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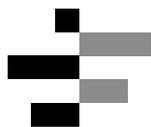
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У СУБОТИЦИ

Универзитет  
у Новом Саду

# **Анали**

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# Садржај / Contents

## ОРИГИНАЛНИ НАУЧНИ РАД / Original scientific article

- Nada Trivić**  
Productivity measurements, production function and Divisia index numbers  
Мерење продуктивности, производна функција и Дивисиа индексни бројеви 003-016
- Zoljargal Ulziibadrakh, Zoltán Szakály**  
Market landscape and the role of marketing in the field of Mongolian performing arts organizations 017-036
- Julija Vidosavljević, Veljko Marinković, Dražen Marić**  
Determinants of User Satisfaction in Mobile Commerce: application of the UTAUT 2 model  
Детерминанте сатисфакције корисника мобилне трговине: примена УТАУТ 2 модела 037-053
- Aleksandra Stojilković, Aleksandar Grubor**  
Cross-cultural localisation of Serbian tourist destinations' websites: cases of websites of tourism organisations of Belgrade, Novi Sad and Niš  
Кроскултурна локализација сајтова домаћих туристичких дестинација: примери сајтова туристичке организације Београда, Новог Сада и Ниша 055-072
- Dimitrije Gašić, Nemanja Berber, Maja Strugar-Jelača, Tibor Zsigmond**  
Socio-demographic characteristics of employees and flexible work arrangements: Evidence from Serbia  
Socio-demografske karakteristike zaposlenih i fleksibilni aranžmani rada: Dokazi iz Srbije 073-091
- Nevena Bevanda, Vuk Bevanda, Goran Pavlović**  
How Servant Leadership Affects Job Satisfaction and Organizational Commitment in the post COVID-19 era  
Како услужно лидерство утиче на задовољство послом и приврженост организацији у периоду након COVID-19 пандемије 093-108
- Bojana Vuković, Kristina Peštović, Dušan Saković, Teodora Ilić**  
Company value analysis: Empirical evidence from Western Europe  
Анализа вредности компаније на узорку западноевропских земаља 109-124
- Katarina Božić**  
Bibliometric analysis of digital transformation on organization design  
Библиометријска анализа дигиталне трансформације на организациони дизајн 125-148
- Diona Đurđević, Jelica Eremić-Đodić, Dóra Kolta, Emese Prihoda**  
Social marketing and auditing for sustainable urban inclusion in Serbia  
Социјални маркетинг и ревизија за одрживу урбану инклузију у Србији 149-167

**Milica Dukanac, Vesna Stojanović Aleksić, Dejana Zlatanović**

The impact of transformational and transactional leadership styles on organizational innovativeness

Утицај трансформационог и трансакционог лидерства на иновативност запослених

169-188

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# Productivity measurements, production function and Divisia index numbers

## Мерење продуктивности, производна функција и Дивисиа индексни бројеви

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**Abstract:** The objective of this study is the theoretical and methodological analysis of the total productivity index, as a measure of economic efficiency, assuming the existence of various inputs and various outputs. The defined index is a measure of the overall change in productivity. The obtained chain two-factor indices are rationalized Divisia indices.

The study actualizes the issues of economic efficiency, measurements of productivity and total productivity, promotes relevant literature in this field, offering a simple methodology with numerous applications at the same time. The presented concept is based on index numbers of total productivity of all factors. Using this approach, net output is compared to a weighted average of all factor inputs. Therefore, a significant part of the study is particularly the input weighting methodology, since it enables the appropriate connection of inputs and outputs, combining their different units of measure at the same time.

The results obtained by applying the presented methodology in this paper provide the basis for numerous empirical analyses of the level and dynamics of changes in the economies' efficiency. Due to its simplicity, this approach has several advantages over other similar approaches.

**Keywords:** total productivity, index number, economic efficiency, labor productivity, capital productivity

**JEL classification:** C43 D24 E23 O47

**Сажетак:** Циљ ове студије је теоријска и методолошка анализа индекса укупне продуктивности, као мере економске ефикасности, уз претпоставку постојања више инпута и више аутпута. Дефинисани индекс је мера укупне промене продуктивности. Добијени ланчани двофакторски индекси су рационализовани Дивисиа индекси.

Студија актуелизује питања економске ефикасности, мерења продуктивности и укупне продуктивности, промовише релевантну литературу из ове области, а истовремено нуди једноставну методологију која има бројне примене. Презентовани концепт се заснива на индексним бројевима укупне продуктивности свих фактора. Такав приступ укључује посматрање нето аутпута у односу на пондерисани просек инпута свих фактора. Стога значајан део студије чини управо методологија пондерисања инпута, јер омогућава повезивање инпута и аутпута, али истовремено и комбиновање њихових различитих јединица мере.

Резултати добијени применом методологије представљене у овом раду представљају основу за бројне емпиријске анализе нивоа и динамике промена ефикасности привреде. Због своје једноставности овај приступ има низ предности у односу на друге сличне приступе.

**Кључне речи:** тотална продуктивност, индексни број, економска ефикасност, продуктивност рада

**ЈЕЛ класификација:** C43, D24, E23, O47

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## Introduction

The main goal of this paper is a concept that offers a simple methodology, resulting in different index numbers, as a measure of the change in the level of productivity. In order to measure the change in productivity, it is necessary to simultaneously monitor the changes in the level of output, as well as the used inputs. Such changes are relatively simple to measure if one input and one output are assumed, and much more complex if conditions are investigated in which there are multiple inputs and multiple outputs at the same time. The concept of index numbers is, actually, one of the solutions to these complex research operations. Index numbers are real numbers that measure changes in a set of related variables. They can be used as an indicator of total factor productivity, as TFP index numbers, but also as partial productivity indicators - input and output index numbers. Also, index numbers can be used to measure changes in prices and quantities, but also in comparative analyses at the level of companies, industries, sectors, regions or economies.

The application of specific methods and criteria for measuring the level and growth of economic efficiency implies previously clearly defined theoretical assumptions. The production efficiency and its interaction with the phenomenon of development is in the center of attention when talking about the problems of modern socio-economic development in general, and economic development in particular (Baldwin & Gu, 2008). Namely, efficiency is the level of performance of used resources, and it is expressed as the ratio of production results and invested inputs. This is exactly what productivity is, so productivity is a general indicator of production efficiency. Besides, productivity is an important indicator for comparing the quality of the economy between related business entities in the country, and between different countries as well (Deaton, 2010).

Economic theory offers various analytical bases for empirical productivity research. However, there is no one, unique and generally accepted indicator that measures and expresses economic efficiency. Also, productivity growth has multiple effects on economic development, because more efficient production is the basis for the general improvement of the economic conditions of any development. Efficiency is most often expressed and measured by labor productivity (Balk, 2001). In order to see the quantitative dimension of economic growth and development, it is necessary to express labor productivity, capital productivity, but also other partial indicators of growth. The indicator of total productivity is of special importance among them, as a summary indicator of development, as well as the indicator of efficiency of transforming resources into products and services (Atkin, Khandelwal, Osman, 2019). It can be said that total factor productivity (TFP) is an extremely complex phenomenon, which refers to the long term and is connected with almost all elements that determine the dynamics of economic life. This is precisely why the ability to measure TFP is important. However, measuring TFP is not a goal, but a means or basis for better organizing and managing production at different levels of the economy.

Economic theory offers different methodological procedures, as different indicators of productivity. Each of these indicators expresses changes in the observed phenomenon in a certain way, but at the same time has certain advantages and disadvantages.

## 1. Total productivity factors as a measure of economic efficiency

Exploring the causes and consequences of changes in productivity and the connection between productivity and other economic categories is a complex matter because it requires an analysis of the entire economic mechanism with numerous interactions of different factors. The number of factors that affect productivity requires, from the analysis, prior classification of these factors into relatively homogeneous groups, which significantly depends on the level, the aspect and the purpose of the analysis itself (Diewert, 2004).

Sometimes, the complex phenomenon of total (global) factor productivity is approached very simplistically and even incorrectly. It is wrong to view productivity as an isolated phenomenon, because the level of productivity is determined by numerous and different factors, and at the same time productivity has multiple effects on numerous other economic categories. It is a complex interactive relationship. Analyses that take into account all the complexity of this phenomenon are mostly limited to one segment of the problem or set of relationships that are established between productivity and other categories at a certain level of observation (Copeland & Shapiro, 2016).

The term “productivity” is generally used to express the relationship between output and inputs used. This conceptual approach results in a number of development indicators and significant advantages over other alternative concepts. The methodology proposed in this paper includes weighting procedures, which ensure the combination of different output and input units, but also their appropriate connection. The index numbers of “productivity of all factors” are then based on observations of *net outputs* and *weighted averages of capital and labor inputs*. Then, the changes in productivity and interactions to which they are conditioned are viewed primarily in a long-term context.

Productivity is, therefore, a complex phenomenon essentially related to all those forces that determine the dynamics of economic life. As a result of numerous and diverse factors, changes in productivity significantly affect the movement of production costs, investments, accumulation, employment, prices, wages, and have a significant role in the development and changes in the structure of production. If productivity is defined as “labor and capital productivity” or “efficiency that transforms a country’s resources into products and services”, then the level of productivity is a *summary indicator of a country’s level of development* (Hill, 2004).

Low or declining productivity growth rate legitimately induces numerous economic disturbances that are multiplicatively carried over to all segments of the economic structure with a number of negative consequences. Economic efficiency is confirmed in faster or at least equal growth of costs and production results. Therefore, a low productivity growth rate directly affects the increase in total costs. Higher costs produce high prices of manufactured goods, and thus a decrease in sales volume, which further reduces the volume of production per employee and reduces overall work activity. This has a feedback effect on the further decline in productivity and income, which results in an increase in inflation and capital ratio, unemployment and a general decline in living standards.

The total productivity index is defined as the ratio of production growth and investment growth of all factors weighted by their relative importance. This is a summary indicator of actual production efficiency. The growth rate of total productivity is actually a weighted average of the growth rates of labor productivity and capital productivity, and indicates an increase in production that is realized without additional investment of factors. One of the dilemmas is whether to put the effect of production in relation only to human labor or to the total costs of production. Recognizing the fact that not only human (labor) but also material factors are engaged in the production process, certain dilemmas arise in terms of understanding productivity. Labor is only a part of the costs in the production process, so labor productivity is only one of the forms of economy and a measure of business success of economic entities. However, it is necessary to ensure the reproduction of all expenses from the realized income. If global (total or overall) productivity is expressed as:  $Y/(K+L)$ , the methodological question arises whether  $K$  and  $L$  can be added. Numerous authors give a negative answer to this question (Diewert, 2015) and consider that total productivity is a theoretical concept that is quantitatively indeterminate. "Total productivity remains a concept without quantitative certainty and thus practical applicability...provides broad analytical possibilities in economic research" (Althin, 2001).

In addition to measuring total factor productivity (TFP) and methodological possibilities and limitations of TFP measurement, this paper also discusses Divisia or chain-link indexes. Namely, it starts from the point of view that the Divisia indices are the most appropriate and most suitable for studying the sources of economic growth. "The great advantage of the Divisia index is alleged to be its "accuracy", that is, its capacity to combine time series of prices and quantities to give a true reflection of the height of a utility or production function over time" (Usher, 1974). The results of numerous studies show that the acceptability and accuracy of the Divisia index implies very restrictive conditions for their application. This paper considers the properties of the Divisia, or chain-link, index, as they relate to the argument that this is the most appropriate index for use in studying the sources of economic growth. Usher D. (1974) indicates that "misplaced confidence in the Divisia index has led to errors of interpretation that might otherwise have been avoided, and has given rise to a distorted view of the process of economic growth".

## 2. Methodology for measuring total factor productivity

We start from the definition that the production function is an analytical summary description of the relationship between production costs and the quantity of finished products (Dean, Harper & Sherwood, 1996). The initial assumption of this model of estimating qualitative development factors is a multifactorial production function (Jorgenson & Griliches, 1971) characterized by a constant rate of return:

$$Y = f(K, L, T) \quad (1)$$

If  $p_Y$ ,  $p_K$  and  $p_L$  are the prices of output, capital and labor, it is possible to define the share of capital and labor inputs in the output ( $w_K$  i  $w_L$ ):

$$w_K = \frac{p_K \cdot K}{p_Y \cdot Y} \quad w_L = \frac{p_L \cdot L}{p_Y \cdot Y} \quad (2)$$

The necessary equilibrium condition is obtained by equality between all values of participation, on one side, and the output elasticity and corresponding input, on the other side:

$$w_K = \frac{\partial \ln Y}{\partial \ln K} (K, L, T) \quad w_L = \frac{\partial \ln Y}{\partial \ln L} (K, L, T) \quad (3)$$

Assuming a constant rate of return, the sum of elasticities and value shares is 1. The rate of technical progress ( $w_T$ ) can be defined as the output growth over time, assuming a constant capital and labor input:

$$w_T = \frac{\partial \ln Y}{\partial T} (K, L, T) \quad (4)$$

At a constant rate of return, technical progress can be expressed as the output growth rate minus the weighted average growth rate of capital and labor inputs (Madžar, 1981). Weights represent the value of the corresponding input shares:

$$w_K \frac{d \ln K}{dT} + w_L \frac{d \ln L}{dT} + w_T \quad (5)$$

This expression of the rate of technical progress represents the quantitative index of technical progress – *Divisia index* (Hulten, 2008). In modern research, the Divisia indices represent a continuous series of numbers which, through the potential production function, are connected to the basic structure of the economy. However, it is sometimes possible for index numbers, even without a full appreciation of the economic structure, to show its basic characteristics even when only data on prices and quantities are used. The Divisia index is widely used in theoretical discussions of productivity analysis, and has important applications elsewhere. Older applications of the Divisia stressed its discrete-time axiomatic properties.

Total output ( $Y$ ) can also be expressed as a function of aggregate input ( $M$ ). The production function then takes the form:

$$Y = g[M(K, L), T] \quad (6)$$

The function  $g$  is linearly homogeneous for the aggregate inputs of capital and labor, while the technical progress of Hicks is neutral (Haughwout, 1998):

$$Y = A(t) \cdot M(K, L) \quad (7)$$

The rate of technical progress depends only on time:

$$w_T = \frac{d \ln A}{dt} \quad (8)$$

The growth rate of aggregate input is the weighted average growth rate of capital and labor input:

$$\frac{d \ln M}{dt} = w_K \frac{d \ln K}{dT} + w_L \frac{d \ln L}{dT} + w_T \quad (9)$$

which represents the *Divisia input index*.

At a constant rate of return, the necessary condition of producer's equilibrium is that

the prices of output and input are consistent with the equality between the value of output and the sum of the value of input:

$$p_Y \cdot Y = p_K \cdot K + p_L \cdot L \quad (10)$$

the obtained equation allows the *output price* to be expressed as a function  $p$  of the *input price*:

$$p_Y = p(p_K, p_L, t) \quad (11)$$

which represents a function of prices, i.e. the price of each aggregate can be expressed as a function of the prices of its components.

The *rate of technical progress* can be defined as the negative output growth over time at constant input prices:

$$w_T = -\frac{\partial \ln p_Y}{\partial t}(p_K, p_L, t) \quad (12)$$

or as a rate of weighted average input prices reduced by the growth rate of output prices (where weights are the corresponding value shares of input):

$$\frac{d \ln p_Y}{dt} = w_K \frac{d \ln p_K}{dt} + w_L \frac{d \ln p_L}{dt} - w_t \quad (13)$$

This equation represents the *Divisia price index of technical progress* (Balk, 2005).

If the output is a function of aggregate input, the output price can be expressed as a function of aggregate input price ( $p_M$ ):

$$p_Y = -\frac{p_M(p_K, p_L)}{A(t)} \quad (14)$$

then the growth rate of aggregate input price can be expressed as a weighted average growth rate of input prices (K and L):

$$\frac{d \ln p_M}{dt} = w_K \frac{d \ln p_K}{dt} + w_L \frac{d \ln p_L}{dt} \quad (15)$$

which represents the *Divisia price index of input*.

The main characteristic of the *Divisia index* is that the aggregate index represents the product of its price and quantity. At the same time, aggregate indices are equal to the sum of aggregate components. Besides, Divisia indices have a reproductive property.

The proposed methodology for measuring productivity is based on the model of production and technical changes, which allows the analysis of the sources of output growth of certain economic areas (sectors). The complete model implies the production function of the sector (Caves, Laurits & Diewert, 1982), where the output is a function of capital, labor, reproductive consumption and time input:

$$Y_i = f_i(K_i, L_i, T) \quad i=1, 2, 3, \dots \quad (16)$$

Based on the defined production functions, it is possible to generate index numbers for sector outputs ( $Y_i$ ), capital, labor and reproductive consumption inputs ( $K_i$ ,  $L_i$ ,  $X_i$ ), corresponding prices and sector productivity.

The analysis of substitution between primary factors of production and reproductive consumption enables the combination of sectoral production functions and necessary equilibrium conditions (Trivić, Todić, 2022). Equilibrium conditions are defined by the equations between the value shares of each input in the sector and the elasticities of the output in relation to that input:

$$\begin{aligned}w_X^i &= \frac{\partial \ln Y_i}{\partial \ln X_i} (X_i, K_i, L_i, T) \\w_K^i &= \frac{\partial \ln Y_i}{\partial \ln K_i} (X_i, K_i, L_i, T) \\w_L^i &= \frac{\partial \ln Y_i}{\partial \ln L_i} (X_i, K_i, L_i, T)\end{aligned}\quad (17)$$

At constant returns on capital (if we start from this assumption), the sum of elasticity and value shares of all three inputs is 1, for each sector:

$$w_X^i + w_K^i + w_L^i = 1 \quad (18)$$

The elasticity coefficients depend on the time and input variables of the production functions of the sector. The analysis of changes in substitution coefficients over time represents defined (known) rates of technical progress for each sector, defined as the growth rates of a sector's output at constant inputs of all factors. Rates of technical progress, as well as the elasticity of sectors outputs and inputs, depend on inputs and time (Lipsey & Carlaw, 2004). Then, the rate of technical progress ( $w_t^i$ ) can be defined for each of the  $n$  sectors as:

$$w_t^i = \frac{\partial \ln p Y_i}{\partial t} (X_i, K_i, L_i, T) \quad (19)$$

Assuming constant returns on capital, the rate of technical progress can be defined as the growth rate of the corresponding sector output minus the weighted average growth rate of inputs (X, K and L) of that sector, and the weights are given by the corresponding shares of factors:

$$\begin{aligned}\frac{d \ln Y_i}{dt} &= \frac{d \ln Y_i}{\partial \ln X_i} \cdot \frac{d \ln X_i}{dt} + \frac{\partial \ln Y_i}{\partial \ln K_i} \cdot \frac{d \ln K_i}{dt} + \frac{\partial \ln Y_i}{\partial \ln L_i} \cdot \frac{d \ln L_i}{dt} + \frac{\partial \ln Y_i}{\partial t} = w_X^i \frac{d \ln X_i}{dt} + w_K^i \frac{d \ln K_i}{dt} + \\&w_L^i \frac{d \ln L_i}{dt} + w_t^i \quad i=1, 2, 3, \dots\end{aligned}\quad (20)$$

The expression (20) represents *the Divisia quantitative index of sectoral rates of technical progress*.

If the production function for each sector individually defines the output  $Y_i$  as a function of the aggregate of total input ( $M_i$ ), then

$$Y_i = g_i[M_i, (X_i, K_i, L_i), t] \quad (21)$$

The total  $M_i$  is linearly homogeneous with respect to the inputs  $X_i, K_i, L_i$  of that sector. This implies that the technical progress of the Hicks sector is neutral, so it is:

$$Y_i = A_i(t) \cdot M_i(X_i, K_i, L_i) \quad (22)$$

and technical progress is:

$$w_t^i = \frac{d \ln A_i(t)}{dt} \quad (23)$$

The growth rate of sectoral input aggregates can be expressed as a weighted average growth rate of individual inputs:

$$\frac{d \ln M_i}{dt} = w_X^i \frac{d \ln X_i}{dt} + w_K^i \frac{d \ln K_i}{dt} + w_L^i \frac{d \ln L_i}{dt} \quad (24)$$

The model set up in this way does not require the existence of aggregate input of the sector to determine the index of technical progress of the sector, just as it does not require Hicks neutrality of technical progress of the sector. Defining the productivity index for each sector assumes that the sector output ( $Y_i$ ) can be expressed as a translog function of sectors inputs. *The productivity index* is a translog index of sectoral technical progress (Gordon & Griliches, 1997):

$$w_t^i = [\ln Y_i(t) - \ln Y_i(t-1)] - w_X^i [\ln X_i(t) - \ln X_i(t-1)] - w_K^i [\ln K_i(t) - \ln K_i(t-1)] - w_L^i [\ln L_i(t) - \ln L_i(t-1)] \quad (25)$$

Weights represent the average shares of sectoral inputs in the value of sectoral output. The assumption is that the output value is equal to the sum of the input values (Dean, Harper & Sherwood, 1996). Value shares can be calculated from data on output ( $Y_i$ ) and its price ( $p_Y^i$ ), inputs ( $X_i, K_i, L_i$ ) and their prices ( $p_X^i, p_K^i, p_L^i$ ).

It is possible to compare the productivity indices defined in this way with the productivity indices based on value added ( $w_{Vt}$ ) (Coelli, Prasada & Battese, 1998). These indices are generated based on the translog output index as:

$$w_{Vt} = w_V^i \cdot w_t^i \quad (26)$$

Value added is equal to the sum of the value of capital and labor inputs (Triplett, 2004). Weights  $w_V^i$  are given through the average share of value added in the sectoral output value.

If the scalar index  $m$  of outputs in time  $t$  is denoted by  $Y_i$ , the scalar index  $m$  of inputs by  $M_i$ , and their derivatives by time by  $Y'/Y$  and  $M'/M$ , then the *total factor productivity index* (TFP) is:

$$TFP = Y'/Y - M'/M \quad (27)$$

The logical question is, what conditions should apply so the total productivity factor can be measured in this way? The set of satisfactory conditions is that there is a consistent index of aggregate output and a consistent index of aggregate input (Uguccioni, 2016). If a hypothetical separation of the additive type is further assumed, the production function of the

form can be specified:

$$g(Y_t) = f(M_t, t) = 0 \quad \text{or} \quad g(Y_t) = f(M_t, t) \quad (28)$$

Assuming that the function  $g$  and  $f$  is characterized by a constant rate of return to a given quantity, which is not necessary but it is useful for data movement and calculation, then the *total productivity factor* is a partial derivative:

$$\varepsilon_{Ft} = \frac{\partial \ln f(M, t)}{\partial t} \quad (29)$$

If the output of a specific form of the production function  $f$  at moments  $t$  and  $t-1$  is represented by  $Y_t$  and  $Y_{t-1}$ , and index numbers, as specific measures of output, by  $I_t$  and  $I_{t-1}$ , such index numbers are assumed to be correct if:

$$\frac{Y_t}{Y_{t-1}} = \frac{I_t}{I_{t-1}} \quad (30)$$

The index thus defined is correct for a homogeneous production function of the translog form (Diewert, 2005), which is equally valid for the price index. This provides a theoretical basis for the use of these indices in productivity analyses, and also explains the name “translog index”. Other expressions of index numbers are correct for other forms of functions and can also be used (McLellan, 2004).

### 3. Application and characteristics of methods of measuring total productivity

Macroeconomic research of this type represents an ex-post analysis. The basis of the analysis is the production function, as an organizational principle of measuring the relationship of productivity with other quantities. Using a two-factor production function,  $T$  is sometimes called “technology”, and includes all the elements that affect the output, in addition to changes in the physical volume of inputs of material factors. As intangible factors accumulate through investment in education, research and development, this “intangible capital” is the primary source of efficiency (Bils & Klenow, 2001). The impression is that  $T$  will show minor changes if intangible inputs are included in the function together with material ones (Tomat, 2006). The Cobb-Douglas production function is defined for a given level of technology. If changes in technology need to be adjusted to logarithmic time series  $Y$ ,  $K$ ,  $L$ , it is necessary to keep in mind the change of scalar  $A$ , as well as exponent  $b$ . The magnitude of their changes can be estimated by different methods.

The expression  $(1+r)^t$  can be used instead of  $A_t$ . At the same time,  $r$  measures the average annual scalar rates  $A$  resulting from technological changes (Feder, 2017). The value of the coefficient  $r$  is then equal to the slope of the trend line adjusted by the index numbers of productivity obtained as *the output ratio to the weighted geometric average of the input*:

$$Y_t / (L_t^b \cdot K_t^{1-b}) \quad (31)$$

The main disadvantage of the described procedure is that it gives *average productivity growth rates* for the observed period as a whole. Further development of this methodology

aims to enable greater flexibility in changing the relationship between variables, which includes the possibility of estimating *annual productivity growth rates*.

According to the second method, the annual growth rates  $A_t$  can be obtained as the difference between the rate of change in output and the rate of change in weighted inputs (Trivić, 2004). By differentiating the production function, the following is obtained:

$$\Delta A/A = -\Delta Y/Y \cdot [b(\Delta L/L) + (1 - b) \cdot (\Delta K/K)] \quad (32)$$

which results in an *annual productivity growth rate*.

Time series of productivity can be provided by successively linking the annual rates of change in the residual with the base period, which has a value of 100. *The rate of total factor productivity* is then:

$$Y/[b \cdot L + (1 - b) \cdot K] \quad (33)$$

Thus expressed *total factor productivity* is the ratio of *output* and *weighted arithmetic average of input*. The weights are not derived from the statistical production function, but the income shares of the factors are estimated. In estimating the values obtained by this (index) approach, the assumption of the starting point of the Cobb-Douglas production function on linear homogeneity with unit elasticity of substitution between factors is avoided (Atkinson, Cornwell & Honerkamp, 2003).

This evaluation procedure is simpler than a number of others. It is often used in productivity analyses and is consistent with the weighting procedure used in measuring the real product (Diewert & Nakamura, 2003). Unlike a number of others, this weighting procedure does not require assumptions about the tendency to reduce the marginal productivity factors and about the neutrality of technical progress.

## Conclusion

The primary goal of this theoretical and methodological analysis is the definition of the total productivity index, as a measure of economic efficiency, assuming the existence of multiple-inputs and multiple-outputs. The defined index is a measure of total productivity change, as a combination of technological change, technological efficiency change and scale efficiency change. The term productivity is generally accepted to denote the relationship between output and associated inputs used in the production process. The main goal of measuring total productivity is to estimate the impact of investments and other variables that improve knowledge and enhance the growth of production (output). That is, the goal is to estimate the contributions of individual factors to production efficiency. The total factor productivity index starts from the production function with constant returns and necessary equilibrium conditions.

The question arises: why is productivity growth considered so significant? Namely, productivity growth is closely related to general economic growth, with a number of other economic aggregates, but also with the growth of living standards. Why or how? An increase

in production can occur with an increase in inputs or with an increase in productivity. It should be borne in mind that productivity growth is only the production growth that is greater than the input growth, which is the essence of the method of estimating productivity growth. Defined as the ratio of production and combined labor and capital costs, this index expresses changes in real product and real input costs.

The analysis of general efficiency on the basis of the total productivity index has a number of advantages compared to the measure of technical progress obtained on the basis of the production function. They can be reduced to the following:

1. non-parametric form of testing the correlation, eliminates the difficulties of statistical evaluation;
2. weighting system based on the estimates of factor shares in the functional distribution is simpler than the parameters obtained based on production function;
3. certain data corrections on weight values in aggregation, as well as on factor consumptions are possible.

The central part of this paper is the analysis of the methodological possibilities of defining the output, input and total productivity indices. To that end, on the basis of general theoretical interdependencies and mathematical axioms, the formulas of the corresponding chain indices were defined. A consistent result of such an approach implies that the possibility of measurement and quality adjustment of physical capital input and labor input is analyzed with special attention. The results obtained by applying the methodology presented in this paper are the basis for further empirical analysis of the level and dynamics of changes in the efficiency of the economy as a whole. This approach is easy to apply, and allows precise delineation of rates of change in productivity and its changes. The methodology developed in this article has a number of applications.

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# Market landscape and the role of marketing in the field of Mongolian performing arts organizations

Тржишни амбијент и улога маркетинга у области организација извођачких уметности у Монголији

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**Abstract:** Classical music is a formal music tradition of the Western world; an accepted genre having had many positive benefits on human and animal lives. The most common benefits of classical music are to provide an immersive live experience, support psychological and physiological needs, boost our health and brain functions, and improve productivity. Many countries have a well-developed history and achievement in this field, thus gaining an advantage; however, as classical music entered Mongolian culture comparatively late, it is a promising field in which to conduct research. This study aims to explore, determine, and gain insight into the marketplace as well as the role of marketing from past, current, and future perspectives as the field of classical music continues to develop in Mongolia. The study uses an in-depth interview approach with 21 interviewees including directors, marketers, managers, artists, researchers, and employees from two main Mongolian performing arts organizations, in order to gain a deeper understanding of this world. Based on the insights and experiences gained from these interviews, the results are identified and divided into two themes – market and audience profile, and the role of marketing within Mongolian performing arts organizations. Finally, the paper summarizes the main findings and concludes with a synopsis of key limitations and future research.

**Keywords:** performing arts marketing, the role of marketing, performing arts organizations of Mongolia, classical music, audiences

**JEL classification:** L82, M31, N75, Z11

**Сажетак:** Класична музика представља формалну музичку традицију западног света; прихваћени жанр који има многе позитивне ефекте на животе људи и животиња. Најчешће користи класичне музике су обезбеђивање имерзивног искуства уживо, подршка психолошким и физиолошким потребама, побољшање здравља и функција мозга, као и повећање продуктивности. Многе земље имају добро развијену историју и достигнућа у овој области, чиме остварују предност; међутим, пошто је класична музика релативно касно ушла у монголску културу, она представља обећавајуће поље за истраживање. Ова студија има за циљ да истражи, утврди и стекне увид у тржиште, као и у улогу маркетинга из прошлости, садашњости и будућности, како се област класичне музике наставља развијати у Монголији. Студија користи приступ

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дубинских интервјуа са 21 саговорником, укључујући директоре, маркетинг стручњаке, менаџере, уметнике, истраживаче и запослене из две главне монголске организације извођачких уметности, са циљем да се стекне дубље разумевање овог света. На основу увида и искустава добијених из ових интервјуа, резултати су идентификовани и подељени у две теме – тржишни и профил публике, и улога маркетинга у оквиру монголских организација извођачких уметности. На крају, рад сумира главне налазе и завршава се прегледом кључних ограничења и смерница за будућа истраживања.

**Кључне речи:** маркетинг извођачких уметности, улога маркетинга, организације извођачких уметности у Монголији, класична музика, публика  
**Јел класификација:** L82, M31, N75, Z11

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## **Introduction**

Performing arts are defined as live real-time events, performed by professional artists at specific venues such as theatres, and concert halls, (Novak-Leonard & Brown, 2011). Performing arts includes many types of performances, which can be specific to a national culture. For example, in the USA, performing arts categories are opera, theatre, classical music performances, dance, and ballet (Borgonovi, 2004), whereas some Asian countries events are comprised of Western classical performances, traditional and local contemporary performances (Wen & Cheng, 2013). In Mongolia, performing arts includes high-brow arts such as classical music, opera, and dance; traditional music, song and dance performances; pop music, contemporary music, etc.

We can see from these studies that every nation has its own unique and special performances; however, one type of performance occurs in every country – classical music. With a rich and long history, classical music has been appreciated throughout the world and has many benefits, for instance, to provide an immersive live experience, to facilitate social interactions (Bourdieu, 1973), and provide psychological, physiological, and emotional benefits for adults, children, and even for animals. However, classical concert audiences are decreasing worldwide due to the increase in choice of alternative leisure activities. Audiences are relatively older in age, and do not attend regularly. Due to technological developments starting in the 1980s, it is tougher to attract younger audiences as classical music appreciators are waning with newer generations, and those that are interested are viewing more and more non-live performances that can easily be found on TV, the internet, radio, etc. (McArdle et al., 2002).

Classical music arrived relatively recently in Mongolia; the 1960s and 70s saw the launch of the Mongolian Opera Theatre (1963) and Mongolian State Philharmonic (1972), and between 1960 and the 1990s classical music successfully spread widely in Mongolia under the influence of Russia. Some Russian classical music experts, musicians, and conductors visited Mongolia during this time to give masterclasses, and Mongolians also started to study Western classical instruments both nationally and internationally. Mongolian musicians and classical music organizations are accustomed to performing or giving lectures to a variety of institutions in order to educate about classical instruments, performances, as well as the importance and benefits of the genre. During that time, classical music audiences increased as the music extensively grew in popularity throughout the whole country.

Nevertheless, in the last two decades, classical music audiences are shrinking due to the social transition in Mongolia, social situation, technological development, the internet, and a broad choice of leisure and arts activities. On the other hand, classical music is still blooming for a select few as artists, conductors, and musicians are working more professionally, musical repertoires are expanding, and classical musical organizations are nurturing their company's internal environment. Since 1996, the Mongolian government have paid more attention to the cultural sector, and a law on culture was adopted. Many programs have been launched since 1999 in certain areas that the government saw as being vital to support; cultural programs such as "Classical art program I" in 2001, which supported the creation of new works of classical music and the training of professional artists, "Classical art program II" in 2011, which reinforced a legal environment for classical music field, and "Classical art program III" in 2018, which provided social and economic components.

In a broader sense, cultural marketing refers multidimensional effort that aims to strike a balance between the development of modern cultural manifestations and the preservation of traditional heritage in Mongolia. In order to portray a genuine image of Mongolia to both domestic and foreign audiences, traditional aspects such as the nomadic way of life, traditional art such as dance, music and song are at the center of marketing campaigns. Modern and traditional influences can be seen in current art, music, film and fashion, which are all gaining popularity at the same time. More precisely, one of the key elements for arts organizations, as they are providing a service, is marketing to attract new audiences whilst retaining their existing consumers, to communicate these customers' wants and needs, and to be a strong bridge between organizations and audiences (Prdić & Kuzman, 2023). Mongolian classical music organizations have not had marketing departments until recently, therefore, the potential of marketing and market research concepts have not been utilized. This study focuses to determine the classical music market, market situation, general audience profile, and the marketing role in this field, using in-depth interviews to gain more insights from the directors, managers, musicians, researchers, and experts who are working in the Mongolian classical music field.

## **1. Theoretical framework/literature review**

### **1.1. Marketing in the cultural sector**

Culture is all the tangible and intangible outcomes of human endeavors, including beliefs and customs that are accepted, objectified, and embraced within a community and passed down to subsequent generations and other communities (Szczepański, 1965). In the late 1960s, a classical marketing concept was introduced to cultural organizations by Kotler and Levy's (1969) work. Since the 1970s, cultural organizations began utilizing marketing most importantly to advertise their forthcoming events and to make a closer connection between arts and audiences (Heilbrun & Gray, 2001; Boter, 2005). While Carls (2012) contends that marketing in culture originated from traditional service marketing, Kolb (2013) argues that marketing in culture emerged from the need for artists to draw audiences and secure funding for additional work since they were unable to support themselves. Colbert and Ravanias

(2018) noted that, in the context of cultural institutions, using marketing principles does not require the artist to modify their work to suit the demands and preferences of the intended audience while discussing the importance of marketing in the cultural sector. Reaching market segments that might be interested in the artwork is how marketing is characterized in the context of culture. The application of marketing and management in art and cultural organizations has grown in significance since the early 1990s, and articles about strategic marketing and the behavior of cultural consumers started to broaden and encompass the entire marketing domain in the 2000s (Colbert, 2014). A cultural institution may perform many tasks, such as invention, production, replication, distribution, or storage, depending on its goals. It is crucial to segment the cultural sector's entities based on their emphasis on the product or market from a marketing perspective (Wróblewski & Kolb, 2017).

With the increasing number of cultural offers available, cultural institutions' marketing strategies center on how to provide visitors with greater value for their money, differentiate themselves from competitors, and win over the patrons' loyalty. The desire to offer outstanding, distinctive, and unique experiences that will attract customers with their singularity and remarkable emotional, sensorial, and aesthetic qualities is the key to answering these concerns (Hume, 2011). Numerous scientific studies addressed the subject of management in culture, although they also put forth some significant definitions of marketing in culture. For instance, Diggle (1984) noted that within the cultural field, marketing's primary objective is to attract a sufficient number of consumers for the product or the artist's creativity, to improve financial outcomes. Being able to understand things from the perspective of the consumer in order to meet their cultural needs is the fundamental component of marketing in culture. According to Mokwa (1980), marketing's function is to facilitate communication between artists and appropriate audiences, not to instruct artists on how to produce works of art. The concept of the purpose and role of marketing orientation has changed over the past few decades and since marketing orientation is crucial to clarifying the contents of cultural institutions, it is crucial to think of marketing as an instrument for converting prospective demand for those contents into actual demand (Krajnović, Vrdoljak Raguž, & Perković, 2021).

## **1.2. Marketing in the cultural sector of Mongolia**

Mongolian society confronted new problems and challenges in 1990 when it transitioned to democracy. These days, funding and facilities are insufficient for arts and cultural institutions to complete their activities. Additionally, there is a significant gap in Mongolia's cultural development and the preservation of the cultural history due to the sharp decline in government support for the arts and cultural sector, and the absence of tax incentives that would promote private donations to the arts (ACM, 2011). Following its early 1990s transition to a market economy and democracy, Mongolia has changed its laws about arts and culture. The State policy on arts and culture was enacted in 1996, and other relevant legislations such as the Law on Culture and Arts were subsequently passed. The Mongolian Parliament amended the State policy on Arts and Culture in 2012 following the UNESCO 2005 Convention (Gantumur, 2016). As stated by a Minister of Culture, Mongolia has an abundance of cultural traditions and heritage, which is rich and renewable resources

(Business.mn, 2021). Some of Mongolia's rich and distinctive cultural heritages, including traditional folk music and dance, Tsuur, the Mongolian epic, Khoomei, the Naadam festival, and traditional music of the Morin Khuur, have been registered with UNESCO (UNESCO, 2023). Mongolia is making a concerted effort to safeguard its rich cultural legacy, encourage the creation and marketing of cultural products, and set up a stable framework for the long-term growth and development of artistic and cultural institutions that are competitive, financially self-sufficient, and have highly skilled labor.

Marketing is a new concept in the cultural sector in Mongolia and the marketing was only restricted to generic messaging and advertisements to the public. In recent years, most of the cultural institutions started to understand the marketing importance in their activities and operations and launched marketing departments in their organizations. In a broad sense, cultural marketing principally and most importantly plays a role in maintaining and promoting Mongolia's extraordinary, rich traditional and cultural heritage. One of the most essential tasks of marketing in culture is to promote and introduce our thousands of years of historical cultural heritage to the world, and also to incorporate the greatest works of global culture into the national culture (Tsend-Ayush, 2016). It helps to differentiate their unique culture from the other countries and aids in creating a distinctive marketing proposition. In accordance, the main goal of the Ministry of Culture is also to produce unique Mongolian cultural manifestations that honor our sovereignty and historical traditions, while also promoting our national art, spirit, and culture all over the globe in the current era of industrialization and globalization (Ministry of Culture, 2020). Cultural sector is a large industry and each of these institutions have their own unique products and offers. Thus, marketing departments of the organizations need to research and formulate the proper marketing strategies intended for their market and audiences, even though the main and principal goal of marketing in culture stands to promote and disseminate the Mongolian traditional cultural heritage to the public.

### **1.3. Market and audience profile of performing arts**

Due to the relatively new field of marketing and thus a limited data set, there has not been sufficient data gathered about performing arts audiences. This has taken a turn in recent decades, however, as an increasing amount of literature as well as analysis through audience surveys has been produced using marketing as a tool for this (Fitzhugh, 1983). One of the principal components of performing arts is classical music; the term 'classical' determines Western music rooted in Europe beginning in the 1400s (Kallen, 2013). Subsequently, classical music broadened its reach from within the European culture and spread throughout the world. Many performers, composers, and artists emerged on another mainland under the influence of European cultures. American popular music has also borrowed from European tradition of musical vocabulary, therefore classical music penetrated the world of American popular music, further expanding its reach in many cultures. Classical music reached Asian countries, specifically in East Asia during the second half of the nineteenth century (Yoshihara, 2007). In the last few decades, due to technology has been increasingly influential for the classical music audience. Electronic technology, media, and many choices of spare time activities have strongly depreciated a live classical music audience. A statistic

shows that audiences of classical music have started shrinking amongst the younger American generation, leading to a decline in interest in classical music and even showing a downward trend in basic cultural evolution (Dempster, 2000). Ultimately, classical music audiences are not diminishing, however the technological, economic, sociological, and environmental forces are strongly revamping audiences, which might be reflected in diminished audience sizes in the future.

The audience profile concept in performing arts organizations was first introduced in Baumol and Bowen's 1966 publication, "Performing Arts. The Economic Dilemma." The authors described classical music concertgoers as middle-aged, well-educated, professionals, managers, and having a high-income level. These audiences' general characteristics have been confirmed by Throsby and Withers (1979) in that the profile of classical music audiences is getting even younger. On average, theatre audiences are vaster and more diverse in comparison to other performing arts organizations. On the whole, performing arts audiences have higher education levels than museum visitors, however within performing arts, theatregoers showed the lowest education level. A study (Baumol & Bowen, 1966) shows that theatre audiences are male, middle-aged, significantly affluent, and educated, but less so than symphony or ensemble audiences. Conversely, symphony and ensemble audiences are larger in number than theatre audiences. Symphonic music audiences tend to be more female and well-educated, with a larger percentage of over 60s represented, whereas chamber audiences are the lowest middle-aged, more male, best educated, and mostly professionals. Education and occupation highly refer to the symphony and ensemble audiences, while income does not. Conversely, income extremely affects the theatre audiences, while education and occupation do not. In addition to that data, a few other US surveys present detailed research in performing arts audiences' profiles, such as the National Endowment for the Arts (2004), and Survey of Public Participation in the Arts (SPPA-2012, 2017). Moreover, in another survey of classical music consumers in Mongolia shows that classical music audiences are mostly female, well educated, have medium or higher incomes, visit a classical music concert 3-4 times per year, and the highest reason of attending a concert was an invite from a friend. In summary, the typical single-ticket buyer is female, older, married, educated, and affluent. They are regular symphony goers who attend multiple concerts in a year (Garber et al., 2000).

#### **1.4. The role of marketing in the performing arts**

As in other industries and disciplines, the role of marketing is becoming of higher importance in performing arts organizations to understand the nature of the products and services and support these offerings, increase audience numbers, promote and advertise, and to implement the organization's objectives. Strong and effective marketing used in this way leads to long-term victory. Ruth Rentschler studied 128 articles published in the museum and performing arts fields over a 20-year period to further understand the role of marketing in those fields. She concluded that 1975-84 is a foundation period, in which the main focus of the research was audience studies, between 1985-94 is a professionalization period where museum and performing arts organizations are in transition, and the last period is a discovery period from 1995, as marketing orientations have consolidated in arts organizations (Ruth Rentschler,

2002). The marketing concept was applied late in the arts, especially in the performing arts field. Marketers are still working to refine the highest yielding marketing method; for performing arts organizations performances are services, which have cultural and educational roles without specific defined marketing strategies. In the period after the 1990s, the role of marketing became more consolidated and developed (Cacovean, 2015).

Marketing is a new notion in theatres and performing arts organizations in Mongolia. Similar to other business and industrial companies, performing arts organizations it was also essential to apply marketing to their field. One Mongolian classical music consumers survey showed that performing arts organizations should implement marketing activities in this area to improve their service and promotion, and use technological development such as YouTube and Facebook to interact with their consumers. One example of a marketing problem that is faced in Mongolia is the lack of sufficient information consumers receive about concerts, events, activities, and performances. Due to this, consumers miss the events, and retention rate is lost. It is paramount to apply marketing activities such as understanding the marketplace and customer needs, undertaking marketing research, preparing suitable marketing plans and programs adjusted for the organizations and their customers, and creating an adequate marketing strategy. Marketing is a pivotal gap which is missing in Mongolian performing arts organizations, therefore in-depth interviews with directors, experts, artists, researchers and workers were made to gain a deeper knowledge into the organizations and the marketplace.

## **2. Data and methodology**

### **2.1. Methodology**

Most of the marketing research is measured by quantitative analysis to assess sales (Kubacki & Croft, 2004), evaluate their performances, and make predictions. This study uses a qualitative in-depth interviewing approach to provide a more intensive experience and the realistic view from directors, marketers, experts, artists, researchers and employees to understand the marketplace, market position, and the role of marketing within Mongolian performing arts organizations, which will help further marketing directions and audience development in this field. The process of the interview is followed by planning, developing instruments, collecting and analyzing data, and disseminating findings, which follows an explorative approach. The interviews were conducted individually to provide a secure and comfortable atmosphere for interviewees, and interview questions were created in a semi-structured design. The interview guidance has been designed under Boyce and Neale's (2006) handbook, "Conducting In-depth Interviews A Guide for Designing and Conducting In-Depth Interviews for Evaluation Input." An in-depth interview is structured as follows: an introduction, nine open-ended questions, and closing parts. Firstly, a brief introduction includes the purpose of the interview, interview duration, question explanations, and confidentiality agreement. The question section, which includes nine open-ended questions about the interviewee's background, the position of the cultural, arts and classical music market, and the role of marketing in the past, current, and future of performing arts

organizations in Mongolia. This is then followed by the closing part, to end the interview. Interview guidance was written in English, then translated to Mongolian.

This in-depth interview targeted two main performing arts organizations: the Mongolian State Philharmonic Theatre and National Academic Theatre of Opera and Ballet of Mongolia, and all interviewees were recruited from these two organizations. One of the main performing arts organizations in Mongolia is the Mongolian State Philharmonic Theatre, which was established in 1972, and has three orchestras: the Mongolian Symphony Orchestra, Morin Khuur Ensemble, and Bayan Mongol Jazz Orchestra. This study focusing only on the Mongolian Symphony Orchestra, one of the most reputable orchestras in Mongolia. A major aim of this orchestra is to educate through classical music to adults, children, and future generations, and the orchestra hopes to delight audiences not only through various concerts, but also throughout the country with television, radio, and lectures about the beauty and importance of music, expanding the population's knowledge and horizons. The second biggest performing arts organization is the National Academic Theatre of Opera and Ballet, established in 1963. Their aim is to engage the audience with national and international classical works, increase their audiences nationally and internationally, cooperate with prominent international performing arts organizations, target young generations, and produce music education projects. Although these two performing arts organizations have been operating for a shorter time than other well-known international orchestras, they have developed a strong culture of audience members, as well as artists, repertoires, giving rise to a lot of potential.

## **2.2. Data analysis**

Researchers conducted 21 interviews with directors, marketers, experts, artists, researchers and workers of two outstanding Mongolian performing arts organizations, which took place between June and October 2021, and December 2023; nine were interviewed in person in Mongolia, and twelve interviewed online. Interviewees are aged between 27 and 65 years old, with ten males and eleven females. The interview durations were between 30 and 60 minutes.

All interviews were recorded with a mobile phone and audio recorder and transcribed verbatim as soon as possible after the fact. After transcribing the recordings word for word, researchers analyzed the data from the transcripts, using an explorative approach focusing on the information collected and provided during in-depth interview research. Afterwards, the interview transcripts were split into main themes, compared with existing literature, and accordingly, a result has been written up.

## **3. Result**

In the following component, the major theme findings have emerged from the interview data analysis. The in-depth interviews revealed the Mongolian market of classical music, general audience profiles, and the role of marketing in the past, present, and future in the case of Mongolia's two main performing arts organizations. Therefore, the interview themes have

fallen into two main categories; market and audience profile, and the role of marketing of Mongolian performing arts organizations.

### 3.1. Market and audience profile of Mongolian performing arts organizations

In the period of establishment of the socialist society (1924-90), the art of music reached a new level under Mongolian state policy. During this time, musicians, composers, and artists trained and studied nationally and internationally, and the period after the 1960s saw the establishment of the two main Mongolian classical performing arts organizations National Academic Theatre of Opera and Ballet of Mongolia, and Mongolian State Philharmonic Theatre. It needs to be characterized that classical music has developed with the help of Russia (Soviet Union).

In 1992, Mongolia transitioned from a socialist to a market economy. Since then, the arts sector faced difficult times such as a decline in public funding and fall in salaries, and as a result, many artists quit their jobs. The adoption of the Mongolian government's cultural policy in 1996 marked a new stage in the development of the arts sector. Generally, classical music has resided in Mongolia for around 70 years, which is a miniscule time compared to Europe, America, and other Asian countries. The first research question results are shown in Table 1.

Table 1: The result of RQ1-how would you characterize the position of the classical music market in Mongolia?

<i>Interviewee 4</i>	Classical music has only recently arrived in Mongolia due to the nomadic nature of our culture. We are going to celebrate our sixty-fifth anniversary of classical music soon. However, we have our own classical oeuvres, repertoires, and genres, which is our advantage.
<i>Interviewee 8</i>	In the period between the 1960s and 90s, classical music was disseminated widely in Mongolia under the influence of Russia; for example, artists used to give performances and lectures in many factories, introducing their classical instruments. After that, the audiences for classical music grew steadily as it was mandatory for factory workers to attend concerts and lectures. Nowadays, it is starting to lose its audience due to the social transition of Mongolia, and many more options of leisure time activities.
<i>Interviewee 19</i>	One of the most significant tools and ways to assure a human's development is culture and arts, which is the key immunity of the nation. In the history, we were not able to educate people through culture and arts including performing arts, therefore the primary aim of cultural and arts organizations should be focusing to engage with the public, disseminate and promote their products through all the availabilities.

<i>Interviewee 6</i>	Although classical music arrived late to Mongolia, it was a huge advantage we border with Russia which influenced us in a positive way on our classical music development. At that time, conductors used to visit Mongolia from the Russian Soviet Union and started to train Mongolian musicians in Russia. This was the beginning of our path in the growth of classical arts.
<i>Interviewee 10</i>	The number of classical music audiences is still small due to the social situation in Mongolia, however those in the classical music field such as performing arts organizations, musicians, composers, and artists are more and more working professionally and flourishing. There is still a lack of government policy and endorsement into the arts industry.
<i>Interviewee 1</i>	Our arts sector is under the auspices of the Mongolian government state. In other developed countries, performing arts organizations are also under the auspices of their government, but those organizations are allowed to receive sponsorship for their performances and projects. In our country, performing arts organizations are prohibited to receive sponsorship or donations, therefore we face financial issues occasionally regarding our performances and functions.
<i>Interviewee 2</i>	If performing arts organizations are independent of their governments, it leads to a breakdown. Therefore, theatres, orchestras, and performing arts organizations need to be under the auspices of their government. We just established a Ministry of Culture, but we still do not have a law on music. Audience education of classical music is poor throughout the country. Therefore, the government needs to pay special attention to performing arts organizations for at least the next 50 years.
<i>Interviewee 21</i>	The cultural and artistic industries have a significant impact on the nation's social and economic growth. Therefore, in recent years, Ministry of Culture have been actively working on the development of cultural trends and cultural policy to make an influential impact on the economic and social development of the country. Introducing policies and trends into a performing arts organization can also support the social and economic growth, organizational market expansion, and managerial advancement of the organization, and could have positive effect on the audiences.
<i>Interviewee 16</i>	We understand that the marketing departments are all new, thus cultural and arts organizations need to take suggestions and recommendations from the professional experts on the marketing activities and strategies from the multiple sides in order to improve the quality of the products, and to reach their intended market.
<i>Interviewee 5</i>	One of the big advantages of classical music is that we are always one step ahead of society. Hence, the role of performing arts organizations is to produce a high-class performance rather than adapt to the education of existing audiences, so we can be several steps removed from our society.

<i>Interviewee 9</i>	Since the period after the 2000s, the internet has emerged strongly in Mongolia. As a result of this, audiences of classical music have fallen harshly, and people started to listen to other popular music. Therefore, we need to provide information about classical music as the root of all types and genres of music, therefore it is the music of everyone who thinks of themselves as well-educated.
<i>Interviewee 3</i>	We do not have official marketing research in terms of classical music. However, in my experience, the audiences of classical music are approximately 10-15 per cent of the total population, but it is not regular attendees. Most of the audiences are middle-aged, above 30 years old, female, well-educated, and the upper class of society. Younger generations and baby boomers do not attend classical music concerts, which is concerning for performing arts organizations. The main reason for attending the concerts is being invited by friends or colleagues. Therefore, the word-of-mouth information between friends is a powerful influence for performing arts organizations.
<i>Interviewee 12</i>	We must prepare our audiences from childhood. The government needs to make a policy on the development of classical music audiences co-operating with performing arts organizations. In other countries, large budgets are allocated for cultural policy.
<i>Interviewee 1</i>	To increase the number of audiences, we need to conduct activities aimed at schools and include some activities in their curriculums, for example the students need to watch a classical music concert or opera twice a year. For instance, the students choose and learn one classical instrument from elementary school in America, and each school has its young volunteer orchestras. Therefore, it is important to apply these kinds of music programs and events into kindergartens and schools, which helps to prepare our future audiences.
<i>Interviewee 11</i>	Students studying culture and arts are our largest segment in market research, so it is possible to disseminate classical music through this segment. Also, it is essential to support voluntary and private music training.
<i>Interviewee 7</i>	Another important factor in increasing the number of classical music audience members is to play Mongolian traditional songs and music on classical music instruments. In this way, we can introduce classical instruments and music to the public. For example, the cost of performing with a small number of musicians at schools is low, but it has many advantages, such as educating audiences, understanding classical music and works, preparing future audiences, and increasing the number of audience members.
<i>Interviewee 4</i>	It is influential to segment the audiences, and then adapt the concert programs to the level of acceptance of classical music. For the beginning level of audiences, the organization needs to prepare a program that is easy to understand and digest.

*Source: Authors research*

Interviewees' statements are supported by existing literature. For example, interviewee 8 was supported by Andreasen's (1991) statement that since the 1970s, the audiences of opera and symphony orchestras have been expanding at a consistent rate due to the gradual increase in the social and economic status of the population, and direct and indirect participation of arts organizations. The following literature supported interviewee 8's statement that classical music is in a very difficult situation today (Lipman, 1992). Concert sales have generally declined, which makes it almost impossible to live entirely as a significant composer. Subsequently, due to the electronic and technological changes from the 2000s, live performances are falling into decline. Many other choices of activities have strongly influenced this decline.

Some researchers also supported interviewee results regarding classical music audiences. Classical music audiences were young, high-spirited, and blooming, but nowadays they are aging traditionally, and it is tough to find new audiences amid baby boomers, a younger generation, and within an urban population in America (Dempster, 2000). The biggest concern for audiences is that middle-aged audiences are not being replaced by younger audiences. Therefore, classical music audiences are dying (Brown & Bare, 2003).

### **3.2. The role of marketing of Mongolian performing arts organizations**

Marketing is a significant connection between audiences and arts organizations. The arts marketing concept has been controlled under cultural marketing activities (Kotler, 2005), and started to expand in the 1970s. A more considerable increase of arts marketing conception was during the 2000s, when more educational programs emerged concerning this topic. In the Mongolian arts sector, especially in the performing arts organizations, marketing is a relatively new notion. Until recently, there were no marketing department, thus there was a poor connection between performing arts organizations and audiences. The second research question results are shown in *Table 2*.

*Table 2. The result of RQ2-what is the role of marketing in Mongolian performing arts organizations?*

<i>Interviewee 10</i>	The Mongolian State Philharmonic Theatre started its marketing and public relations department in 2010. We need to do our marketing as strategically, targeted, calculated, effectively, and efficiently as possible. We could sell our tickets online and increase our ticket sales with the help of the marketing department. Market and audience research is currently being conducted.
<i>Interviewee 12</i>	The marketing department of National Academic Theatre of Opera and Ballet of Mongolia has only recently been established, however with this establishment, the number of audience members have increased significantly.

<i>Interviewee 6</i>	There is no market and marketing research throughout performing arts organizations in Mongolia. We need to pay attention to the education of our listeners at all times. Arts, especially classical arts, are very valuable, high-priced, and exclusive. Therefore, the government, arts organizations, and artists need to contribute for the public to understand that classical art is such a valuable asset, and marketing campaigns need to focus on that.
<i>Interviewee 17</i>	As a marketer, I realized that the consumers of the cultural and arts organizations swing due to the products. For instance, the program and repertoire of the concert are crucial for the audiences. Thus, we need to consider conducting constant market research and observing our customers' interests, behavior, and trends.
<i>Interviewee 2</i>	Marketing departments are conducting detailed market and marketing research. One of the disadvantages of the marketing department is only doing a promotion for their specific performances, concerts, and events. It does not provide a marketing message or information on why you need to visit performing arts organizations and watch a classical concert on the whole. Therefore, we need to do marketing activities to reflect this and advertise in a broader way.
<i>Interviewee 14</i>	The use of the social media has increased significantly over the years, and which is reachable and cost-efficient marketing way in Mongolia. Qualified social media content is a best-suited idea to introduce and demonstrate our repertoires, programs and offerings to the public since the marketing in arts and culture is a new discipline to the market.
<i>Interviewee 9</i>	We need to segment our audiences, define organization's strengths, weaknesses, opportunities, and threats (SWOT), and come up with a proper marketing plan for it. So far, our marketing department is not focusing to the main target, making poor plans and unexpected decisions without any prior research.
<i>Interviewee 5</i>	We are facing some marketing problems in our performing arts organizations such as a lack of funding, time, professional marketers and managers, misunderstandings of managers, and deficiency of cooperation.
<i>Interviewee 11</i>	The environment of our performing arts organizations is bad. For example, the National Academic Theatre of Opera and Ballet has its building, but there is no parking, on the other hand, the Mongolian State Philharmonic Theatre is located in a rented building, the entrance is hidden, there is no parking spaces, and the internal environment is inferior as well; there is no Theater with acoustics for classical music.
<i>Interviewee 2</i>	The Mongolian State Philharmonic Theatre has 250 seats, which is not enough comparison with the total population. Our artists, musicians, and workers are working more and more professionally nationally and abroad.

<i>Interviewee 5</i>	We set our ticket prices as low as we can. Most of our audiences are one-time ticket buyers. Audiences have no intention to buy seasonal or subscriber tickets, due to their lack of time, performance information, uncomfortable environment, and incompatible programs or performances.
<i>Interviewee 20</i>	Mongolia has a unique cultural and nomadic traditions. Marketing managers of all the arts and cultural sectors need to think of integrating their repertoire with traditional culture. The number of tourists increasing over the years in Mongolia, hence this kind of cultural and arts products would be able to attract more tourists to their organizations, besides educating and disseminating their products to the local audiences.
<i>Interviewee 13</i>	Technological and digital transitions are rapidly evolving all over the world and most of the arts and cultural organizations are following this direction. In order to support the management and marketing initiatives of the organizations, we also need to adapt this trend into our performing arts organizations, moreover, into arts and cultural sectors.

*Source: Authors research*

Some of the above interviewee results agree with existing literature statements that from the marketing perspective, value is subjective and exists in the middle of the market. This can also happen in the arts (Kotler, 1972); classical music is a valuable thing, a core meaningful product for audiences who think of themselves as fully-fledged people. Successful marketing activities generally consist of elements such as defining the organizational objectives, making SWOT and audience analysis, positioning marketing goals and targets, then implementation and evaluation (Lee, 2005).

Easy parking, a comfortable social environment, and low-ticket prices positively influence audience experience, which can have a significant impact on the attendance of classical music audiences (Garber, Muscarella, Bloom & Spiker, 2000). In testing this statement with our research findings, the following results were reflected in interviewee 11 and 2's answers.

Andreasen (1991) states that audience expansion is a marketing issue with five key elements: product, price, place, promotion, and public relations. For performing arts organizations, the main marketing tool is subscription marketing which is an essential factor in determining audience attendance. Most of the American Concert Symphony Orchestra tickets are sold to subscribers, whereas only a small number of tickets are selling to one-time ticket buyers. Therefore, subscriber-centered marketing is important in performing arts organizations; most of these subscribers are also older and wealthier than one-time buyers.

As the number of arts and cultural offerings increases, these organizations shall centralize their marketing strategy to be different from the competitors. According to Hume (2011), unique, distinctive, and outstanding products attract customers, providing an opportunity to retain loyal patrons for a long-term in this highly competitive market. Interviewee 20 mentioned that Mongolian arts and cultural organizations aim to make their products distinctive by combining their unique traditional and nomadic culture with contemporary works. This approach allows them to attract not only local audiences but also

tourists and global spectators. Performing arts organizations are also capable of formulating repertoires, programs and performances that integrate their traditional music, songs and dance with classical and contemporary works based on market interests and demand.

As a result of Covid-19 pandemic, all the arts organizations shifted their activities to digital marketing. The work of Krajnović, Vrdoljak Raguž, & Perković, A. (2021) mentions that arts and cultural institutions also needed to change their operations to fit a rapid digital and technological transition, as seen in other businesses and industries. According to the advice given by the Interviewee 14 and 13, arts and cultural organizations in Mongolia need to use digital and technological marketing methods in their activities. While these organizations mostly employ traditional marketing methods, it is important to consider following the latest trends and adapting to using digital and social media marketing (Djokic, Milicevic & Djokic, 2021). Certainly, performing arts organizations may not be able to shift their concerts and performances entirely to digital and technology, however creating high-quality content, streaming, reaching and connecting with their audiences can be quick, beneficial, cost-effective and measurable.

## Conclusion

This current study aims to determine the position of the market and the role of marketing in two main performing arts organizations in Mongolia. The 21 in-depth interviews with figures such as directors, managers, marketers, musicians, researchers, and workers from those two performing arts organizations expressed their experiences in great detail over 30-60 minutes. Existing literature supported plenty of our in-depth interview results, meaning Mongolian performing arts organizations have faced the same problems as global performing arts organizations.

Classical music penetrated the Mongolian market almost 70 years ago. However, the market of classical music is developing as more professional artists are in training, and repertoires are expanding. In the period after the 1990s, there was a financial decline in every sector due to the social transition in Mongolia. In the last few years, however, the government have placed a higher importance on the arts sector and established a Ministry of Culture, creating a project encompassing classical music programs. All performing arts organizations are under the auspices of government; therefore, those organizations face financial, building, free-thinking, and environmental issues. While these organizations can be under the auspices of the government, it is pivotal for the government to understand the organizations' need for sponsorship. In this way, the performing arts organizations will be able to operate on a larger scale, without financial problems.

Audiences of these two performing arts organizations are above 30 years old, female, and well educated. Due to the social and technological changes, audiences are being lost, and are not being replaced by younger generations. To prepare for future audiences, performing arts organizations need to co-operate with the government and organize regular tour concerts of classical music in schools. Also, to increase the audience numbers, it is essential to segment pre-existing audience members, and make intended programs to cater to the musical

preferences of each segment. Furthermore, the most important thing is to perform market and marketing research to get to know the market and audiences, then devise a sufficient marketing plan and implement it properly.

The role of marketing is crucial in the cultural and arts sector – specifically in performing arts organizations which need to be a strong bridge between organizations and audiences. The presence of marketing departments in Mongolian performing arts organizations has been close to none, and it is a huge disadvantage of those organizations. Due to this disadvantage, until now there was no widespread knowledge of each organization's market, audiences, consumer needs, and desires. Luckily, marketing departments have recently emerged in the performing arts organizations. The government and performing arts organizations seldom performed market and marketing research, therefore the marketing departments need to conduct it themselves. After conducting this research, marketers need to create and implement marketing plans, strategies, then monitor and control appropriately.

Performances and programs can be planned according to seasons, celebrations, segments, and audiences' wants and needs. Prices need to be set carefully and discounts could be applied as an incentive for subscribers and a loyal audience. Subscriber-based marketing is an outstanding approach for performing arts organizations; however, to follow this approach to audience, research must be conducted. As mentioned earlier, performing arts organizations need to organize tour concerts at schools with a small number of groups to attract and prepare future audiences. The facilities of performing arts organizations are insufficient to hold concerts, for example lack of parking availability, hidden main entrance, and inadequate hall, seating, and environment.

Most audiences expressed feelings to marketers of receiving a lack of information about performances. Hence, promotion and advertising plans must be a higher priority and more adequate. An effective and cheap method is to use social and digital media to connect with audiences, give general insight into the importance of classical music, and share why it is important to watch classical performances. As performing arts organizations are delivering a service, it is crucial to take care of the process, atmosphere, and workers, which in turn makes a great contribution to audience experience.

Generally, the result of the in-depth interview study was effective for the field of performing arts organizations to understand the gaps in their market. Using many examples within this research, we confirmed that the role of marketing has emerged as one of the most influential components of this sector. Performing arts organizations are unique because of their services and offerings, therefore organizations and audiences need to be connected closely.

## **Limitations and future research**

The focus of this study was to understand the market, the role of marketing, and the problems faced, and to learn of the expert experiences from those who are working in Mongolian performing arts organizations. To cultivate deeper insight, a qualitative in-depth interview approach was used. Therefore, this study is limited in terms of wide-ranging interviewees.

The result of this study indicates that market and marketing research is a necessity in the field of performing arts organizations, thus future researchers can undertake research using both quantitative and qualitative approaches on a broad scale. Qualitative research is used with consumer/audience, whereas quantitative research emerged to define the general market, audiences, target market, to make suitable plans, programs, and strategies for them.

The classical music audience is declining due to technological changes, many types of leisure time activities, and social changes, for example the Covid-19 pandemic. Therefore, it is essential to perform market and marketing research not only in Mongolia, but in every performing arts organization throughout the world. This research will help us know the market and audiences better, reset marketing strategies sufficiently, and implement them beneficially.

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# Determinants of User Satisfaction in Mobile Commerce: application of the UTAUT 2 model

Детерминанте сатисфакције корисника мобилне трговине: примена УТАУТ 2 модела

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**Abstract:** According to growing trends, there is an evolution of models that explain consumer behavior in the domain of accepting new technologies. The UTAUT model stands out as one of the most commonly used models, which was created as a result of the integration of many that preceded it. The aim of the study is to determine whether variables – performance expectancy, effort expectancy, social influence, facilitating conditions, price value, hedonic motivation, and habit - influence user satisfaction in mobile commerce. The sample consists of 210 respondents. The study applied descriptive statistical analysis, reliability analysis, correlation analysis, and multiple regression analysis. The results show that variables such as performance expectancy, facilitating conditions, hedonic motivation, price value, and habit are determinants of user satisfaction with mobile commerce services. The research findings can be beneficial for mobile commerce service providers in terms of creating loyalty programs, providing added value, and creating an overall consumer experience that is appealing to customers. Given that previous research, especially in the domestic literature, was focused on some of the earlier established models such as TAM or UTAUT, the originality of this paper lies in the use of the contemporary UTAUT2 model.

**Keywords:** mobile commerce, UTAUT2, price value, habit, satisfaction

**JEL classification:** M31, L81

**Сажетак:** Имајући у виду растуће трендове, долази до еволуирања модела који објашњавају понашање потрошача у домену прихватања нових технологија. Као један од најчешће коришћених модела, који настаје као резултат интеграције бројних који су му претходили, издваја се UTAUT2 модел. Циљ истраживања је утврдити да ли варијабле - очекиване перформанси, очекивани напор, друштвени утицај, олакшавајући услови, ценовна вредност, хедонистичка мотивација и навика - утичу на сатисфакцију корисника мобилне трговине. Узорак чини 210 испитаника. У истраживању су примењене дескриптивна

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статистичка анализа, анализа поузданости, корелациона анализа и вишеструка регресиона анализа. Резултати показују да су варијабле очекиване перформансе, олакшавајући услови, хедонистичка мотивација, ценовна вредност и навика одређујући фактори задовољства корисника услугама мобилне трговине. Налази истраживања могу бити корисни пружаоцима услуга мобилне трговине у креирању програма лојалности, пружању додатне вредности и обликовању укупног корисничког искуства које је привлачно купцима. С обзиром на то да су се претходна истраживања, посебно у домаћој литератури, фокусирали на неке од раније успостављених модела попут ТАМ-а или УТАУТ-а, оригиналност овог рада лежи у коришћењу савременог УТАУТ2 модела.

**Кључне речи:** мобилна трговина, УТАУТ2, ценовна вредност, навика, сатисфакција  
**ЈЕЛ класификација:** М31, L81

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## Introduction

The eighties are believed to have been the years of personal computers, the nineties were the decade of the internet and e-commerce, while the beginning of the 21st century is associated with the rise of mobile computing and mobile commerce. In a narrower sense, mobile commerce (m-commerce) refers to the entire range of financial transactions through mobile networks. Broadly defined, m-commerce encompasses any applications and services supported by mobile devices and networks (Urbaczewski et al., 2003). Today, with the use of mobile devices and wireless internet connections, m-commerce is becoming a way of doing business that can transform entire industries (Chong, 2013, Momčilović, et al., 2022).

Currently, nearly 7 billion people own smartphones. Comparing this figure to the world's population of 8 billion, it can be concluded that approximately 80% of the population owns a smartphone. In the Republic of Serbia, 95.5% of the population uses a mobile phone, and this percentage is continuously increasing. The segment of the population over 65 years old predominantly constitutes those who do not possess mobile devices. Compared to global statistics, Serbia ranks above the world average in terms of the number of people owning mobile devices. According to the Statistical Office of the Republic of Serbia (2022), the penetration of mobile devices in the Republic of Serbia stands at 123.9%, meaning that there are 123 mobile devices per a hundred inhabitants.

Some of the largest e-commerce markets include China with a share of 52%, the USA with a participation of 12%, the United Kingdom with a participation of 4.8%, and Japan with a 3% share in total trade (Business.com). Serbia is not an exception when it comes to e-commerce trends. Experts anticipate a growth rate of over 20% concerning internet shoppers. In the territory of Serbia, there are currently around four million consumers who have made purchases online, representing significant potential for the development of this purchasing mode (PlutonLogistics). According to the Statistical Office of the Republic of Serbia (2023), the proportion of users who bought a product via the internet in the last three months was 42.3%, while 39% of the country's population has never purchased a product or service online. Regarding mobile commerce worldwide, 79% of smartphone users have made purchases using their mobile devices (Oberlo, 2022). It is predicted globally that mobile commerce will reach a share of 42.9% in total e-commerce (eMarketer, 2023).

As the process of adopting new technologies is extremely complex and influenced by numerous factors, and technologies are subject to development and change, several models

have been identified to explain this process. Most studies in this field, especially those related to the adoption of mobile commerce, investigate this process using intention-based models rooted in cognitive psychology. One of the more contemporary models in this field used as the basis for this paper is the UTAUT 2 model (Unified Theory of Acceptance and Use of Technology) (Venkatesh, 2013). Accordingly, the research subject comprises key determinants that influence user satisfaction in mobile commerce. It is essential to emphasize that, unlike the original UTAUT2 model, user satisfaction is used as the dependent variable, considering it has been proven as a significant predictor of intention, repeat purchases, recommendations, and loyalty (Eggert & Ulaga, 2002; Đurić, 2023). The main aim of the research is to examine whether variables – perceived usefulness, effort expectancy, facilitating conditions, social influence, price value, hedonic motivation, and habit – affect user satisfaction in mobile commerce.

## **1. Background research**

### **1.1. Technology acceptance models**

One of the fundamental models that explains the process of adopting new technologies is the Technology Acceptance Model (TAM). According to its authors, two key determinants for accepting new technologies are perceived usefulness and ease of use (Davis, 1989). The model is based on the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980) and was widely used in initial studies of this process. However, despite its widespread use, TAM is not without limitations. One of its primary limitations is its incomplete explanation of how mobile technology is adopted and used (Molina-Castillo, López-Nicolás & Bouwman, 2008). Furthermore, the model only explains 40% of the variance in information system usage and does not include all factors crucial to accepting new technology (Chong, 2013).

The adoption of new technologies, originally explained by TAM, has been further elaborated upon through its extensions like TAM 2 (Venkatesh & Davis, 2000), TAM 3 (Venkatesh & Bala, 2007), and the Unified Theory of Acceptance and Use of Technology (UTAUT) model (Venkatesh, 2003). Another reason for the model's evolution lies in the continuous development of new and more sophisticated technology and devices, as well as the necessity to understand the moderating effects of individual, technical, and other characteristics (Sun & Zhang, 2006). Despite providing a detailed explanation of technology acceptance and use, even the UTAUT model has certain limitations. In this context, Venkatesh et al. (2012) propose the use of a new model called the Extended Unified Theory of Acceptance and Use of Technology – UTAUT 2. This model includes seven variables, thus extending the original UTAUT model (Venkatesh et al., 2003) to include hedonic motivation, price value, and habit. By incorporating additional characteristics, this model becomes more consumer-focused compared to UTAUT (Tak & Panawar). Price value is an essential factor concerning consumers and service usage, habit is a fundamental factor in using new technology based on previous research, and hedonic value has been extensively described in prior studies (Kim & Malhotra, 2005) since emotions such as fun and satisfaction are involved in the process of adopting new technologies (Kulviwat, 2009).

## 1.2. Hypotheses and research model

Performance expectancy can be defined as “the degree to which the use of technology will provide advantages to users in performing specific activities” (Venkatesh, 2012). Therefore, performance expectancy consists of different attributes of information systems that can offer benefits to users. Users will accept and use new technology if it enhances compared to previous solutions (Chong, 2013; Alalwan, 2017; Verkijika, 2018). In the context of electronic commerce, it is also defined as the extent to which a consumer believes that online shopping will provide access to information, facilitate price comparison, and shorten the decision-making process in purchasing (Kalinić & Marinković, 2016). Concerning this determinant in a paper context, performance expectancy measures the extent to which users consider mobile technology significant in achieving their job-related goals and is often regarded as the most significant driver of intention to use mobile commerce (Park, Yang & Letho, 2007). Numerous studies have investigated the influence of performance expectancy on the intention to use mobile banking. Using the TAM (Technology Acceptance Model), Filipović (2019) state that perceived usefulness has the greatest influence on consumer attitudes towards internet banking. In a study conducted by Zhou et al. (2010) using the UTAUT model, it was confirmed that performance expectancy is the most significant driver of intention for future use. Research by Kalinić et al. (2019), Chong (2013), and Shang & Wu (2017) demonstrates that performance expectancy is a significant determinant of consumer satisfaction in using mobile commerce services. Accordingly, the following hypothesis can be defined:

H1: Performance expectancy has a positive impact on user satisfaction with mobile commerce services.

Effort expectancy represents the degree to which a person believes that using the system will involve minimal effort (Davis 1989). Venkatesh (2012) defines effort expectancy as “the degree of ease associated with the use of technology by users.” Depending on effort expectancy, users decide whether using a certain technology aligns with their daily lives (Park et al., 2018) and thus, in specific studies, stands out as a key driver of new technology acceptance (Zhou, 2011). In many studies, effort expectancy stands out as a driver of intention to use m-commerce (Chou, Li & Ho, 2018). Effort expectancy is identified in various research studies as a significant determinant of user satisfaction in m-commerce (Chong, 2013b; Marinković and Kalinić, 2017). A comparative analysis conducted by Cho (2008) showed that effort expectancy is more significant among American users compared to those in Korea. Research conducted by Shang and Wu (2017) indicates that effort expectancy does not influence user satisfaction in mobile commerce. Conversely, in a study also conducted in the mobile commerce sector (Agrebi & Jallais, 2015), it was shown that this impact is positive. According to research conducted by Tarhini et al. (2016), effort expectancy does not influence the intention to use internet banking. Based on the above, we define the following hypothesis:

H2: Effort expectancy has a positive impact on consumer satisfaction with mobile commerce services.

Social influence is often emphasized as a crucial element in decision-making process within sociology and behavioral sciences (Lu, 2014). It can be defined as the individual process of adopting the culture, norms, and values of a particular social group (Thompson et al., 1991). Users of mobile commerce who are members of complex social networks, including colleagues, friends, experienced users, and public figures, are more susceptible to influence that can stimulate the intention for future behavior (Lu, 2014). In this context, it can be defined as the extent to which a user understands that influential people in their life, such as friends or family, believe that they should use a given technology. Another type of source of social influence includes mass media, television, newspapers, and the like (Venkatesh & Brown, 2001). Social influence is considered most significant in the initial stages of adopting new technology when users lack personal experience with its use and often rely on public opinion (Scheriz et al., 2010). Using the UTAUT model, it has been proven that social influence positively affects the intention to use electronic commerce (Chen et al., 2021). On the other hand, research in the m-banking sector conducted by Alwain et al. (2017) applying the extended UTAUT2 model shows that social influence does not positively affect the intention to use m-banking. In a study conducted by Marinković & Kalinić (2017), social influence emerged as the only observed variable that does not impact user satisfaction when using mobile commerce. Social influence appears as a significant determinant of mobile commerce acceptance in numerous studies (Chou, Li & Ho, 2018; Verkijika, 2018). Accordingly, the following hypothesis can be defined:

H3: Social influence has a positive impact on user satisfaction with mobile commerce services.

Facilitating conditions can be defined as the extent to which an individual believes that the organizational and technical structure can support system usage and provide access to necessary resources (Venkatesh, Morris & Davis, 2003; Tarhini et al. 2016). In other words, facilitating conditions can be seen as consumers' perceptions regarding barriers in the environment or resources that can facilitate the usage of mobile commerce solutions. For instance, the cost or availability of the internet in certain parts of the world can impact the use of mobile shopping applications (Verkijika, 2018). Even the mobile devices themselves can be considered facilitating factors, since mobile commerce is a voluntary activity conducted to attain certain benefits. Smartphones and wireless networks enable the accomplishment of the goal, i.e., making purchases (Venkatesh et al., 2012). Investigating the acceptance of e-commerce, Sim et al. (2018) state that facilitating conditions have a statistically significant impact on user satisfaction. Research conducted by Liu & Forsythe (2011) shows that facilitating conditions have a positive influence on the intensity of online shopping. Numerous studies in the field of mobile commerce (Lai & Lai 2013; Zhou et al. 2010; Chimborazo, Frasquet & Molla, 2021) emphasize the impact of facilitating conditions as a significant driver of purchase intention. Research results indicate that facilitating conditions are a significant determinant of satisfaction in mobile banking usage (Farzin et al., 2021; Faizal, 2020). Considering the above, we can define the following hypothesis:

H4: Facilitating conditions have a positive impact on user satisfaction with mobile commerce services.

Hedonic motivation refers to the pleasure derived from using technology and reflects consumers' perception of the potential enjoyment of this experience (Venkatesh & Brown, 2005). It's important to emphasize that the emotional ambiance significantly impacts customer ultimate buying decision (Rita & Okorie, 2022). Numerous empirical studies demonstrate that hedonic motivation is a crucial driver of intention to use and adopt technologies. Hedonic motivation can be a reason for certain behaviors and arises as a result of the internal satisfaction an individual experiences when buying products (Alimpić & Perić, 2020) or services. In the context of the paper, it pertains to the satisfaction an individual feels when using mobile commerce (Soni, Jain & Kumar, 2019). Paden & Stell (2010) emphasize that utilitarianly motivated consumers search for specific information, while hedonistically motivated consumers seek general information. With the increase in entertaining content during the use of mobile commerce, there is a higher likelihood of consumer acceptance (Farzin et al., 2021; Farah et al., 2018). From the user's perspective, entertainment and enjoyment are crucial in shaping their perception and tendency to accept new systems (Alwain et al., 2015), as evidenced in studies related to "mobile entertainment" (Leong et al., 2013). Even in earlier research, before the construction of the UTAUT 2 model, it was shown that "perceived enjoyment" is a significant driver of the intention to use mobile commerce (Thong, Hong & Tam, 2006). In a study conducted by Farzin et al. (2021), it was proven that hedonic motivation significantly influences the intention to use mobile commerce. Using the UTAUT 2 model, Paramaeswari & Sarno (2021) demonstrate a significant impact of hedonic motivation on the intention to use mobile banking. Based on the above, we can define the following hypothesis:

H5: Hedonic motivation has a positive impact on user satisfaction with mobile commerce services.

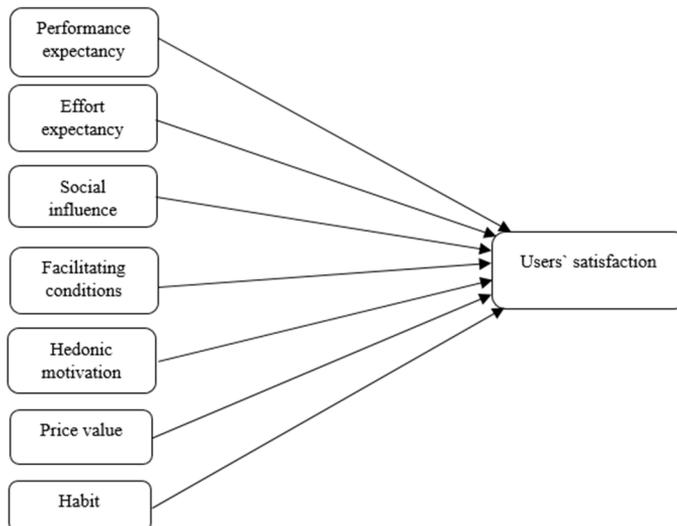
Habit reflects the extent to which people tend to conduct certain behaviors automatically, as a result of learning and acquired knowledge (Venkatesh, 2012; Alwain et al., 2015). When people perform something automatically, their behavior becomes a habit. Habit often stands out as an important determinant of both technology adoption and user satisfaction (Lin & Wang, 2005). Considering that we rely on computer software in everyday life (Hew et al., 2015), it is not surprising that habit is often emphasized as one of the main predictors of intention to use mobile technology (Chuang, 2011). Studies show that habit positively influences the intention to use mobile banking (Farzin, 2021). Research conducted in the field of mobile commerce shows that habit positively affects loyalty in this sector (Lin & Wang, 2006). A study conducted by Kalinić, Marinković, Đorđević & Liebana-Cabanillas (2019) indicates that habit is a significant predictor of using mobile commerce services. According to research in the mobile commerce domain (Tak & Panwar, 2017), it was found that habit is the most significant predictor of using applications for mobile shopping. The results of a study conducted by Dakduk et al. (2020) on the acceptance of mobile commerce in low-income countries show that habit is a significant driver of intention. Based on the above, we can define the following hypothesis:

H6: Habit has a positive impact on user satisfaction with mobile commerce services.

Price value refers to the ratio of the price of technology to the value it delivers. The price/value ratio is an important determinant, since the customer unconsciously analyzes whether the price is in line with his assessment of the product value (Nuševa et al. 2023). Price value is positive when the benefits of using new technology outweigh the costs it incurs (Venkatesh, 2012). In the context of mobile commerce, price value can be observed as the advantage of using mobile commerce compared to the monetary costs of similar transactions done “face-to-face”. For example, the cost of mobile internet required for using mobile commerce applications might be higher compared to the cost associated with using other applications due to the heavy content loading (Verkijika, 2018). In the context of mobile commerce, if consumers perceive that the benefits outweigh the costs of using mobile commerce, price value will significantly impact the consumer decision-making process, their satisfaction, and loyalty (Hew et al., 2015). Examining the factors influencing the acceptance of mobile banking by users in Jordan, Alalwan & Dwivedi (2017) show that price value is indeed a significant determinant. A study conducted in the field of mobile commerce (Verkijika, 2018) demonstrates that price value influences its usage. According to Chong (2013), perceived costs are a significant factor in the satisfaction of mobile commerce users. Considering the above, we can define the following hypothesis:

H7: Price value has a positive impact on consumer satisfaction with mobile commerce services.

Figure 1: Research model



Source: the authors' research

Taking into account the significance of satisfaction, its influence on other behavioral variables (Eggert & Ulaga, 2002), and its presence in numerous studies within the field of m-commerce (Kalinić et al., 2019; Cho, 2008; Chong, 2013; Shang & Wu, 2017; Faizal, 2020),

satisfaction was used as the dependent variable in this study. Figure 1 displays the research model.

## 2. Methodology and sample structure

Data collection was conducted in the territory of Central Serbia from May 5th to May 15th, 2023. The sample includes 210 individuals, segmented according to the following characteristics: gender, age, level of education, employment status, and income level. The research was carried out electronically, through a Google form survey. Respondents expressed their level of agreement with statements on a five-point Likert scale (1 - strongly disagree; 5 - strongly agree). The questionnaire included 25 statements, extracted from relevant studies, grouped into 7 factors. To ensure representativeness, the gender structure of the sample, as well as the employment structure roughly correspond to the sample used for the analysis of mobile commerce users by the Statistical Office of the Republic of Serbia (2022). Out of the 210 respondents, 53,81% are female and 46,19% are male. Respondents are predominantly aged 18 to 24 (35.71%), with earnings between 40,000 and 80,000 RSD per month (36.67%). In terms of educational structure, the highest number of respondents have obtained a university degree (44.76%).

The data analysis was conducted using the statistical software SPSS v20. Appropriate statistical analyses were performed using the software. The reliability of variables was determined through reliability analysis. Correlation analysis was used to establish the degree of agreement among variations in formed factors. Multiple regression was utilized to determine the effects of the mentioned variables on user satisfaction in mobile commerce.

## 3. Research results

The reliability analysis is presented in Table 1. It can be observed that the statements within all factors are reliable, considering the Cronbach's alpha coefficient value exceeding the threshold of 0.7 (Nunnally, 1978). The factor with the highest reliability is Effort expectancy due to the highest Cronbach's alpha coefficient value of 0.957, while the lowest level of reliability occurs in the Social Influence factor with the lowest Cronbach's alpha coefficient value of 0.837.

*Table 1: Reliability analysis*

Factors	Mean	SD	Cronbach's alpha
Performance expectancy	3.92	1.13	0.906
Effort expectancy	4.21	0.98	0.957
Social influence	3.58	1.02	0.837
Facilitating conditions	4.13	0.88	0.839
Hedonic motivation	3.73	1.03	0.913
Price value	3.91	0.88	0.895
Habit	3.32	1.13	0.833
Customers' satisfaction	3.91	0.93	0.911

*Source: the authors' research*

Based on the correlation matrix shown in Table 2, it can be concluded that there is a statistically significant degree of linear dependence among all variables, as the p-value is less than 0.001. The highest correlation level occurs between the variables Effort Expectancy and Facilitating Conditions as the Pearson’s coefficient value for this pair of variables is the highest at 0.807. Conversely, the lowest correlation level appears between the pairs of variables Perceived Performance and Social Influence, indicated by the lowest Pearson’s correlation coefficient value of 0.522.

*Table 2: Correlation matrix*

Factors	PE	EE	SI	FC	HM	PV	H	SAT
PE	1	0.709**	0.522**	0.670**	0.616**	0.627**	0.719**	0.633**
EE	0.709**	1	0.417**	0.807**	0.675**	0.690**	0.609**	0.577**
SI	0.522**	0.417**	1	0.543**	0.612**	0.620**	0.634**	0.622**
FC	0.670**	0.807**	0.543**	1	0.722**	0.728**	0.627**	0.630**
HM	0.528**	0.573**	0.634**	0.634	1	0.570**	0.598**	0.659**
PV	0.398**	0.269**	0.649**	0.404**	0.570**	1	0.643**	0.585**
H	0.601**	0.459**	0.699**	0.512**	0.598**	0.643**	1	0.376**
SAT	0.633**	0.577**	0.622**	0.630**	0.585**	0.585**	0.736**	1

*\*\*The correlation coefficient is significant at the 0.01 level*

*Source: the authors’ research*

Table 3 displays the results of multiple regression analysis measuring the influence of the examined factors on satisfaction. The coefficient of determination is 0.668, meaning that 66.8% of the satisfaction variability is explained by the given regression model. Based on the value of VIF coefficient (values are lower than 5) (Field, 2000), data are suitable for carrying out multiple regression analysis.

*Table 3: Multiple regression analysis*

Factors	Mean	SD	Cronbach’s alpha
Performance expectancy	3.92	1.13	0.906
Effort expectancy	4.21	0.98	0.957
Social influence	3.58	1.02	0.837
Facilitating conditions	4.13	0.88	0.839
Hedonic motivation	3.73	1.03	0.913
Price value	3.91	0.88	0.895
Habit	3.32	1.13	0.833
Customers’ satisfaction	3.91	0.93	0.911

*Source: the authors’ research*

We can conclude that perceived performance has a statistically significant positive influence on mobile commerce user satisfaction ( $\beta = 0.121$ ;  $p < 0.1$ ). Effort expectancy ( $\beta = 0.080$ ;  $p > 0.1$ ) and Social influence ( $\beta = 0.006$ ;  $p > 0.1$ ) do not have a statistically significant impact on mobile commerce user satisfaction. Facilitating conditions also have a

statistically significant impact on mobile commerce user satisfaction ( $\beta=0.133$ ;  $p < 0.1$ ). The influence of hedonic motivation on satisfaction is statistically significant ( $\beta=0.168$ ;  $p < 0.01$ ). Price value has a positive, statistically significant impact on mobile commerce user satisfaction; however, considering the  $\beta$  coefficient value, this impact is the weakest among all tested variables ( $\beta=0.119$ ;  $p < 0.05$ ). Habit has the strongest impact on mobile commerce user satisfaction due to the highest  $\beta$  coefficient value ( $\beta=0.376$ ;  $p < 0.01$ ).

#### **4. Discussion**

Based on the results of multiple regression analysis, it has been established that perceived performance significantly impacts user satisfaction in mobile commerce services, confirming the first hypothesis. These findings align with numerous studies in the field of mobile commerce (Kalinić et al., 2019; Chong, 2013; Shang & Wu, 2017) where this influence has been confirmed. It is reasonable that meeting and surpassing consumers' expectations, regarding service provision and benefits received, will influence an increase in consumer satisfaction. Furthermore, consumers' perception that online shopping facilitates easier access to information, price comparisons, and a shorter purchasing process will contribute to an increase in their satisfaction. In addition, effort expectancy does not have a statistically significant impact on user satisfaction in mobile commerce services, rejecting the second hypothesis. These results are consistent with the findings of the study conducted by Tarhini et al. (2016), in which effort expectancy does not influence the intention to use internet banking. Similarly, the results of the research conducted by Shang and Wu (2017) show that effort expectancy does not affect the satisfaction of mobile commerce users. These findings contradict the results of the study conducted by Agrebi & Jallais (2015), which demonstrated a positive impact. The obtained results can be explained by the fact that users have mastered the use of m-commerce applications, which have become part of their everyday routine. Additionally, the applications are intuitive and easy to use, as well as compatible with other similar technologies.

Moreover, social influence also stands out as a variable that does not have a statistically significant impact on user satisfaction in mobile commerce services, thus rejecting the third hypothesis. The obtained results correspond with the findings of the study conducted by Marinković & Kalinić (2017), where social influence was the only variable that did not affect user satisfaction in m-commerce. Additionally, a study conducted in the mobile banking sector (Alwain et al., 2017) and acceptance of commerce (Jambulingam, 2013) also showed that social influence is not a significant driver of intention to use m-commerce. These results contradict numerous studies (Chen et al., 2021; Chou, Li & Ho, 2018; Verkijika, 2018) where social influence was shown to be a significant determinant of m-commerce use. The obtained results can be explained by the fact that users rely on m-commerce for other benefits such as discounts, free delivery, ease of use, etc., and recommendations from social groups and media incentives do not have a sufficiently significant influence on users.

The results indicate that facilitating conditions significantly influence user satisfaction in mobile commerce, confirming the fourth hypothesis. The obtained results align with numerous studies in the field of m-commerce (Lai & Lai, 2013; Zhou et al., 2010;

Chimborazo, Frasquet & Molla, 2021), confirming the impact of facilitating conditions on the intention of future use, and in mobile banking (Farzin et al., 2021; Faizal, 2020) where the impact of the observed variable on satisfaction was confirmed. In today's conditions, it is crucial to have adequate infrastructure that will primarily enable appropriate use of m-commerce and subsequently provide advantages over traditional shopping methods. Multiple regression analysis shows that hedonic motivation is a significant driver of user satisfaction in m-commerce services, confirming the fifth hypothesis. The findings are consistent with studies conducted by Farzin et al. (2021) in the field of m-commerce and Paramaeswari & Sarno (2021) in the field of mobile banking. The rapid development of mobile commerce and intense competition lead users, besides fulfilling basic shopping functions, to seek an overall experience that is more engaging.

The analysis results show that price value is a significant driver of user satisfaction in m-commerce, confirming the sixth hypothesis. The obtained results correspond to the findings of earlier research conducted by Alalwan & Dwivedi (2017) and Verkijika (2018) in the field of m-commerce, and Chong (2013) in the field of mobile banking. The results indicate that consumers attach significance to the relationship between price and quality when conducting mobile commerce. Quality influence customer satisfaction (Mitic & Brzaković, 2023) and price can be a significant motivator, especially considering that this type of shopping is still unfamiliar to a certain number of users.

## Conclusion and implications

Considering current trends, it is evident that mobile commerce will become the most common form of conducting electronic commerce in the near future. It is not excluded that it might even surpass traditional purchase methods. The increasing use of technology has led to the emergence of numerous models that explain its acceptance. Besides the most commonly used TAM and UTAUT models, the UTAUT 2 model stands out, which, unlike the previous ones, includes the highest number of variables and primarily focuses on consumers.

The conducted research has the following theoretical and practical implications. Primarily, this paper allows for the expansion of existing knowledge about determinants of user satisfaction in the use of mobile commerce. The aim of the study is to test the influence of the mentioned variables on mobile commerce user satisfaction. The originality of the paper resides in the use of the UTAUT 2 model, which is more contemporary and applicable compared to the UTAUT model, primarily due to its broader scope and inclusion of additional variables. Additionally, unlike the original UTAUT 2 model, this paper includes user satisfaction as a dependent variable, considering its significance regarding its impact on consumer loyalty, recommendations, and repeat purchases. To the author's knowledge, there are few studies, especially in domestic literature, that test the influence of these variables on mobile commerce user satisfaction, and this research fills that gap.

The contribution of the conducted research is reflected in the following practical implications. Since habit has been shown as the most significant determinant of user satisfaction in mobile commerce services, it is essential to transform the use of m-commerce

from occasional usage to habit. This can be achieved by offering conveniences such as loyalty programs that will stimulate consumers for more regular use of this form of commerce. The next most significant determinant of user satisfaction is hedonic motivation. It is crucial to make the experience engaging, and service providers can primarily use interesting animations in the context of application design, as well as an engaging presentation of products or services. Users' hedonic motivation can be increased through their involvement in the product presentation process (e.g., a special section on the page that pulls images from social media platforms where the user tagged the company). Facilitating conditions, as a significant determinant of user satisfaction, relate to the required knowledge, resources, and compatibility with other technologies. Providers of m-commerce services need to provide software that is user-friendly and compatible with other solutions already in use. Also, considering resources such as internet availability, providers can enable users to browse product and service pages when they are offline and do not have access to the internet network. Given the significance of price value for user satisfaction, companies can introduce options such as free delivery, discounts for loyal customers, as well as the aforementioned loyalty programs to stimulate increased purchases, personalized offers, the opportunity to purchase products at reduced prices ahead of other users, and similar incentives. As perceived performance is also an important determinant of user satisfaction in m-commerce services, the recommendation for companies is to highlight the advantages of mobile commerce over other forms of commerce through intensive marketing campaigns.

The conducted research has several limitations. The study included only the variables of the UTAUT 2 model. The effects of UTAUT 2 variables were measured on one dependent variable – user satisfaction. Considering these limitations, future research can include participants from other countries. Furthermore, future research directions could involve incorporating trust or other variables important for user satisfaction. It is also possible to analyze the influence of variables such as customer loyalty or interpersonal communication that will represent a dependent variable of the model. Additionally, it is possible to test the moderating influence of a variable (such as trust) on consumer satisfaction.

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# Cross-cultural localisation of Serbian tourist destinations' websites: cases of websites of tourism organisations of Belgrade, Novi Sad and Niš

Кроскултурна локализација сајтова домаћих туристичких дестинација: примери сајтова туристичке организације Београда, Новог Сада и Ниша

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**Abstract:** Tourism and culture are inextricably linked. Visiting another country with a different culture gives tourists the opportunity to gain different perspectives and enjoy the destination as well. As a result of the development of Information and Communication Technologies, but also the development of the web as a primary source of information on tourist destinations, international tourism has increased over the past two years. Therefore, the cross-cultural adaptation of tourist destination websites becomes even more important. To that end, a literature review was conducted, which highlighted a research gap regarding the examination of the actual state of website localization practices for tourist destinations. The aim of this research is to examine and analyse the actual implementation of the practice of cross-cultural website localization on the example of tourism organizations of three cities in Serbia. An open-ended survey was conducted, and the research results show that the localization process is recognized as important for online marketing communication in all three tourism organizations.

**Keywords:** cultural localisation, website, tourism organisations of cities

**JEL classification:** M31

**Сажетак:** Несумњиво је да туризам и култура иду заједно. Туристи из једне земље са одређеном културом одлазе у другу земљу са различитом културом, како би уживали у дестинацији и стекли другачија искуства. Број међународних туриста се повећао у претходне две године, чему је допринео развој информационе и комуникационе технологије, али и развој веба као једног од првих места где ће туриста отићи у потражи за информацијама о туристичкој дестинацији. Стога, међукултурна адаптација веб-сајтова туристичких

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дестинација постаје још значајнија. У том циљу је урађен преглед литературе, који је указао на истраживачки јаз у погледу испитивања стварног стања пракси локализације веб сајтова туристичких дестинација. Циљ овог истраживања је да испита и анализира стварну примену пракси кроскултурне локализације веб сајтова на примеру туристичких организација три града у Србији. Спроведена је анкета отвореног типа, а резултати истраживања показују да је процес локализације препознат као важан за онлајн маркетинг комуникацију у све три туристичке организације.

**Кључне речи:** културна локализација, вебсајт, туристичке организације градова  
**ЈЕЛ класификација:** М31

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## Introduction

After a recorded decrease due to the COVID-19 pandemic, the number of tourists in the world is slowly starting to increase, according to statistics on international tourist arrivals in 2023, which increased in all regions as compared to 2022. According to Statista (2024), Europe had the highest number of inbound travellers last year, with around 700 million arrivals. The list of countries from Europe, which leads in international tourism with approximately 60% of all international tourist arrivals worldwide in 2022, is topped by Southern Mediterranean countries, such as France, Spain, Turkey, and Italy (Statista, 2024).

The number of international tourists visiting Serbia is also increasing. According to UN Tourism (previously known as The United Nations World Tourism Organisation - UNWTO) (2024), Serbia recorded 1,773,000 foreign tourists in 2022, compared with 871,000 foreign tourists in 2021 and 446,000 foreign tourists in 2020, based on the number of foreign tourists staying overnight. The Statistical Office of the Republic of Serbia (RZS) (2024) reports the same trend, indicating that the number of tourist arrivals increased by 8.3% in January 2024 compared with January 2023 in the Republic of Serbia, while the number of overnight stays increased by 3.9% and the number of overnight stays by foreign tourists increased by 1.2%. There is a projected growth rate of 0.9 million international tourists coming to Serbia between 2024 and 2029 (+47,62%), while a new peak is expected in 2029, with 2.78 million arrivals, following nine years of consecutive growth (Statista, 2024).

Information and Communication Technologies (ICT) play a key role in supporting and encouraging this phenomenon (Mele & Cantoni, 2018), since tourists can now find information about their desired destinations more quickly and easily via the Internet, and gain valuable insight from other tourists' comments or reviews (Khan, Hussain, Hussain Mari, & Ali, 2022) posted on websites such as TripAdvisor, Yelp, etc. Communication between tourism providers and potential tourists is essential, as high-quality communication via a travel website should influence tourists' decision-making (Marić, Leković, & Džever, 2024). Furthermore, Khan et al. (2022) also emphasise the importance of using official websites of tourist destinations, as these websites influence tourists' decision-making and destination image.

A growing number of foreign tourists worldwide and in Serbia, as well as the potential Serbia has in the field of tourism, have led to the question of how to make tourist destinations in Serbia more accessible to selected foreign markets. It is, therefore, crucial to first understand the culture of foreign target countries before adapting online marketing

communications of Serbian tourist destinations. Hofstede, Hofstede & Minkov (2010) describe culture as “the collective programming of the mind which distinguishes the member of one group or category of people from another” (p. 6). In their opinion, culture is always a collective phenomenon (Hofstede et al., 2010). Due to the fact that most of today's business, including sales and service provision, occurs online, or via the Internet, mainly through the web, and more recently via social networks, it is necessary to pay special attention to this aspect of cross-cultural Internet marketing communication of Serbian tourist destinations. Websites of domestic tourist destinations, as one of the first places where a tourist from a foreign country will go to seek information about a particular destination, require better adaptation of destination communication for foreign visitors. In this sense, as research on this topic shows (Mele & Cantoni, 2016, 2017, 2018; Mele, De Ascaniis, & Cantoni, 2015), it is necessary to localize tourist destination websites, which means creating a website in accordance with the cultural characteristics of tourists from different countries. Localization practices in online communication can be divided into two main topics: localization of multimedia content, which involves adapting cultural values, and localization of (website) design, which involves adapting cultural markers to a specific country (Tigre Moura, Sing, & Chun, 2016). Social networks, which have gained increasing popularity in the last few years, are no exception. Researchers such as Mele, Kerkhof & Cantoni (2021) analysed how Instagram promotes tourism from a cross-cultural perspective, referencing the official reports of national tourism organisations in four culturally different countries: Chile, the United States, the Netherlands and Portugal. The purpose of localising a tourist destination is to improve its perceived image and willingness to visit a heritage site (Mele, Kerkhof, & Cantoni, 2020).

A review of the literature on this topic has concluded that very few of the currently available studies provide an overview of the actual state of website localization practices for tourist destinations, and none of them focus on the websites of tourist destinations in Serbia, which represents a identified research gap. The aim of this research is to examine and analyze the actual implementation of the practice of cross-cultural website localization on the example of tourism organizations of three cities in Serbia: 1. Tourism Organisation of Belgrade, 2. Tourism Organisation of Novi Sad, and 3. Tourism Organisation of Niš.

## **1. Cultural localisation of websites**

For a long time, authors have been interested in cultural localisation, a topic that has gained importance with the advent of the web. Websites have emerged as an unusual medium for presenting both local and global cultural values (Hamid, 2017), which are by their nature accessible to a global audience and as such require country-specific cultural adaptation (Singh & Matsuo, 2004). Accordingly, Singh, Zhao & Hu (2005) propose studying the web as a cultural document and determining whether it is culturally neutral or infused with local values. According to Singh, Zhao & Hu (2003), the web is not a culturally neutral medium, but a medium rich in cultural values that give country-specific websites an appearance unique to the local cultures. The characteristics of the web as a cultural document are summarized

as follows (Cermak & Smutny, 2018, p. 207; Singh et al. 2005, p. 131): A website is visible to people across cultures; The interactive nature of the website makes it an ideal medium for creating culturally sensitive dialogue; Links and search options depend on the user and his or her motivation to browse the web; Website templates can be adapted for different cultures; and Culturally appropriate websites can be better perceived and used by users. Wąsowicz-Zaborek (2018) state that culturally adapted websites can affect a website's usability, resulting in more positive attitudes towards the website and increased consumer's willingness to purchase, just as culturally incompatible websites can negatively affect purchase intents. Furthermore, the international study by Singh, Fassott, Chao & Hoffmann (2006) provides empirical evidence that a culturally adapted website significantly increases purchase intent and leads to favourable attitudes towards the website. However, despite ample evidence supporting that cultural adaptation of websites positively affects consumers' attitudes, country-specific websites are still in the nascent stages of cultural adaptation.

Many international issues about website design must be considered by website designers when developing country-specific websites, including translation, logistics, legal hurdles, and most importantly, the diverse cultural expectations of global consumers (Singh & Matsuo, 2004). Understanding local cultures and local websites requires both an etic and an emic approach by website designers (Singh et al., 2003). Such a comprehensive approach to localisation ensures that website is accessible and appealing to people from different cultural backgrounds (Mele & Cantoni, 2018).

Localisation of the website's cultural values in online communication could be described as adapting the design and content of the website to meet the cultural needs and specificities of the target markets. At first, this process was limited to only translating languages and adjusting simple website elements such as time, date, and currency. The localisation of websites has, however, expanded beyond that and encompassed adapting accessibility, sound, cultural values, functionality, graphics, information architecture, layout, search engines, symbols, videos, and navigation, among other features, to meet the cultural preferences and needs of specific markets.

In order to successfully localise websites, Singh, Toy & Wright (2009) recommend that factors such as language, culture, customs, colour preferences, currencies, and time zones be taken into account when designing websites, while Alexander, Thompson & Murray (2016) believe that new cultural adaptations need to consider cultural preferences for *appearance, navigation, links, multimedia, visual representation, colours, and text*. According to Rafetzeder (2019), localisation involves two levels. The first is the surface level and consists of adjusting the language, punctuation, dates and time zones, units of measurement, currencies, etc., while the second is the cultural level, which includes aesthetic appeal, colours, images, communication patterns, etc. (p. 37). Singh et al. (2009) measured localisation in terms of adapting content to local users to achieve customisation of elements such as language translation, navigation structure, use of appropriate colours and graphics, global gateway for sites in different languages and culturally relevant web content, and identified five categories of websites based on these localisation variables: standardised, proactive, global, localised, and highly localised websites (p. 282). According to these

authors, the first three categories (standardised, proactive and global) do not provide any localised content (more information in: Singh et al., 2009).

Although cultural localisation is the subject of numerous studies: on the creation of international advertising campaigns and communication materials that emphasise country-specific cultural values (Albers-Miller & Gelb, 1996); on e-commerce in order to analyse the cultural influence on the e-commerce experience (Panchal, Ray, & Schofield, 2020); on the influence of cultural elements in choosing pictures as part of web design and marketing strategy on universities' websites in Pakistan (Hamid, 2017); on models that would support the cultural localisation strategies of companies on the web (Cermak & Smutny, 2018; Singh & Matsuo, 2004; Singh et al., 2005), or on social media when examining the influence of psychological distance and message type on Facebook according to cultural orientation (Sung, Kim, Choi, & Lee, 2020), more research needs to be done in the field of tourism (Tigre Moura, Gnoth, & Deans, 2014).

## **2. Localisation of tourist destinations' websites**

The studies listed in Section 1, specifically addressing the topic of website localisation of tourist destinations, were influenced by the research of Tigre Moura et al. (2014). These authors developed a cultural framework for evaluating cultural values in tourist destination websites, adapted from the framework for researching cultural values in websites developed by Singh et al. (2003). The mentioned framework is based on the three of the six dimensions of cultural values proposed by Hofstede (1980) – individualism-collectivism, uncertainty avoidance, power distance, and one cultural dimension of high and low context proposed by Hall (1976) (according to Singh et al., 2004). The masculinity-femininity dimension of Hofstede's framework of cultural dimensions was excluded during the framework consolidation due to low reliability, and the dimension of long-term and short-term orientation (pragmatism) was never included (Tigre Moura et al., 2014), nor was the dimension of indulgence versus restraint. Singh et al. (2003) explain that Hofstede and Hall's models were chosen for two reasons. The first is that Hofstede's model has been widely applied and validated in different cultural contexts and management research in general, while the second is parsimony, since both models are viable frameworks, given their analytical flexibility, which is desirable in measuring culture. According to Cermak & Smutny (2018), Hall's cultural dimension is represented in the literature because it accounts for a culture's common communication means. Tigre Moura et al. (2014) provide a critical perspective on localisation, highlighting the negative impact complete cultural localisation (such as boredom) has on online travellers' destination image and willingness to travel, which can be caused by reducing novelty in favour of familiarity (cultural congruence). However, the majority of studies confirm that cultural localisation contributes to familiarity, visitors' perception, and willingness to visit a destination.

Almost 90% of online buyers select their native language before making a purchase (Mele & Cantoni, 2017). In this context, Wąsowicz-Zaborek (2018) provide guidelines and recommendations for the development of websites adapted to cultural clusters. According to

this, Anglo cultures prefer English on websites because it is consistent with their national language, Latin Europe prefers national language on websites, Eastern Europe prefers national language, Latin America prefers Spanish, Arab cultures prefer Arabic and English, whereas South Asia prefers the national language and English. In this case, language is only taken into account as one of the factors in localising a website, but other elements and their adaptation according to cultural clusters are also important (more information in: Wąsowicz-Zaborek, 2018).

As Cermak & Smutny (2018) argue, website localisation is not only translation, although, in most cases cultural adaptation provides just that – translation of language, date, time, currency, number format or modification of graphic design elements (Alexander et al., 2016). The fact that a tourist destination's website is translated into English and offers various language options does not mean that the website is culturally adapted. Simply providing different language options does not equate to adapting to different cultures (Rafetzeder, 2019). Additionally, the fact that websites often offer only the English language option to their visitors should be considered carefully. According to Statista (2024), in 2023 there were approximately 1.5 billion people worldwide who spoke English as their first language or second language, but there were also slightly more than 1.1 billion people who spoke Mandarin Chinese, while Hindi and Spanish were in the third and fourth places, respectively. This indicates that although English is the most widespread language, it does not mean that all website visitors speak or understand English.

Rafetzeder (2019) believes tourism is a highly internationalised industry, making the website of tourist destinations highly relevant to cross-cultural values, and its appeal crucial for marketing the destination and attracting tourists. A study by Luna-Nevarez & Hyman (2012) found that hotel booking services, maps, event calendars, descriptions of attractions, deals, activities, culture, shopping, and weather forecasts are the most important content for attracting tourists to websites of cities as tourist destinations. However, the question arises whether the designers of tourist destination websites, and cities as tourist destinations, are generally aware of the cultural implications. According to Rafetzeder (2019), websites of tourism organisations are mostly designed from an ethnocentric perspective, in accordance with the cultural values of the host country, without considering the cultural background and preferences of website visitors. This opens up a broad field for researching the state of website localization for tourist destinations and opportunities for their better adaptation according to the cultures of foreign target markets.

### **3. Methodology**

Detailed information regarding the research methodology, the criteria for selecting the research sample, the method of conducting the research, and the method of analysing the results is presented in this chapter.

#### **3.1. Sample selection**

The national tourism organisations aim, among other things, to promote their destinations internationally. As a result, tourist destination websites are an excellent case study for

investigating how localisation is actually integrated into tourism marketing and communication (Mele & Cantoni, 2017), specifically in the context of cities as tourist destinations.

The statistics of overnight tourist stays according to the RSO's report (2023) for the first and second quarters of 2023 were a selection criterion for analysing tourism organisations' websites: 1. Tourism Organisation of Belgrade, 2. Tourism Organisation of Novi Sad, and 3. Tourism Organisation of Niš. In order to analyse the most important tourist destinations by category: Spas, Mountain centres, and Other tourist places, the first three tourist destinations ranked in accordance with overnight stays of tourists were considered: (I) Category Spas: 1. Vrnjačka Banja, 2. Sokobanja, and 3. Banja Vrdnik; (II) Category Mountain centres: 1. Zlatibor, 2. Kopaonik, and 3. Rudnik (the highest growth in overnight stays in the first six months of 2023 compared to the same period in 2022), and (III) Category Other tourist places: 1. Belgrade, 2. Novi Sad, and 3. Subotica.

After previously analysing tourist destination websites based on overnight stays by category, a narrower range of tourist destination websites was assessed in the further analysis. The criterion of regional affiliation was applied only to one category - Other tourist places, where tourist destinations were analysed by regions Serbia-North – Belgrade Region and Vojvodina Region, and Serbia-South – Region of Šumadija and Western Serbia, Region of Southern and Eastern Serbia and Region of Kosovo and Metohija, which are top three: 1. Belgrade, 2. Novi Sad, and 3. Niš.

Besides the statistics on tourist overnight stays from the Statistical Office of the Republic of Serbia (SORS) report (2023) for the first and second quarters of 2023, the criterion for this analysis was the statistics of tourist arrivals/overnight stays - Tourist traffic for May-July 2023 according to the Statistical Release no. 155 - year LXXIII, 30<sup>th</sup> June 2023; no. 199 - year LXXIII, 31<sup>st</sup> July 2023, and no. 217 - year LXXIII, 31<sup>st</sup> August 2023 - Catering and tourism statistics of the SORS (2023). The comparative analysis of common parameters within the same category led to selecting only one category of tourist destinations – Othertourist places. In addition to the analysis of tourist destinations' websites as one of the main means of international internet marketing communication of domestic tourist destinations, an analysis of the offer categories was also included, followed by the selection of websites of cities as tourist destinations: 1. Tourism Organisation of Belgrade (TOB), 2. Tourism Organisation of Novi Sad (TONS), and 3. Tourism Organisation of Niš (TON).

### **3.2. Conducting research**

The research in this paper is part of the dissertation titled *Cross-Cultural Specificities of International Internet Marketing Communication of Domestic Tourist Destinations*. In order to accomplish this, 1. Tourism Organisation of Belgrade (TOB), 2. Tourism Organisation of Novi Sad (TONS), and 3. Tourism Organisation of Niš (TON) were emailed with detailed information about the research, one part of which is a study of cross-cultural localisation of tourist destinations' websites, and each tourism organisation was emailed with an invitation to participate in an open-ended survey.

Taking into account Mele & Cantoni's (2017) research, survey questions cover four macro-areas related to website localisation practices and activities of cities as domestic tourist destinations. The questions covered four areas related to adaptation practices and activities: (I) current state of localisation processes; (II) market research for online content creation and selection; (III) most important adaptation activities; and (IV) use of key performance indicators (KPIs) to assess the effectiveness of marketing and communication ad hoc choices. Mele & Cantoni (2017) selected these areas after previous studies on the given topic (Mele, De Ascaniis, & Cantoni, 2015; 2016), where the questions from the mentioned areas were adapted to the needs of this research. Another area related to the state and practices of destination promotion in Serbia was added with questions from that area, along with two additional questions: 1. Do you think cultural adaptation would affect the increase in visits? and 2. Do you think cultural factors influence the choice of offer or product category? The questionnaire is available by e-mail: [aleksandra.stojiljkovic@gmail.com](mailto:aleksandra.stojiljkovic@gmail.com)

The participants in the survey were employed in the Sector for Promotion, the Sector for Development, Promotion of Tourism and Events, the Sector for Information and Commercial Activities, and employed at positions as Organisers for the Development and Promotion of the Niš Fortress, in the Tourism Organisation of Niš. The survey was conducted from December 8, 2023 to February 8, 2024.

### 3.3. Data analysis

A content analysis was used to analyse the survey data. Previous studies related to a similar topic have successfully applied this method (Singh et al., 2003; Singh & Matsuo, 2004; Singh et al., 2005; Tigre Moura et al., 2014). According to Singh et al. (2003), content analysis is considered an appropriate technique for analysing values, norms of behaviour and other elements of culture. The three Serbian cities listed as tourist destinations were analysed using content analysis to determine the actual state of website localisation practices. In order to analyse the answers received, a code sheet was manually created using an Excel spreadsheet, while keeping notes on observations for every response. As a result of the analysis, 55 lines of coded statements were obtained in an Excel table, which were then reanalysed to be reduced to the main localisation activities of the surveyed tourism organisations (see Table 2). In the subsequent sections, abbreviations will be used as indicated in Table 1.

*Table 1: Tourism organisations that participated in the research*

Name	Abbreviation
Tourism organisation	TO
1. Tourism organisation of Belgrade (TOB)	TO1
2. Tourism organisation of Novi Sad (TONS)	TO2
3. Tourism organisation of Niš (TON)	TO3

*Source: the authors' research (2023)*

## 4. Results

The first part of the survey examined the opinions of TOs regarding Serbia as a tourist destination in general, the degree to which tourist destinations in Serbia have been utilised, their quality of promotion, as well as the use of potential and quality of promotion of Serbian cities as tourist destinations. According to all three TOs, Serbia is a tourist destination with great potential, especially for foreign tourists, due to its diverse tourist offer, geographic location, cultural and historical heritage, natural beauty, and food and wine product offerings. The quality of gastronomic events positively contributes to enhancing the destination's brand equity (Čavić, Čurčić, & Radivojević, 2023). Thus, according to TO2, the slogan of Serbia's umbrella tourism organisation is *Experience Serbia!*

Based on the survey results, all three TOs recognise Serbia's potential as a tourist destination. Regarding the utilisation of the tourist destinations' potential in Serbia, all three TOs consider it to be mostly well utilised, but that there is still room for full utilisation. Accordingly, TO1 stated the following:

*“Increasing regional networked actions in long-distance travel markets, such as China and the USA, is important (for organising and presenting the circular tours of the region – the so-called Balkan tours).”*

In terms of the promotion of cities as tourist destinations in Serbia, all three TOs said it was satisfactory, as evidenced by the statistics of visitors and overnight stays obtained by the SORS, especially in larger cities in Serbia, which have a comprehensive tourism offer. Moreover, better synchronisation and harmonisation with the general promotion of Serbia are needed, as TO3 pointed out, and TO1 stated as follows:

*“We believe that Belgrade, Novi Sad and Niš are leading the way; however, there is certainly room for the further development of promotional activities in these cities, as well as in other cities in Serbia, especially in those nearby the mentioned three cities.”*

Secondly, the survey examined the actual state of the process of localising tourist websites and social networks of TOs participating in the survey. According to all three TOs, their promotion is tailored to tourists from different countries through the website and social networks, because they are not only targeting domestic tourists, but also those from the region, mainly from the former SFRY countries, but also beyond, according to TO2.

In response to a question about how they adapt their promotion via social networks and website to tourists from different countries, all three TOs stated that they adapt text and images based on the number of visitors from specific countries, where the text is translated only to English. TO1 and TO2 provide on their websites both Cyrillic and Latin script, whereas TO3 offers only Latin script. TO1 emphasised it pays special attention to the top 5 markets in terms of arrivals and overnight stays in Belgrade, as well as the markets of long-distance locations, while TO2 stated as follows:

*“For marketing purpose, when we launch digital campaigns (social networks, specifically Facebook and Instagram), we make sure the copy is in the language of the target audience (Croatian, Slovenian, etc.). As for the visual element, in the case of a video, we typically play the Latin version for the majority of countries and the Cyrillic version for North Macedonia and Bosnia and Herzegovina. ...With Google display ads, we try to adapt the visuals to the language of the target group.”*

Furthermore, TO3 said they are currently adjusting only the content, namely the purpose of posting on social networks, not necessarily the language of individual posts, to reach the most numerous target groups, as well as organising promotions directly in the cities in those countries. The same applies to the content on all three TOs' websites, where the version offered is only in English. Accordingly, TO2 stated:

*“All content on the TONS's website is available in Latin and Cyrillic script, and English (short news are not translated into English, however, our projects, such as “52 weekends in Novi Sad”, “Wine trails of Fruška Gora”, “UNIQUE Novi Sad”, etc., are translated into English, so that everyone has the best opportunity to learn about them).”*

A third part of the survey focused on market research for creating and selecting online content, as well as how surveyed TOs select foreign markets for which they create content online, and whether they have branches in foreign countries or websites that are tailored to specific foreign markets. In this regard, TO1 and TO3 said that they select target foreign markets based on the RZS's statistics on arrivals and overnight stays, whereas TO2 said that it selects target foreign markets based on data collected from the information centre. While none of the TOs have branches in foreign countries or websites tailored to specific foreign markets, TO1 is considering hiring a marketing agency to handle its travel deals to target foreign markets. In this context, TO2 stated:

*“Rather than having separate websites for each target group, we use promotion through online portals of the countries from which our target groups originate, so we present Novi Sad's tourism offer via PR and Native texts in their native languages (North Macedonian, Croatian, Bosnian, Slovenian, Hungarian, Greek, etc.).”*

In discussing the translations into foreign languages offered on their websites, as well as any previous research or market analysis in this context, all three TOs indicated that English is the most common language used. According to TO1, a version in German and Chinese is also being prepared. Furthermore, TO2 clarified that its choice is based on the years of experience working with tourists and monitoring both RZS's and internal statistics, in which it is recorded from which countries tourists visit the information centres.

In the fourth part of the survey, the key activities of adapting the online content of websites and social networks were examined - text (language and context) and images (context), according to the cultural dimensions of foreign countries. In this regard, each TO stated that they adapt the advertising to specific markets and direct online campaigns based on the target market's specifics, and also adapt text and images in order to appeal to both domestic and foreign tourists. To address the above, TO2 selects content for domestic tourists, depending on the proximity of the location, such as invitations to events, exhibitions

or visits to certain historic and cultural sites, or food and wine content, whereas TO2 designs special projects for tourists from foreign countries. Adding to that, TO2 said:

*“Our project ‘52 weekends in Novi Sad’ was designed and created for this reason. As Novi Sad held the title of ‘European Capital of Culture’ in 2022, and ‘European Youth Capital’ in 2019, we promoted the city during that period with the slogan ‘Feel the spirit of Novi Sad in the year of the European Capital of Culture’.”*

Likewise, TO3 stated that it adjusts the content and images, for domestic tourists who see Niš as an interesting destination for weekend visits, which implies having a good time in bars with an impressive gastronomic offer and music, which is why TO3 uses a typical expression from Southern Serbia for domestic tourists: “You can’t put a price on a good time” (*“Merak nemacenu”*). On the other hand, TO3 wants to motivate transit and other foreign tourists to visit Niš as a city of rich and unusual historical sites from different time periods (prehistory, ancient and Ottoman periods, World War I and II), since by visiting monuments and reading stories about them, tourists can really get a sense of Europe’s civilisational development. To accomplish this, TO3 used a slogan: “Niš-History of Europe in one city”.

In regard to research into foreign tourists’ motives for visiting the city as a tourist destination, TO1 stated that it performs research through regular surveys conducted at accommodation and hospitality facilities, as well as information centres, which allow TO1 to determine the visitors’ preferences. As with the previous respondent, TO3 said that it also conducts surveys at its two information centres regularly. However, TO2 pointed out that in addition to direct conversations with visitors at information centres and at tourism fairs, surveys of visitors’ opinions are carried out periodically by independent agencies. In addition to the previous respondent, TO3 mentioned it had its research conducted few years ago by the HORES association. In the context of that, TO2 stated:

*“In addition to talking with tourists who visit our information centres or attend tourism fairs in the country and abroad, we periodically conduct research on tourists’ attitudes as to why they visit Novi Sad. It is done by an independent agency, which provides us with reasons why tourists visit Novi Sad.”*

The research results show that all three TOs pay attention to researching the motives of foreign tourists to visit a city as a tourist destination, with information centres being the main source of data. However, some TOs for this type of research also hire independent agencies in addition to research within the TOs themselves.

All three TOs cited the importance of social media research as a way to understand how the external environment perceives a tourist destination. For this purpose, TO1 uses specialized agencies for conducting research on the impressions and effectiveness of online campaigns, as well as impressions from the destination. To address this subject, TO3 stated the following:

*“Several sources of information are regularly checked, including Google reviews, blogger’s texts, YouTube videos, and posts on various travel-related websites, such as*

*www.darktourism.com, which recommends its visitors to visit the Skull Tower (Ćele kula), the Second World War concentration camp and the Bubanj Memorial Park.”*

Both TO2 and TO3 conduct the research independently, while TO3 hires specialized agencies for this type of research. When asked about online tests that determine the focus of users' attention, such as landing page, TO1 and TO3 replied that they do not use such pages. However, TO1 reported that this type of page is in preparation, and TO2 reported that it is already in use.

The surveyed TOs evaluate the effectiveness of customised marketing and communication based on the analysis of a specific marketing campaign. As part of this process, TOs also analyse statistical data from various tourist markets to determine how effective the marketing strategy is. In addition, TOs also analyse data from digital communication channels, statistics on Instagram and Facebook, as well as Google Analytics and Google Search Console. The main factor of effectiveness, however, is the increase in tourists who choose to visit a destination. All three TOs provided the same answers regarding the assessment of the effectiveness of ad hoc marketing and communication.

Two additional questions followed in the fifth part of the survey. In the first question, TOs were asked whether cultural adaptation would result in the increase of visits to cities as tourist destinations. TO1 asserted that it believes it would have an effect, as tourists from the target countries would have more trust in those cities knowing their culture is respected. Similarly to TO1, TO2 believes it is possible that it would have an effect because other cultures might feel welcomed and respected in those destinations, which would contribute to a positive experience. TO3 also expressed a positive attitude toward the increasing visits to cities as tourist destinations as a result of cultural adaptation, since TO3 already tailors the promotion to domestic as well as foreign tourists, especially from the countries that generate the most tourists, such as Bulgaria. To address the above, TO1 stated the following:

*“In our view, it would have an effect, since adapting a destination to a particular tourist market certainly involves cultural adaptation, a connection between the destination tourists visited and their culture, history, and customs, respect for religious, cultural, and other customs, holidays, etc. ... We believe that tourists feel safer in destinations where they know their culture is welcomed.”*

The second additional question examined whether surveyed TOs believe cultural factors influence the choice of TO's offer or product categories. In other words, would TO rather, for example, promote family city tours to Russian tourists, or a festival to German tourists? In this regard, TO1 stated the following:

*“They have an impact, because culturally adapted tourist products are more likely to attract tourists. ... When we examine tourist markets, we can identify the dominant cultural factors and adjust tourist offer or product accordingly.”*

In order to engage effectively, TO2 said it is crucial to adapt the message to the target group and present content that is relevant to that group of tourists based on research or previous experience. As in the previous question, TO3 said it is already adjusting its product

offer to align with the culture of the target country that brings the largest number of tourists, such as Bulgaria. Table 2 shows the localisation activities of the surveyed TOs.

*Table 2: Localisation activities of tourism organizations of cities*

<b>Localisation activities</b>	<b>TO1</b>	<b>TO2</b>	<b>TO3</b>
Adapting tourism promotion through website and social networks	✓	✓	✓
Targeting foreign markets for online content creation	%	%	%
Selecting translations into foreign languages available on website to target foreign markets	%	%	%
The most important activities of adapting online content - website and social networks	✓	✓	✓
Adapting text and image	✓	✓	✓
Analysing foreign tourists' motives for visiting the city as a tourist destination	✓	✓	✓
Social media research, or how the external environment perceives the destination	✓	✓	✓
Conducting online tests that identify the focus of user's attention, e.g. landing page	✗	%	✗
Developing specific projects for adapting content to tourists from target foreign countries	%	%	✗
Assessing the effectiveness of adapted marketing and communication	✓	✓	✓
Assessing the effectiveness of ad hoc marketing and communication	✓	✓	✓
Notes: ✓=achieved; %=partially achieved; ✗=not achieved			

*Source: Authors' research (2023)*

## **Conclusion**

According to the research objective, this paper provided insight into the state of website localisation practices and activities in three surveyed tourism organisations. According to the research findings, all three tourism organisations consider themselves to be localising their websites and social networks to cater to the needs of foreign target audience. Consequently, the text and images are adapted to the culture of the foreign target countries, while the translated texts are only provided in English on all three websites. They select target foreign markets based on the statistics of the RZS on arrivals and overnight stays, as well as on data collected in the information centres. While none of the tourism organisations surveyed has branches abroad or websites designed for specific target foreign markets, one is considering hiring a marketing agency to handle the offer to certain target foreign markets. When it comes to examining the motives of foreign tourists to visit the city as a tourist destination, the main

sources of data are information centres, and research carried out by tourism organisations themselves, as well as by independent research agencies. Likewise, social media research, or how the external environment perceives the destination, is conducted both internally and by specialised agencies. Generally, with the exception of one, the surveyed tourism organisations do not use landing pages, but instead develop special projects to localise content for tourists from foreign countries, with the exception of one that does not make such projects. The tourism organisations surveyed assess the effectiveness of adapted marketing and communication based on the analysis of statistical data from various foreign markets, as well as analysis of data from Instagram and Facebook, Google Analytics and Google Search Console. However, the main indicator of effectiveness is the increase in the number of tourists who decide to visit the destination. There is a general agreement among all three tourism organisations that cultural adaptation will increase visits to cities as tourist destinations.

In this review of localisation activities and practices in surveyed tourism organisations, it is clear that each of the three organisations is aware of the importance of cultural localisation and its advantages. However, the practices of cultural localisation on the websites and social networks of the surveyed tourism organisations appear to differ from the actual cultural localisation of websites and social networks. Would a translation into English suffice, or would complete cultural localisation have to be carried out at the expense of novelty? The answer to this question remains to be found in further research.

Multiple contributions have been made by this research. First, the research shows that surveyed tourism organisations are aware of the localisation process and engage in activities and practices related to localising their social media and website content. Second, the research confirms that localisation is a process, not a finished product, as mentioned before, a point also acknowledged by tourism organisations in the survey. Third, the research provides an overview of the current state of localisation activities and practices applied by the surveyed tourism organisations, which could be a starting managerial implication for other tourism organisations as well. Fourth, the study shows that localisation activities can be used to improve online content for foreign target audiences, since targeting localisation activities can reduce the risk of information overload (information confusion). Fifth, the question that arises is whether tourism organisations' websites and social networks must be completely or partially congruent with foreign target culture. Sixth, this is the first research on the topic of cultural localization of websites and social media for tourist destinations in Serbia, specifically in the case of cities. It can serve as an introduction to further research, as well as a research framework for other researchers who wish to explore this and similar topics. This represents a direct contribution to both theory and practice in the field of cultural adaptation of tourist websites in Serbia and the international market.

This research also has certain limitations, primarily related to the sample, as only the tourism organizations of three cities, all from one category – cities as tourist destinations – participated in the study. Additionally, the research methodology, as only the survey method was used, as well as the limited budget and time available for conducting the research, may have impacted the depth and breadth of the data collected.

Future research should include a larger share of tourism organizations from cities as well as from other categories. It should also consider other aspects of localization, such as costs and profitability, of both culturally adapted and non-adapted websites of domestic tourist destinations. Additionally, it should investigate how culturally adapted and non-adapted websites of tourist destinations affect destination visits and, consequently, economic effects, as well as whether cultural adaptation of tourist destination websites is justified in this regard. In this sense, it would be necessary to conduct longitudinal studies that track changes in the effects of cross-cultural localization over an extended period. Detailed analysis of successful examples of cross-culturally localized websites should be carried out to identify best practices that can serve as models for other tourism organizations. Research into how new technologies such as artificial intelligence and machine learning can assist in automatic localization and personalization of content for different cultural groups. Collaborate with experts in linguistics, anthropology, and communication to ensure comprehensive and accurate localization. Integrate knowledge from marketing, tourism, IT technologies, and cross-cultural communication to gain a complete picture of the impact of localization. Finally, compare localization strategies of domestic tourist destinations with those from other countries to identify global trends and improvement opportunities.

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# Socio-demographic characteristics of employees and flexible work arrangements: Evidence from Serbia

## Socio-demografske karakteristike zaposlenih i fleksibilni aranžmani rada: Dokazi iz Srbije

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**Abstract:** The turbulent environment that influences the contemporary business has caused a reconfiguration of operations, where organizations have developed flexible work arrangements that involve the modification of traditional work. The goal of applying various forms of flexible work arrangements is to attract and retain talent, develop employee skills and capabilities, and become more innovative in terms of job organization. The aim of the research is to investigate differences in the use of flexible work arrangement according to socio-demographic characteristics of employees in the Republic of Serbia. The research was conducted on a sample of 582 employees, using the independent sample T-test and univariate analysis of variance (ANOVA) by using the IBM SPSS software for data processing. The research results indicated that there are statistically significant differences between employees who use flexible work arrangements according to gender, age, and level of education, and accordingly, the research hypothesis was confirmed. The scientific contribution is focused on a key segment related to the lack of scientific research on this topic in the Republic of Serbia and beyond. The results represent significant propositions for future research in this field and provide a basis for amending labor laws.

**Keywords:** Flexible work arrangements, socio-demographic characteristics, CRANET, Republic of Serbia

**JEL classification:** J1, J5, M10, M50

**Сажетак:** Турбулентно окружење које утиче на савремено пословање изазвало је промену операција, где су организације развиле флексибилне радне аранжмане који укључују модификацију традиционалног рада. Циљ примене различитих облика флексибилних радних аранжмана је привлачење и задржавање талената, развијање вештина и способности запослених, те постизање веће иновативности у организацији посла. Циљ истраживања је испитивање разлика у коришћењу флексибилних радних аранжмана према социо-демографским карактеристикама запослених у Републици Србији. Истраживање је спроведено на узорку

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од 582 запослена, користећи независни узорак Т-теста и униваријантну анализу варијансе (АНОВА) помоћу IBM SPSS софтвера за обраду података. Резултати истраживања су показали да постоје статистички значајне разлике између запослених који користе флексибилне радне аранжмане према полу, старости и нивоу образовања, и у складу с тим, хипотеза истраживања је потврђена. Научни допринос је фокусиран на кључни сегмент везан за недостатак научних истраживања на ову тему у Републици Србији и шире. Резултати представљају значајне предлоге за будућа истраживања у овој области и пружају основу за измене радног законодавства.

**Кључне речи:** Флексибилни радни аранжмани, социо-демографске карактеристике, Кранет, Република Србија

**ЈЕЛ класификација:** J1, J5, M10, M50

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## Introduction

In today's fast-paced and constantly changing business environment, organizations are continually seeking innovative strategies to remain competitive and efficient (Wilden & Gudergan, 2015). High-quality approach in human resource management and investment in employees lead to higher profitability and market value of the firm (Džepoljac et al., 2023). One such strategy is the use of flexible work arrangements (Kalleberg, 2001), which are becoming increasingly prevalent across various industries. These arrangements, which include remote work, flexi-work, overtime, part-time jobs, etc., represent a significant shift from traditional work models (McNall, Masuda & Nicklin, 2009). They are designed not only to enhance employee satisfaction, which is still one of the most important employee attitudes (Kerekes et al., 2023), organizational commitment (Cvjetković & Cvjetković, 2023), and work-life balance, in terms of achieving satisfaction with the state, situation and experience in both spheres of life (Mladenović et al., 2023), but also to attract and retain top talent, boost productivity, and foster a more adaptive and resilient organizational culture (Berber et al., 2022).

The primary objective of this research is to investigate the differences in the use of flexible work arrangement, focusing on socio-demographic characteristics such as gender, age, and education level. Using the CRANET research methodology, this analysis aims to identify whether significant differences exist among various demographic groups that are provided to utilize flexible work arrangements.

This research addresses a critical gap in the current literature, given the limited scientific investigations on the socio-demographic dimensions of flexible work in Serbia and the broader region. By leveraging a robust sample of 582 employees and employing statistical tools such as the independent samples T-test and univariate analysis of variance (ANOVA), the study aims to determine whether there are statistically significant differences in the application of various forms of flexible work arrangements according to the socio-demographic characteristics of employees in the Republic of Serbia.

The results of this research are expected to have practical implications for both organizational policy-making and legislative frameworks. As companies increasingly recognize the value of flexibility in work arrangements, understanding the nuanced differences across demographic groups can inform more tailored and effective human resource strategies. Additionally, these insights can contribute to the development of labor laws that better accommodate the needs of a diverse workforce.

Ultimately, this study aims to illuminate the ways in which flexible working arrangements can be optimized to support not only organizational goals but also the personal and professional growth of employees. Through a detailed analysis of socio-demographic characteristics, we aim to provide actionable recommendations for employers and policymakers to foster a more inclusive and dynamic work environment.

## 1. Theoretical background

Gašić (2023) emphasizes that flexible work arrangements (FWAs) represent a necessary phenomenon in today's digital society, where companies worldwide are compelled to change their behavior patterns due to various internal and external business influences. Some of these influences include IT development, globalization, various crises such as health (COVID-19 pandemic), economic, political (Russia-Ukraine conflict) crises, increasing competition in the labor market, etc. (Sinclair et al., 2020). These challenges can lead to significant implications for the labor market, which is evolving and thereby presenting new challenges in business. Organizations that aim to attract, motivate, and retain the best candidates employ various strategies to achieve these goals. One effective method through which companies can better manage their human resources is job redesign and implementation of flexible work arrangements (Kelliher & De Menezes, 2019, p. 4-6). Flexible work arrangements represent a mutually beneficial arrangement between employers and employees where both parties negotiate when, where, and how employees will work to meet the company's needs (Thompson, Payne & Taylor, 2015; Bjärntoft et al., 2020). Flexible working hours and remote work opportunities are seen as a part of elements contributing to work-life balance (Janošik et al., 2024).

The next table presents a depiction and explanation of 12 types of flexible work arrangements based on the research by Stavrou (2005) and the CRANET international research methodology (Berber & Slavić, 2019; Gašić & Berber, 2021). CRANET is the largest Human Resource Management network in the world and the only one that has been collecting comparative HRM data across different countries for over three decades. The research is conducted using a standardized questionnaire that covers key HRM activities, including an assessment of the implementation level of various forms of flexible working arrangements. Berber & Slavić (2019) conducted a factor analysis of 12 types of FWAs, and the analysis showed that 12 types of FWAs according to the CRANET research methodology can be classified in four groups.

*Table 1: Types of flexible working arrangements according to the CRANET research methodology*

Type of flexible work arrangements		
I	Weekend work	It implies that employees have the option to perform their work activities during weekends (Saturday and/or Sunday) (Weston et al., 2019; Austin-Egole, Iheriohanma & Nwokorie, 2020).
	Shift work	This pertains to the work schedule of employees who work in shifts or rotations outside the traditional 9 am – 5 pm timeframe. The implementation of such work arrangements is most commonly used in the manufacturing, hospitality, healthcare, and customer support sectors (Kerin & Aguirre, 2005; Stavrou & Kilaniotis, 2010).
	Overtime	This pertains to additional working hours that an employee works beyond regular working hours. Typically, this type of engagement is compensated at a higher rate than regular hours and is subject to the employment laws and regulations of the given country (Beckers et al., 2008; Junaidi et al., 2020).
II	Flexi-time	represents the ability of employees to determine the start and end of their working hours, as well as to adjust the total number of working hours (Vanajan, Bültmann & Henkens, 2020).
	Home-based work	refers to the ability for employees to perform their work activities from home instead of working from the company's office (Afrianty, Artatanaya & Burgess, 2022).
	Teleworking	is a work arrangement in which employees perform their tasks primarily from their homes or any location that is not a traditional office environment, i.e., not at the company's office (Saragih et al., 2021; Beckel & Fisher, 2022). Čudanov, Cvetković & Săvoiu (2022) highlight that remote work has gained significance due to the COVID-19 pandemic.
III	Compressed working week	refers to an alternative work schedule where employees perform their job activities in fewer days per week. For example, instead of working eight hours a day for five days a week, employees have the option to work longer hours over four days (Bolino, Kelemen & Matthews, 2021).
	Job share	represents a work arrangement in which two or more employees share the working hours and responsibilities of a single full-time position (Bhalla, 2016).
	Part-time job	refers to a work arrangement in which an employee works fewer hours compared to those with full-time employment. Employees engaged in this type of flexibility work less than 40 hours per week. The number of working hours usually varies depending on the industry, organizational needs, and employment contracts (Antunes et al., 2023).
IV	Fixed-term contract	are designed to meet the temporary or specific needs of the organization. This type of employment can last from a few weeks to several months or even years (Austin-Egole, Iheriohanma & Nwokorie, 2020).
	Temporary job	represents employment that pertains to a shorter period of work or non-permanent jobs. Organizations opt to engage temporary workers in specific circumstances to meet organizational labor needs (Horne & Soares, 2022).
	Annual hours contract	represents an employment contract in which the total number of hours that an employee must work annually to perform contract-defined activities is specified within the year (Berkery et al., 2017).

*Source: Authors' research*

Bontrager, Clinton & Tyner (2021) defined flexibility availability as a measure of how employees feel free to use formal or informal work models. Formal flexible work arrangements are typically documented and communicated to employees through the company's official policies. These arrangements encompass policies and programs implemented by companies to provide employees with ways to adjust work schedules, locations, or hours necessary to meet job requirements. Examples of formal flexible work arrangements include flexible working hours, compressed workweek, part-time work, remote work, and job sharing. Informal flexible work arrangements refer to flexibility forms not established through employment contracts or official organizational policies. They result from agreements between employers, employees, or teams based on needs and circumstances that may influence business operations. They don't involve strictly defined guidelines but offer flexibility in work arrangements. Informal flexible work arrangements depend on individual agreements and negotiations between employees and supervisors. Examples include flexi-time, as-needed work from home, and flexible breaks.

Wheatley's (2017) research suggests that flexi-time, the most common form of FWAs among men, have positive effects on alleviating the management of household responsibilities. It has been shown that men use temporary jobs and home-based work more, while women, due to limitations related to household obligations, are forced to use part-time work. Furthermore, different arrangements can have different outcomes for men and women. Peters et al. (2009) found that women report a better work-life balance if they have greater control over their working hours (Chung & Van der Lippe, 2020). Langner (2018) emphasizes that both men and women benefit from flexi-time. For women, the positive effect (salary) appears later, suggesting that, unlike men, they must first prove their commitment. The results suggest that men can use flexi-time to support their wives' careers. This measure may not necessarily be used unless needed (e.g., parenting).

Ciarniene & Vienazindiene (2018) found that representatives of the baby boom and Y generations are most satisfied with various flexible work arrangements, with women tending to use flexibility more than men, benefiting from improved work-life balance, health benefits, reduced stress, time and cost savings, and earning opportunities tailored to their needs. Dixon (2022, p. 52) highlights that the X and Y generations have distinct views on the benefits of various FWAs in terms of establishing work-life balance. Treuren & Anderson (2010) found that the Y generation evaluates flexible work arrangements better than employees belonging to the X and BB generations. Similarly, the X generation rated the variable of flexible work arrangements better than employees belonging to the BB generation and were confirmed in the variable balance between work and private life.

According to OECD findings by Thévenon, Adema, & Clarke (2016, p. 5), FWAs are most commonly available to and used by highly educated employees in top-tier jobs. In empirical study by Gašić & Berber (2023) on a sample of 518 highly educated

employees in the Republic of Serbia indicated the positive effects of FWAs on work engagement and intention to leave, as well as the mediating role of work engagement in the relationship between FWAs and turnover intention.

Based on previous research by authors on the topic of flexible work arrangements and differences between employees in terms of socio-demographic characteristics, a research hypothesis has been formulated to be tested in this study:

H<sub>0</sub>: There are statistically significant differences in the level of implementation of flexible working arrangements based on the socio-demographic characteristics of employees in the Republic of Serbia.

## **2. Methodology**

### **2.1. The questionnaire**

An electronic version of the questionnaire was created using Google Forms. The questionnaire consisted of two parts. The first part pertained to socio-demographic characteristics, where respondents could indicate their gender, age group, and level of education. The second part of the questionnaire included nine questions where respondents could indicate the extent of their use of various forms of flexible work arrangements according to the CRANET research methodology (Slavić & Berber, 2023) on a scale from 1 to 5, with 1 representing the lowest level of the use and 5 representing the highest level of the use.

### **2.2. Sampling procedure**

The data collection based on the created electronic questionnaire was conducted from September 2021 to September 2022, electronically due to the unfavorable epidemiological situation of the COVID-19 pandemic. The electronic version of the questionnaire was distributed via email addresses to individuals using flexible work arrangements, and the survey link was also posted on LinkedIn profiles for random sampling purposes. As stated earlier, an electronic version of the questionnaire was used where respondents were informed about the general research objectives and the security of collected data. Participants voluntarily agreed to participate in the mentioned research.

### **2.3. The sample**

Based on the defined subject and research objectives, the sample includes employees from organizations operating in the territory of the Republic of Serbia. A total of 582 employees completed the questionnaire, of which 294 were men (50.5%) and 288 were women (49.5%). The sample is approximately balanced by gender, with a slightly higher percentage of men. Comparing the age structure, the largest number of respondents are in a group between 25 and 34 years old ( $n = 265$ ; 45.5%), followed by those aged 35 to 44 ( $n = 173$ ; 29.7%), between 45 and 55 years old ( $n = 58$ ; 11.7%), less than 25 years old ( $n = 53$ ; 9.1%), and the smallest number of respondents are older than 55 ( $n = 23$ ;

4%). Based on the sample distribution, the sample primarily consists of a younger population that uses flexible work arrangements. Analyzing the level of education, it can be concluded that these are highly educated employees, with the largest number having completed Master studies ( $n = 283$ ; 48.6%), followed by those holding a Bachelor degree ( $n = 173$ ; 29.7%), Ph.D. studies ( $n = 59$ ; 10.1%), Three-year vocational studies ( $n = 48$ ; 8.2%), while the smallest number have completed Master (Serbian magistar) ( $n = 19$ ; 3.3%).

Table 2: Sample characteristics

Gender	Number	Percent
Male	294	50.5%
Female	288	49.5%
Age	Number	Percent
Under 25	53	9.1%
25 – 34	265	45.5%
35 – 44	173	29.7%
45 – 55	68	11.7%
Over 55	23	4%
Level of education	Number	Percent
Three-year vocational studies	48	8.2%
Bachelor	173	29.7%
Master study	283	48.6%
Master (Serbian magistar)	19	3.3%
Ph.D. study	59	10.1%
Total	582	100%

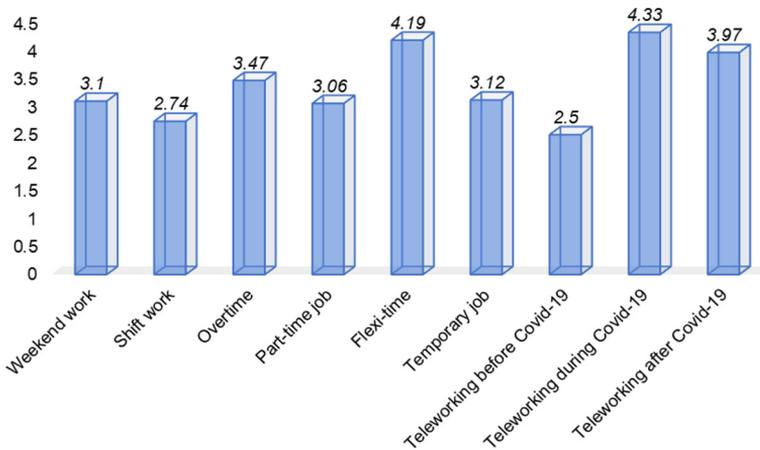
Source: Authors research

According to data from the Statistical Office of the Republic of Serbia, in the second quarter of 2022, the number of employed individuals was 2,310,035 (Републички завод за статистику, 2023). Considering the size of the target population in the 2022 research and the sample size formula developed by Cochran (1997), it is concluded that for the most commonly applied significance level of 5% and a confidence interval of 95%, a sample consisting of at least 385 employees in the Republic of Serbia can be considered sufficient for further analyses (Social Science Statistics, 2023). Based on the defined criteria and the collected sample, it can be concluded that this criterion has been met.

### 3. Results and discussion

After the sample was collected, the authors coded the data and conducted analysis using the IBM SPSS Statistics software. Within IBM SPSS, they performed analysis of socio-demographic characteristics, T-tests to compare the mean values of flexible working arrangement usage between males and females, and analysis of variance (ANOVA) to determine statistically significant differences based on age and educational level.

At the beginning of the analysis, the authors performed descriptive statistics to present the actual level of the usage of different FWAs in Serbia.

*Figure 1: The level of the usage of different FWAs*

Source: Authors' research

Based on the presented Figure 1, the highest level of implementation, when comparing different forms of flexible working arrangements excluding teleworking before, during, and after the Covid-19 pandemic, is flexi-time (4.19), followed by overtime (3.47), temporary job (3.12), part-time job (3.06), and weekend work (3.1). Comparing teleworking before, during, and after the Covid-19 pandemic, it can be concluded that the highest level of implementation was during the Covid-19 pandemic, followed by after (3.97), while the lowest level of implementation was before the Covid-19 pandemic (2.5). This indicates that due to the health crisis, companies faced significant business challenges and had to move to new ways of working, successfully adopting remote work. The positive data on remote work implementation after the Covid-19 pandemic suggests that companies have largely maintained this mode of work, slightly lower compared to the period during the Covid-19 pandemic but significantly higher than before pandemic.

To test the stated hypothesis, the authors conducted an independent samples t-test based on gender (male/female) and a univariate analysis of variance (ANOVA) based on age and education level.

Table 3: T- A test of the application of different forms of flexible work arrangements based on the gender of employees

Type of flexible work arrangements	Gender	N.	Mean	St. dev.	Sig. (2-tailed)
Weekend work	Male	294	3,28	1,51	<b>0.04</b>
	Female	288	2,92	1,51	
Shift work	Male	294	2,92	1,49	<b>0.006</b>
	Female	288	2,57	1,57	
Over time	Male	294	3,58	1,27	<b>0.042</b>

	Female	288	3,36	1,30	
Part-time job	Male	294	3,28	1,44	<b>0.000</b>
	Female	288	2,83	1,56	
Flexi-time	Male	294	4,34	0,93	<b>0.001</b>
	Female	288	4,04	1,23	
Temporary job	Male	294	3,27	1,39	<b>0.017</b>
	Female	288	2,98	1,48	
Teleworking before Covid-19	Male	294	2,51	1,25	0.797
	Female	288	2,49	1,33	
Teleworking during Covid-19	Male	294	4,28	0,96	0.203
	Female	288	4,38	1,05	
Teleworking after Covid-19	Male	294	3,98	0,99	0.934
	Female	288	3,97	1,15	

*Source: Authors' research*

Based on the conducted independent samples t-test, it was found that for certain forms of FWAs, there are statistically significant differences according to gender in the usage level. Men ( $M=3.28$ ;  $SD=1.51$ ) use **weekend work** more  $t(580)=2.92$ ;  $p=0.004$ , compared to women ( $M=2.92$ ;  $SD=1.51$ ). The difference between mean values (mean difference = 0.37, 95% CI: 0.12 to 0.61) was small ( $\eta^2=0.014$ ). In the case of **shift work**, men ( $M=2.92$ ;  $SD=1.49$ ) use this form of FWAs more  $t(577)=2.78$ ;  $p=0.006$  than women ( $M=2.57$ ;  $SD=1.57$ ). The difference between mean values (mean difference = 0.35, 95% CI: 0.10 to 0.60) was small ( $\eta^2=0.013$ ), too. Men ( $M=3.58$ ;  $SD=1.27$ ) use **overtime** more as a form of FWAs  $t(580)=2.04$ ;  $p=0.042$  than women ( $M=3.36$ ;  $SD=1.30$ ). The difference between mean values (mean difference = 0.22, 95% CI: 0.01 to 0.43) was very small ( $\eta^2=0.007$ ). Men ( $M=3.28$ ;  $SD=1.44$ ) use **freelance work** as a form of FWAs more  $t(574)=3.54$ ;  $p<0.001$  than women ( $M=2.83$ ;  $SD=1.56$ ). The difference between mean values (mean difference = 0.44, 95% CI: 0.20 to 0.69) was small ( $\eta^2=0.021$ ). Men ( $M=4.34$ ;  $SD=0.93$ ) use **flexi-time** more  $t(535)=3.29$ ;  $p=0.001$  than women ( $M=4.04$ ;  $SD=1.23$ ). The difference between mean values (mean difference = 0.30, 95% CI: 0.12 to 0.48) was small ( $\eta^2=0.018$ ). In the case of **temporary job**, men ( $M=3.27$ ;  $SD=1.39$ ) indicated that they use this form of FWAs more  $t(580)=2.40$ ;  $p=0.017$  than women ( $M=2.98$ ;  $SD=1.48$ ). The difference between mean values (mean difference = 0.29, 95% CI: 0.05 to 0.52) was small ( $\eta^2=0.01$ ). Analysis using Levene's test revealed that the homogeneity of variance was violated for the following forms of flexible work arrangements: shift work, part-time job, flexi-time, and teleworking after the COVID-19 pandemic.

Based on the review of previous research by the authors Wheatley (2017), Peters et al. (2009), Chung & Van der Lippe (2020) and Langner (2018), and the obtained results from a sample of 582 employees in the Republic of Serbia, it can be confirmed that there are statistically significant differences in the level of application of various forms of flexible work arrangements according to gender.

The next analysis pertains to a univariate analysis of variance (ANOVA) to determine statistically significant differences in the level of usage of different forms of FWAs according to the age of the respondents.

*Table 4: Univariate analysis of variance (ANOVA) of the application of different forms of flexible work arrangements based on the age structure*

Type of FWAs	Age	N.	M	SD	Levene's test <i>p</i>	ANOVA	Welch
Weekend work	Under 25	53	2.85	1.57	0.15	<b>0.002</b>	0.002
	25 – 34	265	2.88	1.46			
	35 – 44	173	3.34	1.58			
	45 – 55	68	3.56	1.43			
	Over 55	23	3.04	1.46			
Shift work	Under 25	53	2.85	1.71	<b>0.01</b>	0.027	<b>0.024</b>
	25 – 34	265	2.54	1.49			
	35 – 44	173	2.83	1.56			
	45 – 55	68	3.16	1.42			
	Over 55	23	2.96	1.64			
Overtime	Under 25	53	3.25	1.33	0.11	<b>0.008</b>	0.007
	25 – 34	265	3.36	1.31			
	35 – 44	173	3.61	1.24			
	45 – 55	68	3.87	1.13			
	Over 55	23	3.13	1.42			
Part-time job	Under 25	53	3.15	1.55	0.49	0.249	0.261
	25 – 34	265	2.92	1.57			
	35 – 44	173	3.10	1.45			
	45 – 55	68	3.37	1.48			
	Over 55	23	3.13	1.49			
Flexi-time	Under 25	53	4.21	1.03	<b>0.06</b>	0.005	<b>0.063</b>
	25 – 34	265	4.24	1.10			
	35 – 44	173	4.24	1.08			
	45 – 55	68	4.13	1.01			
	Over 55	23	3.35	1.40			
Part-time job	Under 25	53	3.30	1.39	0.44	<b>0.028</b>	0.019
	25 – 34	265	2.99	1.47			
	35 – 44	173	3.06	1.46			
	45 – 55	68	3.49	1.33			
	Over 55	23	3.65	1.23			
Teleworking before Covid-19	Under 25	53	2.74	1.33	0.47	<b>0.000</b>	0.001
	25 – 34	265	2.45	1.27			
	35 – 44	173	2.32	1.27			
	45 – 55	68	2.59	1.15			
	Over 55	23	3.61	1.41			
Teleworking during Covid-19	Under 25	53	4.40	0.95	0.72	0.305	0.311
	25 – 34	265	4.41	1.00			
	35 – 44	173	4.22	1.08			
	45 – 55	68	4.22	0.86			
	Over 55	23	4.35	1.07			

Teleworking after Covid-19	Under 25	53	3.94	1.23	<b>0.01</b>	0.242	0.270
	25 – 34	265	4.08	1.02			
	35 – 44	173	3.84	1.17			
	45 – 55	68	3.94	0.83			
	Over 55	23	3.91	1.24			

*Source: Authors' research*

Based on the conducted test of homogeneity of variances for different types of FWAs according to age, it can be concluded that for shift work, flexi-time, and teleworking after the COVID-19 pandemic, the homogeneity of variances is violated as the  $p$ -values  $< 0.05$  (based on the mean). The ANOVA test determined that there are statistically significant differences for weekend work, overtime work, temporary work, and teleworking before the Covid-19 pandemic as the  $p$ -values  $< 0.05$ . The Welch's test indicates that there are statistically significant differences in the usage levels of shift work and flexi-time according to the age of employees, as the  $p$ -value  $< 0.05$ .

Based on the Games-Howell test, significant differences were identified in the use of various work arrangements across different age groups. Employees aged 25-34 utilize weekend work less ( $M = 2.88$ ) compared to those aged 35-44 ( $M = 3.34$ ) and 45-55 years ( $M = 3.56$ ). Similarly, employees aged 25-34 engage less in shift work ( $M = 2.54$ ) compared to those aged 45-55 years ( $M = 3.16$ ). Regarding overtime, employees aged 25-34 ( $M = 3.36$ ) participate less than those aged 45-55 years ( $M = 3.87$ ). Conversely, employees aged 25-34 use flexi-time more frequently ( $M = 4.24$ ) compared to those aged 45-55 years ( $M = 3.35$ ). Before the Covid-19 pandemic, significant differences were observed in teleworking practices, with employees aged above 55 years ( $M = 3.61$ ) using teleworking before Covid-19 pandemic more compared to those aged 25-34 ( $M = 2.45$ ), 35-44 ( $M = 2.32$ ), and 45-55 years ( $M = 2.59$ ).

In the univariate analysis of variance (ANOVA) according to age structure, statistically significant differences were found in the application levels of weekend work, shift work, overtime work, flexi-time, and teleworking before the Covid-19 pandemic. Despite older employees using weekend work, shift work, overtime work, and teleworking before the Covid-19 pandemic more frequently compared to those aged below 25 and between 25 and 35 years, it is noteworthy that the sample size of older individuals is smaller, contributing to differences in application levels without implying that younger individuals use them more than older ones. Additionally, a significant portion of older respondents work in educational institutions, mainly as professors accustomed to traditional work methods, and organizational changes driven by technology have prompted them to adapt to new ways of working.

Based on the review of previous research by the authors Ciarniene & Vienazindiene (2018), Dixon (2022, p. 52) and Treuren & Anderson (2010) and the obtained results from a sample of 582 employees in the Republic of Serbia, it can be confirmed that there are statistically significant differences in the level of application of various forms of flexible work arrangements according to age structure.

The following analysis pertains to univariate analysis of variance (ANOVA) to determine differences in the implementation of various forms of FWAs according to the level of education.

Table 5: Univariate analysis of variance (ANOVA) of the application of different forms of flexible work arrangements based on level of education

Type of FWAs	Level of education	N.	M	SD	Levene's test $p$	ANOVA	Welch
Weekend work	3-year vocational studies	48	2.65	1.51	<b>0.003</b>	0.002	<b>0.001</b>
	Bachelor	173	3.03	1.48			
	Master study	283	3.06	1.56			
	Master (Magistar in Serbian)	19	3.63	1.12			
	Ph.D. study	59	3.73	1.39			
Shift work	3-year vocational studies	48	2.04	1.57	0.067	<b>0.009</b>	0.015
	Bachelor	173	2.85	1.43			
	Master study	283	2.72	1.58			
	Master (Magistar in Serbian)	19	2.95	1.65			
	Ph.D. study	59	3.05	1.48			
Overtime	3-year vocational studies	48	2.96	1.44	0.129	<b>0.001</b>	0.002
	Bachelor	173	3.35	1.23			
	Master study	283	3.51	1.29			
	Master (Magistar in Serbian)	19	3.95	1.18			
	Ph.D. study	59	3.92	1.18			
Part-time job	3-year vocational studies	48	2.58	1.56	0.122	<b>0.016</b>	0.012
	Bachelor	173	3.00	1.50			
	Master study	283	3.05	1.54			
	Master (Magistar in Serbian)	19	3.37	1.54			
	Ph.D. study	59	3.56	1.32			
Flexi-time	3-year vocational studies	48	3.81	1.36	<b>0.000</b>	0.000	<b>0.002</b>
	Bachelor	173	4.02	1.12			
	Master study	283	4.34	1.04			
	Master (srb. magistar)	19	3.74	1.41			
	Ph.D. study	59	4.41	0.79			
Temporary job	3-year vocational studies	48	2.38	1.39	0.061	<b>0.001</b>	0.001
	Bachelor	173	3.10	1.41			
	Master study	283	3.16	1.48			
	Master (Magistar in Serbian)	19	3.53	1.39			
	Ph.D. study	59	3.51	1.18			
Teleworking before Covid-19	3-year vocational studies	48	2.40	1.33	0.758	0.105	0.127
	Bachelor	173	2.39	1.26			
	Master study	283	2.49	1.29			
	Master (Magistar in Serbian)	19	2.53	1.22			
	Ph.D. study	59	2.92	1.30			
Teleworking during Covid-19	3-year vocational studies	48	4.00	1.49	<b>0.000</b>	0.008	<b>0.025</b>
	Bachelor	173	4.18	1.08			
	Master study	283	4.43	0.91			
	Master (Magistar in Serbian)	19	4.53	0.70			

	Ph.D. study	59	4.47	0.70			
Teleworking after Covid-19	3-year vocational studies	48	3.48	1.47	<b>0.000</b>	0.001	<b>0.005</b>
	Bachelor	173	3.82	1.09			
	Master study	283	4.11	1.01			
	Master (Magistar in Serbian)	19	4.05	1.13			
	Ph.D. study	59	4.15	0.76			

Source: Authors' research

Levene's test indicated that the homogeneity of variance is violated for weekend work, flexi-time, and teleworking during and after the Covid-19 pandemic, as the p-values < 0.05 (based on the mean). ANOVA testing determined that there are statistically significant differences in shift work, overtime, part-time jobs, and temporary work, as the p-values < 0.05. The Welch test indicates that there are statistically significant differences in the implementation of weekend work, flexi-time, and teleworking during and after the COVID-19 pandemic based on the educational level of employees, as the p-values < 0.05

The Games Howel test indicated that in the case of **weekend work**: employees with magister studies (M = 3.63) and doctoral degrees (M = 3.73) exhibit significantly higher utilization of weekend work compared to those with vocational studies (M = 2.65), four-year academic studies (M = 3.03), and master's degrees (M = 3.06). **Shift work**: there are notable differences in shift work usage between employees with vocational studies (M = 2.04) and those with bachelor's degrees (M = 2.85) and doctoral degrees (M = 3.05), indicating varied preferences among education levels. **Overtime**: individuals with magister studies (M = 3.95) and Ph.D. (M = 3.92) engage more in overtime compared to those with vocational studies (M = 2.96) and bachelor's degrees (M = 3.35) (p < 0.05). **Part-time jobs**: employees with Ph.D. (M = 3.56) demonstrate higher involvement in part-time jobs than those with vocational studies (M = 2.58). **Flexi-time**: differences in flexi-time usage are observed among education levels, with bachelor's degree (M = 4.02) showing lower utilization compared to master's (M = 4.34) and Ph.D. degree (M = 4.41). **Temporary job**: vocational studies (M = 2.38) exhibit lower engagement in temporary job compared to bachelor's (M = 3.10), master's (M = 3.16), magister studies (M = 3.53), and Ph.D. (M = 3.51). **Teleworking after Covid-19**: employees with master's (M = 4.11) and Ph.D. (M = 4.15) degrees demonstrate higher teleworking engagement compared to vocational studies (M = 3.48) and bachelor's degrees (M = 3.82).

Based on the review of previous research by the authors Thévenon, Adema, & Clarke (2016, p. 5) and Gašić & Berber (2023), and the obtained results from a sample of 582 employees in the Republic of Serbia, it can be confirmed that there are statistically significant differences in the level of application of various forms of flexible work arrangements according to level of education.

Based on the conducted t-test of independent samples by gender and univariate analysis of variance (ANOVA) by age and education level, hypothesis H<sub>0</sub> is confirmed.

## Conclusion

This study sheds light on the significant impact of flexible work arrangements on employees in the Republic of Serbia, highlighting variations in their adoption and effects across different socio-demographic groups. Employing a robust methodology that includes the CRANET research approach, independent samples T-tests (gender), and analysis of variance (ANOVA) (age and education level), we identified statistically significant differences in the utilization of FWAs among a sample of 582 employees in the Republic of Serbia.

Based on the results of the research, several practical recommendations can be made for organizations regarding FWAs: **gender-specific policies**: given that men tend to use FWAs such as flexi-time, temporary jobs, and teleworking more than women, organizations should consider implementing gender-sensitive policies. This could include promoting flexible work options that cater to diverse household responsibilities and career paths. Companies should make proper analysis of their own employee structure and decide what type they should offer to different genders. **Age-targeted strategies**: recognizing significant age-related differences in the use of FWAs, particularly with younger employees favoring flexibility like flexi-time over weekend and shift work, organizations should tailor their FWAs offerings accordingly. This might involve promoting flexible scheduling options that appeal to younger age groups while ensuring continuity with older employees who prefer teleworking. **Education-based support**: understanding that employees with higher education levels utilize weekend work and teleworking more frequently, organizations should provide targeted support and infrastructure for these groups. This could include advanced technological resources and policies that facilitate remote work and flexible scheduling. **Promotion of work-life balance**: given the positive impact of FWAs on work-life balance reported by both genders, organizations should continue promoting the benefits of flexi-time and teleworking. This could enhance employee satisfaction and retention, particularly among highly educated employees in professional roles. **Continuous monitoring and adjustment**: organizations should continuously monitor the usage and effectiveness of different arrangements. Adjustments in policies and practices may be necessary to ensure equitable access and benefit across diverse employee demographics. By implementing these recommendations, organizations can foster a supportive work environment that accommodates varying employee needs and enhances overall productivity and satisfaction.

Limitations of the research relate to the sample used in the study and the analysis being conducted for only one country, without comparison to other countries, in only one period.

Recommendations for future research include analyzing organizational characteristics using the same methodology to determine if there are statistically significant differences based on organization size, the market they operate in, headquarters location, etc. It would also be beneficial to analyze a larger sample to ensure

more relevant data. Another suggestion is to conduct a comparative analysis with other countries to compare the data.

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# How Servant Leadership Affects Job Satisfaction and Organizational Commitment in the post COVID-19 era

Како услужно лидерство утиче на задовољство послом и приврженост организацији у периоду након COVID-19 пандемије

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**Abstract:** This study aims to investigate how servant leadership influences job satisfaction and organizational commitment in the post-COVID-19 era. Its objective is to understand how servant leadership, with its focus on empathy and employee well-being, has influenced these key organizational outcomes following the challenges brought by the pandemic. Primary data were collected using a survey method, and descriptive statistics, correlation, and simple regression were employed to analyze the data. The data collection took place in September 2024, with a sample of 101 respondents. The main requirement for the sample was that respondents work in an organization located in Serbia. The results show that servant leadership significantly influences both job satisfaction and organizational commitment. These findings underscore the importance of satisfied and committed employees in driving organizational efficiency, effectiveness, and performance. This paper might be of interest to leaders, HR professionals, researchers in leadership and management, and policymakers. It offers actionable recommendations for integrating servant leadership principles into HRM strategies to strengthen team cohesion, enhance employee engagement, and improve organizational outcomes. Furthermore, the findings serve as a valuable resource for shaping future HRM decisions and strategies.

**Keywords:** servant leadership, job satisfaction, organizational commitment, COVID-19

**JEL classification:** D23, J28, M54, O15

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**Сажетак:** Ова студија има за циљ да истражи како услужно лидерство утиче на задовољство послом и приврженост организацији у периоду након пандемије COVID-19. Циљ је да се разуме како је услужно лидерство, са својим фокусом на емпатију и благостање запослених, утицало на ове кључне организационе исходе након изазова које је донела пандемија. Примарни подаци су прикупљени анкетним методом, а за анализу података коришћени су дескриптивна статистика, корелација и проста регресија. Подаци су прикупљени током септембра 2024. године, а узорак обухвата 101 испитаника. Основни критеријум за укључивање у узорак био је да испитаници раде у некој организацији у Србији. Резултати су показали статистички значајан утицај услужног лидерства на задовољство послом и приврженост организацији. Такође, резултати истичу значај задовољних и посвећених запослених за постизање ефикасности, ефективности и успешности организације. Рад може бити од интереса за лидере, стручњаке за људске ресурсе, истраживаче у области лидерства и менаџмента, као и за доносиоце одлука. Пружа практичне препоруке за интеграцију принципа услужног лидерства у стратегије управљања људским ресурсима, с циљем јачања тимске кохезије, повећања ангажовања запослених и унапређења резултата организације. Поред тога, резултати истраживања представљају вредан ресурс за креирање будућих одлука и стратегија у области управљања људским ресурсима.

**Кључне речи:** услужно лидерство, задовољство послом, приврженост организацији, COVID-19

**ЈЕЛ класификација:** D23, J28, M54, O15

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## Introduction

Leadership is one of the most extensively studied concepts within organizational behavior and management. It is generally understood as the influence a leader exerts on their followers to engage them in achieving the organization's goals and vision. Besides the three traditional approaches to leadership research—traits, behavior, and contingency—recent developments have introduced new dimensions to leadership studies, such as transformational, transactional, gender-based, charismatic, guru, and servant leadership. Servant leadership, in particular, focuses on addressing the needs and interests of others, including followers, group members, and the wider community. Modern organizational dynamics highlight the need for leaders to serve their followers, be open to various ideas and suggestions, and provide support, encouragement, and motivation for greater efforts. As a result, one of the key measures of a leader's success is the extent to which their followers are successful, satisfied, and capable of leading themselves. Effective leaders recognize the limitations of what they can achieve alone and understand that empowering and motivating their followers is essential. They leverage their influence to foster the development of other members within the organization (Stojanovic-Aleksic, 2016).

Research on servant leadership indicates its positive impact on several areas, including innovation, organizational commitment, organizational citizenship behavior, trust, creativity, self-efficacy, job satisfaction, and work-life balance (Agung et al., 2024; Howladar & Rahman, 2021). The positive influence of servant leadership on job satisfaction has been confirmed by studies conducted by Manel et al. (2023), Zarei et al. (2023), Gil et al. (2024), Saadaoui et al. (2024), and Udin et al. (2024). Regarding organizational commitment, research by Artha et al. (2023), Setiadi et al. (2023), Sihombing et al. (2024) and Zahari et al. (2024) validate a positive correlation between servant leadership and employee commitment to the organization. Although previous studies provide valuable insights from international contexts, there is a notable lack of

research conducted by domestic scholars. This research seeks to bridge that gap by examining the impact of servant leadership on job satisfaction and organizational commitment within organizations in Serbia during the post-pandemic period. The aftermath of the COVID-19 pandemic has introduced unprecedented challenges, including changes in workplace dynamics, evolving employee expectations, and heightened demands on leadership. By focusing on this unique context, the study provides new perspectives on the role of servant leadership as a vital strategy for organizations navigating the complexities of post-pandemic recovery. For the academic audience, this research contributes to a deeper understanding of servant leadership's efficacy in addressing modern workplace challenges. For practitioners, it offers actionable recommendations for leveraging servant leadership to enhance employee well-being, satisfaction, and commitment, thereby improving organizational performance in a rapidly evolving environment.

## **1. Literature review and hypotheses development**

The idea of servant leadership, introduced by Robert Greenleaf, characterizes a leader as someone who prioritizes the needs and interests of others, including their followers, group members, and community. Greenleaf argued that leadership is not a privilege but a responsibility that must be earned. This approach to leadership emphasizes a follower-centric perspective, where the leader's role is more about support than authority, with the primary aim of serving rather than controlling (Greenleaf, 1998).

Servant leadership is a style of leadership that focuses on meeting the needs of others. It involves understanding and responding to the individual needs and interests of followers through personal interactions. This approach encourages leaders to move away from self-centered behavior and develop a genuine concern for the well-being of others, both within their organization and in the wider community (Eva et al., 2019). Servant leadership is a leadership style that provides exceptional support through attention and empathy towards its followers ensuring that they feel genuinely valued and cared for by their leader.

As stated by van Dierendonck (2011), leaders who combine their wish to lead with a need to serve others show the principles of servant leadership. In this context, personal characteristics and cultural influences are significant in addition to motivational factors. Servant leadership is manifested through the empowerment and development of individuals, the expression of humility and authenticity, acceptance of others, and the provision of guidance. High-quality relationships characterized by trust and fairness are considered crucial in promoting self-development, fostering positive job attitudes, enhancing performance, and reinforcing a commitment to sustainability and corporate social responsibility within organizations.

Servant leaders not only promote the mental and emotional well-being of their teams, but they also enhance cohesion, team task performance, cooperation and connection with their followers by understanding their needs and emotions (Michel et al., 2024), positively impact on employee work attitudes and performance (Eslamdoust & Mahmoudinazlou, 2023), employee

career development (Agusta & Azmy, 2023) and loyalty through empowerment (Mohzana et al., 2023). Servant leadership could be the key for organizations seeking a competitive advantage, as leveraging employee knowledge increases the likelihood of achieving organizational success (Dimitrakaki, 2023).

Prami et al. (2022) highlight that employees are a crucial resource for any organization and need to be managed well to maximize their contributions. Job satisfaction is essential, as employees who feel uncomfortable, undervalued, or unable to reach their full potential are less likely to focus and concentrate on their work. Ensuring employees' comfort and development is essential for maintaining productivity and engagement (Hartika et al., 2023). Satisfied employees tend to develop loyalty to the company, actively participate in their work, and continuously do their best to advance performance (Subagja & Safrianto, 2020).

Job satisfaction refers to how employees feel about their work, reflecting their attitudes toward their job. It encompasses whether they have positive or negative feelings about their work or work conditions. In simpler terms, it's an employee's overall feeling of approval or disapproval regarding their job (Wibowo et al., 2023). According to most authors in this field, job satisfaction consists of several key factors, typically grouped into five areas: satisfaction from task completion, being part of a team, belonging to an organization, financial compensation, and job status. The most important elements of job satisfaction, especially in leadership contexts, include engaging and creative work, positive relationships with coworkers and supervisors, job security, autonomy, career advancement opportunities, and a healthy balance between personal and professional life (Febrian & Sani, 2023; Marić et al., 2021; Mladenović et al., 2023). Job satisfaction is related to organizational variables such as organizational culture, climate, and leadership style. A leader's behavior can enhance employee satisfaction by demonstrating humility, authenticity, and courage, forgiving followers for their mistakes, supporting and recognizing their achievements, delegating authority while holding them accountable, developing their potential, and empowering them (Akdol & Arikboga, 2015).

Several studies have examined the relationship between servant leadership and job satisfaction with contributions from various researchers (Gil et al., 2024; Saadaoui et al., 2024; Udin et al., 2024; Vrcelj et al., 2024; Zarei et al., 2023). The research conducted by these authors reveals a significant connection between servant leadership and job satisfaction. Based on this insight, we suggest the following hypothesis:

H1: Servant leadership has a positive statistically significant impact on job satisfaction.

The concept of organizational commitment, introduced by Whyte (1956), has been examined across various countries for over six decades, attracting the attention of numerous researchers (Herrera & De Las Heras-Rosas, 2021; Janošik et al., 2024; Kozak, 2020; Pratama et al., 2022; Pavlović et al., 2024; Soelton, 2023; Soomro et al., 2024). Organizational commitment refers to an individual's alignment with the organization's goals and values, a sense of belonging, and a willingness to contribute effort toward its success (Armstrong, 2006).

Organizational commitment can be viewed from two different angles. The first, developed by Porter et al. (1974) and Mowday et al. (2013), emphasizes the emotional attachment and involvement of individuals with their organization, reflected in the extent to which employees identify with the organization's values and engage in its activities. In contrast, Becker (1960) defines commitment from a more calculative perspective, viewing it as the tendency to remain engaged in a particular course of action due to the perceived costs or risks associated with pursuing alternative activities, such as leaving the organization. Since commitment is viewed as an attitude, it is distinct from job satisfaction in the following ways (Porter et al., 1979):

- **General vs. Specific Nature:** Commitment is a broader concept that reflects an individual's emotional response to the organization, whereas job satisfaction pertains to individuals' responses to their specific job or certain aspects of their job. Thus, commitment emphasizes an emotional bond with the organization as a whole, including its goals and values, while job satisfaction focuses on the particular work environment where employees perform their tasks.
- **Temporal Stability:** Organizational commitment is significantly more stable over time compared to job satisfaction. Daily events can influence the level of job satisfaction, making it a less stable measure since it reflects immediate reactions to stimuli in the work environment. In contrast, commitment develops slowly but continuously over time, in alignment with the employee's thoughts, attitudes toward the organization, and their relationship with it.

Research on this subject reveals a positive correlation between servant leadership and organizational commitment. This perspective is supported by studies conducted by Sihombing et al. (2024), Zahari et al. (2024), Setiadi et al. (2023), Artha et al. (2023), and Vrcelj et al. (2024). Based on these findings, the second research hypothesis is formulated as follows:

H2: Servant leadership has a positive statistically significant impact on organizational commitment.

## **2. Research Methodology**

An empirical study was carried out using a survey method to assess the influence of servant leadership on job satisfaction and organizational commitment. The questionnaire was created in an online format and distributed to participants through email using the Google Forms platform. The questionnaire was distributed to a total of 200 email addresses. During September 2024, 101 fully completed responses were received, resulting in a response rate of 50.5%. The target population consisted of employees from organizations located in Serbia. Participants were selected based on their employment status, with the main inclusion criterion being active engagement in an organizational setting. The sample included employees from diverse industries and hierarchical levels to ensure a comprehensive understanding of servant leadership's impact across organizational contexts. This approach aligns with previous studies on leadership that prioritize collecting data from both managerial and non-managerial employees to capture a holistic view of workplace dynamics.

The questionnaire consists of two sections. The first section includes three groups of variables, comprising a total of 25 items. Respondents expressed their opinions on a five-point Likert scale, with values ranging from 1 (strongly disagree) to 5 (strongly agree). The influence of servant leadership was measured on two variables: job satisfaction and organizational commitment. To measure servant leadership, a combination of items adapted from validated scales developed by Fields and Winston (2010) and Van Dierendonck and Nuijten (2011) was used. Job satisfaction was assessed using a modified version of the Job Satisfaction Survey by Spector (1994), while organizational commitment was evaluated using the Organizational Commitment Questionnaire by Porter et al. (1979). The inclusion of established and widely recognized instruments ensures consistency with methodologies employed in previous research, enhancing the reliability and validity of the study.

*Table 1: Variables and items of the model*

Variable	Item
Servant leadership	<i>My superior (leader) gives me all the information I need to do my job well.</i>
	<i>gives me the authority to make decisions and thus makes it easier for me to do my job.</i>
	<i>helps me develop and progress.</i>
	<i>gives me a lot of opportunities to acquire new skills.</i>
	<i>has a long-term vision.</i>
	<i>thinks that helping others is the most important thing.</i>
	<i>wants to build relationships based on trust.</i>
	<i>is always honest.</i>
	<i>does what he advocates and preaches.</i>
	<i>respects the opinions and ideas of others.</i>
<i>is looking forward to the success of his colleagues.</i>	
Job satisfaction	<i>I am well paid for the work I do.</i>
	<i>The work I do is appreciated a lot.</i>
	<i>I am satisfied with the chances for promotion at work.</i>
	<i>I get along well with my colleagues and I like working with them.</i>
	<i>The goals of the organization I work for are clear to me.</i>
	<i>I feel satisfaction when performing work tasks.</i>
<i>I feel that my efforts have been rewarded in the right way.</i>	
Organizational commitment	<i>I want to continue working for the company I currently work for.</i>
	<i>I would recommend to friends to work in this company.</i>
	<i>I am proud to be a part of this company.</i>
	<i>I am ready to make an extra effort to make the organization I work for successful.</i>
	<i>I am interested in the business and success of the organization I work for.</i>
	<i>I am extremely glad that I chose this organization among the options that were considered at the time.</i>
	<i>Working in this organization inspires and motivates me to do my job as well as possible.</i>

*Source: Authors based on Fields and Winston (2010), Van Dierendonck and Nuijten (2011), Spector (1994) and Porter et al. (1979)*

The questionnaire also includes items that gather demographic information about the respondents, such as gender, age, education level, years of service in the organization, and the size of the organization. The analysis of gender distribution among the respondents reveals that, out of 101 participants, 33 are male, making up 32.7% of the sample, while 68 are female, which constitutes 67.3%.

In terms of age distribution, the largest group of respondents (39.6%) falls within the 41 to 50 age range, closely followed by those aged 31 to 40 years (32.7%). Respondents under 30 and those between 51 to 60 each make up 11.9%, while the smallest group consists of individuals over 60 years (4%).

Examining the respondents' educational qualifications reveals a diverse range. The largest segment consists of those with bachelor's degrees (31.7%), followed by individuals with master's degrees (26.7%) and those with secondary education (21.8%). Additionally, 12.9% hold doctoral degrees, while 5.9% have vocational training, and only 1% have primary education.

Regarding the respondents' years of work experience within their respective organizations, a significant portion, specifically 37.6% (38 individuals), reported having less than five years of experience, indicating that many are relatively new to their positions. In contrast, 17.8% (18 participants) have 11 to 15 years of experience, while 16.8% (17 participants) have 6 to 10 years. Furthermore, 13.9% (14 participants) fall into both the 16 to 20 years and over 21 years' experience categories.

Concerning the size of the organization participants work for, the majority of respondents work in organizations with over 250 employees, accounting for 29%, while 28% are employed in organizations with 50 to 249 employees. Additionally, 26% of participants work in organizations with 10 to 49 employees, and the smallest group, comprising 18%, is found in organizations with 2 to 9 employees.

### 3. Results

In the data analysis, we utilized descriptive statistics, correlation, and simple regression techniques. Initially, a descriptive statistical analysis was performed on the complete sample of respondents, calculating the mean and standard deviation for each item (Table 2). Subsequently, correlation analysis was conducted to assess the relationships among the variables, followed by simple regression analysis to explore the predictive relationships. The analysis was carried out using the SPSS 26 statistical software package.

Table 2: Descriptive statistics findings for the items

Item	Mean	Std. Deviation
<i>My superior (leader) gives me all the information I need to do my job well.</i>	4.02	1.077
<i>... gives me the authority to make decisions and thus makes it easier for me to do my job.</i>	3.94	1.173
<i>... helps me develop and progress.</i>	3.58	1.194

... gives me a lot of opportunities to acquire new skills.	3.53	1.196
... has a long-term vision.	3.83	1.150
... thinks that helping others is the most important thing.	3.43	1.252
... wants to build relationships based on trust.	3.90	1.245
... is always honest.	3.39	1.257
... does what he advocates and preaches.	3.69	1.198
... respects the opinions and ideas of others.	3.63	1.222
... is looking forward to the success of his colleagues.	3.97	1.144
I am well paid for the work I do.	3.02	1.273
The work I do is appreciated a lot.	3.73	1.182
I am satisfied with the chances for promotion at work.	3.09	1.274
I get along well with my colleagues and I like working with them.	4.45	0.818
The goals of the organization I work for are clear to me.	4.18	1.117
I feel satisfaction when performing work tasks.	3.83	1.078
I feel that my efforts have been rewarded in the right way.	3.08	1.324
I want to continue working for the company I currently work for.	3.69	1.317
I would recommend to friends to work in this company.	3.46	1.360
I am proud to be a part of this company.	3.66	1.283
I am ready to make an extra effort to make the organization I work for successful.	3.98	1.131
I am interested in the business and success of the organization I work for.	4.01	1.187
I am extremely glad that I chose this organization among the options that were considered at the time.	3.98	1.200
Working in this organization inspires and motivates me to do my job as well as possible.	3.54	1.237

*Source: Authors research*

The analysis results for the entire sample indicate that the ratings of the surveyed respondents range from 3.02 to 4.45. Respondents rated their relationships and clarity regarding organizational goals highly. The statement "I get along well with my colleagues and I like working with them" received the highest average rating of 4.45, followed by "The goals of the organization I work for are clear to me" at 4.18. On the other hand, the lowest ratings were given to perceptions of compensation, with "I am well paid for the work I do" receiving an average rating of 3.02, and "I feel that my efforts have been rewarded in the right way" at 3.08. For all items, the standard deviation values range from 0.818 to 1.360, indicating a similar level of variability in the assessments of all 25 items.

The reliability and consistency of the questions for each variable were assessed using Cronbach's alpha coefficient (see Table 3). Cronbach's alpha coefficient ranges from 0 to 1, with values above 0.7 indicating satisfactory levels of reliability and internal consistency (Nunnally, 1978). Cronbach's alpha values ranged from 0.876 for Job Satisfaction to 0.953 for Servant Leadership, indicating that the items measuring these variables demonstrate strong reliability and internal consistency.

The results of the correlation analysis are presented in Table 4. Pearson's coefficient was used to evaluate the degree of interdependence among the variables in the model. The results indicate a strong correlation among the identified variables. The most significant correlation was found between Job Satisfaction and Organizational Commitment, with a value of 0.772. Additionally, the relationship between Servant Leadership and Job Satisfaction (0.662) demonstrated a stronger dependence than the connection between Servant Leadership and Organizational Commitment (0.641). The correlation matrix confirms that all correlations are statistically significant.

Table 3: Cronbach's Alpha

Variable	Cronbach's Alpha
Servant leadership	.953
Job satisfaction	.876
Organizational commitment	.948

Source: Authors' research

Table 4: Correlation matrix

	Servant leadership	Job satisfaction	Organizational commitment
Servant leadership	1	.662**	.641**
Job satisfaction	.662**	1	.772**
Organizational commitment	.641**	.772**	1

Note: \*\* The correlation is significant at the 0.01 level

Source: Authors' research

Following the descriptive statistical analysis, reliability assessment of the variables, and examination of the correlation matrix, two simple regression analyses were performed. The first analysis aimed to evaluate the effect of servant leadership on job satisfaction. The results, shown in Table 5, demonstrate a statistically significant influence of servant leadership on job satisfaction ( $\beta = 0.662$ ,  $t = 8.783$ ), confirming the study's first hypothesis. Furthermore, it is worth mentioning that the independent variable explains 43.8% of the variance in job satisfaction ( $R^2 = .438$ ).

Table 5: Simple regression analysis (dependent variable: job satisfaction)

Variable	$\beta$	t	Sig.	$R^2$
Servant leadership	0.662	8.783	.000**	.438

Note: \*\* The result is significant at the level of 0.01

Source: Authors' research

Table 6: Simple regression analysis (dependent variable: organizational commitment)

Variable	$\beta$	t	Sig.	$R^2$
Servant leadership	0.641	8.306	.000**	.411

Note: \*\* The result is significant at the level of 0.01

Source: Authors' research

The findings from the simple regression analysis (Table 6) indicate a statistically significant effect of servant leadership on organizational commitment ( $\beta = .641$ ,  $t = 8.306$ ), thus confirming the second hypothesis of the study. Additionally, the independent variable explains 41.1% of the variance in organizational commitment ( $R^2 = .411$ ).

## **Discussion and Conclusion**

The servant leadership theory emphasizes that leaders prioritize the needs of their followers, considering them as intrinsic values rather than as tools to achieve organizational objectives. This approach centers on addressing the needs of followers, promoting their personal and professional growth, and leads to various advantages, including enhanced innovation, trust, creativity, job satisfaction, organizational commitment, organizational citizenship behavior, self-efficacy, and a better work-life balance.

This study involved research conducted with a sample of 101 respondents to assess the impact of servant leadership on job satisfaction and organizational commitment in the aftermath of the COVID-19 pandemic. The survey results reveal a notable overrepresentation of female respondents compared to males. Most participants are aged between 31 and 50, indicating a young to middle-aged group. Additionally, many respondents have higher education degrees, and a large portion has less than 10 years of work experience, suggesting a younger workforce overall. Most participants work in larger organizations, indicating a preference for big institutions. Further, respondents rated their relationships and clarity regarding organizational goals highly. The statement "I get along well with my colleagues and I like working with them" received the highest average rating of 4.45, followed by "The goals of the organization I work for are clear to me" at 4.18, and "I am interested in the business and success of the organization I work for" at 4.01. Conversely, the lowest ratings were given to perceptions of compensation, with "I am well paid for the work I do" receiving an average rating of 3.02, and "I feel that my efforts have been rewarded in the right way" at 3.08. Overall, while interpersonal relationships and clarity of goals are perceived positively, concerns surrounding fair compensation and recognition of efforts highlight areas that require improvement and action. Addressing these issues can significantly enhance job satisfaction and organizational commitment, creating a more motivated and engaged workforce. Implementing strategies for transparent reward systems and consistent recognition can help organizations foster a culture of appreciation and fairness, ultimately benefiting both employees and the organization as a whole.

The research findings demonstrate that servant leadership significantly influences both job satisfaction and organizational commitment, validating the study's hypotheses. Simple regression analysis reveals that servant leadership accounts for 43% of the variance in job satisfaction ( $R^2 = 0.438$ ) and 41% of the variance in organizational commitment ( $R^2 = 0.411$ ). These results highlight the importance of servant leadership in fostering positive workplace outcomes, showing that leadership style not only enhances job satisfaction but also plays a crucial role in promoting employees' commitment to their organization. However, the slightly higher influence on job satisfaction suggests that leadership practices have a more immediate effect on

employees' day-to-day experiences compared to the longer-term development of organizational commitment. The results align with prior research by Gil et al. (2024), Saadaoui et al. (2024), Udin et al. (2024), Sihombing et al. (2024), and Zahari et al. (2024) highlighting the importance of servant leadership and its positive influence on job satisfaction and organizational commitment, particularly in the post-pandemic period.

This research underscores the critical role of servant leadership in fostering employee satisfaction and organizational commitment, particularly in the post-COVID-19 era. These findings carry significant implications for leaders, HR professionals, researchers, and policymakers, offering both theoretical and practical insights into leveraging servant leadership to address contemporary workplace challenges. Adopting servant leadership helps create supportive work environments that prioritize employee well-being, engagement, and loyalty, which are essential for navigating post-pandemic challenges. Leaders who practice empathy and focus on employee growth strengthen team cohesion and build a resilient culture. HR professionals can integrate servant leadership into HRM strategies through training programs, leadership development, and performance evaluation systems that reward servant leadership behaviors. This approach enhances organizational efficiency, effectiveness, and performance by fostering trust, mutual support, and innovation, which ultimately drive employee retention and long-term success. Policymakers can promote servant leadership through guidelines and incentives that align with labor policies focusing on employee well-being. Academically, this study adds empirical evidence to leadership literature, providing insights for further research across various industries and cultural contexts. The findings also guide future organizational strategies, such as mentoring, flexible work policies, and wellness programs, and suggest refining leadership assessments to promote servant leadership behaviors. Overall, this study offers valuable contributions to both academic research and practical HRM strategies for enhancing organizational outcomes.

The study has several limitations that must be taken into account. Firstly, the sample size is relatively small, which may affect the reliability and generalizability of the findings. Secondly, there is a notable gender imbalance among the respondents, with a significantly higher proportion of female participants than males, which could influence the overall results. Additionally, the age distribution is heavily skewed towards individuals aged 31 to 50, suggesting that the sample mainly reflects the views of younger and middle-aged employees. This limitation may overlook the insights and experiences of older workers or those who are new to the workforce. Lastly, the majority of participants come from larger organizations, which might not accurately represent the experiences of individuals employed in small or medium-sized businesses. This could limit the findings' applicability across various organizational settings.

For future research, it is recommended to improve the questionnaire by adding new items that reflect emerging trends in servant leadership and employee behavior in the post-COVID environment, including aspects such as remote work dynamics and mental health. Furthermore, utilizing more advanced analyses like Confirmatory Factor Analysis (CFA) or Structural Equation Modeling (SEM) would provide a better understanding of the latent factors influencing

the observed model. Conducting research at regular intervals would also enable the assessment of changes in servant leadership and other relevant phenomena.

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# Company value analysis: Empirical evidence from Western Europe

## Анализа вредности компаније на узорку западноевропских земаља

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**Abstract:** The assessment of the future sustainability of the company is based on the analysis of its value. In order to find the best way to maximize value and improve corporate performance, this paper aims to research factors that determine the value of Western European companies in the time period 2017-2022. The influence of financial determinants such as financial leverage, profitability, size, liquidity, growth, and dividend payout ratio on company value was thoroughly analyzed. The research is based on a sample of 321 companies, creating 1926 observations. To process the data, panel regression analysis is used. Research results presented that leverage and profitability have a positive impact of statistical significance, while company size and liquidity have the opposite impact of statistical significance. Indicating the positive and negative impact of the analyzed indicators on the value of the company creates a basis for the optimal use of available funds, strengthening the competitive position, and meeting the information needs of all internal and external stakeholders.

**Keywords:** Company value, Indicators, Western Europe

**JEL classification:** M40

**Сажетак:** Анализа вредности компаније значајна је за процену њене одрживости у будућности. У циљу проналажења најбољег начина да се максимизира вредност предузећа и унапреди корпоративни учинак, у раду су истражени фактори који одређују вредност западноевропских компанија у временском периоду 2017-2022 година. Детаљно је анализиран утицај финансијских детерминанти као што су финансијски леверџи, профитабилност, величина, ликвидност, раст и коефицијент исплате дивиденде на вредност компаније. Истраживање је засновано на узорку од 321 компаније, стварајући 1926 опсервација. За обраду података коришћена је панел регресиона анализа. Резултати истраживања показали су да леверџи и профитабилност имају статистички значај позитиван утицај, док величина предузећа и ликвидност имају статистички значајан негативан утицај. Процењом позитивног и негативног утицаја анализираних индикатора на вредност предузећа ствара се основа за оптимално коришћење расположивих средстава,

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јачање конкурентске позиције и задовољавање информационих потреба свих интерних и екстерних стејкхолдера.

**Кључне речи:** вредност компаније, индикатори, Западна Европа  
**ЈЕЛ класификација:** М40

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## **Introduction**

The company value can be an expression of the value of the assets that are owned by the company, and which are essential for its management and the state of the company so that with a good company value, potential investors will have a good opinion about the company (Endri, 2018). There is a correlation between high company value and high shareholder prosperity, so a higher share price leads to a higher company value. Shareholders expect high share value because it brings high profits for them.

Enterprise value would be measured by Tobin's Q, price-earnings ratio (PER), price sales ratio and price-to-book value ratio (PBV). In this paper, the value was measured by the PBV ratio. The value of the Price Book ratio above 1 or higher market value than the company's book value, indicates the company's success from the aspect of creating shareholders' value. On the other hand, a value of the Price Book ratio below 1 indicates an undervaluation of the company. A higher PBV value implies that the market believes in the company's prospects. This value can be also used to evaluate companies with negative earnings values, as well as companies that cannot use earnings ratios (Hasangapon et al., 2021).

Bearing in mind that every company needs to adapt to the digital environment changes (Vuković et al., 2023), the aim of this paper is to research the effect of financial indicators on company value. In that direction, the paper measured the impact of leverage, profitability, firm size, liquidity, growth, and dividend payout ratio on firm value. If the financial indicators do not have satisfactory values, investors will not be interested in investing in the company, which leads to a decrease in its value. By analyzing Western European companies' financial statements in the period 2017-2022, a model of optimal company value will be built in the paper, which will lead to the growth and maximization of the company value, while improving their long-term performance. Firm value has been an interesting research topic of previous and current researchers in international frameworks (Asiri & Hameed (2014); Winarto (2015); Endri (2018), Le Ha & Minh (2018), Natsir & Yusbardini (2019), Husna & Satria (2019), Radja & Artini (2020), Soetjanto & Thamrin (2020); Renaldi et al. (2020); Bahraini et al. (2021)). To our knowledge, no research has been done on the observed sample and in the analyzed period. The research results can serve the management and other employees to improve the financial indicators that affect the growth of the market value of the company. A company's value can also provide information about the financial strength of the company, that is, the access and availability of internal and external sources of funds.

The structure of the paper begins with an Introduction, after which previous research is presented in the Theoretical Background. The analyzed sample and applied methodology are shown in Data and Methodology, after which the results are presented and interpreted in

Results and Discussion. Finally, limitations and future research recommendations are presented in the Conclusion.

## 1. Theoretical Background

To enhance operational and financial policies related to the distribution of current resources and acquisition of new ones, managers employ financial performance indicators in their strategic decision-making processes (Lehenchuk et al., 2023). In order to provide a comprehensive overview of the company's financial performance and position, financial reporting serves as a vital component of communication with stakeholders (Mladenović et al., 2023). There are many external and internal factors that directly or indirectly influence the value of the company. Chosen financial variables will be presented below based on previous theoretical and empirical studies.

Companies should consider the capital structure when making their financial decisions, impacting the earnings and shareholders' risks. Debt to equity ratio which is used in the paper as a variable for measuring capital structure, indicates the company's sources of financing so that a greater volume of borrowing leads to a greater risk of bankruptcy. A higher indebtedness level also indicates that the company's operations create a greater shareholders risk. Alpi (2020) showed the significant negative effect of leverage measured by debt to equity ratio on firm value. A higher debt to equity ratio affects the company's ability decline, so that it cannot manage equity effectively in order to make a revenue. If company's debt level is too high, it is considered that any additional borrowing would lead to a decrease in the company's value, since there is an understanding by investors that any additional borrowing creates a burden for the company (Winarto, 2015). Suhadak & Nuzula (2014) pointed out that a high indebtedness level means that the company has a low internal financing level, and a low finance investments ability, which, along with high risks of inability to meet obligations, leads to the company's bankruptcy, confirming the significant negative impact of debt to equity on company value. Furthermore, Paminto et al. (2016) stated that debt to equity ratio has a significant negative impact on the value of oil palm plantations in Indonesia, which means that the companies managed a capital structure that overcomes the optimal structure and leads to the maximization of the company's share price.

Starting from the fact that leverage represents debt usage in order to increase investment or project returns, Bahraini et al. (2021) indicated a significant positive impact of debt to equity ratio on firm value which means that liabilities growth policy is a positive signal for the investor that affects the company value. Likewise, Endri (2018) confirmed significant positive relationship between capital structure and firm value. Borrowing leads to an increase in the company's value up to a certain level, after which the increase in borrowing reduces company' value. Research results of Mubyarto (2020) also showed significant positive influence of debt to equity ratio on firm value, emphasizing that additional borrowing that relies on signaling theory provides information that is important for creditor confidence, which positively reflects on company value. Pradika & Dwiati (2021) also showed significant positive impact of debt to equity ratio on company performance and emphasized that the goal of company in the direction of maximizing company value, should rely on the financial management tasks, so that financial decisions affect each other, and also the value of the

company. Soetjanto et al. (2020) showed that there is a positive influence of debt to equity ratio on the value of companies in the industry of consumer goods during 2013-2017 period, noting that the capital structure below optimal level means that each borrowing leads to an increase in the company's value until the balance between the benefits and costs of borrowing is ensured. Rizqia & Sumiati (2013) also showed significant positive influence of debt to equity ratio on company value, determining that leverage is a tool used by the company to reduce the agency problems.

Niar et al. (2018) found a positive insignificant relationship between debt to equity ratio and value of Indonesian manufacturing companies in the time period 2014-2016. Saputri & Bahri (2021) also found a positive insignificant impact on the company's value, which means that it does not influence investors in evaluating the company's performance. The valuation of investors is based on the leverage value, so that a high value of leverage affects the valuation of the company's low value by investors due to the greater volume of borrowing in relation to equity. These results were also confirmed by Sukmawardani & Ardiansari (2018) who stated that debt to equity ratio does not affect value of Indonesian manufacturing companies during the period 2012-2016, explaining that the debt policy is used to make decisions on external financing in order to increase the funds of company from the aspect of meeting operational needs. A positive insignificant influence of debt to equity ratio on company value was also found in research results of Sudiani & Wikusana (2018) stating that the capital structure aims to improve the productivity and performance of the company.

On the other hand, Rasyid (2015) found an insignificant negative impact of debt to equity ratio on firm value and that companies in the consumer goods industry used debt capital to a greater extent than their own capital, which was indicated by the debt increase from year to year. He explained that the capital structure is important from the aspect of realizing the company's goals aimed at maximizing profits and minimizing risks. Khuzaini et al. (2020) confirmed insignificant impact of debt to equity ratio on value of Indonesian companies in the service industry sector during 2013-2015 period.

Relying on previous theoretical and empirical research, we set the following hypothesis:

Hypothesis 1 (H1): There is a positive effect of statistical significance between financial leverage and company value.

High profitability as an expression of good corporate performance affects the positive reaction of investors to the company's value growth (Husna & Satria, 2019). If the company is not able to achieve a satisfactory level of profitability, it will jeopardize the continuity of its business. Profitability has an impact on the company value so that external stakeholders view the company from the perspective of maximizing profits, investments, and company performance which leads to its improvement. Vukoje et al. (2022) state that factors which impact the company's profitability consequently affect its economic sustainability. Tica et al. (2023) researched the repercussions of the Covid-19 pandemic on companies' profitability, emphasizing its potential as a basis for successful operations prediction. Marković & Savović (2022) state that enhancements in profitability can be attained by increasing cost efficiency and optimizing the management of business assets.

By measuring profitability through the return on employed assets, the company's net profit is determined, which is generated based on the contribution of the company's assets (Hasangapon et al., 2021). Analyzing the business of wholesale and retail Indonesian companies in the time period 2016-2019, Hasangapon et al. (2021) found that there is a significant positive impact of return on assets on firm value. Conducting a sector analysis on a sample of all listed firms in Bahrain Bourse in the period from 1995 to 2013, Asiri & Hameed (2014) concluded that ROA is the most important factor in determining the value of the company, and that there is a statistically significant positive relationship between return on assets and firm value. Significant positive influence of ROA on company value was confirmed in research results by Radja & Artini (2020) who stated that higher ROA of companies will provide the company easier business activities financing, as well as research results of Rusnindita (2020) who stated that the high rate of return on the employed funds and in a reasonable period of time will ensure good company's performance prospects. This research result is in accordance with the research conducted by Rasyid (2015) who indicates that the company's profitability is one of the options that serves to precisely determine the extent to which the return rate based on investment activities will be realized.

The research results of Rizqia & Sumiati (2013), Endri (2018), Husna & Satria (2019) and Natsir & Yusbardini (2020) also showed a significant positive relationship between return on assets and firm value. Contrarily, the negative impact of profitability measured by return on assets on firm value was found in research conducted by Aggarwal & Padhan (2017). Finally, Sukmawardini & Ardiansari (2018) and Sondakh (2019) found insignificant effect of ROA on firm value, which may be a consequence of inadequate use of available funds resulting in low net income, and the fact that the company's profit is often not an expression of its size.

Bearing in mind previous mentioned research, we set the following hypothesis:

Hypothesis 2 (H2): There is a positive effect of statistical significance between profitability and company value.

A variable size is measured by total assets, showing that a large value of total assets indicates that the company has a sufficient volume of funds for the realization of operational activities. Atiningsih & Izzaty (2021) showed that there is a significant positive relationship between size and company value, emphasizing that a large company is characterized by good business running stability. This tendency is in accordance with the requirements of the signaling theory which assumes that companies with higher total funds provide a positive signal to investors about the company's business. Furthermore, Natsir et al. (2019) found significant positive impact on company value, determining that total assets serve to assess the size of the company in order to take advantage of potential investment opportunities and market share potential. Management should strive to improve the performance of the company's assets so that the funds contribute to the growth of the company's value. Pradika & Dwiati (2021) confirmed significant positive influence of company size, that reflects the company's success in the operations management process, on value. They indicated that large companies are participants in the capital market, which enables them to sell easily, bearing in mind that capital markets are influenced by the unique conditions of a specific national economy (Marić

& Ignjatijević, 2023). Investors are interested in buying shares of registered companies which affects the higher company's value. Sondakh (2019) also found significant positive influence of size on the company value, mentioning that the company's size has impact on the ease of obtaining external and internal sources of funds. Concluding that the company's size shows the company's development level in business, Rizqia & Sumiati (2013) also confirmed significant positive effect of size on the value of manufacturing companies.

By analyzing the business of Indian hospitality firms during 2001-2015, Aggarwal & Padhan (2017) found a significant positive impact of size on the company's value, explaining that large companies use the advantages of diversification and are protected from unfavorable fluctuations in cash flows. Size is inversely related to the probability of bankruptcy, as it reduces the costs of financial distress. Husna & Satria (2019) also found a significant positive influence of size on company value, stating that the companies with a large volume of assets are in the maturity stage, have good business prospects in a stable period, and indicate the possibility of profitable business compared to companies with a small volume of assets. High assets of the company indicate positive cash flow and good company's prospects in a long period, as well as research results of Radja & Artini (2020).

Bahraini et al. (2021) also found a significant negative influence of the value on the company's size, explaining that the excessive size of the company represents a negative signal for investors because it causes inefficiency in monitoring the management operations and plans, resulting in a decrease in the value of the company. Rusnindita (2020) also found a significant negative impact of size on the company value.

Finally, Hasangapon et al. (2021) found an insignificant relationship between company size and value, stating that investors can be reassured about investing due to the company's size, which will make the company's shares more appealing to investors. The size of the company can affect obtaining external sources of financing, due to the volume of funds that can serve as a guarantee. By analyzing the business of manufacturing Indonesian companies, Winarto (2015) also found that size does not significantly influence the firm value during the period 2005-2010.

Bearing in mind the literature review in the field of company size, we set the following hypothesis:

Hypothesis 3 (H3): There is a positive effect of statistical significance between size and company value.

Liquidity is a key variable of company value and each company strives to achieve an optimal liquidity level which affects corporate financing activities (Le Ha, 2018). With greater liquidity, companies can more easily finance investments and settle their short-term obligations. High liquidity means that the company is in a safe zone and far from bankruptcy risk due to the inability to smoothly settle its obligations. A low level of liquidity represents a negative signal in the company's operations because it makes it difficult to settle obligations and affects the decline or stagnation of the company's activities (Pradika, Dwiaty, 2021).

Aggarwal & Padhan (2017) found that liquidity has a significant positive impact on the value of Indian hospitality companies during the period 2001-2015, so financial

institutions should provide funds to ensure uninterrupted operations. Similarly, Sondakh (2019) found that liquidity has a significant positive effect on company value. Greater liquidity indicates a higher level of the company's ability to secure funds for the payment of dividends to shareholders. On the other hand, Kristianti & Foeh (2020) found that liquidity has a significantly negative effect on the value of pharmaceutical companies, as well as Sukmawardini & Ardiansari (2018) who stated that a high liquidity indicates inactive assets that are not used in operational management activities, so a higher value of the current liquidity ratio affects the company value.

Endri (2018) found an insignificant impact of current liquidity on company value, on the grounds that liquidity is a determinant of the company's success, and that meeting cash needs and resources to secure them indicates the company's risky areas. Husna & Satria (2019) also found an insignificant impact of liquidity on company value which means that the investor does not consider the current liquidity ratio when investing funds. Research results of Renaldi et al. (2020) confirmed that liquidity does not affect the company's value. They stated that a decrease in investor interest can lead to a decrease in demand for shares, resulting in a decrease in the market value of the share, as well as the company's value. Soetjanto et al. (2020) also confirmed the insignificant impact of liquidity on company value.

Bearing in mind theoretical background in the field of liquidity, we set the following hypothesis:

Hypothesis 4 (H4): There is a positive effect of statistical significance between liquidity and company value.

The growth of the company affects the growth of value and the company's strengthening, as well as the economic activity growth. Research results of Niar et al. (2018) found a statistically significant positive impact of growth on the company value, mentioning that the rapid growth of companies affects the achievement of positive business results in conditions of competitive changes, significant sales growth, and market expansion. Companies that achieve a high growth rate need a larger volume of funds in the future, especially external financing in order to meet the needs for capital investment and growth financing. The growth of asset value affects the growth of investors' expectations regarding potential investments and expected benefits. Aggarwal & Padhan (2017) confirmed a significant positive impact of growth on the company value. On the other hand, research results of Rasyid (2015) showed a significant negative impact of growth on the value of Indonesian companies in the consumer goods industry during 2009-2013 period. Similarly, research results of Salim & Susilowati (2019) showed that the growth of assets had a significant negative impact on the value of the Indonesian food and beverages companies during the period 2013-2017, so the decline in the growth rate impacted the investor's perception about the value of the company.

Positive but insignificant impact of the growth on the company value was confirmed by Alpi (2020) who stated that companies that achieve high asset growth are able to use resources in the direction of making a profit and ensuring the growth of company's assets which indicates adequate management of the company.

Bearing in mind literature overview about growth, we set the following hypothesis:

Hypothesis 5 (H5): There is a positive effect of statistical significance between growth and company value.

The company relies on its dividend policy to estimate how much of the profits it will distribute to shareholders and how much it will invest. An appropriate dividend policy will ensure the company's investment profit in future, so with a higher volume of distributed dividends and more investment possibilities, the company's value will grow (Atiningsih & Izzaty, 2021). However, the high value of the dividend distributed to shareholders affects the low value of the company's undistributed profit, which affects the company's difficult investment conditions.

According to the Dividend Irrelevance Theory, the dividend policy does not influence the value of the company. On the other hand, The Bird in Hand Theory assumes that a high dividend value affects the growth of the company's value, as stated by Winarto (2015) who found that dividend payout ratio has a statistically significant positive impact on the company value. The obtained results are consistent with the signaling theory, and the payment of dividends is viewed as a positive indicator of the company's earnings, thereby driving share price growth. Similarly, Sudiani & Wikusana (2018) showed that the dividend policy achieved a statistically significant positive impact on the value of Indonesian manufacturing companies during 2013-2016, indicating that shareholders are more likely to distribute profits through dividends rather than capital gains. The growth of the dividend payout ratio will affect the growth of share prices, which affects the company's value growth. Accordingly, Kristianti & Foeh (2020) showed significant positive impact on the value of Indonesian manufacturing companies in pharmaceutical sector during 2013-2017. On the other hand, research results of Sondakh (2019) found a significant negative impact of dividend policy on company value showing that investor confidence is growing as a result of reduced dividend payments. The policy of greater reliance on dividends in relation to capital gains is more popular since dividends are more certain and less risky.

Husna & Satria (2019) found an insignificant impact of dividend payout ratio on the company value mentioning that dividend payout ratio can't be seen as a tool for evaluating value in production companies, but that the dividend policy is important in evaluating the company's finances. Paminto et al. (2016) also found an insignificant positive impact of dividend on the company value stating that the payment of dividends shows the management's ability to manage the company, thereby encouraging shareholders to reinvest in the company. The dividend policy evaluates the company's ability, so that it affects the share price. Renaldi et al. (2020) also found insignificant impact of dividend policy on the company value stating that a higher value of the dividend paid to shareholders indicates a company with better performance, which affects the investor's assessment through share prices. Saputri & Bahri (2021) confirmed an insignificant impact of dividend policy on the company value mentioning that the company's dividend policy is in line with expectations of shareholders because the payment of dividends is linked to the growth of share prices and is a sign that a company is performing well.

Bearing in mind previous research studies about dividend policy, we set the following hypothesis:

Hypothesis 6 (H6): There is a positive effect of statistical significance between dividend payout ratio and company value.

## 2. Data and Methodology

The basic source of data are financial statements taken from the TP Catalyst database (Bureau Van Dijk, 2023). Based on the available data for the calculation of dependent and independent variables in the time period 2017-2022, the final sample included 321 companies, generating 1926 observations. The sample included very large, large, and medium-sized active companies. Given that these types of companies have good growth prospects, they provide an adequate basis for evaluating optimal company value indicators. Statistical program Stata 13 was used for data processing. Price book value as a measure of company value was observed as a dependent variable, while Debt to Equity ratio, ROA, Company size, Liquidity, Growth and Dividend Payout ratio were observed as independent variables. Table 1 presented dependent and independent variables included in the model.

Table 1: Overview of type, name and calculation method of variables

Variable type	Variable name	Calculation method
Dependent	PBV	(Market value per share/Book value per share)
Independent	Debt to Equity ratio	Total Debt/Equity
	ROA	Net income/Assets
	Company size	Ln Total assets
	Liquidity	Current assets/Current liabilities
	Growth	Total Assets <sub>t</sub> - Total Assets <sub>(t-1)</sub> /Total Assets <sub>(t-1)</sub>
	Dividend payout ratio	Total dividends/Net income

Source: Authors' illustration

Empirical analysis consisted of descriptive statistics, correlation matrix, and multiple regression analysis. To test regression model, panel data analysis was applied in the paper. Accordingly, we set the following model:

$$PB_{it} = \beta_{it} + \beta_1 ROA + \beta_2 DER + \beta_3 LIQ + \beta_4 SZ + \beta_5 GROW + \beta_6 DPR + u_{it}$$

$i$  - company ( $i = 1,2,3,\dots, n$ ),  $t$  - year ( $t = 1,2,3$ )

PB - P/B value (of the company)

ROA – Profitability

DER- Debt to Equity Ratio (Financial leverage)

LIQ – Liquidity

SZ- Size

GROW- Growth

DPR- Dividend Payout Ratio

### 3. Results and Discussion

Descriptive statistics results are presented in Table 2.

Table 2: Descriptive statistics

Variable	Obs	Median	Mean	Std. Dev.	Min	Max
PBV	1,926	1.393	2.510	2.944	0.199	43.557
DebttoEquity	1,926	0.654	1.436	9.643	0.000	226.919
ROA	1,926	4.396	6.400	7.938	-35.530	68.206
Firmsize	1,926	13.574	13.696	1.871	7.725	20.667
Currentratio	1,926	1.580	4.021	8.594	0.026	97.508
Growth	1,926	0.049	0.093	0.257	-0.999	2.813
Dividendpayout	1,926	48.400	127.871	761.310	0.331	23656.140

Source: Authors' calculation

In order to reduce the possibility of extreme values influence in the sample, the average values were analyzed based on the median value, not the arithmetic mean value. The median value of PBV is 1.393 which shows the higher market than book value of observed companies. It means that Western European companies have earning capacity and realize future growth and development potentials. The value of PBV ratio varies between 0.199 to 43.557 which means that there are also companies in the sample that create concerns of investors about the future potential for growth. Median value of debt to equity ratio showed that 1 dinar of capital corresponds to 0.654 dinars of debt which is less than the reference value below 1. Measuring the riskiness of investing in a company, this indicator should be as low as possible. Observing the sample of Western European companies, it shows a satisfactory level of company's indebtedness, given that the Western European companies are mostly financed from their own sources of financing. The average company profitability in the sample is 4.40%, which is below the reference value of 10%. The profitability values of Western European companies fluctuate from -35.53 to 68.21 which means that the sample includes unprofitable companies that are unable to fertilize the employed assets, and companies that achieve a high rate of return on the employed assets. The average company size value was 13.574 with no significant value dispersions. The mean value of the current liquidity ratio of 1.58 shows that the observed Western European companies are not, on average, able to cover their short-term liabilities by using available current assets. High value dispersion of current liquidity ratio from 0.026 to 97.508 showed that the sample included highly liquid companies and companies with difficulties in terms of maintaining liquidity in the future. The average value of dividend ratio distributed to net income (DPR) is 48.40 with high value dispersions from 0.331 to 23656.14, which showed that the majority of observed European companies use a large percentage of net income to pay dividends.

Table 3. Results of autocorrelation and heteroscedasticity presence test

Test	Test Statistics Value	p Value
Wooldridge test	F(1,320) = 11.329	0.0009
Breusch-Pagan/Cook-Weisberg test	chi2(1) = 2162.08	0.0000

Source: Authors' calculation

According to obtained results of the Wooldridge test in Table 3, which evaluated the presence of data autocorrelation, there is a statistical significance ( $p=0.0009<0.05$ ), which implies the first-order autocorrelation. Breusch-Pagan/Cook-Weisberg test results in Table 3 that analyze the existence of heteroskedasticity, showed that the p value is below the significant level ( $0.0000<0.05$ ), thus confirming heteroskedasticity.

Table 4 presents the results of the multicollinearity check between independent variables, using variance influence factors (VIF) and 1/VIF (TOL). The VIF parameters for all variables are below 10. TOL coefficient falls below 0.1 which indicates the existence of a high correlation among independent variables.

Table 4. Multicollinearity presence test results

Variable	VIF	1/VIF
Firmsize	1.10	0.909
DebttoEquity	1.06	0.948
ROA	1.04	0.958
Currentratio	1.04	0.960
Growth	1.04	0.964
Dividendpayout	1.00	0.998
Mean VIF	1.05	

Source: Authors' calculation

Stata allowed estimating a panel-corrected standard error (PCSE) model with a correlation structure aimed for the panel data model residuals. This runs a panel data regression with the independent variables and takes into account potential serial correlation and heteroscedasticity.

Table 5. Regression model evaluation

Variable	Coefficient	Standard Error	t	P >  t	[95% Conf. Interval]	[95% Conf. Interval]
DebttoEquity	0.029	0.007	4.32	0.000	0.016	0.043
ROA	0.061	0.007	8.90	0.000	0.048	0.075
Firmsize	-0.114	0.031	-3.72	0.000	-0.175	-0.054
Currentratio	-0.024	0.003	-8.45	0.000	-0.030	-0.019
Growth	-0.262	0.172	-1.52	0.129	-0.600	0.076
Dividendpayout	-0.000	0.000	-0.47	0.642	-0.000	0.000
_cons	3.541	0.434	8.15	0.000	2.690	4.393

Source: Authors' calculation

Presented results in Table 5 showed that financial leverage measured by debt to equity ratio has a statistically significant positive impact on the value of Western European companies which confirmed hypothesis 1. Consequently, borrowing on a larger scale by

Western European companies increases their value and is a positive sign for investors since they can expand their operations, provide the necessary funds for operational activities and assume sustainable cash flow in the future. Obtained results are in accordance with the research results of Winarto (2015), Natsir et al. (2019), Renaldi et al. (2020), Rusnindita (2020), and Radja & Artini (2020). Therefore, results showed that profitability measured by return on asset has a statistically significant positive impact on the company value which confirmed hypothesis 2. Bearing in mind that profitability is essential for maintaining company's activities in the long-term, it is obvious that Western European companies strive to ensure a high and stable profitability level. Obtained results are in accordance with Moldigliani and Miller's relevance theory of profitability, which assumes that value of Western European companies is determined by the profitability's level or it is defined by their ability to make profit based on available assets. In Western European companies, management policies aim to increase net income, since high profits indicate company's good future prospects. Obtained results are also in accordance with the research results of Suhadak & Nuzula (2014), Salim & Susilowati (2019) and Atiningsih & Izzaty (2021).

According to presented results, company size has a statistically significant negative impact on the company value, thus rejecting hypothesis 3. It means that Western European companies fail to raise a sufficient volume of funds for business development, and that the size is not an indicator of the financial strength of these companies. Obtained results are also in accordance with research results of Asiri & Hameed (2014) who stated that the smaller the company, the higher its value to investors, or the larger the company, the lower its attractiveness to investors. Furthermore, Liquidity measured by current ratio has a statistically significant negative impact on the company value, so hypothesis 4 is rejected. Large cash amount indicates a lower level of cash circulation, which leads to Western European companies' yield decrease, and consequently to a decrease in their value. The management of Western European companies obviously used funds inefficiently, which meant that the liquidity was above the optimal level and caused a decrease in the value of their companies. Obtained results are in accordance with the research results of Winarto (2015) and Bahraini et al. (2021).

Variable Growth has a negative, but insignificant impact on the company value which means that growth in assets does not affect the investor's attitude about the company's value which is in accordance with the research results of Paminto et al. (2016) and Rusnindita (2020). Likewise, dividend payout ratio also has an insignificant impact on the company value, so that the dividend amount distributed to shareholders does not impact the company's value which is in accordance with research results of Sukmawardini & Ardiansari (2018) and Khuzaini et al. (2020).

## **Conclusion**

Achieving the maximum value for the company relies on relevant information about the company, measurable decisions, and maximum control over the company's operational performance (Pradika & Dwiaty, 2021). Measuring the company value in the market through

the share price is an expression of the real financial performance of listed companies (Rachmi & Heykal, 2020).

The aim of this paper is to develop a model of optimal company's value by measuring the influence of independent variables such as leverage, profitability, company size, liquidity, growth, and dividend payout ratio on the value of Western European companies in the time period 2017-2022. The results showed that financial leverage measured by debt to equity ratio has a positive impact of statistical significance on the company value. Increasing borrowing by Western European companies leads to a greater success in achieving their goals and a growing sense of trust in the company, which increases their value. Variable profitability has a positive impact of statistical significance on the value of Western European companies which indicates that high profitability is an expression of good operations of Western companies, which positively affects the perception of investors and the value growth of these companies.

Company size and liquidity had a negative impact of statistical significance on the company value. The size of Western European companies does not provide flexibility to the management in terms of the available assets' usage, nor does it serve to improve business operations. The size of the Western European companies obviously does not represent a positive signal to investors from the aspect of future perspective, which does not affect the growth of their trust, the share price's growth and consequently their value. The higher liquidity of these companies affects the decline in their value, which means that the company liquidity was poorly managed. Western European companies do not achieve optimal liquidity, which implies that they do not properly manage their assets, and therefore investors believe that large inactive assets affect the impossibility of generating additional profits.

Through more detailed insight into the value and improvement of company performance, this paper creates a basis for future research and provides added value for further research in this area. In the future research, the factors of company value related to certain industries or sectors should be analyzed. In addition, it is possible to make a comparison between the value factors of the companies in the Eastern European markets with those of the Western European markets. Besides those mentioned, other financial variables can be considered, as well as non-financial variables. In addition, macroeconomic variables can be considered.

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# Bibliometric analysis of digital transformation on organization design

## Библиометријска анализа дигиталне трансформације на организациони дизајн

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**Abstract:** Digital transformation has become a key driver of change in modern organizations, reshaping their design and way of functioning. This paper aims to investigate how digitalization has impacted organizations and their organizational design, using a bibliometric approach to analyze research trends in this area. Using the Bibliometrix software package in the R programming language, bibliographic data analysis was performed in order to identify the most influential authors, key topics and future research directions. The study analyzed a dataset of 175 publications in English from the period 2000-2023, sourced from Web of Science Core Collection database, focusing on research articles discussing digital transformation and organizational design. Bibliometrix application was used to perform the bibliometric analysis, which included co-citation, keyword analysis, and thematic mapping to reveal core trends and influential papers in the literature. The study reveals that digital transformation significantly alters organizational structure and role distribution, often decentralizing power and increasing flexibility within companies. These findings align with theories on dynamic capabilities and suggest that further research could focus on how digital transformation supports agility in organizational design, providing practical insights for adapting organizations to digital era demands. Future research on the impact of digital transformation on organizational design could focus on artificial intelligence integration, digital skill requirements, hybrid structures, blockchain technology, as well as challenges and strategies for managing data security and privacy.

**Keywords:** digitization, organizational design, information technologies, artificial intelligence, organization, bibliometric analysis

**JEL classification:** L22, D02, M15

**Сажетак:** Дигитална трансформација је постала кључни покретач промена у савременим организацијама, преобликујући њихов дизајн и начин функционисања. Овај рад има за циљ да истражи како је дигитализација утицала на организације и њихов организациони дизајн, користећи библиометријски приступ за анализу трендова истраживања у овој области. Коришћењем софтверског пакета Библиометрикс, у програмском језику Р, извршена је анализа библиографских података у циљу идентификације најутицајнијих аутора, кључних тема и будућих праваца истраживања. Студија је анализирала скуп података од 175 публикација на енглеском језику из периода 2000-2023, добијених из базе података Web of Science Core Collection, фокусирајући се на истраживачке чланке који говоре о утицају дигиталне трансформације на организациони дизајн. Библиометрикс апликација је коришћена за обављање библиометријске анализе, која је укључивала коцитирање, анализу кључних речи и тематско мапирање да би се открили кључни трендови и утицајни радови у литератури. Студија открива да дигитална трансформација значајно мења организациону структуру и дистрибуцију улога, често децентрализујући моћ и повећавајући флексибилност унутар компанија. Ови налази су у складу са теоријама о динамичким способностима и сугеришу да би се даља истраживања могла фокусирати на то како дигитална трансформација подржава агилност у организационом дизајну, пружајући практичан увид за прилагођавање организација захтевима дигиталне ере. Будућа истраживања о утицају дигиталне трансформације на организациони дизајн могла би се фокусирати и на интеграцију вештачке

интелигенције, захтеве за дигиталним вештинама, хибридне структуре, блокчејн технологију, као и изазове и стратегије за управљање безбедношћу података и приватношћу.

**Кључне речи:** дигитализација, организациони дизајн, информационе технологије, вештачка интелигенција, организација, библиометријска анализа

**ЈЕЛ класификација:** L22, D02, M15

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## Introduction

Digitization is more than simply introducing new technologies into business; it is a comprehensive strategic initiative that requires fundamental changes in the way organizations function (Kretschmer & Khashabi, 2020). This process involves redefining the organizational design and business model, thus adapting the organization to new digital opportunities and market needs. Technology has long been recognized as one of the key factors shaping organizational forms and structures, which is widely accepted among academic researchers (Thompson & Bates, 1957). Its role in defining the way companies function is becoming increasingly important with the development of new technological achievements. Organizations that successfully integrate digital technologies into their business can realize numerous benefits, including increasing operational efficiency, improving customer experience and significantly strengthening their competitive position in the market. Such changes not only enable organizations to be more agile and innovative, but also help them better respond to dynamic changes in the environment. Given that organizations today operate in a very dynamic business environment that is heavily influenced by digitalization, the purpose of the paper is to map and explore the impact of digitalization, information technology (IT) and artificial intelligence on organizational design.

The main areas of impact of digital transformation, as the author Kuusisto (2017) points out, include organizational learning, digital innovation, organizational agility, business ecosystems and adaptation of organizational structures. These factors help companies adapt to changes faster, improve innovation and optimize internal processes to achieve a successful digital transformation. The organizational structure, as a segment of the organizational structure, has a key role in improving the level of business excellence (Nielsen, Spasenić & Stevanović, 2024). Digital transformation, as defined by Hess et al. (2016), refers to changes that digital technologies bring to business models, products or organizational structures of companies. This represents one of the biggest challenges for managers in the past and future decades. Although technology plays a key role, the presence of trained employees and managers is also necessary in order to realize its full potential. In the study of Omol et al. (2023), the terminology of digitalization has changed over time, so that the term "digital transformation" has only started to be used in scientific research since 2010. Authors Nadkarni and Prügl (2020) analyze the growth of academic research on digital transformation, focusing on 58 studies published between 2001 and 2019. The authors identify two key dimensions: technology and actors, developing nine core themes that help understand the digital transformation process. It also points to under-researched aspects such as the speed of transformation, work culture and the role of middle management. In this paper, bibliometric analysis was used, which fundamentally involves the application of

statistical methods to scientific articles and other publications in order to gain insights into the dynamics of publication within a certain discipline. Bibliometric analysis is a methodological approach used to quantitatively study publications, often including scientific papers or books (Junquera & Mitre, 2007; Merigó & Yang, 2017). The main goal of the study is to identify the most relevant research and the latest trends based on data from the Web of Science Core Collection (WOS CC) database.

Specifically, the paper aims to answer three research questions:

- R.Q.1: Which authors have made the most significant contributions to research on the impact of digitization on organizational design?
- R.Q.2: What are the key topics associated with research on digitization and organizational design?
- R.Q.3: In which direction could future research on the impact of digital transformation on organizational design develop?

The paper is structured into three main sections. The first section briefly presents a literature review of the impact of digitalization on organizational design. Second, the methodology section explains the bibliometric approach, which applies quantitative techniques to bibliographic data, highlighting its significance in analyzing scientific literature and research trends systematically. The results section focuses on three key aspects: performance analysis, network analysis and science mapping. Performance analysis evaluates the contributions of researchers, institutions, and countries based on publication volume, citations, and impact indices, while science mapping examines relationships between research entities, thematic linkages, and the development of knowledge networks in digital transformation and organizational design. Finally, the conclusion summarizes key findings, discusses research gaps, and proposes future directions, emphasizing the relevance of bibliometric methods in advancing the understanding of digital transformation in management and business studies.

## 1. Literature review

Digitalization has a significant impact on organizational design, as it changes the way organizations function, communicate, and make decisions. As a result of IT replacing most of the coordination and control roles of the hierarchy, new forms of organizational structure can be developed that are process-oriented rather than function-oriented. This new coordination role of IT makes it a key component in the structure of organizations, and it is no longer possible to design or modify organizations without taking into account the role of IT. Also, it is emphasized that research into the dynamics of human behavior within organizations must take into account the influence of information technologies (Zammuto, 2007). Based on the bibliometric analysis, we can conclude that the impacts of digital transformation are reflected in various aspects of the design of organizations. First of all, the change of organizational structures, which means that digital transformation requires

reorganizing traditional hierarchical structures according to more agile and flexible models (Kaiser & Buxmann, 2012; Fabac, 2021).

Decentralized structures enable faster decision-making, better innovation management and adaptation to changes in the digital environment. In addition, technology plays an important role in decision-making, in the form of artificial intelligence (AI) and data analytics that are key tools in strategic decision-making (Raj & Seamans, 2019; Dixon, 2021). These technologies enable organizations to respond more quickly to changes in the market, increasing operational efficiency and reducing risks. New forms of work are also more ubiquitous because digital transformation supports new work models such as remote work and hybrid work (Lang & Zhao, 2000; Kingma, 2019). These changes affect organizational design as work processes, communication channels and collaboration tools need to be redefined. In order to successfully implement digital transformation, organizations must invest in the development of employees' digital competencies. This often implies the creation of new roles and functions within the organization that are focused on managing digital tools and processes (Chang, 2011; Maragno et al., 2023; Wulff & Finnestrand, 2024). Modern digital technologies and the Fourth Industrial Revolution have significantly transformed the way organizations operate and interact with both their internal and external environments. The digitalization of business has led to the expansion of innovative business models, changes in work processes, and a redefinition of the relationship with employees (Barjaktarović, 2023).

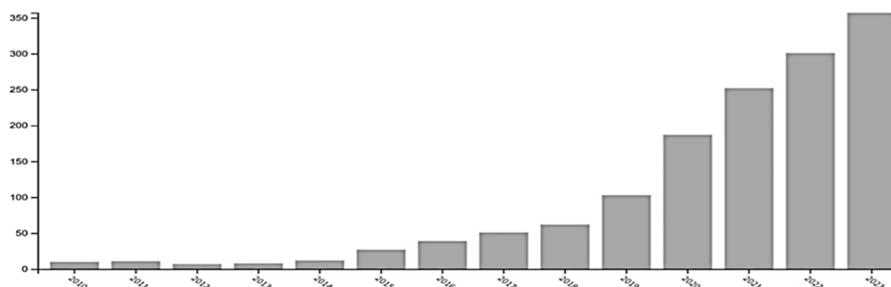
Changes occur in culture and leadership as digital transformation affects not only technology, but also organizational culture (Calhoun et al., 2008; Nold & Michel, 2016). Leaders should promote a culture of innovation, rapid adaptability and openness to new technologies, which changes traditional leadership styles (Kolbjornsrud, 2024). Using automation and digital tools can significantly reduce operational costs while improving efficiency. This requires the optimization of organizational processes through the application of digital solutions (Mabe et al., 2022; Roth & Farahmand, 2023). Also, digital transformation allows organizations to become more competitive in the market thanks to the speed of innovation, improved customer service and greater flexibility in business (Wulff & Finnestrand, 2024). In addition, there is a growing discussion of the evolution of managerial roles. Managers in digitally transformed organizations face the need to acquire new skills to effectively manage changes in the technological environment. These skills include not only understanding and using new technologies, but also the ability to lead hybrid teams, often working in a combination of physical and digital spaces. In such environments, managers must develop capabilities such as agility, digital literacy, effective remote communication, and managing diverse team dynamics to ensure team productivity and cohesion.

## 2. Methodology

The bibliometric methodology involves quantitative techniques applied to bibliographic data. Bibliometric analysis techniques can be divided into two main categories: performance analysis and science mapping (Donthu et al., 2021). Performance analysis includes assessing the contributions of various researchers, institutions, or countries in a specific field, based on

quantitative indicators such as the number of publications, citations, and impact indices. On the other hand, science mapping focuses on exploring the relationships and connections between different research actors, such as collaborations among scientists, thematic linkage of papers, and the development of knowledge networks within a specific discipline. Nowadays, these analyses are becoming increasingly popular due to the development of large databases such as Scopus and WOS. Bibliometric analysis is a comprehensive research method used for the systematic study of scientific literature and the development of various disciplines. The primary goal of this method is to provide objective and measurable data on the scientific performance and impact of researchers, papers, institutions, and countries, as well as on trends and relationships within specific research fields. While bibliometrics was first discussed in the 1950s, its impact on fields such as business, management, and social sciences has only grown recently (Donthu et al., 2020; Donthu et al., 2021). A search of the WOS CC database with the keyword “bibliometrics” from 2010 through 2023 shows an overall upward trend in the use of this methodology in Management and Business research (Figure 1).

Figure 1: Annual publication of bibliometric papers in the field of Management and Business



Source: the author's research

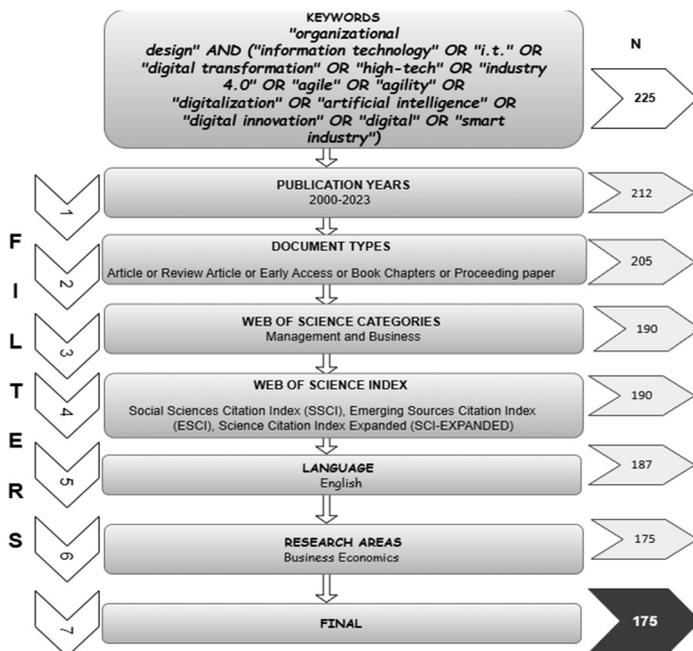
Data analysis usually uses specialized software tools such as VOSviewer, CiteSpace, or the Bibliometrix package in R. These tools allow visualization of citation networks, analysis of publication trends, identification of key papers and authors in specific scientific fields, and mapping of how scientific disciplines develop and intertwine. For the purposes of this research, Bibliometrix was used within the programming language R, which offers a wide range of functionalities for quantitative analysis of bibliographic data. Given its versatility and depth of analysis, Bibliometrix has become a popular tool among researchers engaged in this type of data analysis, providing powerful tools for in-depth understanding of scholarly communication. Bibliometrics is used not only in academia to assess research impact and trends, but also in industry, government agencies, and other sectors that rely on scientific discovery and innovation. The results of bibliometric analyses are used for policy formulation, strategic planning in education and research, as well as for evaluation and management of research performance.

Ramos-Rodríguez and Ruíz-Navarro (2004) contributed to the understanding of how bibliometric data can be used for an objective view of scientific production, which enables a

better understanding and management of knowledge inside and outside the academic community. Bibliometric research is designed to efficiently manage and analyze large amounts of data. These analyses include various metrics such as: citation count, which indicates how many times a paper has been cited and helps assess its impact; H-index, it is a measure that helps quantify the productivity and citation impact of individual scientists or researchers and co-citation or analysis that looks at how often certain papers are cited together, which can indicate related areas of research or collaboration between authors. For the purpose of this research, the WOS CC scientific database was searched and a total of 175 primary papers were collected, which were identified based on the set keywords.

The keywords used in this research on the impact of digital transformation on organizational design are "organizational design" AND ("information technology" OR "i.t." OR "digital transformation" OR "high-tech" OR "industry 4.0" OR "agile" OR "agility" OR "digitalization" OR "artificial intelligence" OR "digital innovation" OR "digital" OR "smart industry") where the end result was 175 scientific articles (with filters included). As a next step, the inclusion criteria will be presented to better illustrate how the database searches and the selection of papers were conducted (Figure 2). Those criteria include the choice of time frame of published publications, types of documents, Web of Science categories, language, WOS index and research areas.

Figure 2: The process of selecting documentation for bibliometric analysis



Source: the author's research

Our investigation of relevant papers in the field of bibliometric analysis provided insight into the number of documents required for this type of analysis. The sample is acceptable in light of the results from other similar studies. Thus, the authors Aria and Cuccurullo (2017) included 304 documents in their research for the purpose of bibliometric analysis for the period from 1985 to 2015, while the author Schad and his colleagues (2016) included 133 papers in the analysis for the period from 1990 to 2014.

After the selection of scientific documentation, the sources were imported into R studio, and then the Bibliometrix package was opened, based on which the following results will be displayed: descriptive analysis of publications from the sample and the introductory report, annual scientific production, scientific sources, average citations by year, the most relevant and the most productive authors, number of articles per author, frequency of scientific productivity distribution, author keywords, publication data by geographic area, map and network of collaboration between authors from different countries, as well as the selection of key clusters in digitalization research in the field of organizational design.

### **3. Results and discussion**

The results of the study are presented in three main segments. The first part presents a performance analysis and a visualization of digitalization trends in the domain of organizational design. This section also analyzes the most cited publications in the observed time period from 2000 to 2023, as well as the most influential scientific journals and the most productive authors. The second part presents the mapping of science, which allows for the exploration of the conceptual and cognitive structures of research, the discovery of key themes and connections between different fields. Using techniques such as co-citation analysis, keyword analysis and citation analysis, a network of related studies, terms and authors is visualized, which helps to better understand the evolution of specific research topics. The third part presents a network analysis that provides insight into which scientists and organizations are most connected, where the largest collaborations occur, and what research benefits from international collaboration.

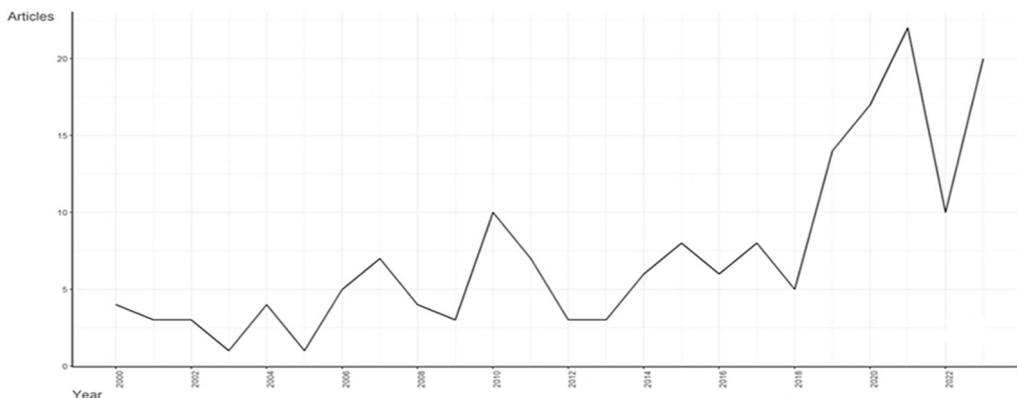
#### **3.1. Performance analysis**

Performance analysis is a key component of bibliometric analysis that focuses on the quantitative measurement of the contribution of researchers, institutions, countries or journals in a certain scientific field. It provides an insight into who are the most influential authors, which journals publish the most relevant papers, and which papers are most cited. A more detailed analysis of performance allows researchers to understand the bigger picture of how a scientific field is developing and what are the key points of progress (Donthu et al., 2021).

The first analysis report in Bibliometrix shows the introductory report or first information about all scientific publications. The publications cover the period from 2000 to 2023, and provide an overview of research during the last two decades. The data was collected from 135 different sources, reflecting the diversity of literature reviewed. The

annual growth rate of 7.25% shows that there was a constant growth in the number of published scientific documents during the analyzed time period. The average age of the documents is 8.5 years, which suggests that the documents are relatively current. Analyzing the years of publication and the number of publications per year, we can draw several conclusions about the trends and dynamics of publication on the topic of the impact of digital transformation on organizational design. The general trend of increasing the number of publications over time, especially since 2010 (number of documents: 10), is visible, which coincides with the research of the authors Omol et al. (2023). The number of publications on this topic declined significantly in 2012 (number of publication: 3). This is followed by the increase in the number of published articles (year: 2015, number of publication: 8). Despite a decline in 2018 (number of publication: 5), the number of published documents increased from 2019 onward (number of publication: 3). There is a growing interest in this topic, which may reflect an increasing understanding of how crucial digital transformation is to the modern business world. In addition, this period is called the beginning of the Big data and Deep learning era in the study authored by Martinovic and colleagues, while the period from 2000 to 2010 is called the Internet era. The largest increase in the number of publications was recorded at the beginning of 2021 (number of publication: 22), while at the beginning of 2022 publication numbers on the topic of digitization in organizations dropped sharply (number of publication: 10). A closer examination of the causes of that decline reveals that many researchers turned their attention to the post-covid situation and its impact on organizational design at that time. Already at the beginning of 2023, an enormous increase in the number of published publications was recorded (number of publication: 20), which is to some extent expected considering that the authors mostly researched the effects of artificial intelligence on organizational design. Therefore, we conclude that the end of 2022 marks the beginning of a new era called the Artificial Intelligence era.

Figure 3: Trend of published publications by year



Source: the author's research

Overall, the trend of an increasing number of publications suggests the increasing importance and recognition of the impact of digital transformation on organizational design.

It is an area that continues to attract academic and practitioner attention, encouraging further research into how technology is shaping modern organizational structures and processes.

A paper published in 2003 stands out with an exceptionally high average number of citations per article (370.00). Authored by Levin and Ross, the study highlights that companies outsource IT services due to cost advantages offered by external providers. However, it remains unclear whether providers can genuinely achieve these advantages, especially for large firms that could potentially replicate such benefits within their own operations. In IT outsourcing literature, client reasons for outsourcing and client-provider relationships are extensively examined, while the provider's perspective is underexplored. Their study analyzes supplier strategies and practices in a long-term successful engagement, revealing that provider success relies on developing core competencies that complement organizational design.

Papers from 2000 also show a high number of citations (161.00 per article), and their annual citation average (6.44) shows that they are still relevant. In 2000, the studies authored by Garicano and Sambamurthy and Zmud stand out. Garicano's study focuses on the ways knowledge is organized within manufacturing firms, specifically investigating how hierarchical structures affect the efficiency and distribution of knowledge. Garicano analyzes how knowledge and information are used in decision-making at different levels of the organization and how this affects the firm's performance. He also considers how technological advances, especially in information technology, can change traditional hierarchical structures and lead to more efficient management and organization of knowledge. In their research, Sambamurthy and Zmud represent an attempt to shed light on how companies should organize their IT resources to adapt to the demands of the digital economy, where rapid technological change and new business models are transforming the way companies operate. Special emphasis is placed on the concept of a platform as a means of structuring IT operations, which helps visualize how IT activities should be managed in the light of new organizational requirements. The idea is to rethink traditional approaches to management and resources and develop them into more complex structures that are in line with network architectures and basic IT capacities, thus offering a fresh perspective and new approaches to the management of the IT sector in modern firms. A 2007 study by Zammuto and colleagues examines the impact of information technology on the structure and functions of organizations.

Since the 1950s, interest in the relationship between technology and organizational structure has declined even as information technologies have become ubiquitous and significantly changed the way organizations function. Instead of a traditional hierarchical management model, today's organizations are increasingly organized around the possibilities provided by IT, enabling innovations such as visualization of work processes, flexibility in product and service development, virtual and mass collaboration, as well as advanced simulations. These changes are not only technological but the result of the interaction between IT and organizational practices. The authors suggest that existing theories of organization do not fully capture these changes, therefore they propose new approaches that consider the combined impact of IT and organizational characteristics on modern

organizations. Their research, which deals with the impact of IT on the organizational structure, shows that information technologies are no longer just tools, but key elements that shape the way of coordination and control within modern organizations (Zammuto et al., 2007).

Table 1: Top 15 most cited articles

Authors	Title of the article	Name of the source	Year of publication	Number of citations on WOS
Zammuto, RF; Griffith, TL; Majchrzak, A; Dougherty, DJ; Faraj, S	Information technology and the changing fabric of organization	Organization Science	2007	606
Garicano, L	Hierarchies and the organization of knowledge in production	Journal of Political Economy	2000	440
Levina, N; Ross, JW	From the vendor's perspective: Exploring the value proposition in information technology outsourcing	Mis Quarterly	2003	370
Leeflang, PSH; Verhoef, PC; Dahlström, P; Freundt, T	Challenges and solutions for marketing in a digital era	European Management Journal	2014	269
Amit, R; Han, X	Value Creation through Novel Resource Configurations in a Digitally Enabled World	Strategic Entrepreneurship Journal	2017	212
Sambamurthy, V; Zmud, RW	Research commentary: The organizing logic for an enterprise's IT activities in the digital era - A prognosis of practice and a call for research	Information Systems Research	2000	185
Straub, DW; Watson, RT	Research commentary: Transformational issues in researching IS and net-enabled organizations	Information Systems Research	2001	162
Teece, DJ; Linden, G	Business models, value capture, and the digital enterprise	Journal Of Organization Design	2017	149
Roh, J; Hong, P; Min, H	Implementation of a responsive supply chain strategy in global complexity: The case of manufacturing firms	International Journal of Production Economics	2014	136
Guadalupe, M; Wulf, J	The Flattening Firm and Product Market Competition:	American Economic	2010	115

	The Effect of Trade Liberalization on Corporate Hierarchies	Journal-Applied Economics		
Ancarani, A; Di Mauro, C; Mascali, F	Backshoring strategy and the adoption of Industry 4.0: Evidence from Europe	Journal of World Business	2019	112
Murray, A; Rhymer, J; Sirmon, DG	HUMANS AND TECHNOLOGY: FORMS OF CONJOINED AGENCY IN ORGANIZATIONS	Academy of Management Review	2021	105
Guadalupe, M; Li, HY; Wulf, J	Who Lives in the C-Suite? Organizational Structure and the Division of Labor in Top Management	Management Science	2014	98
Chalmers, D; MacKenzie, NG; Carter, S	Artificial Intelligence and Entrepreneurship: Implications for Venture Creation in the Fourth Industrial Revolution	Entrepreneurship Theory and Practice	2021	95

*Source: the author's research*

Authors Amit and Han propose a conceptual framework to examine how digitalization reshapes firms' resource configurations, emphasizing the need for a value-centered, systematic approach. Their analysis focuses on how digital-driven resource configurations allow firms to organize resources more efficiently and create new value through collaboration with partners and customers. They highlight the growing importance of digital business, which requires companies to adopt a value-creation-oriented perspective for designing and organizing resources. Murray, Rhymer, and Sirmon (2021) explore how advanced technologies, capable of analyzing large data sets and operating autonomously, impact organizational routines and development. They propose four interaction types between humans and technology: assistive, stop-gap, augmenting, and automation technologies. Each type influences how organizations adapt and evolve, affecting organizational routines and feedback responses over time, underscoring the need for strategic consideration of technological choices in organizational design. Leeflang, Verhoef, Dahlström and Freundt (2014) identify key challenges marketers face in a dynamic environment, including big data integration, digital channel management, and personalization in customer interactions. To address these challenges, they propose approaches such as data-driven decision-making, digital channel management, integration and automation, and customer engagement. Findings suggest that talent focus, adaptable organizational design, and practical metrics offer the greatest improvement opportunities for organizations. The article by Chalmers, MacKenzie and Carter examines how AI is transforming processes, practices, and outcomes in entrepreneurship, analyzing its effects on production and sales. They discuss how AI changes organizational design and enhances business activities, while also highlighting potential negative economic and social impacts, particularly on traditional small businesses at risk in an AI-driven economy. The article calls for a research focus on these challenges to better understand and address them in the future. Artificial intelligence (AI) is viewed as a transformative, general-purpose technology that, along with other Industry 4.0 technologies

such as machine learning, blockchain, and quantum computing, significantly impacts organizational development. These technologies not only shape business formation decisions but also affect the quality of life of founders. Author Villalba-Diez is primarily known for his research on Industry 4.0. One of his studies, conducted with Losada, Benito, and Gonzalez-Marcos, focuses on analyzing the impact of organizational structures in the context of Industry 4.0, specifically examining the issue of dual leadership and its coordination with the company's strategic goals. The study explores how a dual reporting line, where one subordinate reports to two leaders, affects the leaders' ability to align with the organization's strategic objectives. The implementation of quantum circuits as decision-making models enables the analysis of these dynamics through two scenarios: one where leaders do not communicate with each other and another where there is communication. Results from 500 quantum circuit simulations show that in the scenario without leader communication, alignment with strategic goals rarely occurs for both leaders simultaneously. However, in the communication scenario, there is a significantly higher probability that both leaders will align with the strategic goals, with alignment probability exceeding 90%. These findings emphasize the importance of effective communication and coordination between leaders in complex organizational structures, especially in dynamic and technologically advanced environments like Industry 4.0 (Villalba-Diez et al., 2021). Additionally, in one of his studies, Villalba-Diez analyzes the challenges of strategic organizational design in highly complex cyber-physical systems typical of Industry 4.0. In such environments, leaders often have to make decisions without complete certainty regarding the correctness and impact of those decisions on other parts of the organization (Villalba-Diez & Zheng, 2020).

The journal quality analysis shows that research on the impact of digitalization on organizational design is primarily published in high-ranking journals. The most articles in this analysis were published in "Management Science," indicating that it is a highly regarded journal in the field of organizational design and management. Journals in the Q1 quartile are usually the most cited and have the greatest influence in their respective fields.

Table 2: The most relevant sources

Sources	Articles	Category quartile
Management Science	7	Q1
Sustainability	5	Q2
Journal Of Organization Design	4	Q3
Mis Quarterly	4	Q1
Ieee Transactions on Engineering Management	3	Q1
Information Systems Research	3	Q1
Journal Of Business Research	3	Q1

Source: the author's research

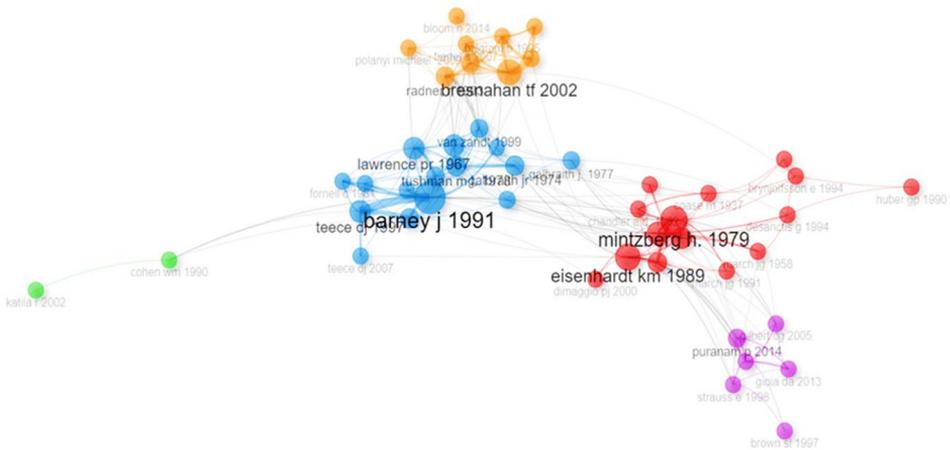
### 3.2. Science mapping

Science mapping is a technique used in bibliometric analysis to visualize and analyze the relationships between different research entities, such as authors, publications, topics, institutes or research areas. Unlike performance analysis, which focuses on quantifying the contributions of individuals or institutions, science mapping aims to identify and display

structural and dynamic relationships within scientific communities and disciplines (Tunger & Eulerich, 2018; Donthu et al., 2021). In this paper, two science mapping techniques were selected: (1) Co-citation analysis, and (2) Co-word analysis.

**Co-citation analysis** is a scholarly mapping technique used to reveal the intellectual structure of a research field by analyzing publications that are frequently cited together, the assumption being that publications that share common citations have a similar thematic orientation. Thus, this method enables the identification of basic themes and thematic clusters in a certain area of research (Rossetto et al., 2018; Donthu et al., 2021).

Figure 4: Co-citation Network



Source: the author's research

The co-citation network shows how specific papers are interconnected through shared citations, providing insights into key authors and topics within a research field. This map highlights a total of five clusters. The first cluster contains leading references, with 15 nodes, including papers like Eisenhardt (1989) and Mintzberg (1979), which are foundational contributions in organizational theory and strategic management. These papers are frequently cited as they offer fundamental conceptual frameworks for exploring the complexity of organizational structures and strategic management, making them key reference points for further theoretical and empirical studies in this field. The second cluster, with 16 references, includes works by Barney (1991) and Teece (1997), which focus on concepts crucial for understanding strategic resources and dynamic capabilities in organizations. Barney (1991) explores sources of sustainable competitive advantage in strategic management, while Teece (1997) examines how companies can adapt to changing market conditions through innovation and resource reorganization. These works are often cited for their deep insights into how organizations can sustain competitive advantage in dynamic and complex business environments. The third cluster consists of only two nodes, while the fourth cluster includes six nodes. Notable articles here are by Clark G. Gilbert (2005) and Puranam et al. (2014).

Gilbert analyzes two forms of inertia in organizations: resource rigidity (relating to unchangeable investment patterns) and routine rigidity (relating to inflexible organizational processes). Using data from news organizations facing the rise of digital media, he shows that a strong perception of threat can reduce resource rigidity but increase routine rigidity. Puranam et al. (2014) discuss whether new theories are needed to explain new forms of organizing or if existing theories can encompass them. The fifth and final cluster contains nine nodes, including works by Bresnahan (2002) and colleagues, who explore the role of information technology as an enabling technology. Without useful applications, IT has little value, but valuable applications often arise from IT innovations, pushing the boundaries of possibilities in the economy. IT is also defined as a general-purpose technology with broad applications across various sectors, meaning advancements in IT can have wide-ranging impacts on the economy.

Unlike other scientific mapping techniques, such as citation analysis, co-citation, and bibliographic coupling, which focus on publications, **keyword co-occurrence analysis (co-word analysis)** focuses on the content of the publications themselves, particularly the authors' keywords or words from titles, abstracts, or the entire text. This technique assumes that words that frequently appear together have a thematic relationship. It can also be used to predict future research directions by analyzing keywords related to recommendations and future guidelines from existing studies. In this way, the technique provides insight into the future of the research field (Burton et al., 2020; Donthu et al., 2022). Figure 5 illustrates the terminology that most frequently appears in research papers on the impact of digital transformation on organizational design.

Figure 5: TreeMap



Source: the author's research

The most commonly mentioned term indicates that management is a central theme in research concerning organizational design and digital transformation. This can include aspects such as change management, leadership, and strategic management. The high frequency of the term "performance" highlights the importance of evaluating organizational performance in the context of digital transformation. This may encompass business

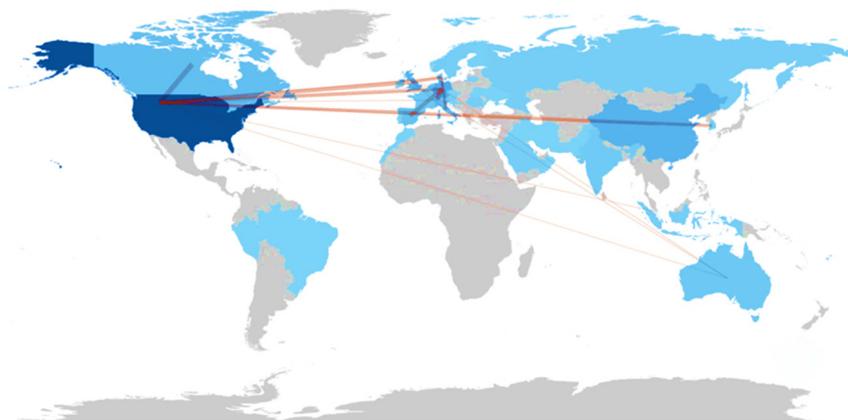
performance, productivity, and efficiency. The strong focus on information technology emphasizes its crucial role in enabling and supporting digital transformation processes. The frequent appearance of the term "innovation" underscores its significant role in research, particularly in how technological advancements can enable new ways of working and doing business.

### 3.3. Network analysis

Given the increasingly complex methodology and theoretical treatment of topics in research, co-author collaboration has become common, as the contribution of different authors can bring greater clarity and richer insights into research. Collaborating scientists form networks whose study can help advance scientific disciplines. This analysis helps identify research clusters from specific regions and can encourage collaboration in underrepresented parts of the world. It also enables the tracking of intellectual development through collaborative networks, providing scholars with the opportunity to identify key players in the field and potential future collaborators. Co-authorship analysis is an important tool for understanding the dynamics and evolution of research communities, as it indicates how collaborations can influence the development of new ideas, theories and methods within a scientific field (Cisneros et al., 2018; Donthu et al., 2021).

Figure 6 illustrates a network of international collaborations among different countries in research on the impacts of digital transformation on organizational design. This collaborative map highlights the interconnectedness and international nature of research and academic endeavors. Germany, the USA, the United Kingdom and Australia stand out as central hubs with many connections. These countries have the most extensive cooperation networks, which indicates their significant role in global research networks. Regional partnerships are evident, such as those between Germany and its European neighbors (Spain, Switzerland), which show frequent collaborations. The US exhibits a wide network of international cooperation, cooperating with a large number of countries including Australia (2), Canada (5), China (2), the United Kingdom (4), Germany (3), Croatia (1), Denmark and France (2), Korea (3), Switzerland (2) and other countries. Australia's collaborations with Austria (1), Fiji (1), Canada (1), Denmark (1), France (1), Germany (2), the USA (2) and the United Kingdom (2) demonstrate Australia's wider geographic diversification in partnerships, covering Europe, North America and the Pacific.

Figure 6: Countries' Collaboration World Map



Source: the author's research

The countries with the richest cooperation with foreign authors are marked with the deepest blue color. Countries marked in gray have not cooperated at all with other countries in terms of research on the impacts of digital transformation on organizational design. The intensity of the color blue depends on the strength of the network that the authors of individual countries have created with other countries.

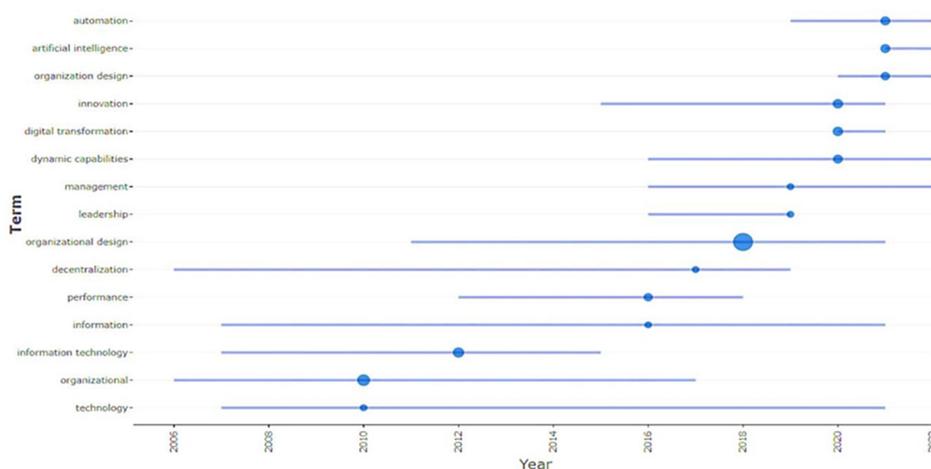
The thematic maps in the Bibliometrix software are used for the visual presentation of different clusters of related themes or keywords based on their frequency of co-occurrence in publications. The map highlights several key clusters (Figure 7), each representing a specific thematic focus in the analyzed literature:

- Cluster 1: Business Model – This cluster includes keywords such as "competitive advantage," "strategic planning," and "sustainability." It focuses on the structure of business models and their impact on competitive advantage and strategic planning within organizations.
- Cluster 2: Innovation – This cluster includes keywords such as "innovation," "management," and "ethnography," indicating the study of how innovation and management are connected, particularly in the context of organizational change and the adoption of new technologies.
- Cluster 3: Production – This cluster addresses terms like "production," "Industry 4.0," and "small and medium enterprises (SME)," focusing on production processes and the digital transformation in the industry.
- Cluster 4: Knowledge Sharing – This cluster covers terms such as "knowledge sharing," "organizational structure," and "communication," emphasizing the importance of organizational communication and knowledge management in improving performance and fostering innovation.



"decentralization" dominated from 2006 to 2017. In the following years, terms like "organizational design" and "information technology" became central, with the highest activity recorded between 2011 and 2021. A particularly significant increase is observed in the terms "digital transformation" and "artificial intelligence," which became dominant from 2020 onward, reflecting the current changes driven by digitization and automation. Additionally, themes such as "leadership," "dynamic capabilities," and "management" gained more prominence in recent years, particularly between 2016 and 2023. These trends indicate the growing influence of technology, particularly artificial intelligence and digital transformation, on organizational design and management. At the same time, traditional concepts like "performance" and "innovation" remain relevant, with a renewed focus on the innovations enabled by technology.

Figure 8: Trend topics



Source: the author's research

Trend analysis of the key topics leads to the conclusion that automation, AI, digital transformation, and adaptive capabilities will have a greater impact on organizational management and design in the future. Organizations have to adapt to these technological changes in order to be competitive since concepts such as "digital transformation" and "artificial intelligence" are relatively new and are growing rapidly. This implies that, at least with regard to technology, innovation will be integral to maintaining economic advantage and productivity. From these trends, one might deduce that future organizational studies and practices will focus on incorporating new technologies into regular business operations and, simultaneously, facilitate leadership and flexibility.

## Conclusion

Digital transformation remains critical for the survival and development of contemporary organizations. As much as it presents challenges, its impact on organizational design leads to

significant improvements in operational efficiency, competitiveness, and adaptability to enable organizations to remain relevant in a dynamic market environment.

Villalba-Diez and co-authors explore how the principles of quantum computing can be used to enhance strategic organizational design in the context of Industry 4.0. This paper presents an innovative approach to strategic organizational design, using quantum computing to simulate decision-making networks expressed as quantum circuits. This enables not only faster information processing but also new possibilities for simulating and optimizing organizational structures in real-time. In addition to management applications, the proposed quantum-based approach can also be useful in technological domains that have been widely applied in recent years. In 2020, in their article, Villalba-Diez and co-authors examine the impact of the subordinate-leader relationship in Industry 4.0 using quantum simulations of decision-making networks. The results show that subordinates can influence leaders, and they also identified fractal behavior in these relationships, suggested by oscillations in the exchange of energy between the two agents, depending on interdependence parameters. These findings answer the research question of the study R.Q.1.

The most common key terms related to the research topic include innovation, performance, organizational management and decision-making, business process automation, strategy, and knowledge organization. Trend analysis shows that some topics such as "information technology," "organization", and "performance" have consistently appeared in research papers over time. This answers the research question R.Q.2.

Nevertheless, there are several limitations to this research. First, reliance on bibliometric data is limited to the publication output available. Second, digital transformation is a dynamically developing topic; therefore, some key trends cannot be captured by current databases. Third, the limitation comes with the choice of databases since different databases vary in their coverage, particularly when the subject matter is an interdisciplinary one like digital transformation. Therefore, a proposal for future research is to include publications from other databases, such as Scopus and similar ones. Fourth, long-term changes in terminology make tracking variation over time difficult. Other current topics on which future research in the field of digital transformation could focus are: first, research on artificial intelligence integration and its effects on structures, processes, and decision-making in organizations; second, a study of new demands for digital skills and how they shape teams and roles within organizations. Other important areas of research are hybrid organizational structures that merge telework and office work. Finally, blockchain technology is another candidate for deeper analysis in changing the ways in which organizations structure and manage resources.

The study highlights several unexplored directions for future research (R.Q.3), including the impact of digital transformation on managerial cognitive load and decision-making processes, changes in organizational hierarchies and power distribution due to AI adoption, the role of AI in supporting agile methodologies and adaptive business models, the long-term effects of hybrid and remote work on organizational culture and team cohesion, and the ethical and psychological challenges posed by AI-driven transformations. By

identifying these critical areas, this study lays the foundation for further empirical and theoretical research, advancing the understanding of digital transformation and its implications for modern organizations. Further research may also focus on changes affected by the integration of AI tools in decision-making at different levels of the organization. How is AI changing the roles and responsibilities of managers? What are the risks involved, and how can a company overcome them? Future research may also address the challenges and strategies of data security and privacy management in organizational environments that will be increasingly digital.

This study enhances the theoretical understanding of digital transformation in the context of organizational design through a bibliometric analysis that identifies key research streams, authors, and thematic areas. It provides a systematic literature review and maps the evolution of this research field, enabling a better conceptualization of the relationship between digital transformation and organizational structures. Additionally, the study highlights research gaps and suggests new directions for future studies, such as managerial cognitive load in digital environments, the impact of artificial intelligence on hierarchy and decision-making, and the long-term effects of hybrid work on organizational culture. The study offers practical insights for managers, policymakers, and researchers engaged in digital transformation within organizations. By identifying key research areas and trends, it helps in understanding the critical factors that influence the successful implementation of digital technologies in business processes. The findings can assist organizations in recognizing best practices for digital transformation, optimizing their structures and strategies in alignment with global trends, and addressing potential challenges associated with new technology adoption. Moreover, this study can serve as a guide for future empirical research and data-driven decision-making in management and organizational change.

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# Social marketing and auditing for sustainable urban inclusion in Serbia

## Социјални маркетинг и ревизија за одрживу урбану инклузију у Србији

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### Abstract

**Purpose:** The problems of the Roma population play a very important role for the Government of Serbia. An anonymous questionnaire was used to conduct the empirical research, which was distributed online to all local self-government units and Roma non-governmental organizations in the Republic of Serbia.

**Methodology:** In order to check the dimensionality of the scales, exploratory factor (EFA) analysis was used. During factor extraction, the principal components analysis method was applied, with the Promax solution selected in rotation.

**Findings:** According to the results of the CFA, the indicators of the five-factor structure of the social inclusion of the Roma national community were achieved at an acceptable level because they confirm the five-factor segment of the social inclusion of the Roma national community. The measurement model was evaluated based on reliability, convergent validity and discriminant validity.

**Originality/value:** Based on the presented results, the existence of a five-factor structure of social inclusion of the Roma national community can be confirmed.

**Practical implications -** The coefficients of the path for the quality of life of Roma varied between five segments of social inclusion, of which employment, as one of the segments of social inclusion, has the greatest statistical significance - the impact on the quality of life of Roma.

**Limitations:** The limitations of the study how to increase the employability of Roma men and women in public institutions.

**Keywords:** social marketing, audit, social inclusion, civil society, governance

**JEL classification:** M31, M42, M19

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**Сажетак**

**Циљ:** Проблеми ромске популације играју веома важну улогу за Владу Србије. За спровођење емпиријског истраживања коришћен је анонимни упитник, који је дистрибуиран путем интернета свим јединицама локалне самоуправе и ромским невладиним организацијама у Републици Србија.

**Методологија:** Како би се проверила димензионалност скала, коришћена је анализа експлоративних фактора (ЕФА). Током екстракције фактора, примењен је метод анализе главних компоненти, са Промак решењем изабраним у ротацији.

**Резултати:** Према резултатима ЦФА, показатељи петофакторске структуре социјалне инклузије ромске националне заједнице постигнути су на прихватљивом нивоу јер потврђују петофакторски сегмент социјалне инклузије ромске националне заједнице. Модел мерења је процењен на основу поузданости, конвергентне валидности и дискриминаторне валидности.

**Оригиналност/вредност:** На основу приказаних резултата може се потврдити постојање петофакторске структуре социјалне инклузије ромске националне заједнице.

**Практична примена:** Коефицијенти путање за квалитет живота Рома варирали су између пет сегмената социјалне инклузије, од којих запошљавање, као један од сегмената социјалне инклузије, има највећи статистички значај - утицај на квалитет живота Рома.

**Ограничења истраживања:** Ограничења студије како повећати запошљивост Рома и Ромкиња у јавним институцијама.

**Кључне речи:** друштвени маркетинг, ревизија, социјална инклузија, цивилно друштво, управљање ЈЕЛ класификација: M31, M42, M19

**Introduction**

When we talk about the position of the Roma National Community in the Republic of Serbia, the past period shows certain results that influenced their upgraded and improved status (subsequent registration of persons who were not registered in the birth register was made possible; the number of Roma children in primary education increased; affirmative measures when enrolling them in secondary school education as well as university education; a better approach to the realization of individual rights is enabled when it comes to the process of public policies). On the other hand, the reasons for the adoption of the Strategy for the Social Inclusion of Roma Men and Women in the Republic of Serbia for the period from 2016 to 2025 arise from the need to create preconditions for achieving the mentioned strategic goals.

Listed mechanisms indicate the purpose and importance of social marketing in the function of improvement and revision of the implemented activities of civil activism of the Roma national community in the Republic of Serbia.

The goal of this research is to examine the structure of social inclusion of the Roma national community in all segments of society (education, housing, employment, health, social protection), and to determine which segment of social inclusion contributes the most to the quality of life of Roma. Therefore, there are two research tasks:

1. Verify all the segments of social inclusion of the Roma national community: education, housing, employment, health and social protection
2. Determine which segment of social inclusion contributes the most to the quality of life of Roma.

## 1. Theoretical background

According to Meler (2003) and to Kotler (2013), social marketing seeks to induce social behavior, but not for the purpose of creating benefits for the social marketer, but for creating benefits for the target market and society as a whole; social marketing aims at social change. All changes must be subject to a certain control framework - audit. Therefore, the European Union has adopted measures to strengthen public economic discipline and control the deficit (Bostan et al., 2021; Anačkov 2024). Audit procedures indicate the importance of the responsibility of state institutions in the implementation of the policies they implement (Tetteh, et al 2023). Effective oversight of the budget process not only provides valuable support for performance audits but also serves as a tool for ongoing guidance and corrective action (Eremić Đodić & Bošnjak, 2020; Vuković et al., 2024). It should be emphasized that social marketing has a very difficult task because it needs to influence social changes through its programs (Grgar, Tot & Radnović, 2013, p. 228). Social marketing programs affect raising the level of awareness of certain social issues, problems, marginalized communities, etc. Kotler & Andreasen (1991) give an explanation that the fundamental difference between social and conventional marketing lies in the goals of the one who implements social marketing. Kennedy (2010) says that the key distinction between social and conventional marketing lies in the differing objectives pursued by those implementing social marketing (Katrodia, 2022). The final goal of social marketing actions is to raise the quality of life of people, members of a certain social community.

Patterns of behavior are always at the center of interest. It should be advocated that the basic principles (within the implementation of social measures) of marketing be applied to influence politicians, media persons, activists in the local community, lawyers and judges and other individuals whose actions are necessary for the implementation of broad and long-term social change (Andreasen, 2006; Wenzel, 2016). Very little attention is often paid to the implementation of the internal marketing process in practice so it happens that this directly affects the reduced success of the marketing program (Grgar & Radnović, 2013). For Meler, social marketing involves using marketing strategies to achieve social objectives that prioritize meeting community needs over generating profit (Meler, 2003; Mirić et al. 2023; Petrović et al., 2024). Social problems seem always to have been of concern to every society everywhere in the world (Andreasen, 2006; May & Perry, 2022).

Based on research on the position of Roma men and women from 2021, it was defined that, in the upcoming period, it is essential to enhance the efficiency of the mechanisms established for coordinating, monitoring, and reporting on the implementation of the strategic goals and measures outlined in the Strategy on the Social Inclusion of Roma Men and Women (The position of vulnerable groups in the process of accession of the Republic of Serbia to the European Union, 2021). At the end of the last century, UNICEF created the global MICS program. MICS research measures key indicators that enable countries to generate the data necessary to develop policies, programs and national development plans, as well as to monitor progress in achieving the Sustainable Development Goals (SDGs) and other goals that stem from signed international agreements” (2019 Serbia MICS6 and 2019 Serbia Roma Settlements MICS SFR, 2020). This helped UNICEF apply research in the Republic of

Serbia: Serbia MICS 2019 and Serbia - Roma settlements MICS 2019. The study published in 2019 - Roma health mediators in Serbia – good example of multisectoral cooperation in health promotion, highlights that established collaboration between Roma health mediators and other health professionals in primary healthcare centers, social care institutions, and local government bodies has not only supported the mediators in fulfilling their tasks but has also enhanced the capacity of other service providers to work effectively within Roma communities (Kilibarda et al., 2019). According to the material published in 2018 Roma in Serbia, Civil Rights Defenders explain that the authorities in Serbia have adopted several laws and policies that are relevant for improving access to quality housing for Roma (The Wall of Anti-Gypsyism – Roma in the Republic Serbia, 2018).

Aspects of human development: basic rights, health, education, housing, employment, up to standard of living are still of limited access for the Roma national population, which was proven by the Regional Research on the situation of Roma in the Western Balkans conducted in 2017. The research also showed that Roma in Serbia are properly registered as citizens (The difficult position of the Roma in the Western Balkans, 2018). According to the research published in 2015-Health insurance and accessibility to health services among Roma in settlements in Belgrade, Serbia, more than a third reported having limited activity due to ill health in the past 6 months (Nitzan Kaluski et al., 2015).

The empirical research on the position of the Roma in Serbia shows that non-Roma citizens of Serbia lack information when we talk about their social inclusion in segments of life. The Roma population census provides better information in a special way. The results of the research so far point to recognition of inequality, discrimination and marginalization of that community, which, among other things, is an important assumption for the adoption and implementation of successful state measures on the long-term and sustainable improvement of the living conditions, social status and integration of the Roma (Raduški, 2022). Observations so far indicate that industrial and professional segregation play a strong role (O'Higgins, 2015; Florida & Mellander, 2020).

Having recognized this problem, the Republic of Serbia took the necessary steps to enable the Roma national community to overcome the perceived problems. The experiences of countries around the world were analyzed in this regard. Guided by good practice, a set of measures was adopted within the already mentioned Strategy. All segments of life (health, education, etc.) undergo an audit procedure to assess the application of measures. Furthermore, the research indicates that the employment prospects for the Roma population are strongly shaped by the social norms, traditions, and values passed down by their families and communities, significantly affecting their ability to secure and maintain jobs (Dincă, & Luceș, 2018; Fleck & Rughinis, 2008).

By regulating how the measures are implemented, evidence emerged that interventions based on social marketing principles can effectively address a wide range of behaviors (Kubacki et al. 2015) across diverse target groups and settings, influencing not only individuals but also policies and professional practices (Stead et al., 2007; Paunovic & Mamula, 2023).

There is a specific area in which each measure is implemented. Methodological steps are involved in its application. To determine whether these steps are implemented in

accordance with the issued measures and the legal framework, an audit procedure must be defined for each area where the measures are implemented. Some of the common steps that comprise the audit procedure are: defining the subject and area of the audit, reviewing the existing procedures and their application, identifying the existing controls and determining their application, getting to know the irregularities identified so far, finding out whether some of them have been eliminated, determining the risk points in the area to be checked, identification of responsible persons, etc. A detailed audit of the above steps is required to determine the extent to which the general goal of social marketing of the examined population has been achieved. To evaluate its success and the extent of its impact, it is essential to implement ongoing audit controls that also include identifying and segmenting target groups, which are crucial for achieving optimal outcomes in social marketing programs, as the basic task of the performance audit (Galiano Coronil, 2022; Eremić Đodić & Bošnjak, 2020).

## 2. Materials and Methods

At the beginning of the researching of current public policies related to the position of the Roma National Community in the territory of the Republic of Serbia, and in order to collect data on Roma citizens, an anonymous survey-Appendix 1 Measurement scales was sent to Roma associations, the representatives of local self-government bodies and the representatives of local self-government units (municipalities and cities). Roma associations gather members of the Roma national community and represent a link between the individual and the creators of public policies, therefore they represent a real source of data for research on the social inclusion of Roma. Due to the COVID-19 pandemic, surveys were distributed online to all local self-government units and Roma non-governmental organizations in the Republic of Serbia. The survey was conducted in June and July 2022. In the Republic of Serbia, 174 local self-government units and 68 Roma non-governmental organizations are registered with email addresses totaling 242 organizations. However, 28 questionnaires were not filled in, which makes a sample of 214 respondents - organizations with different numbers, cooperation and financial support from the state (Table 1).

Table 1: Profile of surveyed organizations (n= 214)

<i>General characteristics of the respondents</i>	<i>Percent (%)</i>
<i>Organization</i>	
Local self-government unit	71.0
Roma non-governmental organization	29.0
<i>Size</i>	
Up to 50 members	26.2
51-100	25.2
101-200	24.8
More than 300 members	23.8
<i>Cooperation</i>	
State sector	25.7
Other organizations in the country	6.5
Organizations abroad	2.3

Government sector and other organizations in the country	26.2
Government sector and other organizations in the country and abroad	39.3
<i>Financial support</i>	
Through projects	68.7
Through donations	3.7
Through grants	9.3
Through subsidies	4.2
Another type of financial support	14.0

*Source: Author's calculation*

Table 1 indicates that 71% of the sample consists of local self-government units and 29% are Roma non-governmental organizations. Organizations are uniform in their size, but those with fewer than 50 members are most prevalent. In terms of cooperation, the majority work both with the state sector and with organizations abroad and within the country (39.3%). The majority of state financial support is provided through projects (68.7%).

In the first unit of the questionnaire, general questions were asked about the respondents, while in the second unit, questions addressed the Roma's social involvement in all segments of society and their quality of life. The second unit referred to the following segments of social inclusion of Roma: education, housing, employment, health, social protection, comprising 55 items (Appendix 1). In order to measure the attitudes of all segments of the social inclusion of Roma in the national community, a five-point Likert scale was used from 1 (Totally disagree) to 5 (Totally agree). Education, as the first segment of social involvement of the Roma national community, was measured by 11 items. Housing, as the second segment of social involvement of the Roma national community, was measured by 10 items, employment with 13 items, health with 10 items and social protection with 11 items. In the preliminary stages of research, EFA is usually the basic methodology, which helps to reduce the set of variables, determine the key dimensions of interest and provide evidence on the quality of potential factor indicators. During factor extraction, the principal components analysis method was applied, with the Promax solution selected in rotation. In the next phase, the causal link between the segments of the social inclusion of Roma national community and the quality of life of Roma was assessed by the method of structural equation modeling (SEM). Structural equation modeling combines exploratory factor analysis and multiple regression (Ulman, 2007). IBM statistical software packages IBM SPSS 21 and Amos graphics were used for data processing.

### 3. Results

To verify the model assumptions, the data were first tested. Based on the analysis of standardized  $z$  results, univariate outliers did not exist. Comparison of critical values showed that 18 cases have  $\chi^2 = 128,96$  or more with the degrees of freedom 55, at the level of  $p < .001$ . These 18 cases are excluded from the analysis because they fall into the category of multivariate deviations (Tabachnick & Fidell, 2013, p. 952). The sample size for further analysis was reduced from 214 to 196 subjects.

In order to respond to the first research question, the Kaiser-Meyer-Olkin test (KMO test) and the Bartlett's Test of Sphericity were first performed. According to the test results,

the KMO is  $0.660 > 0.60$  (Kaiser, 1974), while the Bartlett sphericity test is statistically significant [ $\chi^2(136) = 2329.858, p < 0.001$ ], which means that the statistical criteria were met. After the basic analysis, the Principal Component Analysis (PCA) was performed. It was decided that the factor loading for each item should be at least 0.6, while the characteristic roots are set to "1", as the default acceptable level for determining the factor (Tabachnick & Fidell, 2013). After deleting the multiple items (EDUC: 1, 3, 4, 6, 7, 8, 10, 11; HOUSE: 2, 4, 7, 8, 9, 10; EMPLOY: 1, 2, 3, 4, 8, 9, 10, 12, 13; HEALTH: 1, 2, 4, 6, 7, 9, 10; PROTECT: 1, 2, 3, 4, 5, 8, 9, 11), exploratory factor analysis (EFA) confirmed five factors (employment, housing, education, health, social protection), which consisted of 17 items of social inclusion of the Roma national community. The total variance explained of five-factor structure was 76.60% (Table 2). According to the results shown in Table 3, factor loadings can be considered indicative for a well-defined structure.

*Table 2: Percentage of variances, eigenvalues and factor loadings of social inclusion segments and items.*

<i>Segments</i>	<i>Items</i>	<i>Eigen Value</i>	<i>% of Variance</i>	<i>Factor Loading</i>
EMPLOYMENT	EMPLOY5	5.838	34.342	0.866
	EMPLOY11			0.845
	EMPLOY6			0.741
	EMPLOY7			0.726
HOUSING	HOUSE1	2.841	16.714	0.875
	HOUSE5			0.840
	HOUSE3			0.817
	HOUSE6			0.712
EDUCATION	EDUC5	1.877	11.041	0.838
	EDUC9			0.798
	EDUC2			0.729
HEALTH	HEALTH3	1.353	7.960	0.865
	HEALTH5			0.835
	HEALTH8			0.732
SOCIAL PROTECTION	PROTECT7	1.112	6.542	0.835
	PROTECT10			0.817
	PROTECT6			0.762

*Source: Author's calculation*

Confirmatory factor analysis (CFA) was used to assess the structure of the five-factor solution. The results of the CFA (Table 3) were:  $\chi^2 = 314.27, df = 110, p < 0.001; \chi^2 / df = 2.857, NFI = 0.910, TLI = 0.933, CFI = 0.962, SRMR = 0.050, RMSEA = 0.023$ . According to the results of the conducted CFA, the indicators of the five-factor structure of the social inclusion of the Roma national community, interpreted on the basis of relevant literature (Hu & Bentler, 1999; Stevens, 2009; Hair, Black, Babin, & Anderson, 2019), were achieved at an acceptable level. Figure 1 confirms the five-factor segment of social inclusion of the Roma national community.

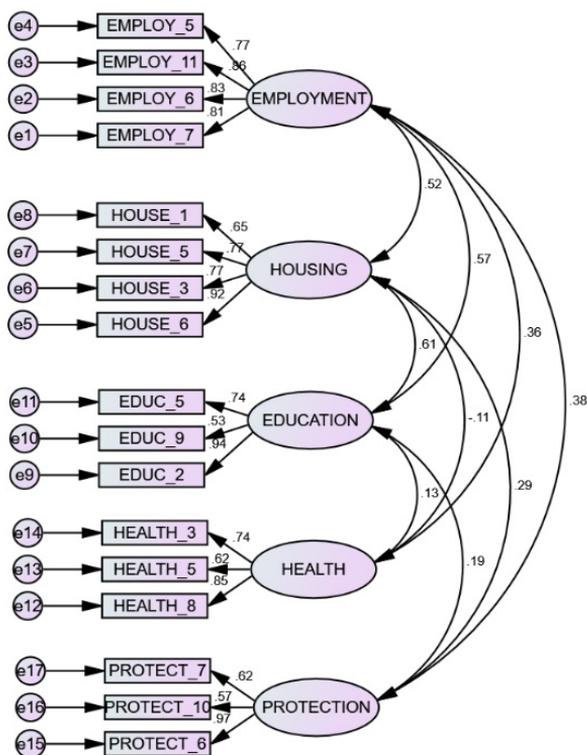
Table 3: Fit indicators of the five-factor structure of the social inclusion of Roma national community

	$\chi^2/df$	NFI	TLI	CFI	SRMR	RMSEA
Fit indicator	2.857	0.910	0.933	0.962	0.050	0.023

Source: Author's calculation

The measurement model was evaluated on the basis of reliability, convergent validity and discriminant validity (Table 4).

Figure 1: Confirmatory factor analysis



Source: Author's calculation

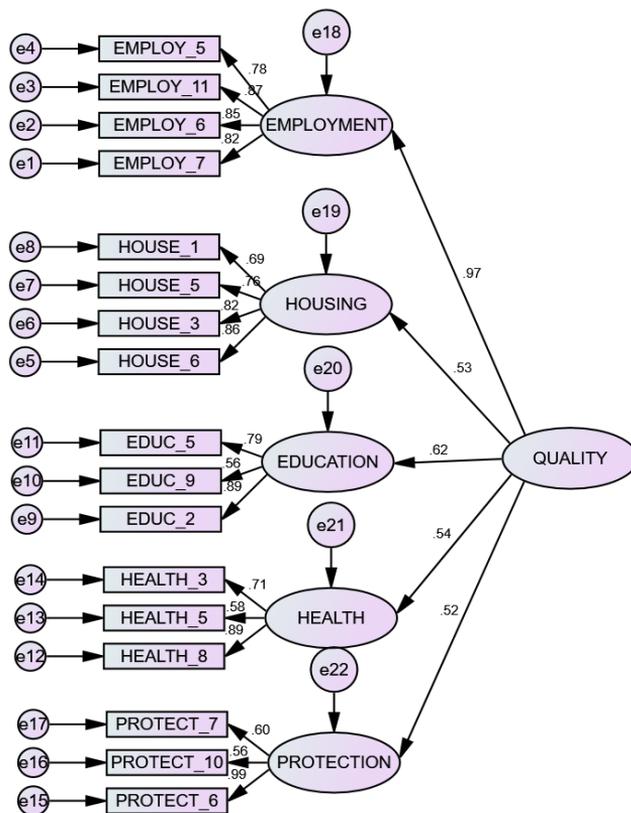
*Table 4: Results of reliability, convergent and discriminant validity testing*

<i>Segments of social inclusion (Factors)</i>	<i>CA</i>	<i>CR</i>	<i>AVE</i>	<i>EMPLOY- MENT</i>	<i>HOUSING</i>	<i>EDUCA- TION</i>	<i>HEALTH</i>	<i>SOCIAL PROTE- CTION</i>
EMPLOY- MENT	0.895	0.873	0.635	<b>0.797</b>				
HOUSING	0.865	0.886	0.661	0.360	<b>0.813</b>			
EDUCATION	0.781	0.832	0.623	0.331	0.288	<b>0.789</b>		
HEALTH	0.785	0.853	0.660	0.341	0.001	0.170	<b>0.813</b>	
SOCIAL PROTECTION	0.738	0.847	0.649	0.416	0.169	0.105	0.296	<b>0.805</b>

Reliability was assessed using Cronbach’s  $\alpha$  (CA) and composite reliability (CR). For a structure to be considered reliable, Henseler et al. (2009) recommend that Cronbach’s  $\alpha$  and composite reliability values for that structure must be above 0.7. Henseler et al. (2009) suggest that the AVE for each construct in the model must be above 0.5. Discriminatory validity, on the other hand, was assessed using the following guidelines: Fornell-Larcker criterion (Fornell & Larcker, 1981), and the loads of each indicator should be greater than all of its cross-loads (Chin, 1998; Henseler et al., 2009; Götz et al., 2010). It can be seen from Table 5 that convergent validity was achieved. Based on the presented results, the existence of a five-factor structure of the social inclusion of Roma national community can be confirmed, as a response to the first research task.

Second-order factorial structure for quality of life of Roma are presented in Figure 2 for each observed variable (EMPLOY: 5, 11, 6, 7; HOUSE: 1, 5, 3, 6; EDUC: 5, 9, 2; HEALTH: 3, 5, 8; PROTECT: 7, 10, 6). Roma people varied among five segments of social inclusion: employment (0.97), education (0.62), health (0.54), housing (0.53) and social protection (0.52). Employment, as one of the segments of social inclusion, has the greatest effect on Roma’s quality of life (WHO Quality of Life Scale, 2022).

Figure 2: Confirmatory factor analysis—second-order measurement model for quality of life of Roma



Source: Author's calculation

#### 4. Discussion

Based on the research results, we verified and proved the basic claim of this paper that members of the Roma National Community are not sufficiently involved in all segments of social life. Regular attendance at a high-quality preparatory preschool program for Roma children is also enabled and organized. These activities related to the Roma national community were promoted in the local community and preschool institutions, assistance was provided to families in exercising this right, enrollment of children in regular primary education and prevention of unjustified enrollment in special primary education of Roma children was carried out. Affirmative measures for enrollment in secondary education were also adopted, considering equality, child rights and human rights, strengthening and preservation of the Roma language and identity, and support for young Roma and Roma

women for enrollment, career guidance and further education. The primary and secondary education of young people and adults who did not go to school or left school was improved.

The measures that examine housing as one of the categories of social inclusion of the Roma national community are prescribed in strategy by Government of Republic of Serbia (2016) and foresee the activities for the preparation and adoption of local action plans to improve the housing conditions of Roma men and women, allocate budget funds for the realization of the adopted urban planning concepts for the areas where Roma settlements are located. On that occasion, local self-governments responsible for revising urban plans, and institutions responsible for governing and implementing the property-legal status of plots and buildings included in the local action plan for the improvement of housing for Roma women and men, contributed greatly to the realization of the budget funds used for implementing measures specifically intended to improve the communal infrastructure, as well as the existing facilities for Roma women and men. Special housing programs and social housing programs were also developed to meet the specific needs of vulnerable groups of the population. Eviction and resettlement provisions in the Law on Housing and the Law on Planning and Construction and other relevant laws are being amended. Furthermore, the cultural centers are being established. The measures that examine employment as one of the categories of social inclusion of the Roma national community are prescribed in strategy by Government of Republic of Serbia (2016) and they imply activities such as creating a national database on unemployed members of the Roma national community, developing and implementing information and education programs for the Roma community members, increasing the inclusion of unemployed Roma women and men in training through active job search systems, work of employment counselors for the less employable categories of the unemployed - work on raising awareness of society, encouraging local governments to regulate the issue of waste management and grant subsidies for the mentioned area.

The measures that examine health as one of the categories of social inclusion of the Roma national community are prescribed in strategy by Government of Republic of Serbia (2016) and imply activities such as expanding the public health program in relation to all Roma women and men in the territory of the Republic of Serbia without affecting their status. In cooperation with the social protection sector, health mediators and targeted preventive programs for pregnant women are also included in order to reduce the risk to the child's health. The work of counseling centers for young people was improved by intensifying preventive work, promotion and implementation of screening programs. In order to ensure the coverage of the Roma settlement population, health mediators and public health institutes are involved in various measures. Health risks and healthy lifestyles are presented to them in promotional materials.

The measures examining social protection as one of the categories of social inclusion of the Roma national community are prescribed in strategy by Government of Republic of Serbia (2016) and imply activities on drafting of local agreements on cooperation.

## Conclusion

Based on the research and analysis presented in this paper, we make the following recommendations:

- strengthening the capacities of Roma associations and associations for Roma through local and regional incentives. Therefore, in the coming period, the associations will contribute even more actively to the improvement of civil activism of the Roma national community members, primarily by actively involving them in and implementing incentives from programs and projects that the European Union (EU) and other international institutions have designed for Roma;

- every local self-government unit in the Republic of Serbia should adopt local action plans (LAPs) for Roma, which must be properly planned and budgeted, because only proper prior planning can achieve increased productivity in all areas of public policies, including public policy for the inclusion of Roma. Unless funds are planned for LAPs, the action plans are merely wish lists;

- organizing groups of employees, at the level of local self-government units (LGUs), to actively monitor calls, develop projects and apply for EU funds intended to finance the improvement of Roma inclusion. Local economic development units at the municipality-city level are currently responsible for monitoring all calls of this nature;

- making available any information related to the LGU's efforts to improve civil activism among the Roma national community on LGU's internet presentation;

- increasing the employability of Roma men and women in public institutions;

- including a greater number of Roma citizens in governing bodies at the local level, such as local community councils. Developing a new scientific research - a project that covers implemented LGU projects in the field of Roma inclusion, financed from EU funds in accordance with the Strategy for the Social Inclusion of Roma in the Republic of Serbia for the period 2022-2030 ("Official Gazette of the RS", number 23 of February 17, 2022), and implemented recently but their results will be seen in the near future. Depending on how future events evolve, new audit procedures will need to be developed, which will be applicable after new measures have taken root.

Compared with previous research, the findings indicate that we should continue working on promoting and improving cooperation with scientific research institutions and organizations in the Republic of Serbia. In this way, pupils and students who belong to the Roma national population are given the opportunity to improve their scientific and research development.

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*Appendix 1. Measurement scales*

<i>Constructs</i>	<i>Items</i>
<i>Education</i>	
EDUC1	Family, community and pre-school programs are offered to parents and children under three to promote the development of children and parenting skills
EDUC2	The availability of quality preschool programs for children aged 3 to 4.5 years (full-day, half-day) has been improved
EDUC3	Complete coverage of Roma children aged 4.5 to 5.5 years is provided with high-quality preschool education, primarily through full-day but also four-hour programs
EDUC4	Full coverage and regular attendance of a high-quality preparatory preschool program for Roma children is ensured
EDUC5	Various activities are carried out in the local community and preschool institutions with the aim of promoting the importance of early inclusion in programs of preschool upbringing and education, as well as helping families in realizing this right
EDUC6	Effective implementation of existing regulations on enrollment of children in primary school is ensured in order to ensure timely entry into regular primary education for Roma children and prevention of unjustified enrollment in special primary education for Roma children, especially those living in Roma settlements and conditions of poverty.
EDUC7	Affirmative enrollment measures in secondary education are provided for all Roma students who complete primary education and meet the conditions to continue their secondary education
EDUC8	Active efforts are being made to develop educational institutions as inclusive, intercultural, non-discriminatory and safe environments for Roma (and all other) children through the development of an inclusive educational environment based on respect for diversity and the promotion of equality, child rights and human rights
EDUC9	Efforts are being made to secure and implement measures that will contribute to the strengthening and preservation of the Romani language and identity and the inclusion of Romani men and women in society as opposed to their assimilation
EDUC10	Support is provided to young Roma men and women who successfully complete a four-year

EDUC11 secondary education in preparation for enrollment, career guidance and further education  
The primary and secondary education of young people and adults who did not go to school or left school was improved

*Housing*

HOUSE1 Local action plans for improving the housing conditions of Roma men and women are being developed and adopted

HOUSE2 Local governments strive to ensure the full participation of Roma men and women and civil society in the process of drafting and implementing local action plans

HOUSE3 Local self-governments determine budget funds, create or update urban plans for areas where Roma settlements are located, starting from the idea of improving the settlements, with updated data on the inhabitants of those settlements

HOUSE4 Local self-governments are working on the review of urban plans that envisage the displacement of Roma settlements from existing locations and strive to revise these plans or to prove the justification of the planned displacement

HOUSE5 Local self-governments strive to include the regulation of the property-legal status of plots and buildings in the local action plan for improving the housing of Roma men and women and to ensure budget funds for the implementation of these measures

HOUSE6 Local self-governments have included the construction of communal infrastructures in Roma settlements in the local action plan for the inclusion of Roma men and women and are striving to secure budget funds for their implementation

HOUSE7 Local self-governments strive to include measures to improve the existing facilities where Roma men and women live in local action plans for the inclusion of Roma men and women and ensure budget funds for their implementation

HOUSE8 The line ministry strives to, in accordance with established competences, develop special housing programs and social housing programs that will meet the specific needs of vulnerable population groups, including Roma men and women, and determine the scope of the necessary funds and provide finances for the implementation of these programs

HOUSE9 Work is underway to amend the provisions related to eviction and resettlement in the Law on Housing and the Law on Planning and Construction and other relevant laws in order to have been harmonized with the provisions of international law on the right to adequate accommodation and the principles of non-discrimination

HOUSE10 Roma cultural centers are established in larger sustainable Roma settlements or in local self-government units where at least 300 Roma men and women live

*Employment*

EMPLOY1 Work is underway to create a national database on unemployed members of the Roma national community, regardless of their status on the records of the National Employment Service

EMPLOY2 They develop and implement information and education programs for members of the Roma community (especially persons from the multiple vulnerable category) about the importance and conditions of registration with the National Employment Service, i.e. the rights and obligations of unemployed persons, with the support of civil society organizations that advocate for the improvement of the position of Roma men and women

EMPLOY3 The inclusion of unemployed Roma men and women in training from the active job search system has been increased

EMPLOY4 The procedures of the National Employment Service, which regulate the work of employment counselors with the more difficult to employ categories of unemployed persons, have been improved  
Effective implementation of the Law on the Prohibition of Discrimination in relation to access to the labor market, employment and employment-based rights has been ensured, which is primarily followed by continuous strengthening of the capacity of the Commissioner for the Protection of Equality

EMPLOY6 We are working on raising the awareness of society (and the Roma community) about the importance of the prohibition of discrimination and the mechanisms of protection against discrimination, in cooperation with Roma civil society organizations

- EMPLOY7 Examples of positive practice in the employment of Roma men and women are promoted as ways of eliminating prejudices and stereotypes
- EMPLOY8 Through the cooperation of institutions from the system of social protection and education, activities of integrated provision of services are created and implemented for the prevention of early school leaving, that is, support for the acquisition of higher levels of qualifications
- EMPLOY9 Affirmative measures of financial and non-financial support are developed and implemented with the aim of supporting employment and economic empowerment of business activities of Roma men and women
- EMPLOY10 The inclusion of civil society organizations that advocate for the improvement of the position of Roma men and women in the creation of measures and activities aimed at reducing the unemployment of persons of Roma nationality at the level of local self-government units is encouraged
- EMPLOY11 The employment of Roma men and women in institutions at the local and national level is encouraged
- EMPLOY12 Local self-governments are encouraged to regulate the issue of waste management: the creation of local waste management plans that foresee the inclusion of individual collectors of secondary raw materials in legal waste management flows
- EMPLOY13 Subsidies are given to individual collectors of secondary raw materials for providing them with the necessary equipment

#### *Health*

- HEALTH1 We are actively working on the expansion of public health programs in relation to all Roma men and women in the territory of the Republic of Serbia, regardless of their status, and taking into account primarily their health needs, with an emphasis on those with the most pronounced vulnerability
- HEALTH2 Public health activities are being developed to eliminate conditions that specifically affect the health of Roma men and women
- HEALTH3 Access to timely and comprehensive antenatal health care has been improved through the work of health mediators
- HEALTH4 Targeted preventive programs in the Roma community for pregnant women were supported in order to reduce the risk to the child's health in cooperation with the social protection sector
- HEALTH5 Immunization coverage of Roma children has been increased through the work of health mediators, the patronage service and regular immunization campaigns in the community
- HEALTH6 Efforts are being made to increase the coverage of Roma adolescents by youth counseling services; In cooperation with the educational system, special programs are implemented for adolescent pregnant mothers
- HEALTH7 Access to services for the protection of women's reproductive health has been improved through the intensification of preventive work, the prioritization of prenatal and postnatal visits to pregnant women
- HEALTH8 During the promotion and implementation of the colon, cervical and breast cancer screening program, measures are planned to ensure coverage of the population of Roma settlements
- HEALTH9 Roma men and women are provided with access to relevant information related to rights in the field of health care at the level of health institutions, local governments and independent bodies, and the functioning of these mechanisms is regularly monitored (Marcikic Horvat et al., 2021)

#### *Social Protection*

- PROTECT1 The system of case management in centers for social work was improved in order to develop culturally competent practice and reach the most vulnerable Roma families
- PROTECT2 Local agreements on cooperation between centers for social work, social care service providers and schools are being developed, as well as agreements on support for families where children do not attend school or are at risk of dropping out
- PROTECT3 Centers for social work are working on more intensive inclusion of Roma children in local social protection services, with special emphasis on children without parental care and improvement of support programs for mothers
- PROTECT4 Centers for social work are working to strengthen their advisory service in working with Roma families and Roma beneficiaries in general
- PROTECT5 Active efforts are being made to improve the prevention and support system with the aim of reducing

- the number of underage and forced marriages and underage pregnancies in the Roma community
- PROTECT6 The system of cash benefits intended for vulnerable families of children with disabilities has been improved in accordance with the principles of social inclusion through amendments to the Law on Social Protection and the Law regulating financial support for families with children
- PROTECT7 The supervision of exercising the right to register the place of residence at the address of the center for social work is carried out
- PROTECT8 There is a legally regulated and effective institute of free legal aid
- PROTECT9 Information from the database of the Ministry of Health on Romani men and women is distributed by improving the software of the Ministry, and respecting the Law on the protection of personal data, to the relevant sectors with the aim of achieving a simpler and more meaningful response from social services regarding the social inclusion of Romani men and women
- PROTECT 10 The work of the Council for Children's Rights is being improved through technical support for the analysis of the availability of social protection services for Roma children
- PROTECT 11 Research is conducted on the experiences of the Roma national community in relation to social protection services on an annual basis
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# The impact of transformational and transactional leadership styles on organizational innovativeness

## Утицај трансформационог и трансакционог лидерства на иновативност запослених

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**Abstract:** Transformational leadership fosters organizational innovativeness by inspiring and motivating employees to challenge the status quo, embrace change, and generate creative solutions. The study aims to demonstrate the effects of transformational and transactional leadership on organizational innovativeness, particularly in the context of companies operating in the Republic of Serbia. The research was conducted among 202 employees in the Republic of Serbia. To ensure internal consistency, reliability analysis was employed, while multiple regression analysis was utilized to assess the influence of the independent variables on the dependent variable. The findings indicate that transformational leadership has a statistically significant positive effect on organizational innovativeness. Conversely, no statistically significant effect of transactional leadership on organizational innovativeness was observed. Future research models could explore the impact of individual dimensions of transformational and transactional leadership on organizational innovativeness. Additionally, it is recommended to investigate the relationship between these leadership styles and organizational innovativeness across different countries. The practical implications suggest that leaders should adopt transformational leadership to enhance organizational innovativeness and promote employee creativity. To the authors' knowledge, no existing studies in the domestic literature have comprehensively examined the effects of both transformational and transactional leadership on organizational innovativeness.

**Keywords:** Transformational leadership, Transactional leadership, Organizational innovativeness.

**JEL classification:** M12, D23, O31.

**Сажетак:** Трансформационо лидерство подстиче организациону иновативност, мотивишући запослене да преиспитују постојеће стање, прихвате промене и генеришу креативна решења. Циљ рада је да испита ефекте трансформационог и трансакционог лидерства на организациону иновативност, посебно у контексту компанија које послују на територији Републике Србије. Истраживање је спроведено међу 202 запослена у Републици Србији. За проверу интерне конзистентности коришћена је анализа поузданости, док је вишеструка регресиона анализа коришћена за процену утицаја независних на зависну варијаблу.

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Резултати показују да трансформационо лидерство има статистички значајан ефекат на организациону иновативност. Насупрот томе, није уочен статистички значајан утицај трансакционог лидерства на организациону иновативност. Будућа истраживања могла би да се баве утицајем појединачних димензија трансформационог и трансакционог лидерства на организациону иновативност. Такође, препоручује се испитивање односа између датих стилова лидерства и иновативности организације у различитим земљама. Практичне импликације сугеришу да лидери треба да усвоје трансформационо лидерство како би унапредили иновативност организације и подстакли креативност запослених. Према сазнањима аутора, у домаћој литератури не постоје студије које свеобухватно испитују ефекте трансформационог и трансакционог лидерства на организациону иновативност.

**Кључне речи:** Трансформационо лидерство, Трансакционо лидерство, Организациона иновативност.

**ЈЕЛ класификација:** M12, D23, O31.

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## Introduction

In the modern economic landscape, the increasing focus on sustainability and effective resource management is driving significant changes in business models (Anufrijev & Dašić, 2024). One of the notable changes is the shift in the concept of leadership, which is widely regarded as a critical factor in motivating members of an organization and effectively mobilizing resources to achieve its goals (Abelha, Costa Carneiro & Cavazotte, 2018). According to Tran (2017), leaders play a crucial role in fostering an organizational culture rooted in trust, motivation, and creativity, which, in turn, enhances overall organizational performance. Additionally, transformational leadership is linked to organizational innovativeness through various characteristics, such as interactive vision, effective communication, and the cultivation of an environment that nurtures innovative teams (Mokhber, bin Wan Ismail & Vakilbashi, 2015). As a result, transformational leadership is recognized as a vital catalyst for creativity and innovation within organizations (Mokhber et al., 2015; Hu, Gu & Chen, 2013; Thuan, 2020). On the other hand, innovativeness can be seen as a major competitive advantage in organizations enhancing their effectiveness and enabling the basis for sustainable development (Zlatanović, Nikolić & Nedelko, 2020). Werlang & Rossetto (2019) emphasize that organizational innovativeness is crucial for companies, as it represents a valuable resource that is challenging to replicate. In a similar context, Hurley & Hult (1998) contend that innovative organizations are proactive in refining their business processes, embracing new ideas, and discarding outdated practices that no longer deliver desired outcomes. Therefore, it is essential to explore how managers can foster innovative behavior among their employees to maintain competitiveness in an evolving environment (Pieterse, Van Knippenberg, Schippers & Stam, 2010).

Although certain studies examine the impact of transformational and transactional leadership on organizational innovation and creativity (Costa, Mariana & Moreira, 2023; Rashwan & Ghaly, 2022; Lukowski, 2017; Jung, Wu & Chow, 2003), to the best of the authors' knowledge, there are no studies that holistically examine the effects of transformational and transactional leadership on organizational innovativeness in domestic literature, which represents a research gap that this study seeks to address. Accordingly, the subject of the research in this paper is transformational and transactional leadership and their relationship with organizational innovativeness. The aim of the study is to demonstrate the

effects of transformational and transactional leadership on organizational innovativeness, particularly in the context of companies operating in the Republic of Serbia.

In light of the defined topic, research objectives, and primary hypothesis, this study employed both qualitative and quantitative methodologies. The study applied qualitative methodology to establish a theoretical basis for quantitative testing of research hypotheses. Data were collected from 202 Serbian employees via a structured questionnaire. Various statistical methods were used for analysis, including Cronbach's  $\alpha$  for internal consistency and multiple regression to assess the impact of independent variables on the dependent variable.

The paper is organized into several interrelated sections. The literature review outlines key theoretical constructs related to transformational and transactional leadership, as well as organizational innovativeness. The second section concerns the hypotheses and research model. The third section discusses the methodology, including the development of the questionnaire and the data analysis process. The fourth and fifth sections present the findings of the empirical research, along with a discussion of their implications. Finally, the paper concludes by summarizing the key findings and identifying both the implications and limitations of the study. The expected theoretical contribution of the paper is eliminating the identified gap in the literature, which pertains to the lack of studies in the domestic literature that holistically examine the effect of transformational and transactional leadership on organizational innovativeness. The expected practical contribution of the paper relates to guidance to leaders in Serbian companies to enhance organizational innovativeness by applying a specific leadership style.

## 1. Literature review

Innovativeness can be defined as the capacity of an organization to adopt a new process, product, or idea (Damanpour, 2018). In other words, it involves the openness of organization members to adopting a specific innovation (Hult, Hurley & Knight, 2004). Organizational innovativeness can also be viewed as a characteristic of organizational culture, indicating the extent to which an organization utilizes new opportunities, specifically introducing and commercializing innovations (Subramanian, 1996). Similarly, Hurley & Hult (1998) describe organizational innovativeness as a component of corporate culture, reflecting a company's tendency and willingness to innovate, experiment with new ideas, and abandon outdated practices. Therefore, it can be concluded that organizational innovativeness is an extremely valuable resource that is difficult for competitors to imitate (Werlang & Rossetto, 2019). Innovativeness provides flexibility to the organization, more efficient meeting of consumer needs (Menguc & Auh, 2006), and sustainable competitive advantage (Calantone, Cavusgil & Zhao, 2002). The need for companies and the economy at large to pursue new ideas and opportunities for improvement, striving to achieve better, more successful, and more efficient ways of doing things than current methods, is a fundamental requirement (Miletić, Ćurčić & Kostić, 2021). To enhance its innovativeness, a company must attain a high degree of creativity (Çekmecelioğlu & Günsel, 2013). Accordingly, Zlatanović et al. (2023) state that there are many factors determining the success of innovation, some of them are stimulating,

while others hinder creativity as the main precondition for innovativeness. Creativity may be defined as a human process leading to a result which is novel (new), useful (solves an existing problem or satisfies an existing need), and understandable (can be reproduced) (Mostafa, 2005), while innovativeness in an organization refers to its capacity to launch new products and penetrate new markets by integrating strategic orientation with innovative behaviors and processes, which highlights its dedication to fostering new ideas, experimentation, and creative initiatives that can result in novel products, services, or technologies (Zlatanović, Nikolić, Potočan & Erić Nielsen, 2023). Therefore, it can be said that creativity is certainly essential for the development of innovations, but these concepts cannot be equated, as innovation goes beyond the phenomenon of a creative product and includes the introduction, launch, commercialization, or exploitation of the product (Zlatanović & Leković, 2024).

Different leadership styles positively influence organizational innovativeness, either directly or by shaping factors like the organizational climate, employee and leader behaviors, or other variables such as learning and knowledge sharing (Alblooshi, Shamsuzzaman & Haridy, 2021). Accordingly, transformational leadership motivates and inspires followers to alter the current state of the organization, while also fostering personal transformation among them to enhance their effectiveness in the leadership process (Aleksic, 2016). Bass (1999) identifies the ability of transformational leaders to motivate their followers, activating higher-order needs, establishing a climate of trust within the organization, and emphasizing the importance of organizational goals over individual ones. Carless & Wearing (2000) indicate that transformational leaders communicate a clear and positive vision of the future, approach each employee as a separate individual, support their growth and development, provide adequate recognition for employees' achievements, encourage different perspectives on business problems, unequivocally emphasize company values, and set an example for company employees through their behavior. Additionally, individuals who possess entrepreneurial initiative and the ability to transform organizations and their members often exhibit attributes such as inventiveness, flexibility, and a willingness to take calculated risks (Janošik, Vukotić & Milenkovski, 2024). Transformational leaders serve as reliable, respectful, and admirable role models for ethical conduct, clearly communicating a vision that inspires others to align with it, questions existing beliefs, and encourages the development of innovation and creativity (Sokolović, Katić, Grubić Nešić, Ivanišević & Pavlović, 2022). Dai, Dai, Chen & Wu (2013) state that transformational leaders contribute to the organization by emphasizing its higher ideals and moral concepts. In other words, followers express a high degree of trust, recognition, loyalty, and respect for managers, feeling that the work they do is truly significant for the organization as a whole (Rust, Zeithaml & Lemon, 2000). Bass (1999) highlights that transformational leadership refers to leaders who motivate their followers through idealized influence, intellectual stimulation, individual consideration and inspirational motivation. Idealized influence involves the leader's ability to highlight the inspirational purpose of the company's business, set an example for employees in the context of organizational values, and emphasize organizational goals over their personal interests (Tajasom, Hung, Nikbin & Sean Hyun, 2015). Okoli, Nnabuiife, Adani & Ugbo (2021) state that idealized influence is the charismatic aspect of transformational leadership, which means inspiring a vision for the future while embracing behavior that makes them respectable. In other words, this suggests that leaders have distinct

attributes that distinguish them from others, allowing them to rally people, and motivate others towards a shared objective (Mirčetić, Popović & Vukotić, 2024). Their enthusiasm inspires followers to embrace change and envision a better future, while their risk-taking empowers them to navigate turbulence and build the resilience essential for the organization's survival (Kariuki, 2021). Inspirational motivation refers to how effectively a leader communicates a compelling and motivating vision that resonates with employees (Savovic, 2017). A crucial element in leadership development is the personal bond followers form with the leader, which is common to all followers but particularly noticeable in those facing challenges with personal identity, low self-worth, and a heightened need for reliance on authority (Aleksic, 2016). This arouses excitement by followers to willingly detest the status quo and pursue the envisioned better future enthusiastically (Kariuki, 2021). Intellectual stimulation refers to the leader's capacity to motivate their followers to reconsider existing problem-solving methods, encouraging them to try new methods and approaches (Avolio, Bass & Jung, 1999). Transformational leaders encourage their employees to think critically, setting challenging goals and tasks (Carless & Wearing, 2000). Intellectually stimulating leadership focuses on unlocking and maximizing the potential and abilities of followers (Sokolović et al., 2022), while Stojanović (2016) states that transformational leaders demonstrate creativity and the ability to view problems from various perspectives, challenging conventional thought and existing norms, while continually reassessing knowledge in light of changing circumstances and avoiding uncritical acceptance of others' solutions. Individualized consideration refers to a leader's focus on addressing the specific needs of followers for personal achievement and development (Sokolović et al., 2022). Raj & Srivastava (2016) state that individual consideration enables leaders to build a supportive relationship with their followers by showing concern for their needs and personal affirmation. Transformational leadership is linked to empowering followers by offering personal support, demonstrating empathy, openly sharing emotions with organizational members, and instilling confidence in their capacity to successfully navigate the challenges of change (Aleksic, 2016). Leaders who practice individualized consideration play a crucial role in enhancing employee creativity by actively encouraging them, broadening their knowledge, and offering opportunities for personal growth and development, all while boosting their self-confidence (Teymournejad & Elghaei, 2017).

On the other hand, transactional leadership refers to the exchange between leaders and followers, where both parties satisfy their own interests (Bass, 1999). A transactional leader is pragmatic and results-driven, resistant to change, and focused on goals, while neglecting to empower employees, value their individuality, or encourage creative and independent thinking (Berber, Strugar Jelača, Bjekić & Marić, 2022). Dimensions of transactional leadership include contingent reward, active management by exception, passive management by exception, and laissez-faire behavior (Bass, 1996). Contingent reward is based on exchange theory, where the leader exchanges a reward for expected compliance, using it as a primary instrument of controlling follower behavior (Stojanović, 2007). Also, contingent reward involves leader behavior that emphasizes set requirements and provides followers with material or psychological rewards proportional to the degree of task accomplishment (Bass, Avolio, Jung & Berson, 2003). Rezvani, Khosravi & Ahmad (2012) state that such

leadership entails an investment-reward relationship, where the leader motivates followers by showing them how to achieve set goals and what reward they can expect in return. Similarly, Dai et al. (2013) indicate that transactional leadership is a relationship of economic, political, and psychological exchange between leaders and followers, where the negotiation process is short-term and lacks deeper significance. Transactional leaders reward those followers who manage to achieve previously formulated goals (Ravichandran, Gilmore & Strohhahn, 2007). In other words, transactional leaders strive to accomplish specified tasks, ensuring employee obedience through rewards and punishments (Quintana, 2014). Transactional leaders attempt to support and motivate their followers through contingent reward, providing an environment where desired behavior is rewarded (Natter, Mild, Feurstein, Dorffner & Taudes, 2001). Additionally, transactional leadership involves management by exception, which refers to monitoring performance by managers and taking corrective actions if necessary (Bono & Judge, 2004). The difference between active and passive management by exception lies in the timing of the leader's intervention, where in active management by exception, leaders monitor the behavior of their followers, expect mistakes, and take corrective actions before problems arise, while passive leaders intervene only when follower behavior causes negative consequences for the company's operations (Judge & Piccolo, 2004). Finally, laissez-faire behavior is characterized by a complete absence of leadership, avoidance of intervention and decision-making, with no attempt to motivate or reward followers, leading to increased interpersonal conflicts and levels of workplace stress (Skogstad, 2007).

## 2. Hypotheses and research model

Transformational leadership fosters organizational innovativeness through several important dimensions, which include inspiring a vision of the future, effective communication between leaders and followers, and creating a supportive environment for innovative teams (Mokhber et al., 2015). Transformational leadership is positively associated with organizational creativity and innovation, as it directly and indirectly influences these outcomes by inspiring teams and fostering an environment conducive to creative thinking and innovative practices (Hu et al., 2013). Transformational leaders succeed in motivating their followers to try out new methods and innovative problem-solving approaches (Rafferty & Griffin, 2004). Mirić, Aničić & Petrović (2023) argue that various forms of forming formal or informal social networks, communities of collaboration, and interorganizational connections, can have a positive effect on their networking and consequently on the innovativeness of the company, which is especially important in the context of the individual consideration and communication skills of a transformational leader. Afsar & Umrani (2020) emphasize that transformational leadership fosters unconventional thinking and problem-solving among employees, which is crucial for enhancing organizational innovativeness and positively impacts employees' innovative work behavior. In other words, transformational leaders stimulate innovative behavior among their followers by presenting a vision of the future, encouraging employees to challenge the status quo, and promoting individual growth and development (Thuan, 2020). This approach encourages followers to utilize their imagination and creativity to transform the current situation and discover more effective ways to complete tasks (Shin & Zhou, 2003). Given that transformational leaders exhibit empathy, tolerance,

and support, followers are able to perceive the risk inherent in the creative process as an opportunity for growth and development (To, Fisher, Ashkanasy & Rowe, 2012). Similarly, many studies show the positive impact of transformational leadership on organizational innovativeness (Gumusluoğlu & Ilsev, 2009; Jung et al., 2003; Mokhber et al., 2015; Qu, Janssen Shi, 2015). Additionally, Al-edenat (2018) identifies a statistically significant impact of all four dimensions of transformational leadership (idealized influence, inspirational motivation, intellectual stimulation, and individual consideration) on organizational innovativeness. Matzler, Schwarz, Deutinger & Harms (2008) identify a positive statistically significant impact of transformational leadership on the innovation of small and medium-sized enterprises. Similarly, Khalili (2016) demonstrates a statistically significant impact of transformational leadership on the innovation and creativity of employees. Based on the analyzed impact of transformational leadership on organizational innovation, the following hypothesis is formulated:

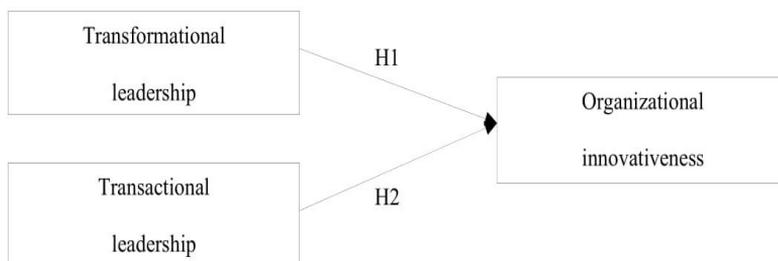
H1: Transformational leadership has a statistically significant impact on organizational innovativeness.

Jia, Jin, Liang & Qian (2018) argue that transactional leadership diminishes the innovative performance of a company and does not contribute to the process of organizational learning. Transactional leaders employ a classical type of management, whereby they do not attempt to use new methods or approaches to problem-solving (Lukowski, 2017). In fact, transactional leaders strive to establish control to the greatest extent possible in order to avoid the risks associated with daily activities (Jia et al., 2018). Pieterse et al. (2010) contend that transactional leadership has a negative impact on employee innovation precisely because it focuses more on performance enhancement rather than stimulating innovative behavior. Dai et al. (2013) state that transactional leaders restrict the development of employees' innovative and creative abilities, thereby slowing down both personal and organizational growth. In other words, transactional leadership is important for achieving short-term goals and increasing organizational efficiency; however, such an approach limits the creativity of employees (Alblooshi, Mohammad & Salah, 2020). Similarly, Costa et al. (2023) show a negative impact of transformational leadership on employee innovation, while Rashwan & Ghaly (2022) do not find a statistically significant impact of transactional leadership on employee innovation. Accordingly, the following hypothesis is proposed:

H2: Transactional leadership does not have a statistically significant impact on organizational innovativeness.

In Figure 1, the research model is displayed, illustrating the assumed relationships between the variables under study.

Figure 1: Research model



Source: Authors' research

### 3. Methodology

The scales employed to assess the relevant variables in the research model were selected based on a comprehensive review of the literature. Each of the three variables was measured using a different number of statements. The Transformational Leadership variable was evaluated through fourteen statements, for example: *The leader clearly understands the direction in which the organization is moving* (Rafferty & Griffin, 2004; Avolio et al., 1999). For the Transactional Leadership variable, eight statements were used, for example: *The leader expresses visible dissatisfaction if my performance is low* or *The leader directly and clearly lets me know when my performance is poor* (Dai et al., 2013; Alavi, Ehlig & Habel, 2022). The Organizational Innovativeness variable was assessed with eleven statements, for example: *The work environment values and encourages the ability to perform tasks in a creative manner* or *The company is open to taking risks* (Mohamed, 2016; Werlang & Rossetto, 2019; Scott & Bruce, 1994). Respondents rated their agreement on a five-point scale, where 1 indicated strong disagreement and 5 represented complete agreement.

To identify the statistically significant impact of various factors of transformational and transactional leadership on organizational innovativeness, empirical research was conducted from February 1 to March 10, 2024, across the Republic of Serbia. A survey method was used to collect primary data and gauge employees' attitudes toward transformational leadership, transactional leadership, and organizational innovativeness. This method included online interviews, with a questionnaire as the primary instrument. The survey was distributed online to 81 companies operating in the Republic of Serbia, and employees from 53 companies completed the survey. They were informed in advance that their participation was part of a research study and that their responses would be kept confidential, ensuring voluntary participation.

Data analysis was performed using the Statistical Package for Social Sciences (SPSS 13.0). The internal consistency of the statements measuring the variables in the model was assessed using Cronbach's  $\alpha$  coefficient. Multiple regression analysis was employed to evaluate the main effects, where *Transformational Leadership* and *Transactional Leadership* were treated as independent variables, while *Organizational Innovativeness* served as the dependent variable.

#### 4. Research results

The sample structure is outlined in Table 1. Of the 202 employees out of 53 companies, 55.9 percent (113 individuals) are female, and 44.1 percent (89 individuals) are male. The majority of respondents fall within the 26-45 age group (67.3 percent), while 30.7 percent are between 18 and 25 years old, and only 2 percent are aged 46 or above. In terms of education level, 45 percent of respondents have completed higher education, 45.5 percent have finished college or undergraduate studies, and 9.4 percent have completed high school. Additionally, 79.7 percent of participants hold non-managerial roles, while 20.3 percent occupy managerial positions. Most respondents are employed in manufacturing companies (53 percent), with the IT sector being the most represented within this category.

Table 1: Sample structure

		Number	Percentage
		Gender	Female
	Male	89	44.1%
	Total	202	100.0%
		Number	Percentage
		Age	From 18 to 25 years
	From 26 to 45 years	136	67.3%
	Over 45 years	4	2%
	Total	202	100.0%
		Number	Percentage
		Education level	Completed high school
	Completed college/university	92	45.5%
	Completed higher levels of study	91	45%
	Total	202	100.0%
		Number	Percentage
		Income level	Below 60.000 dinars
	Between 60.000 and 90.000 dinars	47	23.3%
	Above 90.000 dinars	139	68.8%
	Total	202	100.0%
		Number	Percentage
		Position	Managerial position
	Non-managerial position	161	79.7%
	Total	202	100.0%
		Number	Percentage
		Length of employment in the company under consideration	Less than one year
	Between 1 and 5 years	121	59.9%
	More than 5 years	30	14.9%
	Total	202	100.0%
		Number	Percentage
		Type of company	Manufacturing company

	Service company	95	43%
	Total	202	100.0%

Source: Authors' research

Table 2 presents the results of the reliability analysis. The reliability of the variables in the research model, or the internal consistency of the statements used, was assessed using the *Cronbach's  $\alpha$*  coefficient. All variables (Transformational Leadership, Transactional Leadership, and Organizational Innovativeness) have values above 0.70, indicating a high level of reliability, which is in line with Nunnally's (1978) recommendation that Cronbach's  $\alpha$  should exceed 0.70 to be considered reliable.

Table 2: Reliability analysis

Factors	<i>Cronbach's <math>\alpha</math></i>
Transformational Leadership	0.931
Transactional Leadership	0.706
Organizational Innovativeness	0.919

Source: Authors' research

Testing the effect of independent variables on Organizational Innovativeness was conducted using multiple regression analysis (Table 3). It can be concluded that the Transformational Leadership variable has a statistically significant impact on Organizational Innovativeness, supporting hypothesis H1. On the other hand, the Transactional Leadership variable does not have a statistically significant impact on Organizational Innovativeness, also supporting hypothesis H2. Furthermore, there is no indication of multicollinearity, as all VIF values are under 5 (Shrestha, 2020).

Table 3: Multiple regression analysis

Independent variables	$\beta$	t	Sig.	VIF
Transformational Leadership	0.531	8.871	<0.001	1.038
Transactional Leadership	0.100	1.676	>0.01ns	1.038

Source: Authors' research

\*\*\* $R^2=0.313$ ;  $F=45.260$  ( $p<0.001$ )

## 5. Discussion

The results of the multiple regression analysis show a positive, statistically significant impact of transformational leadership on organizational innovativeness, which is consistent with previous research. For example, Karimi, Ahmadi Malek, Yaghoubi Farani & Liobikienė (2023) demonstrate a statistically significant impact of transformational leadership on employee innovative behavior in developing countries. In this context, leadership plays a vital role in steering organizations through transformation by reassessing current structures, fostering a culture of change, and guiding individuals to embrace new mindsets, knowledge, attitudes, and work methods, while leveraging managerial skills to integrate innovative digital knowledge-based resources with existing organizational assets (Schiuma et al., 2024). Similarly, Alwahhabi, Dukhaykh & Alonazi (2023) show a statistically significant impact of

transformational leadership on innovativeness and employee commitment in the workplace, while Alzghoul, Khaddam, Alshaar & Irtaimeh (2023) argue that leaders who foster knowledge acquisition among their employees influence greater organizational innovativeness. When employees feel empowered within an organization and perceive value and meaning in their work roles, they are more likely to experience intrinsic motivation, which drives them to make a positive impact, foster innovative behaviors, and successfully complete tasks, ultimately contributing to the overall success of the organization (Pham et al., 2024). Furthermore, Jung et al. (2003); Bass & Avolio (1994); Qu et al. (2015); Afsar & Umrani (2020) identify a statistically significant association between transformational leadership and organizational innovativeness. Ansari et al. (2024) explain that transformational leaders promote remarkable results through active team participation, inspiring others to develop leadership qualities, with each member contributing to organizational goals, making transformational leadership traits essential for success in increasingly complex projects. In accordance with the results, Saif et al. (2024) highlight that transformational leadership fosters employees' innovative work behavior, as transformational leaders who cultivate a supportive work environment, appreciate employee contributions, and reward innovation are more likely to inspire and motivate employees to engage in innovative work behavior. Additionally, numerous studies show a statistically significant impact of individual dimensions of transformational leadership on organizational innovativeness (Tajasom et al., 2015; Shafi, Lei, Song & Sarker, 2020; Sethibe & Steyn, 2017; Sandvik, Croucher, Espedal & Selart, 2018; Karimi & Morshedi, 2015).

However, the conducted research collectively examines the influence of both transformational and transactional leadership on organizational innovativeness. The results of the multiple regression analysis indicate that transformational leadership is more conducive to fostering organizational innovativeness than transactional leadership, which is consistent with previous research (Pieterse et al., 2010; Prasad & Junni, 2016; Costa et al., 2023; Rashwan & Ghaly, 2022). The transactional leadership style, which focuses on contingent rewards, tends to build short-term relationships between employees and employers, and while it may produce similar outcomes to certain aspects of transformational leadership, it can disrupt healthy leader-follower dynamics and create discord if not carefully managed (Wuryaningrat et al., 2024). Bass et al. (2003) state that transactional leadership negatively affects employee creativity and motivation to propose new ideas. In accordance with the result, Masenya & Ngoepe (2024) state that transformational leadership, with its focus on relationship-oriented behaviors, has been found to have a greater impact on employee retention than transactional leadership, which emphasizes task-oriented behaviors. Also, Catherin et al. (2025) found no significant correlation between the transactional leadership style and employee performance, suggesting that this style is not ideal for employees who are looking for inspiration and personal growth. Additionally, Howell & Avolio (1993) identify a negative impact of transactional leadership dimensions (contingent reward, active management by exception, and passive management by exception) on organizational innovativeness. However, Alavi et al. (2022) prove that the transactional leadership style is more effective than the transformational style in certain cases, such as crisis situations characterized by high uncertainty.

## 6. Conclusion and implications

Starting from the set research goal, the obtained results indicate the following relevant conclusions. The results of the empirical research show a positive, statistically significant impact of transformational leadership on organizational innovativeness. Simultaneously, the study did not identify a statistically significant influence of transactional leadership on organizational innovativeness.

The conducted research contributes to the existing literature because there are no studies in the domestic literature that holistically examine the effects of transformational and transactional leadership on organizational innovativeness. The proposed model features a distinctive structure, as few studies examine the concurrent impact of transformational and transactional leadership on organizational innovativeness, which enhances the originality of this research. In this context, the findings outlined in the paper highlight conditions under which the application of a particular leadership style can enhance organizational innovativeness. The results also allow for the formulation of both theoretical and practical implications.

The theoretical contribution of the paper lies in eliminating the identified gap in the literature. In practical terms, the research can provide guidance to leaders in Serbian companies. For practitioners, the findings highlight that the adoption of transformational leadership can substantially enhance creativity and employee engagement, which are pivotal in navigating the complexities of today's competitive environment. It is imperative for leaders to emphasize continuous learning while cultivating a culture that encourages experimentation and the acceptance of calculated risks. Furthermore, organizations should invest in comprehensive leadership development initiatives to equip leaders with the competencies required to foster innovative thinking and create an environment in which employees are empowered to contribute meaningfully. This approach involves engaging with employees by recognizing their individual needs and aspirations while valuing their opinions in important decision-making processes. Leaders should actively cultivate curiosity among their team members, urging them to explore problems from multiple perspectives. Various creative thinking techniques can be employed to evaluate all alternatives before dismissing any ideas. Effectively communicating the organization's vision and core values can further inspire employees to pursue shared goals and explore diverse problem-solving methods. It's essential for every employee to understand the organization's aspirations, while leaders should reinforce through their actions and discussions that each individual plays a crucial role in driving change and enhancing business performance. Conversely, relying on transactional leadership—characterized by contingent rewards, management by exception, and laissez-faire attitudes—can hinder efforts to boost organizational innovativeness. Adopting a more empowering leadership style is likely to boost creativity and employee engagement, ultimately enhancing the organization's competitive advantage in a dynamic market. Managers should shift their focus away from employees' mistakes and instead foster an environment that embraces experimentation and learning from failures. This shift towards a culture of innovation can promote psychological safety, encouraging employees to share bold ideas without fear of negative consequences. Additionally, rewards

should not be tied to specific tasks but should be framed within the broader context of the creative process, assessing the entire journey of idea generation and development rather than merely its execution. This approach not only fosters creativity but also emphasizes the value of ongoing learning, helping organizations adapt more effectively to emerging challenges. Additionally, this leadership style can enhance employee satisfaction and retention by making individuals feel more appreciated and engaged in decision-making. In the long run, cultivating a culture that prioritizes innovativeness and creative thinking can play a key role in ensuring organizational sustainability and long-term success. At the same time, organizations that emphasize creativity and innovativeness play a vital role in stimulating economic growth and fostering social development by advancing progress across multiple industries. As more organizations adopt transformational leadership, the potential for enhanced workforce inclusion and diversity increases, as employees are empowered to contribute their distinct viewpoints. This inclusive leadership approach can extend its positive impact on society by fostering collaborative efforts to address complex global challenges.

The main limitation of this research is its focus on the Republic of Serbia, limiting the applicability to other countries. Future research should analyze the relationship between transformational and transactional leadership and organizational innovativeness in different countries to enable international comparisons and identify practices that could be adapted based on cultural compatibility. Also, it is possible to observe the impact of specific dimensions of transformational and transactional leadership on organizational innovativeness to identify dimensions with the strongest effect. Future research could also explore the long-term effects of transformational leadership on organizational performance, specifically in industries undergoing rapid technological change. Investigating the role of leadership in shaping organizational culture and its impact on employee creativity could also provide valuable insights.

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- Zlatanović, D. & Leković, B. (2024). *Upravljanje inovacijama i razvoj novog proizvoda*. Kragujevac: Ekonomski fakultet Univerziteta u Kragujevcu.

## **Списак рецензената часописа „Анали Економског факултета у Суботици“ у 2025. години (број 53) / Reviewers of the journal “Anali Ekonomskog fakulteta u Subotici” in 2025 (No 53)**

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# **Техничко упутство за форматирање радова / Technical instructions for paper formatting**

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## **The paper should consist of:**

Title of the paper (no more than 10 words) in English.

Subtitle (optional) in English.

Personal data of authors/coauthors: name, surname, title and Institution in English.

Abstract of 200 words or less, giving the factual essence of the article, should be written in English.

Key words (no more than 10) in English.

Text of the paper, in English, cannot exceed 12 pages.

Bibliography.

## **Guidelines for the paper format**

Type your work in a common Word Processor (e.g. MS Word).

Page format: B5.

Margin: 2 cm every

Font: Times New Roman, size 11 (use it for title, subtitle, figures, tables, abstract, key words, and so on).

Titles, subtitles, names of the tables, illustrations, figures, etc should be written in Arabic numerals.

Figures, illustrations and schemes should be enclosed in the .jpg format (resolution 300\*300 dpi) or in the vector form (.wmf or cdr) with enclosed fonts or fonts transformed in curves. Figures, illustrations and schemes should be black-and-white (gray-scale). For the texts included in figures, illustrations and schemes font Arial, size 9 pt is preferred.

# 1. Referencing Guide

The references should specify the source (such as book, journal article or a web page) in sufficient detail to enable the readers to identify and consult it. The references are placed at the end of the work, with sources listed alphabetically (a) by authors' surnames or (b) by the titles of the sources (if the author is unknown). Multiple entries by the same author(s) must be sequenced chronologically, starting from the earliest, e.g.:

Ljubojević, T.K. (1998).  
Ljubojević, T.K. (2000a).  
Ljubojević, T.K. (2000b).  
Ljubojević, T.K., & Dimitrijević, N.N. (1994).

Here is a list of the most common reference types:

## A. Periodicals

Authors must be listed by their last names, followed by initials. Publication year must be written in parentheses, followed by a full stop. Title of the article must be in sentence case: only the first word and proper nouns in the title are capitalized. The periodical title must be in title case, followed by the volume number, which is also italicized:

Author, A. A., Author, B. B., & Author, C. C. (Year). Title of article. *Title of Periodical, volume number*(issue number), pages.

### ➔ Journal article, one author, paginated by issue

Journals paginated by issue begin with page 1 in every issue, so that the issue number is indicated in parentheses after the volume. The parentheses and issue numbers are not italicized, e.g.

Tanasijević, V. (2007). A PHP project test-driven end to end. *Management Information Systems, 5*(1), 26-35.

### ➔ Journal article, one author, paginated by volume

Journals paginated by volume begin with page 1 in issue 1, and continue page numbering in issue 2 where issue 1 ended, e.g.

Perić, O. (2006). Bridging the gap: Complex adaptive knowledge management. *Strategic Management, 14*, 654-668.

### ➔ Journal article, two authors, paginated by issue

Strakić, F., & Mirković, D. (2006). The role of the user in the software development life cycle. *Management Information Systems, 4*(2), 60-72.

### ➔ Journal article, two authors, paginated by volume

Ljubojević, K., & Dimitrijević, M. (2007). Choosing your CRM strategy. *Strategic Management, 15*, 333-349.

➔ **Journal article, three to six authors, paginated by issue**

Jovanov, N., Boškov, T., & Strakić, F. (2007). Data warehouse architecture. *Management Information Systems*, 5(2), 41-49.

➔ **Journal article, three to six authors, paginated by volume**

Boškov, T., Ljubojević, K., & Tanasijević, V. (2005). A new approach to CRM. *Strategic Management*, 13, 300-310.

➔ **Journal article, more than six authors, paginated by issue**

Ljubojević, K., Dimitrijević, M., Mirković, D., Tanasijević, V., Perić, O., Jovanov, N., et al. (2005). Putting the user at the center of software testing activity. *Management Information Systems*, 3(1), 99-106.

➔ **Journal article, more than six authors, paginated by volume**

Strakić, F., Mirković, D., Boškov, T., Ljubojević, K., Tanasijević, V., Dimitrijević, M., et al. (2003). Metadata in data warehouse. *Strategic Management*, 11, 122-132.

➔ **Magazine article**

Strakić, F. (2005, October 15). Remembering users with cookies. *IT Review*, 130, 20-21.

➔ **Newsletter article with author**

Dimitrijević, M. (2009, September). MySQL server, writing library files. *Computing News*, 57, 10-12.

➔ **Newsletter article without author**

VBScript with active server pages. (2009, September). *Computing News*, 57, 21-22.

## **B. Books, Brochures, Book Chapters, Encyclopedia Entries, And Book Reviews**

### **Basic format for books**

Author, A. A. (Year of publication). *Title of work: Capital letter also for subtitle.*  
Location: Publisher.

**Note:** "Location" always refers to the town/city, but you should also include the state/country if the town/city could be mistaken for one in another country.

➔ **Book, one author**

Ljubojević, K. (2005). *Prototyping the interface design.* Subotica: Faculty of Economics.

➔ **Book, one author, new edition**

Dimitrijević, M. (2007). *Customer relationship management* (6<sup>th</sup> ed.). Subotica: Faculty of Economics.

➔ **Book, two authors**

Ljubojević, K., Dimitrijević, M. (2007). *The enterprise knowledge portal and its architecture*. Subotica: Faculty of Economics.

➔ **Book, three to six authors**

Ljubojević, K., Dimitrijević, M., Mirković, D., Tanasijević, V., & Perić, O. (2006). *Importance of software testing*. Subotica: Faculty of Economics.

➔ **Book, more than six authors**

Mirković, D., Tanasijević, V., Perić, O., Jovanov, N., Boškov, T., Strakić, F., et al. (2007). *Supply chain management*. Subotica: Faculty of Economics.

➔ **Book, no author or editor**

*Web user interface* (10th ed.). (2003). Subotica: Faculty of Economics.

➔ **Group, corporate, or government author**

Statistical office of the Republic of Serbia. (1978). *Statistical abstract of the Republic of Serbia*. Belgrade: Ministry of community and social services.

➔ **Edited book**

Dimitrijević, M., & Tanasijević, V. (Eds.). (2004). *Data warehouse architecture*. Subotica: Faculty of Economics.

➔ **Chapter in an edited book**

Boškov, T., & Strakić, F. (2008). Bridging the gap: Complex adaptive knowledge management. In T. Boškov & V. Tanasijević (Eds.), *The enterprise knowledge portal and its architecture* (pp. 55-89). Subotica: Faculty of Economics.

➔ **Encyclopedia entry**

Mirković, D. (2006). History and the world of mathematicians. In *The new mathematics encyclopedia* (Vol. 56, pp. 23-45). Subotica: Faculty of Economics.

## C. Unpublished Works

➔ **Paper presented at a meeting or a conference**

Ljubojević, K., Tanasijević, V., Dimitrijević, M. (2003). *Designing a web form without tables*. Paper presented at the annual meeting of the Serbian computer alliance, Beograd.

### ➔ Paper or manuscript

Boškov, T., Strakić, F., Ljubojević, K., Dimitrijević, M., & Perić, O. (2007, May). *First steps in visual basic for applications*. Unpublished paper, Faculty of Economics Subotica, Subotica.

### ➔ Doctoral dissertation

Strakić, F. (2000). *Managing network services: Managing DNS servers*. Unpublished doctoral dissertation, Faculty of Economics Subotica, Subotica.

### ➔ Master's thesis

Dimitrijević, M. (2003). *Structural modeling: Class and object diagrams*. Unpublished master's thesis, Faculty of Economics Subotica, Subotica.

## D. Electronic Media

The same guidelines apply for online articles as for printed articles. All the information that the online host makes available must be listed, including an issue number in parentheses:

Author, A. A., & Author, B. B. (Publication date). Title of article. *Title of Online Periodical, volume number*(issue number if available). Retrieved from <http://www.anyaddress.com/full/url/>

### ➔ Article in an internet-only journal

Tanasijević, V. (2003, March). Putting the user at the center of software testing activity. *Strategic Management, 8*(4). Retrieved October 7, 2004, from [www.ef.uns.ac.rs/sm2003](http://www.ef.uns.ac.rs/sm2003)

### ➔ Document from an organization

Faculty of Economics. (2008, March 5). *A new approach to CRM*. Retrieved July 25, 2008, from <http://www.ef.uns.ac.rs/papers/acrm.html>

### ➔ Article from an online periodical with DOI assigned

Jovanov, N., & Boškov, T. A PHP project test-driven end to end. *Management Information Systems, 2*(2), 45-54. doi: 10.1108/06070565717821898.

### ➔ Article from an online periodical without DOI assigned

Online journal articles without a DOI require a URL.

Author, A. A., & Author, B. B. (Publication date). Title of article. *Title of Journal, volume number*. Retrieved from <http://www.anyaddress.com/full/url/>

Jovanov, N., & Boškov, T. A PHP project test-driven end to end. *Management Information Systems, 2*(2), 45-54. Retrieved from <http://www.ef.uns.ac.rs/mis/TestDriven.html>.

## 2. Reference Quotations in the Text

### ➤ Quotations

If a work is directly quoted from, then the author, year of publication and the page reference (preceded by “p.”) must be included. The quotation is introduced with an introductory phrase including the author’s last name followed by publication date in parentheses.

According to Mirković (2001), “The use of data warehouses may be limited, especially if they contain confidential data” (p. 201).

Mirković (2001), found that “the use of data warehouses may be limited” (p. 201). What unexpected impact does this have on the range of availability?

If the author is not named in the introductory phrase, the author's last name, publication year, and the page number in parentheses must be placed at the end of the quotation, e.g.

He stated, “The use of data warehouses may be limited,” but he did not fully explain the possible impact (Mirković, 2001, p. 201).

### ➤ Summary or paraphrase

According to Mirković (1991), limitations on the use of databases can be external and software-based, or temporary and even discretion-based (p.201).

Limitations on the use of databases can be external and software-based, or temporary and even discretion-based (Mirković, 1991, p. 201).

### ➤ One author

Boškov (2005) compared the access range...

In an early study of access range (Boškov, 2005), it was found...

### ➤ When there are **two authors**, both names are always cited:

Another study (Mirković & Boškov, 2006) concluded that...

### ➤ If there are **three to five authors**, all authors must be cited the first time. For subsequent references, the first author’s name will cited, followed by “et al.”.

(Jovanov, Boškov, Perić, Boškov, & Strakić, 2004).

In subsequent citations, only the first author’s name is used, followed by “et al.” in the introductory phrase or in parentheses:

According to Jovanov et al. (2004), further occurrences of the phenomenon tend to receive a much wider media coverage.

Further occurrences of the phenomenon tend to receive a much wider media coverage (Jovanov et al., 2004).

In “et al.”, “et” is not followed by a full stop.

### ➤ Six or more authors

The first author's last name followed by "et al." is used in the introductory phrase or in parentheses:

Yossarian et al. (2004) argued that...

... not relevant (Yossarian et al., 2001).

### ➤ Unknown author

If the work does not have an author, the source is cited by its title in the introductory phrase, or the first 1-2 words are placed in the parentheses. Book and report titles must be italicized or underlined, while titles of articles and chapters are placed in quotation marks:

A similar survey was conducted on a number of organizations employing database managers ("Limiting database access", 2005).

If work (such as a newspaper editorial) has no author, the first few words of the title are cited, followed by the year:

("The Objectives of Access Delegation," 2007)

**Note:** In the rare cases when the word "Anonymous" is used for the author, it is treated as the author's name (Anonymous, 2008). The name Anonymous must then be used as the author in the reference list.

### ➤ Organization as an Author

If the author is an organization or a government agency, the organization must be mentioned in the introductory phrase or in the parenthetical citation the first time the source is cited:

According to the Statistical Office of the Republic of Serbia (1978), ...

Also, the full name of corporate authors must be listed in the first reference, with an abbreviation in brackets. The abbreviated name will then be used for subsequent references:

The overview is limited to towns with 10,000 inhabitants and up (Statistical Office of the Republic of Serbia [SORS], 1978).

The list does not include schools that were listed as closed down in the previous statistical overview (SORS, 1978).

### ➤ When citing **more than one reference from the same author:**

(Bezjak, 1999, 2002)

➤ When several **used works by the same author were published in the same year**, they must be cited adding a, b, c, and so on, to the publication date:

(Griffith, 2002a, 2002b, 2004)

### ➤ **Two or more works in the same parentheses**

When two or more works are cited parenthetically, they must be cited in the same order as they appear in the reference list, separated by a semicolon.

(Bezjak, 1999; Griffith, 2004)

### ➔ **Two or more works by the same author in the same year**

If two or more sources used in the submission were published by the same author in the same year, the entries in the reference list must be ordered using lower-case letters (a, b, c...) with the year. Lower-case letters will also be used with the year in the in-text citation as well:

Survey results published in Theissen (2004a) show that...

### ➔ To **credit an author for discovering a work**, when you have not read the original:

Bergson's research (as cited in Mirković & Boškov, 2006)...

Here, Mirković & Boškov (2006) will appear in the reference list, while Bergson will not.

### ➔ When **citing more than one author**, the authors must be listed alphabetically:

(Britten, 2001; Sturlasson, 2002; Wasserwandt, 1997)

### ➔ When there is **no publication date**:

(Hessenberg, n.d.)

### ➔ **Page numbers must always be given for quotations:**

(Mirković & Boškov, 2006, p.12)

Mirković & Boškov (2006, p. 12) propose the approach by which “the initial viewpoint...

### ➔ **Referring to a specific part of a work:**

(Theissen, 2004a, chap. 3)

(Keaton, 1997, pp. 85-94)

### ➔ **Personal communications, including interviews, letters, memos, e-mails, and telephone conversations**, are cited as below. (These are *not* included in the reference list.)

(K. Ljubojević, personal communication, May 5, 2008).

## 3. Footnotes and Endnotes

A few footnotes may be necessary when elaborating on an issue raised in the text, adding something that is in indirect connection, or providing supplementary technical information. Footnotes and endnotes are numbered with superscript Arabic numerals at the end of the sentence, like this.<sup>1</sup> Endnotes begin on a separate page, after the end of the text. However, journal **does not recommend the use of footnotes or endnotes.**







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