (as percent of GDP) might be coming back as a boomerang strongly hindering economic growth. While the evidence provided advises against increases in total government consumption, this need not necessarily mean that in each and every case and in all circumstances government intervention is undesirable. Specific country's conditions or rare but unprecedented events like the recent global economic and financial crisis or COVID 19 pandemics might again require a swift and strong government intervention.

Although the contribution of this study to the empirical literature is an important one, the study might have followed a few additional tracks and that is where we see valuable avenues for further research. It would be interesting to investigate empirically, in this broad sample of countries, the difference, if any, in the effects of government consumption across different groupings of countries. This might include the regional criterion, for example whether the effects in European and African countries are any different, or by splitting the sample of countries using the World Bank classification across low income (poor) countries, lower-middle income, upper-middle income and high income (rich) countries. In addition, it would be

interesting to investigate the composition of government spending and its effects on growth or test whether alternative functional forms may better explain the growth dynamics and effects of government on growth. Going for it would be out of scope of the present study and probably each of these avenues deserves a study of its own.

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Vladimir Šimić

UTJECAJ DRŽAVNE POTROŠNJE NA RAST – GLOBALNI DOKAZI

SAŽETAK

Efekti državne potrošnje na ekonomski rast istražuju se u ovoj studiji na panelu svjetskih ekonomija. Nedavno je snažno obnovljen interest za istraživanje ovog važnog odnosa, posebno nakon izbijanja globalne ekonomske i financijske krize koja je rezultirala fiskalnim intervencijama bez presedana na globalnoj razini. Unatoč brojnim pokušajima čini se da literatura još uvijek ne daje jednoznačan odgovor na pitanje o odgovarajućoj ulozi države u ekonomiji. Teoretski, efekti državne potrošnje na rast mogu biti i pozitivni i negativni, s mnogo nejasnoća prisutnih i u empirijskim studijama. S obzirom na ovu nesigurnost, potrebni su dodatni dokazi o povezanosti između državne potrošnje i ekonomskog rasta. Kako bi se uhvatio u koštac s ovim važnim pitanjem, ovaj rad primjenjuje tehnike panel analize na širokom uzorku od čak 178 svjetskih ekonomija, a analiza pokriva razdoblje od 1990. do 2020. godine. Ukupno, ova studija donosi dosljedne i robustne dokaze o negativnom utjecaju državne potrošnje i poreznih prihoda na ekonomski rast.

Ključne riječi: *državna potrošnja, ekonomski rast, panel podaci*

JEL: *F43, H11, O47*

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DIFFERENCES IN THE BRAND NAMING PROCESS BETWEEN B2B AND B2C COMPANIES IN BOSNIA AND HERZEGOVINA

ABSTRACT

The literature suggests potential differences in brand naming approaches between business-to-business (B2B) and business-to-consumer (B2C) markets. Therefore, using the model of the brand naming process proposed by a group of authors, this study aims to determine the differences in the brand naming process between companies operating in the business and the consumer markets in an unexplored research context of Bosnia and Herzegovina (B&H). The research was conducted on 50 companies from B&H using an online survey. The results indicate that B2B companies are more likely to use the company (family) brand name and that B2C companies test ideas more often than B2B companies. Furthermore, the results show differences between B2B and B2C companies regarding branding objectives and brand name criteria. The limitation of this research is primarily the lack of an updated register of contacts of companies at the moment of the data collection.

Keywords: *Brand, Brand identity, Brand name, Brand naming process, B2B and B2C companies*

JEL: *M3, M31*

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1. INTRODUCTION

If a company has reputable brands in its portfolio, its value is indisputable (Clifton and Simmons, 2003). The strongest brands are the most prized intangible assets (Mandić, 2007). Swystun (2007) sees the brand as a mixture of observable and unobservable attributes reflected in a trademark, which can have a significant impact if handled the right way. Product branding is important for B2B (business-to-business) and B2C (business-to-consumer) companies. Kotler and Pfoertsch (2006) state that it becomes unquestionable whether branding is necessary for the B2B market, and mention complex solutions being sold rather than simple products and services, the occurrence of very similar offerings, and price pressures as factors that make the need for B2B branding inevitable. Brand managers know that brand names can create prompt and deep-rooted values (Kohli and Labahn, 1997). Although some believe that naming brands in companies that sell industrial products is not as crucial as naming brands in companies that sell consumer goods, Kotler and Pfoertsch (2006) emphasize that a common practice of using traditional brand names in B2B companies is incredibly fruitless and therefore should be skipped. Choosing a brand name is one of the most critical processes that companies engage in when creating and launching new products. Customers can register the brand name and recall it from memory in a very short time (Keller, 2013). People often go to extremes when it comes to brand names, and brand names are often considered a point of failure for individual products or entire organizations (Davis and Baldwin, 2005). All this speaks in favour of the importance of a strategic approach to the brand name development process in B2B and B2C companies. This research attempts to detect potential differences in the brand naming process in B2B and B2C companies. One of the previously suggested models of the brand naming process is adapted and used in a new context.

2. LITERATURE REVIEW

2.1. BRAND NAME

With rising competitiveness, companies find it harder to attract customers (Kollman and Suckow, 2007). Brand name is considered a key element of its identity and plays an important role in creating the preferable image. Changing a brand name is very expensive, so it is necessary to ensure that brand names comply with their strategic and legal roles (Blackett, 1998).

Collins (1977) concluded that people are never indifferent when it comes to brand names, even new ones. When introducing new products, marketing executives must create brand names that result in market success (Lefkowith and Moldenhauer, 1985). Although it seems like a very simple task, naming brands is a very demanding and time-consuming process. Large companies often hire professionals from various

agencies to come up with a suitable name. Some companies decide to do this process internally since the company's staff is best acquainted with what the brand portrays.

Brands such as Coca-Cola and McDonald's are the best examples of companies that consider their names the most prized asset because, apart from being memorable and recognizable, their brand names facilitate the introduction of new products (Meyers-Levy, 1989). It's undeniable that a brand should be advertisable. Keller (1987) proved that the presence of brand names and identification of product categories in ads resulted in better recall and advantageous decisions.

So far, numerous articles have been published on the topic of brand names. Keller, Heckler and Houston (1998) proved that when suggestive and nonsuggestive brand names were compared, a brand name that carried a product benefit resulted in a better recall of a benefit emphasized in an ad. When it is difficult to detect quality, brand names can effectively signal quality (Rao, Qu and Ruekert, 1999). Rao and Monroe (1989) proved that for consumer products, there was a positive relationship between the name of a brand and product quality. Furthermore, globalization is a trend, and companies must work on creating international brands (Schuiling and Kapfetrer, 2004). Due to numerous cultural differences, companies that operate internationally must take special care when choosing a brand name. Francis, Lam and Walls (2002) favour regional over global brands. Some of the recent research efforts were directed towards analyzing word mechanisms behind brand naming (Jeremić and Josijević, 2019), the effect of possessiveness in names on brand preferences (Khamitov and Puzakova, 2022), success factors of brand naming for cross-gender products (Ulrich, Azar and Aimé, 2020), superstition of brand names (Li, Hsieh and Chang, 2016), as well as the role of brand names in conveying the ethicality of a business (Klink and Wu, 2017).

Choosing the right name for the brand is important not only for B2C companies but also for B2B companies. A brand name can convey promises and tangible advantages of a company selling industrial goods and be used to build and maintain competitive advantages (Shipley and Howard, 1993). Companies in the B2B market often use the company name or name of a product category when naming new products. However, they must be careful with this strategy and brand extensions. In the research on the impact of brand extension on a family brand name, Loken and John (1993) presented results which indicated that dilution effects were present when attributes of brand extensions were incompatible with beliefs associated with the family brand.

The factors that led to the development of the brand naming theory include technological improvements, scaling production, science development, rising competitiveness, and enthusiasm about psychology and the way marketers can use that knowledge (Shevliakova, 2020).

2.1. BRAND NAME PROCESS

The first study on the brand naming process was conducted by McNiel, James and Zeren (1981). Based on a descriptive research approach, the authors proposed a six-stage model of the brand naming process but did not clearly separate branding objectives from brand name criteria. In one of the pioneering and most comprehensive studies on brand naming, Shipley, Hooky and Wallace (1988) analyzed the behaviour of British companies in this process. They proposed a model of six steps, including branding objectives, choosing branding strategies, specifying brand name criteria, generating brand name ideas, checking brand name ideas, and selecting a brand name. The research was descriptive in nature. The same brand naming process was utilized by Shipley and Howard (1993) in their study on B2B companies, taking into consideration the company's size. In their research on the brand naming process, Kohli and Labahn (1997) proposed a brand naming model with five distinctive steps: specifying branding objectives, creating brand name candidates, evaluating brand name candidates, selecting a brand name, and registering it. The authors compared the behaviour of B2B and B2C companies according to the model they proposed. Although they found statistically significant differences in certain steps of the process, the focus was predominantly on descriptive research. As a response to the emergence of online stores, Kollman and Suckow (2007) researched the brand naming process in the net economy. In addition to the traditional path followed by scholars mentioned above, these scholars suggest a path with domain availability check as a step in the process. They found a considerable amount of attention attributed to domain availability checks among online businesses, pointing out that the sooner they go through this step, the shorter the naming process lasts. Recent studies on brand naming processes are narrowly focused and relate to specific industries (e.g., Ab Gani et al., 2023). One such study focuses on investigating the brand naming process for new fruit-flavoured products, providing a detailed overview of all previously explored processes in the literature (Arthur and Bejaei, 2022).

Previous research suggests that B2B companies tend to attribute a reasonable significance to branding and choosing the right name for their brands, too (Shipley and Howard 1993). However, Keller (2013) notes that B2B companies often operate under the assumption that their product buyers are highly informed and professional and, therefore, direct less effort to the brand. Kohli and Labahn (1997) proved differences in the brand naming process between B2B and B2C companies concerning brand name testing, setting branding objectives, and deciding on brand name idea sources, idea generation methods, and participants involved in the final decision-making. Therefore, the authors conclude that differences in brand naming processes between companies do exist and point to lower importance attached to brand names in B2B companies.

3. METHODOLOGY

Our main research objective was to investigate whether there were differences between B2B and B2C companies in Bosnia and Herzegovina. Guided by the available literature presented above, we formulated the following hypothesis:

H: *There are differences in the brand naming process between B2B and B2C companies in Bosnia and Herzegovina*.

Our sample consists of 50 companies located in Bosnia and Herzegovina. The sampling method we used is convenience sampling. For data collection, we used an online survey.

The six-step model of the brand naming process suggested by Shipley, Hooky and Wallace (1988) was used in this research. However, some steps of the process have been adapted. For example, in the second step (selecting branding strategies), the use of the individual name, family name, or combination was investigated. Shipley, Hooky and Wallace (1988) emphasized that brand sponsor decisions were important for a wide range of consumer products. The purpose of this research is to provide a better understanding of the differences in brand naming processes between B2B and B2C companies. Because of the research context, brand sponsor decision analysis is neglected. Furthermore, for the purpose and scope of this research and the context in which it was conducted, investigating whether brand name ideas are tested at all was more important than analyzing participants in the brand name ideas screening.

The questionnaire was standardized, and all respondents answered the same questions. For the purpose of classifying companies into B2B or B2C groups, participants were asked the following question: "Who are your primary customers?". As Kotler and Armstrong (2018) state, companies operating in B2B markets sell products and services to business customers, while companies operating in B2C markets sell them to final consumers. Therefore, the possible answers offered to the question "Who are your primary customers?" were "business customers" and "final consumers". If the answer was "business customer", the company was considered a B2B company. If the answer was "final consumers", it was considered a B2C company. In our questionnaire, we used the combination of a 5-point Likert scale, multiple choice, and checkbox questions.

For our data analysis, we used SPSS. The Chi-Square Test and its alternatives and the Mann-Whitney U test were used to compare the answers given by employees from B2B and B2C companies. The Chi-Square Test and its alternatives were used to determine if there was an association between variables when both variables were nominal. It was necessary to ensure that the assumptions of the Chi-Square Test were met. When the stated assumption on the expected counts in cells (Yates, Moore and McCabe, 1999; Field, 2013) was violated, instead of the Pearson Chi-Square Test,

the values associated with the Likelihood Ratio and Fisher's Exact Test (2χ2tables) were reported. When the dependent variable was measured on a 5-point Likert scale to test differences between B2B and B2C companies, the non-parametric Mann-Whitney U test was used due to the violated assumptions of the parametric t-test.

4. RESEARCH RESULTS AND DISCUSSIONS

4.1. CHARACTERISTIC OF THE SAMPLE

Questions used to identify sample characteristics refer to the type of a company represented by the primary customers and the position of the respondent in the organizational hierarchy. Most of our respondents were in manager positions (86%), while the remaining 14% were in other positions. Most of the companies from the sample were B2C companies (73%), while the minority of them were B2B companies (17%).

4.2. HYPOTHESIS TESTING

When it comes to the differences between B2B and B2C companies in the importance attached to branding objectives, results (Table 1) indicate that B2B companies attach significantly lower importance to establishing a particular image as a branding objective than B2C companies.

Table 1: *Differences between B2B and B2C companies when it comes to the importance attached to branding objectives*

Branding Objectives	Results of the Mann-Whitney U test
Establish a particular image	Mdn_{B2B} = 4.00, Mdn_{B2C} = 5.00, U = 147.000, p = 0.006, r = -0.385.
Establish a brand loyalty	Mdn_{B2B} = 4.00, Mdn_{B2C} = 5.00, U = 192.000, p = 0.136, r = -0.211.
Establish a product differentiation	Mdn_{B2B} = 4.00, Mdn_{B2C} = 4.00, U = 216.500, p = 0.410, r = -0.117.
Establish market positioning	Mdn_{B2B} = 4.50, Mdn_{B2C} = 5.00, U = 248.500, p = 0.933, r = -0.012.
Establish market segmentation	Mdn_{B2B} = 4.00, Mdn_{B2C} = 4.00, U = 217.000, p = 0.425, r = -0.113.
Establish brand reputation	Mdn_{B2C} = 5.00, Mdn_{B2C} = 5.00, U = 237.500 , p = 0.715, r = -0.052.
Establish acceptance of the product	Mdn_{B2B} = 4.00, Mdn_{B2C} = 5.00, U = 189.00, p = 0.136, r = -0.211.

Source: *Authors' work*

Based on the results (Table 2), it can be concluded that there is a significant association between the use of the brand name strategy and the type of the company. This means that there is a significant difference between B2B and B2C companies when it comes to the choice of the brand name strategy. Results show that 64% of B2B companies have all or many products branded with only a family (company)

name. In contrast, 58% of B2C companies have all or many products branded with a combination of individual names and family names.

Table 2: *Association between the use of the brand name strategy and the type of the company*

	Pearson Chi-Square vs. Likelihood ration
Branding strategies*Type of the company	$\chi 2(2, N = 50) = 17.877$, p = 0.000 vs. **LR (2, N = 50) = 17.197, p = 0.000**

Source: *Authors' work*
The bolded results are chosen because of the test assumptions.

Table 3: *Association between the use of brand name criteria and the type of the company*

	Pearson Chi-Square vs. Fisher's Exact Test
Compatibility with desired product image*Type of the company?	$\chi 2(1, N = 50) = 1.531$, p = 0.216 vs. **p (two-tailed) = 0.304**
Consistent with the image of the company's other brands*Type of the company?	$\chi 2(1, N = 50) = 0.211$, p = 0.646 vs. **p (two-tailed) = 0.734**
Different from competition*Type of the company	$\chi 2(1, N = 50) = 0.828$, p = 0.363 vs. **p (two-tailed) = 0.529**
Trademark availability*Type of the company	**$\chi 2(1, N = 50) = 0.010$, p = 0.919** vs. p (two-tailed) = 1.000
Ease of registration*Type of the company?	$\chi 2(1, N = 50) = 8.207$, p = 0.004 vs. **p (two-tailed) = 0.019**
Consistent with company image*Type of the company	$\chi 2(1, N = 50) = 0.066$, p = 0.797 vs. **p (two-tailed) = 1.000**
Overall acceptability*Type of the company	**$\chi 2(1, N = 50) = 0.149$, p = 0.700 vs**. p (two-tailed) = 0.758
Attractive to customers*Type of the company	**$\chi 2(1, N = 50) = 0.542$, p = 0.462** vs. p (two-tailed) = 0.537
Positive connotations*Type of the company	$\chi 2(1, N = 50) = 1.830$, p = 0.176 vs. **p (two-tailed) = 0.213**
Memorable*Type of the company	**$\chi 2(1, N = 50) = 0,000$, p = 1.000** vs. p (two-tailed) = 1.000
Ease of recognition*Type of the company	**$\chi 2(1, N = 50) = 2.794$, p = 0.095** vs. p (two-tailed) = 0.118
Advertisable*Type of the company	**$\chi 2(1, N = 50) = 0.066$, p = 0.797** vs. (two-tailed) = 1.000
Ease of pronunciation*Type of the company	$\chi 2(1, N = 50) = 0.123$, p = 0.726 vs. **p (two-tailed) = 0.746**
Length*Type of the company	$\chi 2(1, N = 50) = 0.176$, p = 0.675 vs. **p (two-tailed) = 1.000**
Versatile among countries and languages*Type of the company	**$\chi 2(1, N = 50) = 2.318$, p = 0.123** vs. p (two-tailed) = 0.198
Versatile among products*Type of the company	$\chi 2(1, N = 50) = 3.429$, p = 0.064 vs. **p (two-tailed) = 0.085**
Persuasive*Type of the company	$\chi 2(1, N = 50) = 0.680$, p= 0.410 vs. **p (two-tailed) = 0.511**
Describes product uses, attributes, or benefits*Type of the company	$\chi 2(1, N = 50) = 0.004$, p = 0.951 vs. **p (two-tailed) = 1.000**
Understandable*Type of the company	**$\chi 2(1, N = 50) = 0.066$, p = 0.797** vs. p (two-tailed) = 1.000
Modern*Type of the company	**$\chi 2(1, N = 50) = 0.001$, p = 0.979** vs. p (2 two-tailed) = 1.000
Attractive to retailers*Type of the company	$\chi 2(1, N = 50) = 0.954$, p = 0.329 vs. **p (two-tailed) = 0.474**

Source: *Authors' work*
The bolded results are chosen because of the test assumptions.

Furthermore, the analysis results (Table 3) indicate that in the case of ease of registration, there is a significant association between the use of the criteria and the type of a company. In other words, there is a significant difference between B2B and B2C companies regarding the use of ease of registration as a brand name criterion. While 3 out of 14 B2B companies use the ease of registration as a brand name criterion, none of the B2C companies use it.

Regarding the brand name idea sources, results show no differences between B2B and B2C companies (Table 4).

Table 4: *Association between the use of brand name ideas sources and the type of the company*

	Pearson Chi-Square vs. Fisher's Exact Test
Marketing department *Type of the company	χ2(1, N = 50) = 0.893, p = 0.345 vs. **p (two-tailed) = 0,436**
Advertising agencies*Type of the company	χ2(1, N = 50) = 0.759, p = 0.384 vs. **p (two-tailed) = 0.657**
Marketing research agencies*Type of the company	χ2(1, N = 50) = 0.434, p = 0.510 vs. **p (two-tailed) = 0.663**
Employees*Type of the company	χ2(1, N = 50) = 2.218, p = 0.136 vs. **p (two-tailed) = 0.187**
Customers*Type of the company	**χ2(1, N = 50) = 3.378, p = 0.066** vs. p (two-tailed) = 0.110
Sales force*Type of the company	χ2(1, N = 50) = 5.357, p = 0.021 vs. **p (two-tailed) = 0.074**
Names in stock*Type of the company	χ2(1, N = 50) = 0.001, p = 0.971 vs. **p (two-tailed) = 1.000**
Dictionaries and books*Type of the company	χ2(1, N = 50) = 2.822, p = 0.093 vs**. p (two-tailed) = 0.126**

Source: *Authors' work*
The bolded results are chosen because of the test assumptions.

Table 5: *Association between the use of brand name generation methods and the type of the company*

	Pearson Chi-Square vs. Fisher's Exact Test
Brainstorming*Type of the company	χ2(1, N = 50) = 1.463, p = 0.326 vs. **p (two-tailed) = 0.278**
Group discussions*Type of the company	χ2(1, N = 50) = 1.531, p = 0.216 vs. **p (two-tailed) = 0.304**
Interviews with customers*Type of the company	χ2(1, N = 50) = 1.691, p = 0.193 vs. **p (two-tailed) = 0.566**
Customer surveys*Type of the company	χ2(1, N = 50) = 0.004, p = 0.951 vs. **p (two-tailed) = 1.000**
Focus groups*Type of the company	χ2(1, N = 50) = 0.397, p = 0.529 vs. **p (two-tailed) = 0.611**

Source: *Authors' work*
The bolded results are chosen because of the test assumptions.

Results (Table 5) indicate no significant association between the use of brand name generation methods and the type of the company. In other words, there is no significant difference between B2B and B2C companies when using brand name generation methods.

According to the results presented in Table 12, there is a significant association between the testing of brand name ideas and the type of the company, i.e., there is a significant difference between B2B and B2C companies regarding the brand name idea testing. In B2C companies, ideas are tested in 15 out of 36 cases, and in B2B companies, they are tested in only 1 out of 14 cases (Table 6).

Table 6: *Association between the brand name idea testing and the type of the company*

	Pearson Chi-Square vs. Fisher's Exact Test
Brand name idea testing*Type of the company	$\chi 2(1, N = 50) = 5.521, p = 0.019$ **vs. p (two-tailed) = 0.021**

Source: *Authors' work*
The bolded results are chosen because of the test assumptions.

Furthermore, it can be concluded that there is no significant difference between B2B and B2C companies when it comes to the importance attached to personnel involved in the decision-making process of the final name (Table 7).

Table 7: *Differences between B2B and B2C companies in the importance attached to different personnel involved in the decision-making process*

Personnel involved in the decision-making process	**Results of Mann - Whitney U test**
Outside trademark attorney	$Mdn_{B2B} = 1.00$, $Mdn_{B2C} = 3.00$,mU = 176.500, p = 0.089, r = -0.240
Advertising agencies	$Mdn_{B2B} = 2.00$, $Mdn_{B2C} = 2.00$, U = 246.500, p = 0.902, r = -0.017
Market research agencies	$Mdn_{B2B} = 2.00$, $Mdn_{B2C} = 3.00$, U = 251.000, p = 0.982, r = -0.003.
Specialized consulting firms	$Mdn_{B2B} = 2.00$, $Mdn_{B2C} = 2.00$, U = 200.000, p = 0.239, r = -0.167.
Managers (brand, product, etc.)	$Mdn_{B2B} = 5.00$, $Mdn_{B2C} = 4.00$, U = 222.000, p = 0.490, r = -0.098.
Senior marketing managers	$Mdn_{B2B} = 4.00$, $Mdn_{B2C} = 4.50$, U = 250.500, p = 0.972, r = -0.005.
Team of individuals from marketing	$Mdn_{B2B} = 4.00$, $Mdn_{B2C} = 5.00$, U = 216.000 , p = 0.403, r = -0.118.
Product development team	$Mdn_{B2B} = 3.00$, $Mdn_{B2C} = 4.00$, N = 36), U = 171.000, p = 0.067, r = -0.258.
Entire marketing department	$Mdn_{B2B} = 4.00$, $Mdn_{B2C} = 4.00$, U = 218.500, p = 0.442 , r = -0.109.
Company legal counsel	MdnB2B = 2.00, MdnB2C = 3.00, U = 174.000, z = -1.728, p = 0.084, r = -0.244.

Source: *Authors' work*

Since the evidence presented above proves some differences between B2B and B2C companies in some of the steps of the brand naming process, we can say that our hypothesis is partially supported. Our research yielded some differences in results when compared to the research of authors who suggested the model we used (Shipley, Hooky and Wallace, 1988). B2B companies do not attach the same importance to establishing a particular image as B2C companies. They also test their brand name ideas less frequently compared to B2C companies, which corresponds to the findings of Kohli and Labahn (1997). Additionally, B2B companies pay more attention to ease of registration than B2C companies, which is in line with the findings that show that industrial companies rely more on trademark registration requirements communicated by their legal advisors (Kohli and Labahn, 1997). Although more and more branding experts stress the importance of branding in the B2B market, B2B companies are still unaware of how important branding is for desired outcomes such as purchase intention, which is not the case with B2C companies (Laroche, Kim and Zhou, 1996).

Furthermore, B2B companies use family (company) names more often than B2C companieswhich are more inclined to combine individual and family (company) names. This means that B2B companies work on building a corporate brand. By using the family (company) name for all or most products, they try to transfer the associations related to the corporate brand and family brands to individual products. It is a strategy that facilitates the introduction of new products to the market but also implies a great risk. If one product fails, the failure can be transferred to the entire product group or the entire company.

On the other hand, by using the combination of individual names and family (company) names in most cases, B2C companies play it safe. When this strategy is used, the presence of a family name facilitates the introduction of new products, while using an individual name limits potential problems with the product to the product in question.

5. CONCLUSION

Considering the differences that emerged from our results, we can conclude that there are some differences in the brand naming process between B2B and B2C companies. Findings on the brand naming strategy and testing are particularly intriguing, leading us to think that B2B companies in Bosnia and Herzegovina still don't attach high importance to brand naming, as opposed to recommendations from the branding literature (Kotler and Pfoertsch, 2006).

The main contribution of this paper is reflected in a better understanding of the approach to the brand naming process in B2B and B2C companies in Bosnia and Herzegovina. In addition to the fact that the results contribute to theory by clearly

indicating the steps in the brand naming process in which there are differences between B2B and B2C companies, the paper also has some managerial implications. Managers could perhaps think about alternatives for their brand name strategy, considering what contemporary literature suggests (Kotler and Pfoertsch, 2006). Alternatives would allow them to reduce the risk of jeopardizing the corporate brand. In line with the recommendations drawn from putting our results in the context of the available literature, we suggest that managers in B2B companies could also pay more attention to establishing a particular image and testing their ideas. If they decide to take alternative strategies, testing is more likely to happen.

The main limitation of this research is the lack of an updated register of relevant contacts (brand or marketing managers) of Bosnian and Herzegovinian companies from the B2B and B2C markets.

Like any other research, this one also carried out limitations in the form of possible biases - confusion of the respondent's own views and those of the company.

Future research into the process of naming brands could be concentrated on specific industries and company naming processes.

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RAZLIKE U PROCESU IMENOVANJA BRENDOVA IZMEĐU B2B I B2C KOMPANIJA U BOSNI I HERCEGOVVINI

SAŽETAK

Literatura sugerira da postoje potencijalne razlike u pristupima imenovanju brendova između poslovnih (B2B) tržišta i potrošačkih (B2C) tržišta. Koristeći model procesa imenovanja brendova koji su predložili raniji autori, ovo istraživanje ima za cilj utvrditi razlike u procesu imenovanja brendova u kompanijama koje posluju na poslovnim i potrošačkim tržištima u dosad neistraženom kontekstu Bosne i Hercegovine (BiH). Istraživanje je provedeno na uzorku od 50 kompanija iz BiH putem online upitnika. Rezultati ukazuju da su B2B kompanije sklonije korištenju korporativnog (porodičnog) imena brenda, dok B2C kompanije češće testiraju ideje nego B2B kompanije. Osim toga, rezultati pokazuju razlike između B2B i B2C kompanija u pogledu ciljeva brendiranja i kriterija za odabir imena brenda. Ograničenje ovog istraživanja je, prije svega, nedostatak ažuriranog registra kontakata kompanija u trenutku prikupljanja podataka.

Ključne riječi: *Brand, Identitet brenda, Naziv brenda, Proces imenovanja brendova, B2B i B2 kompanije.*

JEL: *M3, M31*

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