



# МЕНАЏМЕНТ У ХОТЕЛИЈЕРСТВУ И ТУРИЗМУ

## HOTEL AND TOURISM MANAGEMENT



УНИВЕРЗИТЕТ У КРАГУЈЕВЦУ  
UNIVERSITY OF KRAGUJEVAC

ФАКУЛТЕТ ЗА ХОТЕЛИЈЕРСТВО И ТУРИЗАМ У ВРЊАЧКОЈ БАЊИ  
FACULTY OF HOTEL MANAGEMENT AND TOURISM IN VRNJAČKA BANJA



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## Editorial

*Менаџменту хотелијерству и туризму – Hotel and Tourism Management* is an open access peer-reviewed journal which discusses major trends and developments in a variety of topics related to the hospitality and tourism industry. The Journal publishes both theoretical and applied research papers, giving full support to collaborative research efforts taken jointly by academia and industry. According to its editorial policy goal, *Менаџмент у хотелијерству и туризму – Hotel and Tourism Management* has constantly been striving to increase its quality by promoting the popularisation of science and providing significant scientific and professional contribution to the development of hospitality and tourism industry, both in Serbia and on the global scale. The Journal is published by the Faculty of Hotel Management and Tourism in Vrnjačka Banja, University of Kragujevac. Since launching the Journal in 2013, seventeen issues have been published so far.

*Менаџменту хотелијерству и туризму – Hotel and Tourism Management* includes the following sections: Original Scientific Paper, Review Article, Short or Preliminary Announcement and Scientific Critique. The Journal does not consider PhD theses as prior publication and welcomes excerpts from the author's dissertations. It is published semiannually. The Journal offers an open access of its contents, which makes research results more visible to a wider international academic community. All articles are published in English and undergo a double-blind peer-review process.

The main aspects taken into consideration in paper evaluation are the originality of the study, contribution to the theory and practice and the use of grammar and style (either American or British English are accepted). The expected turn-around period is one to two months following the date of receipt. The crucial requirements for the submission of a manuscript are that the manuscript has not been published before, nor is it under consideration for publication elsewhere. The manuscript will be initially checked to ensure that it meets the scope of the Journal and its formal requirements. Submitted content will be checked for plagiarism. The provided names and email addresses will be used exclusively for the purposes stated by the Journal and will not be made available for any other purpose or to any other party.

The Journal has a reputable international editorial board comprising experts from the United States, the United Kingdom, the Russian Federation, Spain, Italy, Mexico, Japan, UAE, India, Poland, Slovakia, Romania, Finland, Lithuania, Moldova, Greece, Slovenia, Bulgaria, Serbia, Croatia, Montenegro, North Macedonia, Bosnia and Herzegovina.

I am glad to announce that *Менаџменту хотелијерству и туризму – Hotel and Tourism Management* is indexed in ERIHPLUS (European Reference Index for the Humanities and the Social Sciences), CABELLS Scholarly Analytics, CEEOL (Central and Eastern European Online Library), DOAJ (Directory of Open Access Journals), ProQuest, EBSCO (EBSCO Information Services), Ulrich's Web (Ulrich's Periodicals Directory), SCIndeks (Serbian Citation Index), CNKI (China National Knowledge Infrastructure), CyberLeninka, WorldCat and Google Scholar databases.

I would like to use this opportunity to express my deep gratitude to the authors, reviewers, and members of the Editorial and Publishing Boards for their devoted time and efforts that have contributed to the development of our Journal. At the end, I am pleased to invite you to look into the latest research in the fields of hospitality and tourism presented in the current issue.

Editor in Chief  
prof. Drago Cvijanović, Ph.D.

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## Loyalty program value: Give me more or treat me better?

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**Abstract:** Customer loyalty programs are frequently used by companies to establish and improve relationships with customers by providing them with rewards. Loyalty programs investigated in the literature focus mainly on tangible rewards and economic benefits offered to the customers. However, some research done on intangible rewards of loyalty programs suggest that they can be superior to tangible benefits in affecting customer loyalty. Previous research drew conclusions in industry-specific settings. The aim of the paper is to assess the impact of tangible and intangible benefits on customer loyalty using an on-line customer panel representing different industries. The data collected from over 300 customers is subjected to CFA/SEM analysis in R environment. The main contribution of the present study is that it represents the first attempt (to the best of authors' knowledge) to capture loyalty programs' tangible and intangible value in an Arab cultural context, given the fact the focus was on the participants from the United Arab Emirates. Several important dimensions of LP programs in an Arab country are revealed. Firstly, the study confirmed that social value of a loyalty program significantly impacts customer loyalty. In addition, it was confirmed that the flexibility of a loyalty program increased customer loyalty. Ultimately, it was established that customers value intangible benefits more than the tangible ones.

**Keywords:** loyalty program value, economic value, social benefits, intangible benefits, tangible benefits

**JEL classification:** M31

## Vrednost programa lojalnosti: Daj mi više ili me tretiraj bolje?

**Sažetak:** Kompanije često koriste programe lojalnosti kako bi razvili i unapredili odnose sa svojim kupcima, uz obezbeđivanje različitih nagrada. Programi lojalnosti koji su istraženi u literaturi se najčešće fokusiraju na opipljive nagrade i ekonomske koristi koje se kupcima nude. Međutim, određene istraživačke studije koje su se bavile neopipljivim nagradama programa lojalnosti sugeriraju da upravo neopipljive koristi mogu biti superiornije u odnosu na opipljive i efektivnije u obezbeđivanju lojalnosti kupaca. Većina ranijih istraživanja je

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analizirala konkretne privredne grane. U ovom radu istražuje se uticaj opipljivih i neopipljivih koristi na lojalnost kupaca, uz upotrebu panela kupaca iz različitih privrednih grana. Podaci su prikupljeni od više od 300 kupaca i analizirani su uz pomoć CFA/SEM u R okruženju. Glavni doprinos istraživanja se sastoji u tome da, koliko je autorima poznato, ova studija predstavlja pionirski pokušaj obuhvatanja opipljivih i neopipljivih benefita programa lojalnosti u kontekstu jedne arapske države, tj. Ujedinjenih Arapskih Emirata. Istraživanje je ukazalo na bitne dimenzije programa lojalnosti kod kupaca u jednoj arapskoj zemlji. Studija je prvenstveno potvrdila da društvena vrednost programa lojalnosti značajno opredeljuje lojalnost kupaca. Pored ovoga, istraživanje je potvrdilo da fleksibilnost programa podiže lojalnost kupaca. Na kraju, utvrđeno je da kupci u većoj meri vrednuju neopipljive koristi od programa lojalnosti u odnosu na opipljive.

**Ključne reči:** vrednost programa lojalnosti, ekonomska vrednost, društvene koristi, neopipljive koristi, opipljive koristi

**JEL klasifikacija:** M31

## 1. Introduction

Companies tend to capitalize from their relationships with external stakeholders and therefore invest significant efforts in relational capital, which captures knowledge embedded in organizations relationships with customers, suppliers, creditors, and other external partners (Gunay et al., 2021). Loyalty programs (LPs) are one of the main marketing tools companies implement to nourish customer loyalty, both in B2C (Kwiatek et al., 2018) and B2B markets (Kwiatek & Thanasi-Boçe, 2019). Ha and Stoel (2014) define a loyalty program as an “identity marketing tool” which is based on providing customer with rewards. Steinhoff and Palmatier (2016) define LPs as “any institutionalized incentive system that attempts to enhance consumers’ consumption behavior over time” LPs are used by companies not only to increase sales, but also to create long-lasting (Yi & Jeon, 2003) and stronger (Uncles et al., 2003) relationships with customers. In attempts to increase customers’ engagement in LPs, companies emphasize the LP value and the potential benefits customers might gain thanks to a LP. LPs are presented in the literature as the main tool to build customer loyalties (Buhalis & Volchek, 2021; Hollebeek et al., 2021). From the customer’s perspective, LP value is referred to as a bundle of perceived benefits (Zakaria et al., 2014). This bundle consists of tangible (i.e. economic) value the customers gather such as monetary savings (Kopalle et al., 2012), and intangible (soft) benefits such as psychological value (Liu, 2007). The higher perceived value of a loyalty program, the stronger customer’s response is (Kopalle et al., 2012; Yi & Jeon, 2003). Certainly, it is an imperative for successful management of a LP to develop a compelling set of benefits for customers.

The recent research on this topic appears to present inconclusive results. For example, tangible benefits strongly affect the customer satisfaction with a loyalty program, while intangible benefits, like being personally recognized, do not have significant effects (Mimouni-Chaabane & Volle, 2010). On the contrary, Brashear-Alejandro et al. (2016) find that customer recognition and social value (i.e., belonging to a social network) are the soft benefits that positively affect customer-company identification and thus strengthen the bonds that brands form with customers. It is also worth noting that previous research was limited and carried out in industry-specific context, like retail (Mimouni-Chaabane & Volle, 2010) and hospitality (Kim et al., 2013). Thus, the purpose of the current study is to compare tangible and intangible benefits for customers or (both customer and companies) of a LP and assess their relative impact on customer loyalty outside of any industry-specific context.

## 2. Theoretical background

### 2.1. Specifics of loyalty programs in the hospitality industry

A couple of decades ago leading hospitality companies started introducing a range of LPs to enhance their relationships with the guests. The fundamental premise which led to such initiatives' popularity were mainly because of an understanding that "loyal customers exhibit long-term commitment to the brand, leading to increased buying intention, higher revenue per customer; a willingness to pay more for comparable products/services; and reduced vulnerability to substitution by alternative brands" (O'Connor, 2021). Moreover, since loyalty of customers represents one of the key objectives of any organization (whether product or service oriented), achieving customer satisfaction is seen as the most important prerequisite for this. In order to achieve customer satisfaction, there should be a positive difference between anticipated expectations and realized service experience (Jevtić et al., 2020). The customer loyalty is also seen as an important part of intellectual capital, more specifically, relational capital of hotels, which is considered to have a major value creating effect for these organizations (Bontis et al., 2015). The LPs are a significant factor of customer loyalty, which in turn create satisfied guests who are more satisfied and thus more loyal. This in turn, causes repeated visits and positive word-of-mouth. All these factors have significant positive impact on hotel profitability (Vujić et al., 2019).

LPs have never been as relevant as they are in recent time as hospitality giants such as, the American Airline, Hilton and Marriott have seen that LPs' effectiveness is important for overcoming recent global crisis invoked by Covid-19 pandemic (Pascual & Cain, 2021). This assertion could be attributed to the growing competition, increasingly informative customers, emphasis on service quality perception, price, and satisfaction (Arora & Narula, 2018; Dewitte et al., 2021). It has become more obvious, that in the hospitality sector certain critical factors, such as innovative business model, "sharing economy" and collaborative commerce enabled by technological advancement of digital platform, have disrupted the traditional way of doing business (Altinay & Taheri, 2019; Kuhzady et al., 2021; Lima & de Assis Carlos Filho, 2019; Sigala, 2017). These disruptions came at a low operational cost, and also are linked to the constant changes in the customer buying behaviors in this sector (Satti et al., 2020).

LP normally stems from a place of customer acquisition and retention strategies, and as a result of intense competition. Additionally, in the hospitality industry, service quality, price perception and customer satisfaction are seen as factors responsible for customers embracing loyalty practices (Satti et al., 2020). Hospitality sector falls more within the ambit of service industries. Service quality has been identified as the predominant factor of satisfaction and loyalty among customers (Arora & Narula, 2018). Although these researchers suggest that, achieving service quality is dependent on a number of elements such as time and situation, during Covid-19 pandemic, LPs facilitated and maintained loyal customers in the hospitality sector (Pascual & Cain, 2021). It is also important to note the challenges associated with LPs. For example, such programs' benefits may not be sustainable since they could easily be replicated by competitors as most of them are either identical or there is hardly any cost for the customers to switch (Premayani et al., 2018).

Businesses now prefer to maintain existing customers as it is presumed to be cost effective to retain than putting huge efforts and investment to attract new ones (Arora & Narula, 2018). The existing customers retention has advantages as is argued that loyal customers become insensitive to prices, have built attachment to their preferred brand, all of which reduce costs of advertisement as well as marketing (Lentz et al., 2021). A proper application of LPs in the hospitality industry is said to be effective in profit maximization and sustainability, as it

assists businesses to maintain competitive advantage and generate more revenue due to repeat visits from loyal customers (Lentz et al., 2021).

Kim et al. (2021) highlight LP dynamics for understanding the operational, psychological and design characteristics supporting the different stages/levels the customer experiences in such a relationship. It begins with the cognitive value assessment, in which the customer identifies the monetary benefits of such a LP. It goes through an emotional value characterized with an exclusive bond between the company and the customer (Kim et al., 2021). The cognitive and emotional elements are delicate in such relationship considering the four stages normally a customer experience (i.e., acquisition, onboarding, expansion, and retention) (Kim et al., 2021; Pascual & Cain, 2021). Other researchers have noted importance of LP, since these programs in the hospitality sector helped companies' bond and build customer relation as they are used to stimulate and promote comeback buying behaviors which comes from a place of value adding (Chen et al., 2021).

## **2.2. Loyalty program value**

A number of conceptualizations present the value and utility of the loyalty program from different perspectives (Nesset et al., 2021). O'Brien and Jones (1995) broadly conceptualized loyalty program value as a composition of five elements: (1) monetary value of redemption rewards, (2) the scope of these different rewards, (3) the rewards' aspirational value, (4) the perceived prospect of realizing rewards, and (5) the LP's ease of use. This conceptualization builds on both objective (cash value, redemption choice) and subjective (ease of use, aspirational value, attainability of a reward) components of value. Alshurideh et al. (2020) presented a comprehensive analysis of the various benefits in this regard.

In a comparative study Kwiatek et al. (2018) show that benefits offered in a loyalty program are the most important element of loyalty program value. Supposed benefits could provide rationale why customers take part in loyalty programs, because these benefits increase loyalty and strengthen the relationship with the company (Bolton et al., 2004). Earlier research studies suggest that the customer benefits from a loyalty program entail utilitarian benefits (monetary savings and convenience), hedonic benefits (exploration and entertainment), and symbolic benefits (recognition and social benefits). Mimouni-Chaabane and Volle (2010) used hedonic-utilitarian-symbolic triad to derive more specific list of subjectively perceived benefits. In similar line, Evanschitzky et al. (2012) proposed three components of loyalty program value, namely social value, special treatment (both representing intangible value), and program value (economic). These days there are hardly any hospitality companies without a loyalty program for their customers (Lentz et al., 2021). Given the increased importance hospitality sector placed on LPs because of presumed value, a sound understanding of the effectiveness of such LPs is necessary for key stakeholders. This paper attempts to answer the question to what extent intangible effects of LPs contribute to the level of customer loyalty.

## **2.3. Hypotheses development**

Social Exchange Theory (SET) suggests that an individual's behavior varies depending on the exchange process of material goods, services, or social value with the company (Homans, 1961). Every party's aim in an exchange relationship is to minimize costs and maximize benefits. If customers get more engaged in a LP, they may expect social gratification, with social status being an example of this gratification. The premise of a reward for customers to feel recognized and appreciated, their behavior is likely to endure and enhance their relationship. SET provides an economic framework for the analysis of noneconomic social

situations (Chen et al., 2021). According to Blau, “engaging in ongoing social exchanges can create a platform of trust that facilitates the development of close relationships” (Blau, 1964).

The relationship links between customers and a company are positively affected by recognition (Alshurideh et al., 2020; Melancon et al., 2011). It creates customers’ awareness of a higher status that moves them forward to a positive relationship outcome (Drèze & Nunes, 2011). Subsequently, customers would amplify their attempts to maintain this position and demonstrate the higher status (Tanford, 2013). Thus, if customers feel special and are recognized, they should respond with higher loyalty. In line with SET and previous research (Kwiatk & Thanasi-Boçe, 2019; Liu, 2007; Mimouni-Chaabane & Volle, 2010), the anticipated outcome is that economic value also affects perceived LP value. In conclusion, we propose the following hypotheses:

*H1: Intangible value, i.e. a) psychological value, and b) social value of a loyalty program positively affects customer loyalty*

*H2: Tangible value, i.e. a) economic value, and b) flexibility of a loyalty program positively affects customer loyalty*

*H3: Intangible benefits affect loyalty more than tangible benefits*

### **3. Methodology**

Loyalty program value was conceptualized based on Kim et al. (2013), i.e., with two subdimensions for tangible value (economic value and flexibility), and two subdimensions for intangible value (social value and recognition). Building on previously validated scales, each subdimension was described and measured using 3-items Likert-type scales (Evanschitzky et al., 2012; Kim et al., 2013).

The targeted sample for this study was active loyalty program members who belong to consumer programs. We used customer panel managed by YouGov, a well-established consumer panel boasting 11 million members worldwide. For the purpose of the current study, we concentrated on members that represent the population of the United Arab Emirates (UAE) and are at least 18 years old. Members of the panel were invited to participate in an online survey using a quantitative questionnaire and offered a possibility to enter a draw for rewards upon completing the survey. All items were measured using 7-point Likert-type scales (1= strongly disagree to 7=strongly agree). The recognition component on a scale provided by Hennig-Thurau et al. (2002), and Evanschitzky et al. (2012). Social value component measurement was based on symbolic dimensions and adopted from (So et al., 2015). Program’s flexibility was based on Xiong et al. (2014), and economic value on So et al. (2015).

The loyalty towards the LP scale comprised of attitudinal items (Baloglu, 2002); (Evanschitzky et al., 2012), behavioral items (Omar et al., 2010; Umashankar et al., 2017; Xiong et al., 2014), and recommendation items from Raab et al. (2016). Based on demographic statistics provide by the United Nations, the population of the UAE is 10 million, whereas approximately 7.5 million are above 18 years of age. The statistics for loyalty program membership are not available. Based on previous studies, we note 25% penetration rate of the loyalty program. The required sample size is 289. The actual sample consisted of 302 respondents, all of whom belonged to at least one loyalty program based on collecting points and/or miles. The demographic characteristics are presented in Table 1.



Table 1: Participants' demographic profile

<b>Demographic</b>	<b>n</b>	<b>%</b>
<b>Gender</b>		
Male	200	66.2
Female	102	33.8
<b>Age</b>		
18-24	36	11.9
25-29	79	26.2
30-34	84	27.8
35-39	55	18.2
40+	48	15.9
<b>Income</b>		
Below \$19,200	66	21.9
\$19,201-31,980	37	12.3
\$31,981-63,984	58	19.2
\$63,985 or above	74	24.5
Not disclosed	67	22.2
<b>Membership tenure</b>		
Less than one year	102	33.8
One to two years	74	24.5
Two to three years	56	18.5
More than three years	70	23.2

Source: Author's research

## 4. Results

We analyze data in R environment using psych (Revelle, 2018) and lavaan (Rosseel, 2012) package.

Table 2: Confirmatory factor analysis statistics

	Item	$\beta$
<b>Loyalty Program Economic Value (LPVE; CR = .82; AVE = .60)</b>		
1. Being a member of this Loyalty Program allows me to save money	LPVE1	0.81
2. Being a member of this Loyalty Program allows me to get more out of my purchase	LPVE2	0.73
3. This Loyalty Program provides good value for money	LPVE3	0.80
<b>Loyalty Program Flexibility Value (LPVF; CR = .71; AVE = .46)</b>		
1. What I accumulate in this Loyalty Program will never expire	LPVF1	0.80
2. The Loyalty Program offers numerous reward redemption possibilities	LPVF2	0.78
3. I feel that members in this Loyalty Program share similar values	LPVF3	0.76
<b>Loyalty Program Social Value (LPVS; CR = .84; AVE = .63)</b>		
1. Being a member of this Loyalty Program is like being a member of a social club	LPVS1	0.86
2. This Loyalty Program adds to my identity	LPVS2	0.90
3. This Loyalty Program makes special offers to earn extra bonuses (points, miles etc.)	LPVS3	0.81
<b>Loyalty Program Recognition Value (LPVR; CR = .83; AVE = .63)</b>		
1. I feel special as a member of this Loyalty Program	LPVR1	0.83
2. I receive special treatment as a member of this Loyalty Program	LPVR2	0.87
3. As a member of this Loyalty Program I get discounts or special deals other customers don't get	LPVR3	0.88
<b>Loyalty (LOY; <math>\alpha = .92</math>; CR = .92; AVE = .60)</b>		
1. Overall, I am overall satisfied with this Loyalty Program	LOYS3	0.83
2. I enjoy being a member of the Loyalty Program	LOYAC1	0.85
3. Although there are other loyalty programs I still prefer being a member of this Loyalty Program	LOYAC2	0.76
4. This Loyalty Program makes me buy more often from particular brand	LOYB1	0.76
5. I prefer to spend more money buying from the company which runs this Loyalty Program	LOYB2	0.76
6. I would recommend my favorite loyalty program to others	LOYR1	0.75
7. I took the opportunity to recommend the loyalty program to others	LOYR2	0.79

Note: Model fit:  $\chi^2(139) = 289.371$ ,  $p = .00$ , CFI = 0.960, TLI = 0.951, RMSEA = 0.060, SRMR = 0.036,  $cmin/df = 2.19$ , AVE = average variance extracted; CR = Cronbach's  $\alpha$ ; CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation, SRMR = standardized root mean square residual

Source: Author's research

All construct validity thresholds were satisfying the 0.7 criterion (Fornell & Larcker, 1981) and ranged from 0.71 (flexibility) to 0.92 (loyalty). Composite reliability was satisfying for

all constructs, ranging from 0.89 to 0.92 (Nunnally, 1978). Average variance extracted exceeded the 0.5 threshold (Fornell & Larcker, 1981) for all constructs but flexibility (0.46). The value is accepted based on the rationale that average variance extracted (AVE) is lower than 0.5, composite reliability is above 0.6, making the convergent validity of the construct still satisfactory (Fornell & Larcker, 1981). To determine the extent to which variances in the constructs could be explained by the model,  $R^2$  values of the dependent constructs were calculated and found to be significant. Loadings for each construct, composite scores, and AVE per construct are shown in Table 2. The convergent validity of the model is established, since all items are significant at 0.05 levels and indicate loadings of 0.6 or higher (Fornell & Bookstein, 1982).

Table 3: Constructs means and correlations

Construct	M	SD	1	2	3	4	5
1. LPVE	2.20	0.80	0.77				
2. LPVF	2.20	0.70	0.79	0.68			
3. LPVS	2.40	0.91	0.77	0.80	0.79		
4. LPVR	2.30	0.97	0.80	0.83	0.80	0.79	
5. LOY	2.20	0.83	0.87	0.91	0.88	0.91	0.77

Note: LPVE = Loyalty Program Economic Value; LPVF = Loyalty Program Flexibility Value; LPVS = Loyalty Program Social Value; LPVR = Loyalty Program Recognition Value; LOY = Loyalty; Numbers on the diagonal present square root of AVE

Source: Author's research

In order to test H3 new scales were created by merging economic and flexibility value into tangible benefits (LPVEF) and social and recognition value into intangible benefits (LPVRS). The new scales were subjected to same analysis and provided satisfactory validity and reliability results. Composite reliability for all three constructs exceeded 0.7 threshold and the AVE values ranged from 0.55 to 0.61. The new model yielded slight decrease in quality but still within acceptable range ( $\chi^2(146) = 332.160$ , CFI = 0.950, TLI = 0.942, RMSEA = 0.065, SRMR = 0.039,  $cmin/df = 2.28$ ).

As provided in Table 4, three out five hypotheses are supported by the analysis of the data. First, recognition has the highest impact on customer loyalty ( $\beta = 0.58$ ,  $p < 0.01$ ). The flexibility of a loyalty program (like non-expiring points and numerous redemption possibilities) has significant impact on loyalty ( $\beta = 0.34$ ,  $p < 0.05$ ). Contrary to our expectations, both social value ( $\beta = -0.11$ ,  $p = 0.49$ ) and economic value ( $\beta = 0.17$ ,  $p = 0.89$ ) have no significant impact on loyalty. When aggregate measures are used (i.e. tangible and intangible benefits) both are significant. The difference between standardized estimates favors intangible benefits ( $\beta$  in T -  $\beta$ T = 0.02) but is marginal. However, we accept the hypothesis H3 bearing in mind higher value of Wald statistic.

Table 4: Path results

Structural Path	B	z value	Hypothesis
LPVS->LOY	-0.11	0.49	H1a not supported
LPVR->LOY	0.58	2.81**	H1b supported
LPVE->LOY	0.17	0.89	H2a not supported
LPVF->LOY	0.34	2.08*	H2b supported
LPVSR->LOY	0.47	4.48**	H3 supported
LPVEF->LOY	0.45	4.28**	

Note: LPVE = Loyalty Program Economic Value; LPVF = Loyalty Program Flexibility Value; LPVS = Loyalty Program Social Value; LPVR = Loyalty Program Recognition Value; LOY = Loyalty; LPVSR = Intangible Program Value; LPVEF = Tangible Program Value; Paths significant at: \*  $p < 0.05$ , \*\*  $p < 0.01$

Source: Author's research

## 5. Conclusion

This study extends previous works (Kim et al., 2013; Mimouni-Chaabane & Volle, 2010; Raab et al., 2016) by simultaneously testing the relationships between focal constructs on LPs. In this respect, it also extends the knowledge on cross-cultural aspects such as of loyalty programs value that concentrated mainly on the Western culture. Previous research was carried out in French (Mimouni-Chaabane & Volle, 2010) and USA (Kim et al., 2013) cultural contexts. Further, these studies investigated retail and hospitality industry. To the best of authors' knowledge, the present research study is the first to address the loyalty program's social and recognition value in Arab cultural context, since the current study focused on the sample from participants living in the United Arab Emirates and who are 18 years old and above. The sample included 302 respondents where they participated in at least one loyalty program.

An LP can be an important driver of company's sales when customers can identify additional value they receive from it (Evanschitzky et al., 2012; Kwiatek & Thanasi-Boçe, 2019). Loyalty program's perceived value is composed of tangible and intangible elements. Tangible value of a loyalty program is typically depicted by points/miles ratios, discounts, scope and choice of material rewards. Though these types of benefits do influence customer behavior (Meyer-Waarden, 2013) they come at a considerable cost to a sponsoring company. Recognition and social benefits offered to loyalty program members can increase their response at lower cost for a company. For example, material reward needs to be bought in order to be offered. Intangible benefits on the other hand include immaterial benefits like treating customers individually.

In particular, previous research on LPs suggested that social value (feeling of belonging and recognition), and subsequent personalized communication are the drivers of loyalty in collectivist and high-power distance cultures, while monetary rewards are more appealing to individualistic cultures (Kwiatek et al., 2018). Also, cultural elements could be added to the constructs to assess the regional, cultural differences in the value of intangible benefits for LP perception and acceptance by the customers. An important limitation of the present empirical study is its scope. The study focused on a single economy (United Arab Emirates), which could not be seen as a good representative of the Arab countries, due to its stage of development, economy openness, and tourism orientation. Additionally, the research sample is limited quantitatively, and for the future research should be expanded. Finally, the research, due to the respondent level, could not provide focused results in a sense that it could focus on a specific industry. On the other hand, the study reveals several important

aspects of LP programs in an Arab country. Firstly, the study confirmed that social value of a loyalty program significantly impacts customer loyalty. Secondly, it was confirmed that the flexibility of a loyalty program among consumers in the UAE plays important role in enhancing their loyalty. Finally, and most importantly, it was confirmed that customers value intangible benefits to a greater extent than the tangible ones, which brings back the notion of importance of investing in customer capital.

## Conflict of interest

The authors declare no conflict of interest.

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## **The impact of demographic factors on work-family conflict and turnover intentions in the hotel industry**

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**Abstract:** Family and work are the most important aspects in an individual's life, and the primary goal is to find a balance between these two. Given the characteristics of working in the hotel industry, employees in this industry very often face a conflict between family and work. This study aims to measure the impact of socio-demographic characteristics (gender, age, education and marital status) on work-family conflict (WFC) and turnover intentions (TI). On the sample of 1.100 employees in different hotel facilities by applying t-test and analysis of variance ANOVA, it was found that tested socio-demographic characteristics are not significant indicators of experiencing WFC, but age and marital status are proven to be significant determinants of turnover intentions. Results obtained in this study can help managers to understand antecedents and consequences of experiencing work-family conflict and to undertake activities to reduce these conflicts and turnover intentions of employees.

**Keywords:** services, hotel industry, lodging, work-family conflict, turnover intentions

**JEL classification:** L83, J63, J24, Z31

## **Uticaj socio-demografskih karakteristika na konflikt između posla i porodice i namere o napuštanju posla u hotelijerstvu**

**Sažetak:** Porodica i posao su među najvažnijim sferama života pojedinca, a primarni cilj je nalaženje ravnoteže između njih. S obzirom na osobenosti rada u hotelijerstvu, zaposleni se često susreću sa konfliktom uzrokovanim obavezama u porodičnom životu i na poslu. Cilj rada je merenje uticaja socio-demografskih karakteristika (pol, starosna dob, nivo obrazovanja i bračni status) na konflikt posao-porodica i namere o napuštanju posla. Na uzorku od 1.100 ispitanika u različitim hotelijerskim objektima primenom t-testa i analize varijanse ANOVA, pokazalo se da nema razlika u doživljavanju konflikta posao-porodica u odnosu na testirane socio-demografske karakteristike, ali kada je u pitanju namera napuštanja posla, postoje statistički značajne razlike u odnosu na starosnu dob i bračni status. Rezultati dobijeni ovim istraživanjem mogu pomoći menadžerima da razumeju antecedente i posledice

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doživljavanja konflikta između posla i porodice i da preduzmu aktivnosti kako bi smanjili ove konflikte i namere o napuštanju posla kod zaposlenih.

**Ključne reči:** usluge, hotelijerstvo, konflikt posao-porodica, namere o napuštanju posla  
**JEL klasifikacija:** L83, J63, J24, Z31

## 1. Introduction

As the two most important spheres in the lives of individuals, work and family often come into conflict, and their influence is an indicator of success and life satisfaction in general. Work is usually necessary for the normal functioning of the family, but it often happens to affect the disintegration and instability of the family members. The increased number of employed women reduces the time that spouses spend participating in joint family activities. This development has led to a series of problems that inevitably affect the emergence of conflicts between these two spheres of human life. As stated by [Netemeyer et al. \(1996\)](#) family-work conflict (FWC) is a kind of interrole conflict in which the overall demands of the family, as well as time dedicated to it, and the pressure created by the family interfere with completing work-related duties. On the other hand, the same authors defined work-family conflict (WFC) as a type of interrole conflict in which the overall demands of the work, as well as time dedicated to it, and the pressure created by the work interfere with completing family-related duties. The existence of conflicts between family and work, as well as between work and family, negatively affects work performance, health, but also the satisfaction with various aspects of life. Due to this, it is important to strive to establish work-life balance. As claimed by several authors, work-life balance could be characterized as an absence of work-family conflict along with high levels of work-family enrichment ([Duxbury & Higgins, 2001](#); [O'Driscoll et al., 2006](#)). In many industries, the aim is to reduce the time spent at work and away from the family, while in the hospitality industry this is not the case because most jobs are impossible without a key factor - people. In addition to the above, work in the hospitality industry is different from work in other industries because employees in hotels and restaurants work when most employees in other industries are free (e.g. at weekends and national holidays). Studies that have addressed this issue show that employees in the service sector are more susceptible to family and work conflict ([Furnham, 2002](#); [Netemeyer et al., 2005](#)). Susceptibility to these conflicts can be explained by the fact that customer relationships are often very fierce and stressful, which is later transferred to employees' homes ([Netemeyer et al., 1990](#); [Netemeyer et al., 2005](#)). On the other hand, some authors believe that not only work is a factor which affects the existence of this conflict, but also those family duties can affect the disruption of work obligations ([Choi & Kim, 2012](#); [Poelmans et al., 2003](#)).

Employees who are faced with a conflict between family and work become emotionally exhausted, and these two forms of conflict (WFC and FWC) are notable predictors of employment change ([Yavas et al., 2008](#)). The occurrence of problems at work has immediate and negative effects on the family ([Turliuc & Buliga, 2014](#)). The same authors state that the conflict between family and work is the main antecedent of the turnover intention (TI), which explains the high rate of labour turnover in the hotel industry.

## 2. Literature review

### *Impact of gender on work-family conflict and turnover intentions*

Research that has addressed gender differences and conflicts between work and family has yielded various conclusions. Some studies have shown that women express the presence of

these conflicts more than men (Frankenhaeuser et al., 1989; Lundberg et al., 1994), while others pointed out that gender has no effect on the conflict between family and business life (Akinayo, 2010; Frone, 2003; Karatepe et al., 2010). Research in the field of hospitality industry indicated that female employees report higher levels of WFC and FWC than male (Fiksenbaum et al., 2010; Tromp & Blomme, 2014; Yavas et al., 2008). In addition, some authors have indicated that gender is a factor of turnover intention, i.e. that women show a higher degree of turnover intention than men (Emiroğlu et al., 2015). Contrastingly, Carbery et al. (2003) and Yavas et al. (2008) found no influence of gender on turnover intention. Chen et al. (2018) found out that male hotel employees who experienced a higher level of WFC have higher intention to leave an organization than female hotel employees.

Based on this, the authors proposed the following hypotheses:

- H<sub>1</sub>: There are significant differences in experiencing WFC according to gender.
- H<sub>2</sub>: There are significant differences in expressing TI according to gender.

### ***Impact of age on work-family conflict and turnover intentions***

Age has been found as a factor that contributes to experiencing WFC and intent to leave an organization. Specifically, Gordon and Berry (2007) have indicated that, in the early stage of their careers, people are frequently willing to forfeit their personal lives in light of legitimate concern for their professional progression. Various researches indicated inconsistency in findings. For example, several authors pointed to negative association between age and WFC (Andreassi & Thompson, 2007; Grzywacz & Marks, 2000; Hsu, 2011). Contrary to their results, Mjoli et al. (2013) found positive association between age and WFC. On the other hand, Karatepe et al. (2010) did not find any significant correlation between WFC and age. Age was found as a determinant of turnover intention; and the turnover intention is generally lower among older employees (Blomme et al., 2010; Carbery et al., 2003; Karatepe et al., 2006; Kim et al., 2010; Pizam & Thornburg, 2006).

Based on this, the authors proposed the following hypotheses:

- H<sub>3</sub>: There are significant differences in experiencing WFC according to age.
- H<sub>4</sub>: There are significant differences in expressing TI according to age.

### ***Impact of education level on work-family conflict and turnover intentions***

The influence of education level on WFC has been recognized in the literature. Higher educated people would acquire more chances of advancement or working away, which increases the possibility of WFC (Adams et al., 1996). Anafarta and Kuruüzüm (2012) found that increasing the level of education in both males and females leads to an increase in the level of WFC they face with. Contrary to this, Carnicer et al. (2004) indicated that level of education has no evident effect on WFC. In some studies, the relationship between education level and turnover intentions has been examined. There is a positive relationship between the level of education and turnover intention, i.e. people with a lower level of education have a less pronounced intention to leave the organization (Carbery et al., 2003). On the other hand, in the study of Karatepe et al. (2006), a negative connection was found between education level and TI, i.e. that more educated employees express less turnover intention. Blomme et al. (2010) explore the association between flexibility in the workplace, organizational support, WFC, and the turnover intention among highly educated employed respondents in hotels. Their results indicate that the WFC and organizational support significantly explain the intentions of highly educated employed respondents to leave the organization.

Based on this, the authors proposed the following hypotheses:

H<sub>5</sub>: There are significant differences in experiencing WFC according to education level.

H<sub>6</sub>: There are significant differences in expressing TI according to education level.

### ***Impact of marital status on work-family conflict and turnover intentions***

Various studies have examined the impact of marital status on WFC and intentions to leave an organization. In several studies, a negative impact of marital status on WFC was found (Beutell, 2010; Mukanzi & Senaji, 2017; Rathi & Barath, 2013). On the other hand, Liu et al. (2020) found no significant association between marital status and WFC. Besides its impact on WFC, marital status is one of the determinants for leaving an organization (Carbery et al., 2003). The rate of leaving the organization is lower among married people than among singles (Carbery et al., 2003; Emiroğlu et al., 2015).

Based on this, the authors proposed the following hypotheses:

H<sub>7</sub>: There are significant differences in experiencing WFC according to marital status.

H<sub>8</sub>: There are significant differences in expressing TI according to marital status.

## **3. Methodology**

The research was carried out on the territory of the Republic of Serbia among employees in various types of hotel facilities. The study included 64 hotels, 21 garni hotels, 3 tourist resorts, 3 motels and 1 pension. The employees were surveyed using a face-to-face technique in order to increase the response rate, as well as to eliminate potential ambiguities during the completion of the questionnaire. A total of 1,130 employees in different positions and in different sectors were surveyed. 30 questionnaires were eliminated from further processing due to missing data, so responses of 1,100 employees were included in further analysis. The questionnaire used to measure WFC and TI of hotel employees in Serbia consisted of two parts. The first part referred to sociodemographic data of respondents (gender, age, level of education, marital status). The second part contained items that were grouped into five factors (*Work - Family Conflict – WFC, Family - Work Conflict – FWC, Emotional Exhaustion, Job Performance and Turnover Intentions*). The research was based on the study of Yavas et al. (2008) who conducted the research among employees in executive positions in hotels with 3\*, 4\* and 5\*. The factors were taken completely and there was no need for their modification. The first factor, *Work-Family Conflict* included 5 items that referred to the inability to perform family obligations due to work. Given that this conflict is two-way, the second factor *Family-Work Conflict*, consisted of 5 items that are related to the lack of work obligations performance due to family. The *Emotional Exhaustion* factor consisted of 8 items related to burnout and exhaustion at work. Within the *Job Performance* factor, employees expressed their perceptions of commitment at work through 5 items. The last factor, *Turnover Intentions*, consisted of 3 items related to the intentions of employees to leave the organization. A five-point Likert scale was used to express the degree of agreement with the statements within the factors (1 - I do not agree at all, 5 - I completely agree). Higher scores indicate a higher degree of presence of these conflicts, emotional exhaustion, perception of work performance, as well as turnover intention.

## **4. Results**

Out of a total of 1,100 respondents, approximately the same number of employees are male (47%) and female (53%). Most respondents belong to the age category between 26 and 35 years (39.1%) and the least are older than 55 years (4.5%). Pertaining to marital status, almost half of the total number of employed respondents are married (48.8%), and a very

small percentage are widowed (1.6%) as well as those in other types of partnerships (1.7%). Observing the level of education of the respondents, it can be noticed that the majority of respondents have completed high school (56.3%), but the share of highly educated (33.8%), as well as those with completed magistrate/master studies (9.6%) is also satisfactory (Table 1).

Table 1: Sociodemographic characteristics of respondents

<b>Gender</b>	<b>Number of respondents</b>
Male	529
Female	571
<b>Age</b>	
Up to 25 years	156
26 – 35 years	430
36 – 45 years	302
46 – 55 years	162
Over 55 years	50
<b>Marital status</b>	
Married	537
Single/Unmarried	436
Divorced	90
Widowed	18
Other	19
<b>Education</b>	
High School	619
College/Faculty	372
Magistrate/Master	106
PhD	3

Source: Author's research

The results of the descriptive statistical analysis are given in Table 2. Analysing the values of each factor, it is found that the factor with the highest mean is JP (3.3593), while the factor with the lowest mean is FWC (1.9565). Comparing the mean values of factors FWC (1.9565) and WFC (2.5324), it could be concluded that employees in the hotel industry in Serbia face WFC more than FWC. Guided by the fact that work in the hotel industry is very intense and specific, because employees make daily contacts with guests and working with people, it was assumed that respondents would express a high level of emotional exhaustion. Factor EE has the mean value is 2.6095, and such low value were not expected. Statements within the factor TI have almost equal values that are very low. In addition to descriptive statistical analysis, the reliability of the questionnaire was also analysed. The Cronbach Alpha coefficient of the overall scale is 0.919, and the values of the coefficients of individual factors are shown in Table 2. Reliability analysis found that the Cronbach Alpha coefficient for all factors exceeds the recommended value of 0.7 (Kaiser, 1974), indicating that all factors are in the high-reliability domain.

Table 2: Results of descriptive statistical analysis

<b>WORK-FAMILY CONFLICT (<math>\alpha=0.894</math>)</b>	<b>Mean</b>	<b>Std. Deviation</b>
The demands of my job have effects on my home, family and social life.	2.7127	1.22278
Due to my job, I can not maintain close relationships with family, spouse/partner and friends.	2.4400	1.13631
The things I want to do at home I cannot do because of obligations that my job imposes on me.	2.5100	1.12660
I often have to miss family and social gatherings because of my job.	2.7073	1.25891
There is a conflict between my job and my responsibilities to family, spouse/partner or friends.	2.2918	1.10558
<b>FAMILY – WORK CONFLICT (<math>\alpha=0.864</math>)</b>		
The demands of my family, spouse/partner and friends interfere with my job activities.	2.0091	0.99677
Sometimes, I have to miss my job to fulfil family and social duties.	2.1227	1.09612
I fail to complete obligations at work due to family, spouse/partner, friends.	1.8691	0.98909
My family and social life interfere with my job responsibilities such as coming to work on time, completing work tasks, overtime.	1.8545	0.99440
My colleagues and associates do not like my preoccupation with family and social life.	1.9273	1.05628
<b>EMOTIONAL EXHAUSTION (<math>\alpha=0.915</math>)</b>		
The job exhausts me emotionally.	2.6191	1.21314
I feel worn out at the end of the working day.	3.0209	1.25702
I feel tired when I get up in the morning and I have to face a long day at work.	2.8027	1.25182
Working with people all day is an effort for me.	2.5036	1.16242
I feel tired from work.	2.6973	1.17147
My job frustrates me.	2.2682	1.15964
I feel like I work too hard at work.	2.7655	1.18969
I feel that I am on the edge of my nerves.	2.1991	1.18969
<b>JOB PERFORMANCE (<math>\alpha=0.781</math>)</b>		
I commit to work.	4.0182	1.10159
I am among the 10% of the best employees.	3.4564	1.04968
I get along better with guests than other employees.	3.1173	1.06558
I know more than others about the services provided to guests.	3.1218	1.09581
I know better than others what the guests expect.	3.0827	1.11873
<b>TURNOVER INTENTIONS (<math>\alpha=0.917</math>)</b>		
I will probably look for another job soon.	2.3555	1.18299
It would not take me long to leave this organization.	2.3945	1.19095
I often think about leaving the organization.	2.3297	1.20265

Source: Author's research

In relation to the gender of the respondents (Table 3), t-test showed that there are no notable differences between male and female respondents for all observed factors. Based on the obtained results,  $H_1$  and  $H_2$  were not confirmed.

Table 3: T-test according to the gender of respondents

Factors	Male (n=530)	Female (n=570)	t value	p
WFC	2.493	2.566	0.511	0.396
FWC	1.951	1.962	0.986	0.708
EE	2.547	2.668	0.248	0.716
JP	3.378	3.342	0.389	0.842
TI	2.316	2.402	0.385	0.700

Source: Author's research

One-way analysis of variance examined whether there were differences in respondents' responses in relation to certain socio-demographic factors (age, level of education and marital status). ANOVA variance analysis in relation to the age of the respondents (Table 4) determined the presence of significant differences in responses within the factors FWC, EE, JP and TI. No significant differences were found within WFC factor. This result did not provide support for H<sub>3</sub>. By applying LSD post-hoc test, it was determined between which age groups there are differences. Within the FWC factor (F=7,828, p = 0.000), it is evident that respondents from the category up to 25 years give significantly lower grades than respondents from all other age categories. Within the factor EE (F=6,223, p = 0.000), it is noticeable that respondents from the category up to 25 years express a lower degree of emotional exhaustion compared to respondents from all other age categories. Within the factor JP (F= 3,329, p = 0.016), respondents from the category up to 25 years give significantly lower grades than respondents from the categories 26 - 35 years and 36 - 45 years. The last factor, TI (F= 3,064, p = 0.016) indicates that employees in the category of 46 - 55 years express significantly lower intention to leave the organization compared to younger employed respondents.

Table 4: ANOVA according to age

Factors	Age groups					F value	p	LSD post hoc test
	Up to 25 years	26 – 35 years	36 – 45 years	46 – 55 years	Over 55 years			
WFC	2.331	2.529	2.613	2.553	2.629	2.305	0.057	-
FWC	1.656	1.945	2.103	1.988	2.012	7.828	0.000	1<2,3,4,5
EE	2.333	2.561	2.764	2.669	2.773	6.223	0.000	1<2,3,4,5
JP	3.246	3.434	3.400	3.226	3.257	3.329	0.016	1<2,3
TI	2.417	2.347	2.478	2.158	2.095	3.064	0.016	4<1,2,3

Source: Author's research

Using the ANOVA test in relation to the level of education (Table 5), it was found that there is a notable difference only within the factor JP (F = 8,497, p = 0.000). LSD post-hoc showed that employees with completed high school perceive a significantly lower work performance than those with a college or university degree, as well as those with a master's degree. The obtained results did not confirm H<sub>5</sub> and H<sub>6</sub>.



Table 5: ANOVA according to education level

Factors	Education level				F-value	p	LSD post-hoc
	High School	College/ Faculty	Magistrate/ Master	PhD			
WFC	2.491	2.569	2.670	1.733	1.900	0.128	-
FWC	1.940	1.987	1.955	1.733	0.320	0.811	-
EE	2.560	2.641	2.579	1.833	0.860	0.461	-
JP	3.255	3.480	3.538	3.600	8.497	0.000	1<2,3
TI	2.336	2.394	2.406	1.778	0.556	0.644	-

Source: Author's research

Using marital status as an independent variable in the application of the ANOVA test, it was calculated that there was significant difference between the factors FWC ( $F = 4,037$ ,  $p = 0.003$ ), EE ( $F = 2,557$ ,  $p = 0.037$ ) and TI ( $F = 3,084$ ,  $p = 0.015$ ). To determine among which groups of respondents there are differences in responses, the LSD post-hoc test was applied (Table 6). In the case of the FWC, respondents who are divorced express a higher level of this conflict than those who are married and unmarried. In terms of EE, married employees express a significantly lower level of exhaustion and burnout at work compared to divorced employees. The TI is least pronounced among married employees. The LSD post-hoc test indicated that those employees who are not married and those who are in other types of partnerships express a higher degree of turnover intention than employees who are married. The obtained results provided confirmation of  $H_8$ . No significant difference was found within WFC, which did not confirm  $H_7$ .

Table 6: ANOVA according to marital status

Factors	Marital status					F-value	p	LSD post-hoc
	Married	Unmarried	Divorced	Widowed	Other			
WFC	2.531	2.477	2.791	2.378	2.758	2.287	0.058	-
FWC	1.992	1.867	2.211	2.022	1.758	4.037	0.003	3>1,2
EE	2.631	2.523	2.839	2.715	2.809	2.557	0.037	1<3
JP	3.331	3.386	3.400	3.267	3.432	0.454	0.769	-
TI	2.259	2.442	2.444	2.407	2.912	3.084	0.015	1<2,5

Source: Author's research

## 5. Discussion and conclusions

Nowadays, the conflict between family and work life is more and more frequent, and it is especially expressed in service activities such as the hotel industry with overtime work, inflexible working hours, work in shifts, but also work during holidays and weekends. Working with people is often very stressful, which is later projected onto other spheres of life. No matter how much effort is put into creating a balance between these two spheres,

there will always be situations that will demand priority at some point. Reconciling work with private life is very important for the quality of life overall. The question is often asked whether this conflict arises because work takes too much time, so people overcome fatigue after a hard day, or it is difficult to concentrate on work due to family obligations. When it is not possible to strike a balance between these two spheres in an individual's life, there are numerous negative consequences - poor family relationships, poorer performance at work, less motivation to work and more. It is wrong to assume that the conflict between work and family life and the establishment of a balance between these two spheres is a phenomenon that is unique to women. Also, the experience of these conflicts should not be associated with the individual, because the problems caused by this conflict affect both the individual and the organization.

The findings of the conducted research show that gender is not a significant indicator of differences in experiencing WFC, nor the intention to leave the organization. The  $H_1$  stems from the assumption that gender has an influence on experiencing WFC, because women, although accomplished in the career, are still the ones who are most engaged in family life. By applying t-test according to gender it was found that there are no notable differences in experiencing WFC between males and females. These results did not give support for  $H_1$ , but confirmed results obtained in previous studies (Akintayo, 2010; Frone, 2003; Karatepe et al., 2010). Given the fact that several studies identified the impact of gender on intention to leave an organization (Chen et al., 2018; Emiroğlu et al., 2015), in this study the authors tested if gender has an influence on turnover intentions. Results showed no significant differences according to gender when it comes to intentions to leave an organization, which rejected  $H_2$ . In several studies, no significant impact of gender on turnover intentions was found (Carbery et al., 2003; Yavas et al., 2008), so the results obtained in this study are in accordance with them. Taking into account the age of employees as a variable, it was found that significant differences exist in four of the five factors (*FWC*, *EE*, *JP* and *TI*). As in the study of Karatepe et al. (2010), in this study no significant differences were found in responses related to WFC according to age, which rejected  $H_3$ . With reference to turnover intentions, younger employees express a higher degree of turnover intention compared to older ones, which is in accordance with previous studies (Blomme et al., 2010; Carbery et al., 2003; Karatepe et al., 2006; Kim et al., 2010; Pizam & Thornburg, 2006). As an alternative explanation for such results, the fact of greater readiness of young people for new experiences and easier spatial and business change could be mentioned. This confirms  $H_4$ .

The level of education proved to be significant only for the JP factor. Respondents with completed high school perceive their work performance lower than employees with higher education. Highly educated employees are mostly engaged in performing more complex work tasks, which results in a higher perception of their own performance. Employees with a lower level of education usually perform operational tasks, which require fewer skills and qualifications, and therefore the perception of work performance is lower. Since the literature recognized the influence of education level on WFC (Adams et al., 1996; Anafarta & Kuruüzüm, 2012), in this study no evident relationship between education level and WFC was determined. These results rejected  $H_5$ . Based on results of many studies (i.e. Carbery et al., 2003; Karatepe et al., 2006), the initial assumption was that highly educated employees express a higher degree of turnover intention. In this study no significant impact of education level on turnover intention was found, which did not provide support for  $H_6$ . Although several studies found relationship between marital status and WFC (Beutell, 2010; Mukanzi & Senaji, 2017; Rathi & Barath, 2013), the findings of this research showed no notable relationship between marital status and WFC, which rejected  $H_7$ . However, obtained results are in line with the results of Liu et al. (2020) study, who found no significant association between marital status and experiencing WFC. When it comes to the relationship between

marital status and intentions to leave an organization, some papers point out that the level of turnover intention is higher among single people than among married people (Carbery et al., 2003; Emiroğlu et al., 2015). The obtained results indicate that married respondents have lower intention to leave the organization than single ones, which confirms H<sub>8</sub>. These findings could be possibly explained by the fact that married employees do not make easy decisions to leave the organization, especially if there are children in the family, because it would jeopardize financial stability.

The recommendation for future research is to include variables such as job satisfaction and work autonomy (Gözükara & Çolakoğlu, 2016), a type of work and spousal support (Gamor et al., 2014) as well as different cultural backgrounds in order to contribute to the literature in this field, as well as a more complete understanding of this phenomena in the hotel industry.

## Conflict of interest

The authors declare no conflict of interest.

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## **Management of continental saline ecosystems in the Republic of Serbia – Are these ecosystems suitable for nature-based tourism?**

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**Abstract:** Continental saline habitats represent unique, authentic and rare ecosystems. These ecosystems are typically distributed in arid and semi-arid regions; however, they are also found in inland areas in temperate climate zones. Usually, the general public is not familiar with this particular type of ecosystem. In order to present saline habitats to tourists, a broadly applied method of ecosystem suitability assessment (ESI – ecosystem suitability index) was used and adjusted to the purposes of this research. The research aims to estimate the nature-based tourism potentials of selected sites. Thus, six representative halophytic habitats distributed along the geographic gradient, from the Pannonian Plain to the south of Serbia, were chosen. In terms of each site, seven indicators (e.g., flora and vegetation, bird fauna, landscape, protection status, accessibility, and ecotourism facilities), important for nature-based tourism, were analyzed. The results show that the Pannonian saline habitats have greater opportunities for development of this type of tourism in almost all categories compared to southern sites.

**Keywords:** saline habitats, nature-based tourism, ecosystem suitability index

**JEL classification:** Q57

## **Upravljanje slatinskim ekosistemima u Republici Srbiji – Da li su pogodni za turizam zasnovan na prirodnim resursima?**

**Sažetak:** Kontinentalna slatinska područja predstavljaju jedinstvene, autentične i retke ekosisteme. Ova područja su svojstvena aridnim i semiaridnim klimatskim zonama, ali se sporadično pojavljuju duboko u kontinentu umerene zone. Često je ova vrsta ekosistema nepoznata široj populaciji. U svrhu približavanja slatinskih staništa turistima korišćen je široko primenljivan metod procene podobnosti ekosistema za turizam zasnovan na prirodnim resursima. Cilj ovog istraživanja je procena ekoturističkih potencijala odabranih područja. Za

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potrebe istraživanja izdvojeno je šest reprezentativnih slatinskih lokaliteta duž geografskog gradijenta, od Panonske nizije do juga Srbije. Za svaki lokalitet je analizirano sedam kriterijuma (flora i vegetacija, fauna ptica, predeo, status zaštite, pristup i ekoturistička infrastruktura) koji su značajni za ekoturizam. Rezultati su pokazali da panonske slatine imaju veći ekoturistički potencijal po gotovo svim analiziranim kriterijumima u poređenju sa južnim slatinama.

**ključne reči:** slatinska područja, ekoturizam, indeks podobnosti ekosistema  
**JEL klasifikacija:** Q57

## 1. Introduction

Saline ecosystems are primarily distributed in arid and semi-arid regions, but they could be found in all climate zones as a type of intrazonal vegetation. Generally, around the globe, naturally occurring saline areas, salt affected soils include salt marshes, salt coastal wetlands or salt sandy shores, as well as continental salt marshes and meadows/pastures. Flora and vegetation growing in salt-affected areas is referred to as halophytic flora and vegetation. Halophytes are remarkable group of plants that have developed special abilities and mechanisms to cope with extremely high salt concentrations (Rančić et al., 2019). The fact is that only a small number of plants can grow in conditions of increased salinity. The habitats with halophytic flora and vegetation are indeed captivating landscapes, bearing no resemblance to any other attractive ecosystem. Saline habitats, as rare and specific ecosystems, have an important role and are valuable for preserving the natural habitats of halophytic species and communities, including the regulatory and supporting functions, as well as a great potential for tourism development. Because of their authenticity, representativeness and rarity, saline habitats can be ranked as an ecotourism attraction.

In the Republic of Serbia, these rare saline habitats are primarily distributed in the Pannonian plane, where different salt-affected soil types occupy the surface of 15,000 to 25,000 ha. Most of them are located in Bačka, then in Banat and fewer in Srem. The highest percentage of solonetz type of soil is found in Banat (68,000 ha), less in Bačka (4000 ha) and even less in Srem (3,000 ha) (Đorđević & Radmanović, 2016). Saline habitats appear as small mosaically distributed patches in the southern part of Serbia, near the Prokuplje, Vranje and Bujanovac. Natural saline ecosystems are among the most endangered and fragile habitats in Serbia, due to high anthropogenic pressure, including the formation of reclamation canals, changes in the water regime, conversion of salt-affected soils into arable land or garbage dumps, intensive grazing, invasion of weeds and ruderal flora, burning, construction etc. According to (Zlatković et al., 2005), to this day, rare saline habitats have survived in the area of Vojvodina and few of them in the south of Serbia. Besides well-affirmed ecotourism attractions, saline habitats could be seen as captivating multifunctional additions in tourism offer, contributing to nature conservation and education, as well as boosting the economy and diversification of economic activities in local communities.

In general, saline habitats, especially coastal and continental salt marshes, have similar characteristics to wetlands that are recognized as an ecotourism attraction. Wetlands, as well as salt marshes, are ranked as productive ecosystems for their biodiversity richness, especially in plant and bird species, and very attractive landscapes. According to biodiversity and ecosystem features, these types of habitats could be considered as a place of nature-based tourism and recreation. Coping and replicating a well-established model of wetland ecotourism supports development of saline habitats as ecotourism sites that provide advantages and potentials for local communities through the diversification of the local economy, as well as ensures ecological benefits for these sites.

The aim of this study is to review and assess suitability of selected saline habitats in the Republic of Serbia for nature-based tourism. The research was based on the hypothesis that the remaining natural and autochthonous saline habitats possess a variety of natural values (original flora, fauna, landscapes, etc.) suitable to be considered as nature-based tourism objects providing a range of ecological and economic benefits.

## 2. Theoretical background

Throughout the world, saline habitats refer to coastal salt marshes called lagoons, mangrove habitats, sand dunes, continental halophytic ecosystems with specific halophytic flora and vegetation adapted to survive in the range of environmental conditions – edaphic rather than climatic, as well as wet saline habitats, deserts and salt meadows in the temperate climate zone (González, 2020; O’Leary & Glenn 1994). Saline habitats are characterized by a range of roles in terms of ecosystem functions and services. Besides maintaining ecosystem balance, they have a variety of commercial values (Nikalje et al., 2019). Saline meadows are traditionally used for livestock grazing as well as hay supply for winter feed. It is known that many halophytes are suitable for pharmaceuticals or industrial chemicals production, as well as for raw materials such as fiber, biomass, biofuel, etc. (Dagar, 2005). Halophytes support human well-being through food, fodder, non-timber forest products (Zhao et al., 2011). They are also a source of medicinal and aromatic plants, spices, construction materials, energy, and ecosystem support. Their role in CO<sub>2</sub> sequestration, landscaping, natural purification, environmental protection and wildlife support is very important (Luković et al., 2021). In addition, a number of recent studies examined chemical suitability of halophytes for human nutrition (Barreira et al., 2017). The demand for halophytic products on the European market is growing. Some halophytic species, e.g., *Salicornia europaea*, *Salicornia frutescens*, *Suaeda maritima*, *Aster* sp. genus *Atriplex* have already become a part of the new and attractive cuisine. In some tourist centers they are included in the gastronomic offer and often used in salads, as spices, side dishes and etc., due to their health benefits for the consumers (Petrooulos et al., 2018; Srivarathan et al., 2020).

Several studies (e.g., Lasabuda et al., 2019) investigated ecotourism suitability of mangrove habitats (as one of the saline types). Mangrove ecosystems are becoming, in recent times, a subject of interest as tourism destinations. The growing popularity of mangroves and the findings of the mentioned studies are used to promote a sustainable approach, nature, and wildlife conservation (Nelly et al., 2019). In addition, certain studies were conducted to determine marine ecotourism suitability (Johana et al., 2017; Tanto et al., 2018). By examining the studies, practice, knowledge, and experience in wetlands ecotourism, as well as a new approach in mangrove ecosystems as an ecotourism destination, the authors came up with the idea to analyze potentials and suitability of continental saline habitats in this respect. Salt marches and salt meadows (steppe) are inconsistently distributed in the territory of the Republic of Serbia (the Pannonian plane and southern Serbia). Salt marches represent one of the floristic centers in the Republic of Serbia. The landscape of saline habitats complements several shallow alkaline lakes. These rare inland habitats have existed in the Carpathian Basin since the last Ice Age (Šefferoová Stanová et al., 2008). The unusual plant species characteristic for marine areas rather than the country which has no access to the sea, together with sparsely-crystal surfaces formed due to the increased salt concentration in the soil and high evaporation of groundwater during summer, make these areas unique and very attractive. Alkaline lakes are habitats of many different bird species that could be the subject of interest of a wider group of ecotourists (Ecsedi et al., 2004). Due to limited geographical distribution and anthropogenic factors, they belong to the group of the most threatened habitats in Europe. Only several sites are under protection, while the rest of them are competing with agriculture or human impact. In recent time there has been some progress



towards protecting such rare ecosystems. Nature-based tourism could be the solution for the promotion of educational aspects including gaining practical experience, getting opportunities to work with scientists, involvement in data collection and active participation in nature conservation. Ecotourism activities offer travel opportunities to tourists who are fond of nature and willing to contribute to conservation, as well as open to learning about rare habitats, country and culture (Lowman, 2004). As responsible tourism branch, nature-based tourism is a driving force and a safeguard of the ecosystem integrity and producer of economic benefits for local communities that can encourage conservation (Nash, 2001). Such rare ecosystems are always attractive for eco-tourists, and their “placing on the market” must be strictly regulated by conservation strategies and sustainable use of natural resources, even though nature-based tourism has less harmful impacts (Sánchez-Prieto et al., 2021). To avoid any kind of negative impact of tourism, it is necessary to apply sustainable development models, which imply using natural resources “that meet[s] all economic, social, and aesthetic needs while respecting cultural integrity, basic ecological processes, biological diversity, and lifestyles” (Raičević & Marjanović, 2021, p. 92). Saline ecosystems as a part of rural ambient include numerous additional activities arranged by rural hosts such as hunting, fishing, horse-riding, walking, even wellness (Tomić et al., 2020).

### 3. Materials and methods

#### 3.1. Study area

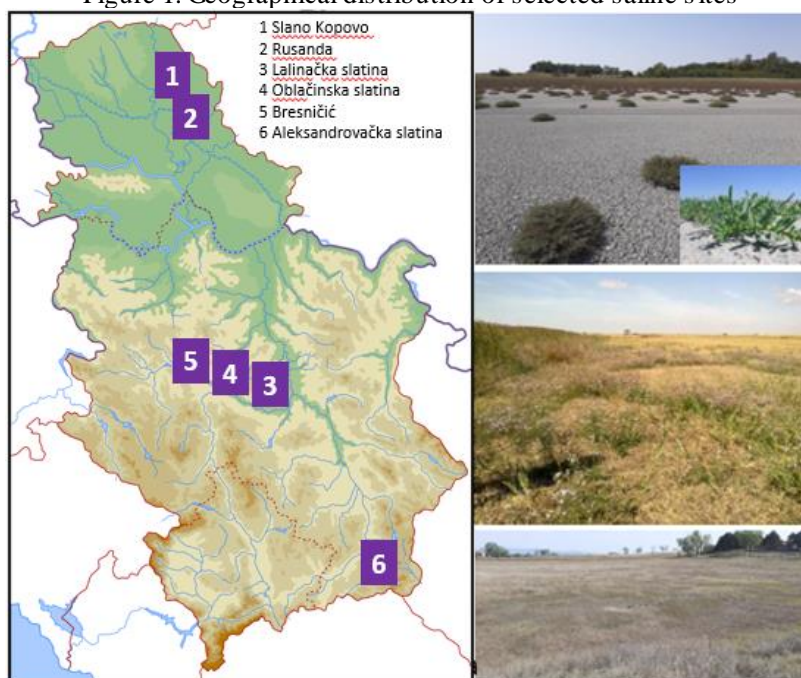
The study area includes two representative continental saline habitats located in the Pannonian plane (Slano Kopovo and Rusanda) and four habitats geographically distributed in southern Serbia (Lalinačka slatina, Oblačinska slatina, Bresničič and Aleksandrovačka slatina) (Figure 1).

Slano Kopovo represents one of the most important saline habitats in the Republic of Serbia according to the level of preservation of authenticity and nature. Slano Kopovo is located in northwestern Banat (Province of Vojvodina) near the city of Novi Bečej. This saline habitat is also important for its saline lake. The lake (together with its surrounding area) was declared a natural asset of exceptional importance and classified in the first category of protection at the end of 2001, while according to the classification of the International Union for Conservation of Nature (IUCN) it belongs to category IV - habitats and other managed areas. In addition, Slano Kopovo was listed under the Ramsar Convention in 2004 as a wetland of international importance. It is characterized by a steppe-continental climate, as well as all other areas in Vojvodina. During the summer months, the lake usually dries up and a salt crust forms on the floor of the lake. This site is a typical example of extreme saline habitats which are characterized by a mixture of salt marches and salt steppe vegetation. Many plant species characteristic of this type of vegetation are rare or endemic species and are protected by the law (*saltwort-Salsola soda*, *sea-blites-Suaeda maritima*, *glasswort-Salicornia europaea*, *Schwartzerbergian's plantain-Plantago schwartzerbergiana* etc.). In addition, Slano Kopovo is one of the most important bird habitats in Serbia.

Lake Rusanda is one of the saline habitats in Banat region. This lake is part of the Rusanda Nature Park and is surrounded by meadows and anthropogenically altered habitats. The Rusanda Spa and its Special Hospital for Rehabilitation, located in the centre of the Nature Park, use mineral peloid in different medical and spa treatments. This lake represents one of the last remaining alkaline lakes in Serbia. Lake Rusanda is located near the town of Melenci and resembles the shape of the letter C. It is inhabited by numerous bird species, and it is a migratory stopover. The shore of Rusanda lake is overgrown with the Pannonian endemic seashore *aster - Aster tripolium ssp. panonicus* and succulent halophytes.

Saline habitats of central and southern Serbia include limited number of sites distributed around Prokuplje and along the valley of the South Morava, near Vranje and Bujanovac. These complex salt habitats include several sites: Lalinačka slatina, Oblačinska slatina, Bresničić and Aleksandrovačka slatina, that are the subject of the research in this study. These saline habitats are mosaically distributed in the shape of small patches around the source of salt waters. A few saline sites in this region belong to vulnerable and threatened habitats. Flora and vegetation in this region differ from those in the Pannonian region in a biogeographical sense. The impact of sub-mediterranean climate has produced specific conditions. Floristic differences are reflected in the presence of rare and endemic species such as *Camphorosma monspeliaca*, *Satchys milanii*, *Puccinellia festuciformis* ssp. *Convolute* etc., but also in the absence of succulent halophytic flora.

Figure 1: Geographical distribution of selected saline sites



Source: Author's research (author's photographs: 1. Slano Kopovo, 2020; 2. Rusanda, 2015; 3. Oblačinska slatina, 2020)

### 3.2. Data collecting method

Necessary datasets were collected during the comprehensive research of saline habitats in the Republic of Serbia (2012-2015) and these include: vegetation patterns (communities, density, cover), floristic data, data on protection or endangerment, geospatial information, as well as community information such as accessibility to main roads or ecotourism facilities. Data on flora and vegetation were collected using the standard Braun-Blaquet method (Braun-Blaquet, 1932) widely used in the science of phytocoenology. The data on more than 300 *relevés* were collected on the whole territory and stored in vegetation databases (GIVD, Dajić-Stevanović et al., 2012). For the purpose of this research, 16 *relevés* were examined for each of the selected sites. Data on fauna were collected from secondary literature sources. Geospatial and communities' data were collected using GPS, fieldwork observation and national infrastructure of geospatial data (National Spatial Data Infrastructure, 2021).

### 3.3. Data analysis

Data analysis was conducted based on similar studies (e.g., Nelly et al., 2020; Pin et al., 2021) with adjustment of selected parameters to this research. The final set of parameters/variables include vegetation cover, percentage of endemic, rare or attractive plant species per *relevé*, bird diversity, percentage of modified landscapes, category of the protected area, accessibility in terms of main roads vicinity and ecotourism infrastructure such as info tables, viewpoints, bridges, towers etc. Ecotourism suitability assessment was carried out using ESI (ecosystem suitability index for continental saline habitats).

$$ESI = \sum (N_i / N_{max}) \times 100\% \quad (1)$$

$N_i$  = The value of parameter “ $i$ ” (weight x score),

$N_{max}$  = Maximum value of continental saline habitat tourism category.

The suitability index was classified into three categories consisting of N = Not suitable, with a value of <50%, S2 = Quite suitable, with a value of 50-75% and S1 = Suitable, with a value of 75-100% for parameters that could be estimated using percentage share.

Table 1: Matrix of continental saline habitats ecotourism suitability

Env. Parameters/category	Weight	Score		
		1 N	3 S2	5 S1
Vegetation cover (VC)	5	<50%	50-75%	>75%
Endemic/rare/attractive species (NSp)	5	<50%	50-75%	>75
Birds diversity (BD)	3	<30%	30-50%	>50%
Protection status (PS)	3	NOP	NM, FOB, SNR,	NtP, NP
Modified landscape (ML)	3	>70%	30-70%	<30%
Accessability (A)	1	ND/NR	ND/HR	D/HR
Ecotourism facilities (EF)	1	NEF	IT	IT, VP, etc.

Note: Abbreviations: NOP – Not protected, NM – Natural monument, FOB – Features of outstanding beauty, NtP – National park, SNR – Special nature reserve, NP – Nature park, ND – Not designed, NR – Not road, D – designed, HR – Have road, NEF – Not ecotourism facilities, IT – Info tables, VP – Viewpoints)

Source: Author's research

## 4. Results and discussion

The main parameters that were considered for the nature-based tourism suitability of continental saline habitats were selected according to similar studies that deal with the main factors of ecotourism attractiveness. The following 7 categories were assessed: vegetation cover, participation of endemic, rare and attractive flora, bird diversity as an important ecotourism attraction, the status of protection, level of anthropogenic modification of original landscape, a factor of accessibility and existing ecotourism facilities or infrastructure. The weights and score values were given according to the importance of ecotourism activities (Table 1). The values of each category were given based on fieldwork research described in

Methods and represented in Table 2. Based on observation results, out of all criteria parameters related to suitability of saline habitats for nature-based tourism, Oblačinska slatina had the lowest ESI value of 45.3, while Rusanda had the highest ESI value of 87.4. The matrix of nature-based tourism suitability indicates that sites Slano Kopovo and Rusanda are suitable (S1), while Lalinac is quite suitable (S2) and Oblačina, Bresničić and Alekdandrovac are not suitable (N); The possible reasons for such results lie in the fact that they are not protected, there are no information signs or boards which would inform the people about their location and significance and are considerably modified by anthropogenic impact.

Table 2: The suitability values of continental saline habitats categories for nature-based tourism

Research site	Sampling point	Parameter/category							Σ	ESI	SCg
		VC	NSp	BD	PS	ML	A	EF			
Slano Kopovo	Water, Costal Meadow	75.0	70.0	74.0	70.0	10.00	90.0	10.0	79	83.2	S1
Rusanda	Water, Costal Meadow	70.0	70.0	84.0	75.0	30.00	90.0	70.0	83	87.4	S1
Southern salines	Lalinac	70.0	30.0	70.0	60.0	50.00	75.0	1.00	53	50.8	S2
	Oblačina	60.0	40.0	70.0	1.00	75.00	75.0	51.0	43	45.3	N
	Bresničić	55.0	60.0	70.0	1.00	75.00	1.00	1.00	47	49.5	N
	Aleksandrovac	60.0	55.0	65.0	1.00	75.00	50.0	10.0	47	49.5	N

Note: SCg – Suitability category

Source: Author's research

#### 4.1. Vegetation cover and floristic attractiveness of continental saline habitats

Natural resources are a very important component of the development of tourism in general. Knowledge and assessment of natural resources represent the basis for strategic planning and management of the potential tourism area. Flora and vegetation are components of natural biological resources. Vegetation cover with endemic, rare and attractive species has the highest weight because it represents the key factor of attractiveness. According to Reichel et al. (2008), nature and landscape play an important role in attractiveness, including the wild flora and fauna, as well as the tradition and culture. Rare, endemic flora is very competitive for tourism attractions (Henri et al., 2017). As reported in the assessment study (Asrianny et al., 2020) of main ecotourism attractiveness, flora was identified as a very important factor in addition to natural features. Some strictly protected plants, among which are succulents *Salicornia europaea*, *Suaeda pannonica*, *Suaeda maritima*, *Salsola soda*, etc., are found on the territory of saline habitats of Vojvodina, to which Slano Kopovo and Rusanda belong (Luković & Dajić Stevanović, 2020). These plant species represent the main attraction and build a recognizable mosaic of the landscape together with evaporated salt crystals on the land surface. The second group of floristic attractions includes salt-steppe meadows populated with *Artemisia santocica* that smells like the seaside. Besides the mentioned plants, many other endemic, rare and attractive species grow in this region such as *Limonium gmelini*, *Plantago schwartzbergiana*, *Plantago maritima*, which are all considered important ecotourism objects as confirmed by other studies in the field of ecotourism (Brankov & Žujović, 2008). A Ramsar site - Special Nature Reserve “Slano Kopovo” and the Nature Park “Rusanda” represent the last examples of the authentic Pannonian salt marshes with a wealth of flora and fauna (Čučulović et al., 2012). On the

other hand, southern saline habitats are fragmented and mosaically distributed like small patches in total surroundings. They give a unique visual effect to the landscape. All Panonian saline habitats do not contain the same number of different species, however this does not diminish the floristic value of sites. Several studies recognized and valorized salt marshes as a touristic potential based on the authenticity of a site, designation as a Ramsar site or the potential for local development (e.g., [Brankov & Žujović, 2012](#); [Stojanović et al., 2018](#)).

#### **4.2. Bird diversity**

Birdwatching is one of the acceptable recreational ecotourism activities since it seeks to observe wildlife ([Rajević et al., 2016](#)). It represents a very responsible and educational activity, and, as part of ecotourism, supports conservation of natural and cultural values of the local area, contributes to the development of the local community and brings important economic benefits ([Son et al., 2011](#)). Birdwatching is considered in numerous studies as a part of the ecotourism package (e.g., [Suana et al., 2020](#)). The most developed birdwatching market is in Great Britain and the Netherlands, while the most attractive destinations are exotic countries (Africa, Asia, Japan, India). Having in mind the fact that more than 70% of the bird fauna of Europe lives in Serbia, the country represents one of the potentially desirable locations for bird watching ([Škvareninová et al., 2013](#)). Centers of bird diversity in the Republic of Serbia are related to nature protected areas like NP Djerdap, NP Kopaonik, NP Golija etc., or Ramsar sites such as Peštersko polje, Vlasina, Gornje Podunavlje, Labudovo okno and Zasavica. Saline lakes Slano Kopovo and Rusanda, as subjects of this research, are home to more than 200 bird species and important migratory stations. Especially interesting bird species are thin-beaked mallard, blue-billed duck, black float, little cormorant, and cranes. Floristic and bird fauna characteristics of saline lakes make the core basis for suitability for nature-based tourism in these areas.

#### **4.3. Protected areas**

Protected areas with their natural beauties are identified as a key expressive attribute of ecotourism satisfaction ([Carvache-Franco et al., 2020](#)). Three of the selected sites researched in this study were designated as protected areas: the Special Nature Reserve “Slano Kopovo”, Nature Park “Rusanda” and Natural Monument “Lalinačka slatina”. The rest of the studied sites are not under protection, notwithstanding their vulnerability and natural values. The status of protection determines the value/weight of the particular parameter and affects the final score; accordingly, the mentioned sites are considered suitable for nature-based tourism.

#### **4.4. Authenticity of landscape**

Some studies reported the importance of original eco-landscape for ecotourism suitability assessment ([Bunruamkaewa & Murayamaa, 2011](#); [Xiaolei et al., 2015](#)). The results show that protected sites (Slano Kopovo and Rusanda) have the highest values (between 10% and 30% are modified) of the preserved original landscape, while saline habitats in the south are over 50% modified and under the intensive anthropogenic impact. According to [Zlatković et al. \(2005\)](#), these southern saline habitats are suffering the negative impacts of agriculture, pollution, and degradation. These human factors disturb the original landscape and diminish the natural value important for tourism development.

#### **4.5. Community factors (accessibility and ecotourism facilities)**

Road network and infrastructure enable access to site points. Road accessibility was analyzed as one of the compulsory criteria for ecotourism suitability (Šiljeg et al., 2019). Developed road network and ecotourism infrastructure can largely affect the economic improvement of tourist destination (Chandio et al., 2014). Slano Kopovo has a good position in terms of traffic infrastructure, due to main roads which facilitate access from the direction of Novi Bečej. In the vicinity of Slano Kopovo, in the 30km to 50km radius, the town of Kikinda and the city of Novi Sad are located. The Rusanda site is located near a small town of Melenci and gravitates towards Zrenjanin and Novi Sad. Both sites are equipped with basic ecotourism facilities such as information desks or small tourism facilities. Researched sites in southern Serbia are less developed in terms of road infrastructure. These sites are situated in villages and some of them do not have direct access to major roads and are not marked by information or sign boards. Due to their geographical position, Lalinačka slatina, Oblačinska slatina and Bresničić gravitate towards the city of Niš and the town of Prokuplje, while Aleksandrovačka slatina gravitates towards the town of Vranje. The common characteristic of all these areas is that they are not marked by information boards and do not have any ecotourist facilities. Analyzed community factors indicate that the Pannonian saline habitats are more suitable for nature-based tourism development. Investments in infrastructure represent one of the crucial activities and strategic advantages for any type of tourism development (Đorđević-Milošević et al., 2021).

### **5. Conclusion**

In this paper, the authors analyzed two Pannonian saline habitats (Slano Kopovo and Rusanda) and four saline habitats situated in southern Serbia (Lalinačka slatina, Oblačinska slatina, Bresničić and Aleksandrovačka slatina) according to their nature-based tourism suitability. Continental saline habitats represent exceptionally valuable biodiversity areas, however, the public is generally not aware of their existence. Tourism development in these areas must support protection, education, and promotion of natural values in order to preserve saline habitats. According to the results, the Pannonian continental saline habitats belong to the S1 suitability category. Lalinačka Slatina belongs to the S2 category in terms of its suitability, while the rest of the southern Serbian saline habitats are not considered suitable for nature-based tourism.

Although the Pannonian saline habitats are in the S1 category thanks to their exceptional flora and bird fauna and authenticity of landscape, investments in improvement and promotion of eco-tourism facilities are needed. The saline habitats in southern Serbia need to be further studied in the future period, as well as protected by the law and finally adequately promoted as potential nature-based sites.

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## Conflict of interest

The authors declare no conflict of interest.

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## Critical success factors for new dishes in gastronomic offer of Belgrade restaurants

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**Abstract:** The subject of the research of this paper is the success of new dishes in the gastronomic offer of Belgrade restaurants, presented through critical success factors (CSFs) that can influence it. The aim was to analyze CSFs of new dishes in mentioned restaurants. The initial assumption was that the success of new dishes depends on various factors, which resulted in developing a general research question: What factors are important for the success of new dishes in the gastronomic offer of a restaurant? To achieve a high level standards in the restaurant industry and boost competitiveness, businesses have to keep up with modern trends and introduce innovative business approaches. The questionnaire consisted of three sections: managers' profile, the restaurant profile and CSFs. The managers of Belgrade restaurants (N=64) were asked to rank ten different CSFs using the Likert scale. According to their opinions, seven CSFs were found to be very important for the success of new dishes.

**Keywords:** Belgrade restaurants, critical success factors, new dishes

**JEL classification:** L83

## Kritični faktori uspešnosti novih jela u gastronomskoj ponudi beogradskih restorana

**Sažetak:** Predmet istraživanja ovog rada je uspešnost novih jela u gastronomskoj ponudi beogradskih restorana, prikazana kroz kritične faktore uspešnosti (KFU) koji na to mogu uticati. Cilj je bio da se analiziraju KFU novih jela u ovim restoranima. Polazna pretpostavka je bila da uspešnost novih jela zavisi od različitih faktora, iz čega je proizašlo i opšte istraživačko pitanje: Koji faktori su značajni za uspešnost novih jela u gastronomskoj ponudi restorana? Da bi se ostvario postavljeni cilj i dao odgovor na postavljeno istraživačko pitanje, bilo je neophodno identifikovati KFU i analizirati značajnost različitih faktora koji utiču na uspešnost novih jela u gastronomskoj ponudi restorana. Upitnik se sastojao od tri dela: profil menadžera, profil restorana i KFU. Za rangiranje KFU (deset stavki) menadžeri beogradskih restorana (N = 64) su koristili Likertovu skalu. Prema njihovom mišljenju, sedam KFU je veoma važno za uspešnost novih jela.

**Ključne reči:** beogradski restorani, kritični faktori uspešnosti, nova jela

**JEL klasifikacija:** L83

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## 1. Introduction

In order to achieve a high level standards in the field of restaurant business and boost the competitiveness of restaurants, this industry must adapt to modern trends and introduce an innovative business approach (Ottenbacher & Harrington, 2009). Such a business approach can be achieved in different ways by introducing: 1) culinary innovations (Gagić, 2016; Lee et al., 2016; Munjal et al, 2016), 2) innovative equipment (Albors-Garrigos et al., 2013), 3) innovative services (Chou et al., 2018; Lee et al., 2016), 4) innovative food preparation and serving techniques (Albors-Garrigos et al., 2013), 5) marketing innovations (Iorgulescu & Sidonia Rvar, 2013; Lee et al., 2016), 6) innovative design and atmosphere (Hornig et al., 2013; Ivkov et al., 2016), 7) innovative technologies (Shcherbak, 2016), 8) innovation in management (Lee et al. al., 2016; Schcherbak, 2016), 9) eco-innovation (Sharma et al., 2020) and etc. At present, the availability of social media platforms (Facebook, Twitter, Pinterest, YouTube, Google+, Instagram, LinkedIn, Foursquare, etc.) (Božić & Zubanov, 2018), offers great possibilities of their use for innovative marketing. Although all innovations are significant and can contribute to the success of a restaurant, the guests most frequently notice innovations related to the gastronomic offer, primarily the new dishes (culinary innovations) and new techniques of food preparation. Lee et al. (2016) indicate that top restaurants are expected to set standards for culinary innovations, which is crucial for building restaurant identity and long-term success. Harrington (2004) created a model for the development of culinary products, which includes the following steps: formulation of culinary innovations, implementation of culinary innovations, evaluation, control and introduction of innovations. Munjal et al. (2016) believe that nowadays innovations in culinary practice are mainly focused on sustainability, care for the environment and the value of tradition, as well as cultural heritage. Given the growing importance of sustainability, much attention is given to the revitalization of traditional diets and cuisines. Accordingly, the gastronomic offer is becoming increasingly important as a part of the cultural heritage. In this respect, Sharma (2012) recognizes the potential and demand for traditional dishes.

Many culinary innovations are based on the use of specific, often very unusual ingredients in food preparation (algae, sprouts, microgreens, edible flowers, edible insects) (Choe et al., 2018; Dobermann et al., 2017; Ebert, 2012; Egebjerg et al., 2018; Ghosh et al., 2018; Mouritsen et al., 2018; Renna et al., 2017; Rioux et al., 2017) or eliminating some ingredients (meat, gluten-containing ingredients, ingredients containing lactose, energy-rich fatty ingredients, sugars, etc.) that are considered bad for consumers' health (Bellisle et al., 2018; Kozonova et al., 2019; Tas et al., 2019). Božić and Milošević (2020) found that in a large number of Belgrade restaurants, microgreens (edible young plants that are harvested 7-14 days after germination when they have developed only cotyledons or a pair of true developed leaves) are used to decorate dishes. Innovations of this type attach great importance to the health aspect, i.e., they are aimed at preparing food that has a positive effect on human health, disease prevention and contributes to improving the quality of life. According to certain studies, the perception of food as "healthy" is a basic attribute of quality that positively affects the attitudes of guests towards that food (Hur & Jang, 2015; Kim et al., 2013).

Although culinary innovations can significantly improve restaurant success, the contribution of different new dishes varies. Namely, the success of new dishes depends on several factors. Previous studies (Kawasaki & Shimomura, 2015; Kawasaki et al., 2015; Klosse et al., 2004) examined CSFs in the Netherlands and Japan, however, thus far, this topic has not been researched in Serbia and the southeastern region of Europe. In addition, previous studies did not analyze the hierarchy of identified CSFs, therefore, their importance for the success of new dishes which are part of the gastronomic offer is not known. The main research question of this study is: What are the most important critical success factors (CSFs) of new dishes in

restaurants? The aim of this study was to analyze the critical factors that are important for the success of new dishes included in the gastronomic offer of Belgrade restaurants.

## 2. Theoretical background

Although food is a basic physiological need, it also plays a role in the success of a restaurant's business. Namely, good food is the basic criterion for the guests' choice of a restaurant (Sulek & Hensley, 2004). Bernardo et al. (2018) point out that high cuisine, i.e., the offer of top-quality food, is a specific factor in the success of high-quality restaurants. Soriano (2002), as well as Josiam and Monteiro (2004), agree that the unique food taste and ingredients have an important role in the guests' choice of a particular restaurant. Also, Le and Needham (2019) researched the reviews posted on the websites of different restaurants, as well as comments on social media platforms, and found that as far as the guests were concerned, the taste and quality of food were decisive for the restaurant choice. Another research, conducted almost three decades ago (Auty, 1992), indicates that from that period until today, nothing has changed in the relation between the guests and the gastronomic offer. Namely, in that period, as well as today, food was one of the most important factors for the consumers' choice of restaurants.

In terms of the introduction of new dishes in restaurant gastronomic offer, it is important to ensure that they will be accepted by the guests. Also, important attributes of food, on which the choice by the guests depends, can be classified into six categories: 1) energy content, 2) nutrient content/health properties, 3) taste, 4) prestige status/properties, 5) ecological, political and ethical characteristics and 6) attributes of time/convenience (Jang et al., 2009).

The success of new dishes depends on several factors identified and analyzed by some authors (Kawasaki & Shimomura, 2015; Kawasaki et al., 2015; Klosse et al., 2004). Based on the interviews with 18 chefs and analysis of 63 dishes, six critical success factors (CSFs) were identified by Klosse et al. (2004). These CSFs are very significant for the development of new dishes or the improvement of existing ones. The main CSFs are: "(1) name and presentation befitting expectations, (2) appetizing smell suitable to the food, (3) good balance of flavor compounds in relation to the food, (4) presence of umami, (5) a mix of hard and soft textures apparent in the mouth, and (6) high flavor richness" (Klosse et al., 2004, p. 107). Other authors identified ten CSFs based on the analysis published in a culinary magazine for chefs and by application of laddering technique (Kawasaki et al., 2015). These CSFs are: "utilization of main ingredient texture, utilization of main ingredient flavor, utilization of main ingredient umami, featured main ingredient, good pairings (complements) between main and secondary ingredients, not too rich, good balance, cuisine more Japanese in style, elegance and surprise" (Kawasaki et al., 2015, p. 3). Listed CSFs were used for the research of new dishes success factors presented in this paper.

## 3. Research methodology

A questionnaire was developed to estimate critical factors for the success of new dishes in the gastronomic offer of restaurants. This questionnaire consists of three sections. The first section includes questions regarding the profile of managers (age, education, and work experience), the second focuses on the restaurants' profile, while the third refers to culinary success factors. The factors used in the questionnaire were taken from the study conducted by Kawasaki et al. (2015): "*Cognitive structures based on culinary success factors in the development of new dishes by Japanese chefs at fine dining restaurants*". Therefore, the third part of the questionnaire consisted of ten closed-ended Likert-type questions rating the factors and one open-ended question. The CSF8 (Dish in the style of Serbian cuisine) was adapted to the local situation. The research was conducted in November 2020. The analyzed

Belgrade restaurants were selected using Tripadvisor – the world’s largest internet travel platform. When entering keywords “restaurant” and “Belgrade”, the portal singles out a wide range of hospitality facilities (1701) on the territory of Belgrade, as well as in suburban municipalities. After eliminating the facilities located in suburban municipalities, 1052 facilities were identified. After another elimination of service restaurants operating under institutions, clubs or cafeterias, fast-food restaurants, temporarily closed facilities, some bakeries and other non-typical facilities, 424 facilities were classified as a classical restaurant. The questionnaire was sent to 200 managers of randomly selected restaurants by e-mail on the e-mail addresses published on the Tripadvisor site, asking them to fill it out and return it to the sender. In order to improve responses, e-mails were followed up with phone calls. All participants were asked the same questions in the same order. The participants ranked each factor with respect to its importance for the success of a dish using a Likert scale of 1 (not important) to 5 (very important). Managers were also asked to identify any other important factors not included in the provided list. The final response sample size was 66, however, due to incomplete questionnaires, 2 were discarded from further analyses. Therefore, the final size of the used sample was 64 and the response rate was 32%, which is in accordance with similar studies (Agarwal & Dahm, 2015; Mandabach et al., 2011).

All data analyses were done using the One-way ANOVA, t-test and Factor Analysis (using statistical package STATISTIKA 5.0). In addition, the scale reliability was analyzed using Cronbach’s Alpha statistics.

## 4. Results and discussion

### 4.1. Profile of respondents

Table 1 profiles the respondents, presenting the basic data about their age, education and professional experience. The average age of respondents was 44, while the highest percentage of respondents was between 41 and 50 (43.8%) years of age. Also, a high percentage of respondents (34.3%) were between 31 and 40. More than half (59.3%) of respondents completed some high school, significant number of respondents (37.5%) had bachelor’s degree, while only 3.2% had master’s degrees. Most of them (70.3%) had professional education in hospitality. Generally, respondents are well experienced in hospitality. Namely, most of them (64.0%) have more than 10 year’s experience in hospitality.

Table 1: Profile of respondents

		Number of respondents	Percent of respondents %
Age (year)	< 30	2	3.2
	31-40	22	34.3
	41-50	28	43.8
	>50	12	18.7
Education	High school	38	59.3
	Bachelor degree	24	37.5
	Master degree	2	3.2
Experience in hospitality (year)	1-5	3	4.7
	6-10	20	31.3
	>10	41	64.0
Professional education in hospitality	Yes	45	70.3
	No	19	29.7

Source: Author’s research

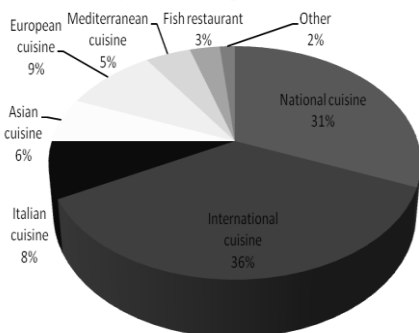
## 4.2. Restaurant profile

The restaurant profile is defined based on several criteria, including the type of cuisine, size and how long the restaurant has stayed in business. Depending on the type of cuisine, the restaurants are classified into eight groups (Figure 1). Most restaurants belong to the type of international (36%) or national (31) cuisine. Then, there are restaurants with European (9%), Italian (8%), Asian (6%) and Mediterranean (5%) cuisine, followed by fish restaurants (3%). The remaining 2% include restaurants offering some other type of cuisine, which is not indicated in the questionnaire.

The size of the restaurant is defined based on the number of available seats (chairs). According to these criteria, all restaurants are divided into three groups (Figure 2). Almost half of the restaurants (47%) belong to the medium size restaurants (50-100 available chairs), while the other half consists of the restaurants that belong to two other groups, which have almost equal share (28% in the category of big restaurants with more than 100 chairs and 25% in the category of small restaurants with less than 50 chairs).

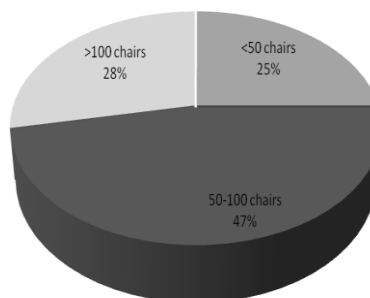
In relation to how long the restaurant has stayed in business, restaurants are divided into three groups (Figure 3). The restaurants that have stayed in business for more than 10 years have the highest share in this respect – 48% and are followed by the restaurants (33%) which have been in business between 3 and 10 years, and finally younger restaurants (19%) which have been operating for less than 3 years.

Figure 1: Type of cuisine



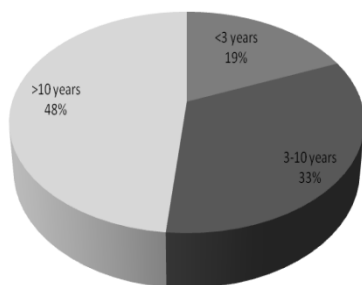
Source: Author's research

Figure 2: Size of restaurant



Source: Author's research

Figure 3: How long the restaurant has stayed in business



Source: Author's research



### 4.3. Critical success factors

In order to evaluate the importance of critical success factors for new dishes included in the gastronomic offer of Belgrade restaurants, the estimation of the importance of 10 offered CSFs was done by the restaurant managers. Based on the responses provided by the respondents, 10 CSFs were ranked according to their importance. Therefore, based on the analysis of descriptive parameters of all variables used to collect data on factors (10 items) influencing the new dishes success in 64 surveyed Belgrade restaurants (Table 2), it was determined to what extent (based on the assessment of the surveyed managers), individual items are recognized as significant factors of new dishes success.

According to the analysis of descriptive parameters, out of 10 offered success factors of new dishes, Belgrade restaurant managers singled out 7 factors whose scalar averages (Mean) range from 4.00 to 4.78, which means that restaurant managers recognized these factors as crucial for the success of new dishes. On the list of 10 success factors, “Main ingredient umami” occupies the first position with an average score of 4.78. Slightly lower values of scalar averages were determined for the following CSFs: “Main ingredient flavor” - 4.66; “Good balance between taste and texture of ingredients” - 4.56; “Elegance, sophisticated impression” - 4.13; “Good pairings between main and secondary ingredients” - 4.11; “Surprise (unusual food experience)” - 4.04 and Main ingredient texture - 4.00. For two CSFs (“Main ingredient” and “Not too heavy, neither too strong in taste nor too much fat”), the scalar averages had a value between 3 and 4, which means that restaurant managers rate these CSFs as less significant compared to the first 7, however, they are classified as important indicators. The only CSF whose scalar average is below 3 is “Dish in style of Serbian cuisine”, which is rated as the least significant CSF.

Table 2: Importance of critical success factors for new dishes in the gastronomic offer of Belgrade restaurants

Position	CSFs	Mean	SD	SE
01.	Main ingredient umami	<b>4.78</b>	0.744	0.052
02.	Main ingredient flavor	<b>4.66</b>	0.720	0.088
03.	Good balance between taste and texture of ingredients	<b>4.56</b>	0.641	0.048
04.	Elegance, sophisticated impression	<b>4.13</b>	0.906	0.060
05.	Good pairings between main and secondary ingredients	<b>4.11</b>	0.936	0.067
06.	Surprise (unusual food experience)	<b>4.04</b>	0.852	0.055
07.	Main ingredient texture	<b>4.00</b>	0.778	0.056
08.	Main ingredient	<b>3.66</b>	1.022	0.085
09.	Not too heavy, neither too strong in taste nor too much fat	<b>3.33</b>	1.197	0.078
10.	Dish in style of Serbian cuisine	<b>2.00</b>	0.055	0.085

Notes: 1=not important; 5= extremely important; SD – standard deviation; SE – standard error

Source: Author’s research

Factor analysis (Table 3) of 10 CFSs found that five variables related to food ingredients (main ingredient umami; main ingredient flavor; good balance between taste and texture of ingredients; good pairings between main and secondary ingredients; main ingredient) participate in the formation of the first component, which is named as Characteristics of ingredients. The remaining three CFSs (elegance, sophisticated impression; surprise (unusual

food experience); not too heavy, neither too strong in taster nor too much fat) create second component entitled Impression about dish.

Table 3: Results of factor analysis

Factors	Factor loading	Eigenvalue	% of variance explained	Cronbach's alpha
<b>F1: Characteristics of ingredients</b>				
Main ingredient flavor	<b>0.821</b>	3.010	25.112	0.897
Main ingredient	<b>0.745</b>			
Main ingredient umami	<b>0.705</b>			
Good pairings between main and secondary ingredients	<b>0.630</b>			
Good balance between taste and texture of ingredients	<b>0.581</b>			
<b>F2: Impression about the dish</b>				
Surprise (unusual food experience)	<b>0.722</b>	1.705	14.134	0.812
Not too heavy, neither too strong in taste nor too much fat	<b>0.614</b>			
Elegance, sophisticated impression	<b>0.570</b>			

Source: Author's research

Differences between managers' viewpoints on the importance of Characteristics of ingredients and Impression about the dish for the success of new dishes in the gastronomic offer, depending on their education (level and area) and the experience and type of cuisine, were analyzed using the t-test. In this respect, in some categories (education level and experience) a smaller number of managers (less than 10% of the total sample) were included; the analysis encompasses only those groups of managers who participate with more than 10% in the total sample (education level: high school and bachelor degree; experience: 6-10 years and more than 10 years; type of cuisine: national and international). The obtained results show that there are significant differences between managers who finished high school and their colleagues with bachelor's level of education regarding the Impression about the dish (Table 4). These results indicate that there are statistically significant differences in the managers' viewpoints according to their level of education for the CSFs "Surprise (unusual food experience)" and "Elegance, sophisticated impression" at significance level  $p < 0.05$ . Both CSFs are rated higher by managers with high school degrees (Table 4). Differences between the two groups of managers were not confirmed for Characteristics of ingredients.

Table 4: Results of the t-test according to the education level

Impression about the dish	Mean value		t-test
	High school	Bachelor	
Surprise (unusual food experience)	4.36	3.78	0.024*
Not too heavy, neither too strong in taste nor too much fat	3,29	3.43	0.589
Elegance, sophisticated impression	4.43	3.76	0.009*

Source: Author's research

Between managers with education in hospitality and managers with education in some other areas, there were no significant differences relating to the Impression about dish. T-test shows significant differences between these two groups of managers concerning the Characteristics of ingredients (Table 5). Namely, there are statistically significant differences

in the managers' viewpoints according to their education field for CSFs "Main ingredient flavor" and "Main ingredient umami" at significance level  $p < 0.05$ . These CSFs are rated higher by the managers whose education is hospitality related (Table 5).

Table 5: Results of the t-test according to the education field

Characteristics of ingredients	Mean value		t-test
	Education in hospitality	Education out of hospitality	
Main ingredient flavor	4.89	3.96	0.007*
Main ingredient	3.74	3.58	0.118
Main ingredient umami	4.88	4.23	0.041*
Good pairings between main and secondary ingredients	4.18	3.93	0.428
Good balance between taste and texture of ingredients	4.43	4.81	0.312

Source: Author's research

Managers' viewpoints about importance of Characteristics of ingredients and Impression about the dish for the success of new dishes are not dependent on their experience in hospitality and type of cuisine. T-test has not identified differences between managers with six to ten years of experience and managers with more than 10 years of experience. Also, results of the t-test according to the type of cuisine show that there are no differences in restaurant managers' viewpoints about the importance of Characteristics of ingredients and Impression about the dish for the success of new dishes in the gastronomic offer depending on the type of cuisine (national or international).

One-way ANOVA was used to analyze differences in restaurant managers' viewpoints about the importance of Characteristics of ingredients and Impression about the dish for the success of new dishes in the gastronomic offer depending on their age, size of the restaurant and how long has the restaurant stayed in business. In this regard, in the category "less than 30 years" pertaining to the age of managers, a smaller number of respondents (less than 10% of the total sample) were included; the analysis included only those groups of respondents who participated with more than 10% in the total sample (31-40, 41-50 and over 50 years). A statistically significant difference at the level of  $p < 0.05$  concerning the managers belonging to different age groups was found only for Characteristics of ingredients (Table 6), while there were no significant differences for Impression about the dish. Post-hoc comparisons using the Tukey test indicated significant differences in viewpoints between the managers aged 31-40 and the managers aged 41-50 for the following CSFs: "main ingredient flavor" ( $p = 0.021 < 0.05$ ) and "main ingredient" ( $p = 0.032 < 0.05$ ). Also, the Tukey test pointed to significant differences between managers aged 31-40 and those over 50 years of age for the following CSFs: "main ingredient flavor" ( $p = 0.034 < 0.05$ ) and "good balance between taste and texture of ingredients" ( $p = 0.019 < 0.05$ ).

Table 6: Results of ANOVA according to the age of managers

Characteristics of ingredients	Mean value			F	p
	31-40	41-50	>50		
Main ingredient flavor	4.21	4.89	4.78	6.312	0.006*
Main ingredient	3.63	3.45	4.21	3.687	0.023*
Main ingredient umami	4.73	4.84	4.69	1.759	0.152
Good pairings between main and secondary ingredients	3.98	4.19	4.09	0.321	0.723
Good balance between taste and texture of ingredients	4.78	4.46	4.01	5.468	0.009*

Source: Author's research

According to the results of ANOVA, there are statistically significant differences in the managers' viewpoints according to the size of a restaurant in terms of the Impression about the dish and only for one CSF (Table 7), while there are no significant differences for Characteristics of ingredients. The results of the Tukey post-hoc test indicated that there are significant differences in viewpoints between the managers employed in restaurants with less than 50 chairs and those working in restaurants with more than 100 chairs concerning the CSF "Suprise (unusual food experience)" ( $p=0.027<0.05$ ).

Table 7: Results of ANOVA according to the size of a restaurant

Impression about the dish	Mean value			F	p
	< 50 chairs	50-100 chairs	>100 chairs		
Surprise (unusual food experience)	4.69	4.01	3.79	3.521	0.031*
Not too heavy, neither too strong in taste nor too much fat	3.32	3.25	3.48	1.153	0.328
Elegance, sophisticated impression	4.02	4.16	4.12	1.947	0.152

Source: Author's research

The application of ANOVA for the analysis of statistically significant differences in the managers' viewpoints according to how long has the restaurant stayed in business showed that there are no differences between viewpoints of managers employed in the restaurants which have been in business for different periods of time concerning any of the given CSFs.

## 5. Conclusion

This research presents the findings of the study focusing on critical success factors for new dishes in gastronomic offers of restaurants from the perspective of managers of Belgrade restaurants. It provides the answer to the main research question. Based on the results of the study, several conclusions can be drawn. First, the majority of analyzed CSFs (7/10) were estimated by the managers of Belgrade restaurants as crucial for new dishes success. Many of these CSFs are related to the ingredients of new dishes, and primarily to the main ingredient. Although the "main ingredient" had a low ranking (08) in the CSFs hierarchy, some parameters (main ingredient umami, main ingredient flavor, main ingredient texture) related to the main ingredient are better positioned, and the "main ingredient umami" was selected as the most important. Factor Analysis showed that six variables related to food ingredients support the first component entitled Characteristics of ingredients, while the remaining variables support the second component entitled Impression about the dish. The influence of seven independent variables on the first and second components were different. Namely, the attitude of managers of different ages, levels and fields of education and working in restaurants of different sizes varied, while significant differences were not identified between the managers depending on their experience, the restaurant's type of cuisine and the restaurant's duration.

Our study contributes to previous research of CSFs of new dishes, since the latter did not analyze the effect of managers' and restaurants' profiles on their attitudes about new dishes success. Also, previous studies were focused on the identification of the CSFs, while this study estimated the importance of already identified CSFs. The obtained results contribute to the science of restaurant business in our country which has not examined the CSFs of new dishes thus far. The practical implications of the research are reflected in the fact that the results of this study might prove valuable to current and future owners of restaurant

businesses. Business owners can improve their business performance by applying knowledge from this study.

The limitations of the research conducted in this paper are related to very scarce literature on the given subject, which is necessary for the design of the research instrument. Also, in terms of future studies, the comparison of the results relating to assessing the significance of different CSFs from different perspectives (guest perspectives and managerial ones) would provide greater reliability of the obtained results.

## Conflict of interest

The authors declare no conflict of interest.

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## The impact of COVID-19 on the hotel supply chain management

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**Abstract:** The COVID-19 virus pandemic appeared to be a low-probability, high-impact event that has caused significant disruptions in supply chains worldwide. The hotel industry has been one of the most severely affected, with all participants in the supply chain suffering from the crisis. This paper aims to analyze if, and to what extent, hotels in the Republic of Serbia have faced difficulties in supply chain management (SCM) due to the COVID-19 virus pandemic, with special reference to the difficulties in introducing information and communications technologies (ICTs) for SCM. Empirical research was conducted in May, 2021 involving managers from 40 hotel companies categorised as 4- and 5-star. The study results reveal that majority of hotel companies have experienced difficulties in SCM and implementation of ICTs for SCM due to the pandemic, while the intensity of difficulties is not found to be correlated with hotel size, category and affiliation.

**Keywords:** COVID-19, supply chain management (SCM), information and communications technologies (ICTs), hotel

**JEL classification:** M11, M15, I15

## Uticaj COVID-19 na menadžment lancima snabdevanja hotelskih preduzeća

**Sažetak:** Pandemija izazvana virusom COVID-19 je događaj male verovatnoće i značajnih efekata, koji je prouzrokovao velike poremećaje u lancima snabdevanja širom sveta. Hotelska delatnost je jedna od najteže pogođenih, pri čemu svi učesnici u lancu snabdevanja podnose teret krize. Ovaj rad ima za cilj da ispita da li su se, i u kojoj meri, hoteli u Republici Srbiji suočili sa teškoćama u menadžmentu lancem snabdevanja usled pandemije virusa COVID-19, sa posebnim osvrtom na teškoće pri uvođenju informaciono-komunikacionih tehnologija (IKT) koje se koriste u menadžmentu lancem snabdevanja. Empirijsko istraživanje je sprovedeno u maju 2021. godine, u kojem su učestvovali menadžeri iz 40 hotelskih preduzeća kategorisanih sa 4 i 5 zvezdica. Rezultati istraživanja pokazuju da se većina hotela usled pandemije suočila sa teškoćama u menadžmentu lancem snabdevanja i

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uvođenju IKT za menadžment lancema snabdevanja, s tim da nije ustanovljeno da intenzitet teškoća zavisi od kategorije, veličine i afilijacije hotela.

**Ključne reči:** COVID-19, menadžment lancima snabdevanja, informaciono-komunikacione tehnologije (IKT), hotel

**JEL klasifikacija:** M11, M15, I15

## 1. Introduction

Supply Chain Management (SCM) refers to the integration and synchronization of interrelated business processes (Min, 2015). Its role is to enable efficient flow of information, goods and services through the supply chain in order to increase the speed, flexibility, availability and quality of goods, and to cut costs at the same time. This way of functioning helps all participants in the supply chain to gain competitive advantage, while the end-user benefits from timely supply of quality goods at a reasonable price. Nowadays, companies can hardly gain competitive advantage on their own, but rather as a part of an efficient and well-managed supply chain. In order to achieve high efficiency of the supply chain, companies can implement numerous information and communications technologies (ICTs) that enable real-time information flow, tracking goods, timely and secure delivery, low stocks, and consequently, the implementation of concepts Just-in-Time (JIT) and lean business.

The COVID-19 virus pandemic has become a global issue affecting people, companies, states, as well as international relations. The way of organizing has changed in all spheres, including education, healthcare, economy, travel, tourism, etc. ICTs have received a huge significance as they have been employed for distance learning and working in order to prevent further spread of the infection. Tourism and hospitality are the most severely affected industries by the pandemic, and not only hotels, restaurants and tourism agencies were affected, but the whole tourism supply chain, including producers of food and other commodities, suppliers, intermediaries, service providers, and tourists.

This work aims to highlight the impact of the COVID-19 pandemic on the hotels' SCM in the Republic of Serbia, with an emphasis on the implementation of ICTs for SCM. The paper is structured as follows. After reviewing relevant literature in the field of SCM, COVID-19-related business effects, and ICTs for SCM, the hypotheses are developed. Further, the research methodology is presented, followed by the results and discussion. The last part of the paper is devoted to conclusions.

## 2. Background

### 2.1. The concept of SCM

Contemporary market conditions, characterised by intensive competition in almost every field, have made companies more oriented towards efficiency and quality in order to survive in the marketplace and achieve competitive advantage. This has led to specialisation and, consequently, to the increasing number of separate businesses which are mutually connected into networks to deliver the product or service to the end-users. A supply chain refers to a system of interrelated business processes which extends from the original producer to the end-user. It involves downstream flow of goods, and upstream flow of information. Ayers (2006) defines a supply chain as “life cycle processes comprising physical, information, financial, and knowledge flows whose purpose is to satisfy end-user requirements with products and services from multiple linked suppliers” (p. 4). The process approach has led to

interfunctional coordination within a company, resulting in higher flexibility, efficiency, and quality. SCM represents an extension of interfunctional coordination, which includes interorganisational integration and coordination across the supply chain in order to capture the synergy and allow better decision-making (Min, 2015). Grant et al. (2017) define SCM as “an integrating function with a primary responsibility for linking major business functions and business processes within and across companies into a cohesive and high-performing businessmodel” (p. 9). Participants in a supply chain become strategic partners and links between them change from simple transactions to sophisticated collaborative relationships (Wallner et al., 2015). The task of the supply chain manager is to assess the impact of business decisions on the entire supply chain, and not only on its specific participants (Ilić & Tešić, 2016).

With none or poor SCM, participants in the supply chain act as closed, independent entities, with very little or no direct exchange of information, and typically hold large inventories to defend against volatility in demand (Đurić et al., 2012). Such a situation leads to increased costs and reduced agility of businesses, which is a very unfavorable position in the modern market, where rapid and major changes occur frequently. Therefore, the focus has to be moved from the strategy “make and sell” to the more responsive one “feel and react”. In other words, instead of the “push” approach based on demand forecast, modernly designed supply chains adopt the “pull” approach based on current customer requirements. Several factors have contributed to the significance of SCM, such as the pressure of customers on companies to tailor goods to their individual requirements; intensive competition, shorter product life cycle; reduced time of product access to the market; new technologies and request for improvement of services and customer support.

Strategic importance of SCM results from the fact that individual companies can no longer compete on their own, but rather through collaboration with supply chain partners. According to Schlegel (1999), SCM should bring numerous benefits, such as improved customer service and value added, better asset utilisation, and increased sales and profitability. There are two basic strategies for gaining competitive advantage, namely, low-cost strategy and differentiation strategy. The first one leads to lower prices to attract price-sensitive customers. The second one is oriented towards customization to offer unique and high quality goods to demanding customers. The SCM enables companies to gain advantage from both strategies simultaneously and avoid traditional trade-offs. Consequently, SCM enables its members to shorten the lead-time, increase product/service availability, decrease costs, as well as to improve quality and customization. The Supply-Chain Council (SCC) has provided the SCOR (supply-chain operations-reference) model, which covers key supply chain activities from customer demand identification to product delivery and cash collection. The goal of the SCOR model is to provide a standardized way to measure supply chain performance and to use common metrics for comparison with other organizations (benchmarking) (Christopher, 2016, p. 239).

Tellioglu (2021) points out that costs and quality of service are of paramount importance in the contemporary hotel business, while the supply chain has a deep impact on both of these drivers of competitiveness. E-word-of-mouth has made customer satisfaction the primary objective of the hotel business due to its visibility to potential guests worldwide, where any negative comment may have serious consequences for the future hotel operations. To produce quality service and keep guests satisfied, hotels should carefully choose supply chain partners and conduct an effective SCM, which involves the selection of key suppliers and distributors, open communication and collaboration, forecast and planning, inventory management, ICT-based integration, and definition of supply chain performance measures. All supply chain members should have access to real-time information, and their integration should result in learning and improvement of business processes. According to González-

Torres et al. (2021), the cooperation among participants in the tourism supply chain is a driving force of agility, flexibility and organizational performance. They argue that transparent and timely communication about difficulties some members of the supply chain face helps other members to anticipate realistic timelines and adjust their operations. Lopes de Sousa Jabbour et al. (2020) state that knowledge management is important for a resilient supply chain, including data collection through group discussion and brainstorming to identify challenges as well as opportunities.

Tourism supply chain (TSC) involves accommodation providers, producers, distributors and suppliers of food and other products used for accommodation services, transportation companies, travel agents and tour operators, restaurants, as well as touristic sites, shopping centers and other (Abdelsalam & Elbelehy, 2020). Each tourism chain is specific as it involves participants and attractions within a certain location. TSC management can be referred to as “a set of approaches utilized to efficiently manage the operations of the tourism supply chain (TSC) within a specific tourism destination to meet the needs of tourists from the targeted source market(s) and accomplish the business objectives of different enterprises within the TSC” (Zhang et al., 2009, p. 345). Tour operators have a significant role in TSC, as they connect supply and demand by combining products and services from different suppliers into a single package, which is being allocated to the tourists or tourism agencies (Tigu & Calaretu, 2013). Thus, tour operators have a strong impact on other participants in the TSC, both upstream and downstream. TSC has certain peculiarities, such as that its members are affected by discontinuity in demand because of seasonality, but also by systemic changes in tourists preferences which are commonly directed by tour operators. TSC is very sensitive to different types of crises, such as economic, political, health crises or natural disasters. Moreover, tourism services are consumed directly and personally by guests who need to be physically present at the place where the service is provided; tourism services are perishable in nature, meaning that they cannot be stored for later use; tourism products cannot be evaluated before purchase so information availability is necessary; and, there is high demand uncertainty (Zhang et al., 2009). Because tourism offer normally consists of different products and services, efficient coordination among suppliers of those products and services is of high importance.

From the hotel perspective, SCM involves identification of guests’ preferences, service design, demand forecast and planning, selection of suppliers and distributors and the mode of communication with them, inventory management, and evaluation of guests’ satisfaction. The importance of availability of real-time information throughout the supply chain enables faster response and decreases the need for high inventories. This is enabled by software solutions which integrate partners in the supply chain and allow them to access relevant data in order to make proper and timely decisions. Moreover, some ICT tools help hotels with SCM activities, such as market research, demand forecast, service design, customer relationship management (CRM), event planning, decision-making, inventory management, and others.

## **2.2. Disruptions in supply chains and hotel business due to COVID-19**

The vulnerability of supply chains results from their complexity and interdependence of their elements, so the problems occurring in one part of the supply chain are felt throughout the whole supply chain with the “ripple” effect. Due to the inherent characteristics of high personal contact, hospitality has become one of the hardest-hit industries by the COVID-19 pandemic. Tasnim (2020) asserts that COVID-19 “has an important effect on global supply chain management process” (p. 73). Border closures, travel restrictions, mandatory quarantine, infection, and fear of disease have significantly affected global supply chains,

both from the demand- and supply-side. In some cases, there were bottlenecks along the whole supply chain: “The COVID-19 pandemic has placed unprecedented stresses on food supply chains, with bottlenecks in farm labour, processing, transport and logistics, as well as momentous shifts in demand.” (OECD, 2020). Global supply chains were also seriously disrupted because Chinese suppliers of raw materials, semi-finished and finished products are significant participants in most supply chains (Tellioglu, 2021). Gentile (2020) refers to the Institute for Supply Management’s survey, which shows that almost half of respondents did not have a plan regarding supply chain disruption from China. The author further asserts that the situation was the most dramatic in the case of personal protective equipment, as over half of total global supplies come from China. Welch (2021) claims that the current pandemic has shown how fragile the global supply chain is, and indicates significance of trusted supplier relationship to ensure favorable lead times and quality. Further, the pandemic has contributed to supply chain diversification and reorientation to local suppliers to ensure continuous flows of products and services (BDO, 2021).

The causes of turbulences in the TSC are the lack of products (such as imported food, masks, gloves, disinfectants, inventory, spare parts for machines, etc.) due to manufacturing closure or limited activity, as well as because of surge in demand, lack of transportation, mandatory closure, lack of knowledge on how to deal with the new situation, employee absenteeism (due to infection, fear, transportation problems, taking care of small children and the like), lack of digitalization, or change in consumers buying patterns (Tasnim, 2020). The changes on the supply-side caused prices of commodities and certain services, such as transportation, to increase significantly. On the other hand, as hospitality facilities were closed, there was overstock of certain products, such as meat, causing decline in prices; some products became critical due to legal obligations, and there was also increased demand for disposable products to protect human health while waste management has been given secondary importance (Tellioglu, 2021). González-Torres et al. (2021) assert that TSC members are interlinked in complex patterns, and therefore shed light on the effective upstream and downstream relationship management within the supply chain in order to mitigate the effects of the crisis and achieve sustainable competitiveness. They advocate the shift from transactional relationship to integration and coordination, emphasizing the importance of trust and win-win philosophy among the supply chain members.

The COVID-19 crises has shed light on the importance of considering supply chain disruptions in contemporary SCM (Ferreira et al., 2021). Clark (2020) states that disruptions in hospitality supply chains due to COVID-19 are the consequence of poor visibility and poor supplier relationship management. In order to resist crises, supply chains have to become resilient, which can be achieved through supply chain engineering, a high level of collaboration between the members, agility and risk management culture (Christopher & Peck, 2004). Through supply chain engineering there should be identified all participants in the supply chain, direct as well as indirect associates, critical path analysis should be performed, and procurement strategy defined (Lopes de Sousa Jabbour et al., 2020). An effective SCM implies collaborative forecasting and planning, as well as sharing real-time information in order to enable timely response to changes and maintenance of small inventories.

Although many hotel facilities were closed, employees at the management and back-office level continued to work, mainly online, performing activities such as maintaining contact with customers and employees, managing reservations, planning future events and the like (Chadee et al., 2021). The use of digital technologies for working from home is being promoted to maintain a certain minimum level of customer service and a relationship with stakeholders. The pandemic has also affected guests' decision-making process and attitude towards using ICTs. Although guests traditionally preferred personal contact over robotic

staff, the pandemic has changed this attitude as guests became concerned about their health (Kim et al., 2021). Hotels worldwide applied strategies to cope with the COVID-19 pandemic and provide safe service to guests. These were improving hygiene standards and implementing solutions for social distancing using ICTs to reduce guest interaction with hotel employees, such as check-in machines, and robotic cleaning and serving guests. Apart from effects on the demand side of hotel operations, the pandemic has also influenced the supply side, including hotel employees, and delivery of goods and services. It was necessary to reassure guests, but also to enable employees to work and ensure their health. The pandemic has occurred to be a new and challenging situation in which service provision, marketing communication, human resource management, and social responsibility need special attention and adjustment. Vasić (2020) finds that many companies in South-East Europe were not prepared for remote working, what caused a lot of stress and anxiety. Summarizing the findings of early empirical research on COVID-19 impact on the hotel industry, Milovanović (2021) points out that hotel recovery strategies include “increasing safety provision through strict hygiene standards, employee trainings and motivation, social distancing, more intensive use of digital technology instead of human contact, intensive marketing to promote safety, safety certification, orientation towards domestic tourists, more attractive offers, medical assistance, charity giving and room/food provision for those in need especially for displaced medical staff and quarantined tourists, business model innovation, and so on” (p. 582).

To investigate the impact of COVID-19 on hotels’ SCM in Serbia, the following hypotheses are developed:

H<sub>1,1</sub>: Hotels in the Republic of Serbia face difficulties in SCM due to the COVID-19 pandemic.

H<sub>1,2</sub>: Higher category hotels face more difficulties in SCM due to the COVID-19 pandemic than lower category hotels.

H<sub>1,3</sub>: Large hotels face more difficulties in SCM due to the COVID-19 pandemic than small- and medium-sized hotels.

H<sub>1,4</sub>: Hotels belonging to a chain face more difficulties in SCM due to the COVID-19 pandemic than independent hotels.

It is expected that the study results reveal that hotels in the Republic of Serbia have experienced difficulties in SCM due to the COVID-19 pandemic, and that the intensity of difficulties is positively related to hotels’ size and category. Such expectation results from the perceived higher complexity of supply chains of hotels of bigger size and higher category. It is also assumed that hotels belonging to a hotel chain will face more difficulties than independent hotels, again, because of the perceived higher complexity of supply chains in case of affiliated hotels.

### **2.3. Application of ICT tools in the tourism and hospitality SCM**

ICTs enable supply chains to be highly responsive to market changes by providing efficient solutions for forecasting, planning, purchase, production, transport, storage, distribution and sales. Thanks to the Internet and other ICTs, the concept of SCM has been redefined. The Internet has changed the way people buy goods and gather information about them, while many processes became automated, what has led to the dramatic increase in speed and accuracy (Min, 2015, p. 442). A very important impact of ICTs is reflected in a higher degree of integration between participants in the supply chain, and in significant reduction of administrative and procurement costs (Mitrović & Mitrović, 2019). ICT should not be seen

only as a tool, because tools can bring some advantages for business, but not development (Soldat & Matotek, 2014). Data does not imply knowledge, but it is important how the data is found, created and used. The development of ICTs should improve forecasting efficiency and competitiveness through availability and exchange of information between supply chain members. Numerous ICT-based tools are used in SCM, such as Enterprise Resource Planning (ERP), Geographic Information System (GIS), Radio Frequency Identification (RFID), Internet of Things (IoT), Cloud Computing, Big Data, Blockchain, as well as Artificial Intelligence (AI). These tools are going to be discussed in more details.

ERP offers an integrated information control system, connecting different functions within the enterprise, but also between the supply chain participants. It enables members of the supply chain to share the same information in real-time, so business processes can be better coordinated and risk reduced. The ERP system makes it easier to do business while reducing bureaucracy and increasing productivity (Beheshti, 2006). Chauhan and Singh (2017) find that ERP is highly relevant for the tourism industry as it helps to enhance service performances, including productivity and operational efficiency. Min (2015, p. 444) lists the major benefits of ERP, such as lead-time reduction, faster information transaction, speedy payment, and laying the groundwork for electronic commerce. GIS is a computer system that stores different kinds of spatial information. For SCM, it can be a valuable platform for communication between supply chain members; it can enhance logistic efficiency, and warn of natural disasters. Yang et al. (2015, p. 16) highlight the main areas of GIS usage in hospitality and tourism management, such as “the research of tourism resource inventories/usage, location suitability, tourism impact analysis and visitor flow management”. RFID technology is used for products’ electronic identification, reducing labor costs while increasing efficiency and inventory accuracy, making product delivery faster, and eliminating the need for physical product inventory (Soldat & Matotek, 2014). It enables reading product information from greater distances and without direct physical contact, thus enabling data reading in harsh environments or chaotic circumstances (Min, 2015, p. 451). Hozak (2012) shows examples of RFID technology application in the tourism industry; namely, it can be used for inventory control and order planning, as well as for tracking of things, such as luggage, uniforms, towels, etc. The author points out that the same RFID card may be used for several purposes.

There are several emerging trends in ICT application to SCM, such as “open collaboration through “cloud computing,” “conversation economy” via online social networking media, mobile commerce in ubiquitous environments, and multitasking using smart objects” (Min, 2015, p. 458). The concept of cloud computing refers to sharing resources over a network, most often the Internet, at any time and independently of a geographic location (Đordjević et al., 2018). Users can access applications on demand via a web browser or desktop/mobile application, while the infrastructure and software are hosted at a remote location. The key benefits include greater accessibility to ICT tools, higher innovative potential, lower costs and improved quality (Marston et al., 2011). Application of cloud computing in the tourism industry includes collection of tourist information on one platform (Wang, 2015). Na et al. (2016) propose a hotel information platform, which integrates tourism and leisure information of a destination using cloud computing technology. Social media or the so called “conversation economy” enable fast interactive communication involving employees, customers and business partners. It is a good ground for customer relationship management (CRM), advertising, and quick exchange of information.

IoT refers to the interconnection of physical objects, which are seamlessly integrated into the information network and are active participants in business processes. Such objects have built-in electronics, software, sensors, and connectivity that enable them to exchange data with the manufacturer, operator and/or other connected devices (Weber & Weber, 2010, p.

1). Abdel-Basset et al. (2018) assert that the main benefits of IoT for SCM are increased real-time inventory visibility and logistics transparency to all supply chain members, increased efficiency, lower costs and higher customer satisfaction. IoT is becoming increasingly important in smart tourism destinations and smart organizations, while examples of IoT in hotels include application-driven devices, automated door locks, thermostats, voice-based interaction, integration with a guest's mobile phone to enable self-check, self check-out and other services, location-based information to advertise hotel services when guests are nearby, offering services such as virtual tour guide, translation services, interactive restaurant menu, sensors enabling maintenance and stock management (Car et al., 2019).

The concept of Big data refers to the design and implementation of a reliable and distributed infrastructure for the storage, analysis, management, and transmission of large amounts of data (Radenković et al., 2015) which can be accessed by supply chain members in order to enable timely and accurate decision-making. Stylos et al. (2021) state that big data helps organizations in dynamic industries, such as tourism, to predict customer behavior and customize the offer, and they mention photo sharing and review websites as sources of big data in tourism. Blockchain is a database that is not located in one place, but consists of smaller databases (blocks) that are digitally interconnected (Swan, 2015, p. 1). Tasnim (2020) suggests the implementation of digitalization in the platform of blockchain technology in order to create a robust global SCM, which will be able to resist similar future crises. In the hotel business blockchain technology is used for making transactions, such as bookings or payments, for guests' identification and interaction with them (Rashideh, 2020). Treiblmaier (2020) summarizes the blockchain use cases in tourism, which involve inventory management, maintenance and tracking, reservations, payment, loyalty programs and personalized marketing, smart contract, privacy assurance, baggage tracking, coordination and cooperation.

The role of AI is of paramount importance in a modern business due to its ability to collect and analyze data, recognize business patterns, and learn business phenomena (Min, 2010). Ivanov and Webster (2017) show some examples of AI application in the travel, tourism and hospitality industry, such as "chatbots, delivery robots, robot-concierge, conveyor restaurants, self-service information/check-in/check-out kiosks, and many others". The benefits from AI employment in SCM include more efficient decision-making process leading to reduced costs, increased revenue, improved asset utilization, more accurate demand forecast, better quality, more efficient designs for waste removal, real-time tracking and error-free production, and shorter process cycle times (Dash et al., 2019).

Empirical research on the impact of COVID-19 on the implementation of ICTs for SCM is very scarce, particularly in Serbia. To fill this research gap, the following hypotheses are developed:

H<sub>2,1</sub>: Hotels in the Republic of Serbia face difficulties in the implementation of ICTs for SCM due to the COVID-19 pandemic.

H<sub>2,2</sub>: Higher category hotels face more difficulties in the implementation of ICTs for SCM due to the COVID-19 pandemic than lower category hotels.

H<sub>2,3</sub>: Large hotels face more difficulties in the implementation of ICTs for SCM due to the COVID-19 pandemic than small- and medium-sized hotels.

H<sub>2,4</sub>: Hotels belonging to a chain face more difficulties in the implementation of ICTs for SCM due to the COVID-19 pandemic than independent hotels.

The study results are expected to provide evidence on the negative effect of COVID-19 on introduction of ICTs for SCM, with the intensity of such effect dependent upon hotels' size,

category, and affiliation. This expectation is based on the assumption that hotels of higher category, bigger size, and those affiliated to a hotel chain, use technologies for SCM more intensively compared to lower-category, smaller-size and independent hotels, and are therefore more susceptible to negative effects of the pandemic in this regard.

### 3. Materials and methods

Empirical research was carried out in May, 2021. The sample consisted of 40 hotel companies of different sizes and affiliations in the Republic of Serbia, which were categorised as 4- and 5-star. One manager per hotel was surveyed. The reason for the selection of hotels with these two categories lies behind the assumption that lower-category hotels may not be using technologies for SCM. The sample characteristics are presented in Table 1.

Table 1: Sample characteristics

	Hotel category		Hotel size			Chain affiliation		Total
	4-star	5-star	Small	Medium	Large	Yes	No	
<b>Number</b>	32	8	18	18	4	7	33	40
<b>Percent</b>	80	20	45	45	10	18	82	100

Source: Author's research

The respondents were asked to indicate which ICT-based tools for SCM they use, then, to evaluate to what extent they have faced difficulties in SCM due to the COVID-19 pandemic (1-we have not faced any difficulties; 2-we have faced small difficulties; 3-we have faced moderate difficulties; 4-we have faced significant difficulties) and to what extent the COVID-19 pandemic decelerated the implementation of ICTs for SCM (1-no impact; 2-it decelerated to a small extent; 3-it decelerated to a moderate extent; 4-it decelerated to a great extent). The respondents were also asked if a hotel is independent or it belongs to a hotel chain, what is the size of a hotel (small, medium or large), and what is its categorisation. The statistical analysis involved descriptive statistics, t-test and ANOVA, and it was conducted using Statistical Package for Social Sciences (SPSS) v23.

### 4. Results and discussion

The results of the study reveal that most hotels in the Republic of Serbia categorised as 4- and 5-star faced difficulties in SCM due to the COVID-19 pandemic (92%), as well as regarding implementation of ICTs for SCM (85%). The extent of difficulties that each hotel faced varied from small to significant, while the majority of respondents assert that they have faced moderate difficulties (Table 2). Based on the obtained results, hypotheses  $H_{1,1}$  and  $H_{2,1}$  are accepted.



Table 2: Impact of COVID-19 on hotels' SCM and implementation of ICTs for SCM

Variable	None	Small	Moderate	Significant	Mean	Standard deviation
Difficulties in SCM due to COVID-19	8%	12%	50%	30%	3.03	0.86
Difficulties in the implementation of ICTs for SCM due to COVID-19	15%	10%	40%	35%	2.95	1.04

Source: Author's research

The T-test was used to investigate whether there are any significant differences between 4- and 5-star hotels in terms of difficulties that hotels have faced in SCM and introduction of ICTs for SCM due to the COVID-19 pandemic. Since there are two versions of the t-test depending on whether the variances of the two groups (4- and 5-star hotels) are assumed to be equal, Levene's test for equality of variances was performed. The results of Levene's test are not statistically significant, indicating that the t-test with equal variances assumed needs to be used (Table 3).

Table 3: Test for equality of variances of the two groups: 4- and 5-star hotels

Variable	Levene's test for equality of variances	
	F	p-value
Difficulties in SCM due to COVID-19	2.949	0.094
Difficulties in the implementation of ICTs for SCM due to COVID-19	2.218	0.145

\* $p \leq 0.05$

Source: Author's research

The results of the t-test show that there is no statistically significant difference in means between 4- and 5-star hotels regarding difficulties that hotels have faced in SCM and the introduction of ICTs for SCM due to the COVID-19 pandemic (Table 4). This means that on average, the pandemic has equally affected 4- and 5-star hotels in this respect. Therefore, hypotheses  $H_{1,2}$  and  $H_{2,2}$  could not be accepted.

Table 4: Impact of COVID-19 on hotels' SCM and the implementation of ICTs for SCM according to category

Variable	Hotel category					
	4-star		5-star		t	p-value
	M	SD	M	SD		
Difficulties in SCM due to COVID-19	3.03	0.93	3.00	0.53	0.091	0.928
Difficulties in the implementation of ICTs for SCM due to COVID-19	2.97	1.09	2.88	0.83	0.226	0.822
M – arithmetic mean; SD – standard deviation; t-test; * $p \leq 0.05$						

Source: Author's research

Large hotels face on average the most difficulties in SCM due to COVID-19, followed by small hotels, while the situation was the least unfavorable in medium-sized hotels. In terms of introducing ICTs for SCM, the severity of difficulties decreased with the increase in the size of hotels. In order to test whether these differences among small, medium and large hotels are significant, one way ANOVA was used. Since the assumption of equality of variance needs to be met for one way ANOVA to be used, Levene's test for equality of variances was performed. The results of Levene's test are not statistically significant, indicating that the assumption of equality of variances of the three groups (small, medium and large hotels) is met (Table 5).

Table 5: Test for equality of variances of the three groups: small, medium and large hotels

Variable	Levene's test for equality of variances	
	F	p-value
Difficulties in SCM due to COVID-19	2.466	0.099
Difficulties in the implementation of ICTs for SCM due to COVID-19	2.407	0.104

\* $p \leq 0.05$

Source: Author's research

The results of the one way ANOVA point out that the differences in means among small, medium and large hotels are not statistically significant (Table 6), and therefore hypotheses  $H_{1,3}$  and  $H_{2,3}$  are not confirmed.

Table 6: Impact of COVID-19 on hotels' SCM and implementation of new technologies for SCM according to size

Variable	Hotel size						F	p-value
	Small		Medium		Large			
	M	SD	M	SD	M	SD		
Difficulties in SCM due to COVID-19	3.17	1.04	2.83	0.71	3.25	0.50	0.817	0.450
Difficulties in the implementation of ICTs for SCM due to COVID-19	3.00	1.24	2.94	0.80	2.75	1.26	0.091	0.913

M – arithmetic mean; SD – standard deviation; F-test in ANOVA analysis; \* $p \leq 0.05$

Source: Author's research

Finally, the t-test was used to investigate whether there are any significant differences between independent hotels and those belonging to hotel chains in terms of difficulties that hotels have faced in SCM and the introduction of ICTs for SCM due to the COVID-19 pandemic. The results of Levene's test are not statistically significant, indicating that the t-test with equal variances assumed needs to be used (Table 7).

Table 7: Test for equality of variances of the two groups: independent hotels and those belonging to hotel chains

Variable	Levene's test for equality of variances	
	F	p-value
Difficulties in SCM due to COVID-19	1.620	0.211
Difficulties in the implementation of ICTs for SCM due to COVID-19	1.161	0.288

\* $p \leq 0.05$

Source: Author's research

The results of the t-test highlight that there is no statistically significant difference in means between independent hotels and those belonging to hotel chains regarding the level of difficulties hotels have faced in SCM and the implementation of ICTs for SCM due to COVID-19 (Table 8). Consequently, hypotheses  $H_{1.4}$  and  $H_{2.4}$  are not supported.

Table 8: Impact of COVID-19 on hotels' SCM and implementation of ICTs for SCM according to affiliation

Variable	Chain affiliation				t	p-value
	Yes		No			
	M	SD	M	SD		
Difficulties in SCM due to COVID-19	3.00	1.15	3.03	0.81	0.083	0.934
Difficulties in the implementation of ICTs for SCM due to COVID-19	2.86	1.21	2.97	1.02	0.258	0.798

M – arithmetic mean; SD – standard deviation; t-test; \* $p \leq 0.05$

Source: Author's research

## 5. Conclusion

The COVID-19 pandemic has altered the whole world, causing many disruptions and changes. It has demonstrated how fragile modern supply chains are due to high complexity, and how important an effective supply chain management (SCM) is. The role of SCM is to ensure competitive advantage for the supply chain members through close collaboration, which includes trust, open communication and real-time data sharing, joint planning, and managing supplier relationships. SCM depends on ICTs to a large extent and numerous ICT tools have been developed for the needs of SCM, such as Enterprise Resource Planning (ERP), Geographic Information System (GIS), Radio Frequency Identification (RFID), Internet of Things (IoT), Cloud Computing, Big Data, Blockchain, and Artificial Intelligence (AI). Effective SCM results in increased supply chain agility, lower costs, better quality and customer service, and, consequently, in customer satisfaction, competitive advantage and profitability.

The present study deals with the impact of the COVID-19 pandemic on SCM, focusing primarily on the hotel business. The aim of empirical research was to investigate whether hotels in the Republic of Serbia have experienced difficulties in SCM due to the COVID-19 pandemic, and how serious those difficulties are. The results show that the pandemic has caused disruptions in hotels' SCM, with the significance of disruptions varying among

hotels. It was also found that the pandemic has decelerated the implementation of ICTs for the SCM. Contrary to expectations, the results reveal that severity of difficulties in hotels' SCM and the introduction of ICTs for SCM due to COVID-19 does not depend on hotel size, category or affiliation.

The main limitation of the study is reflected in the aggregate presentation of the impact of COVID-19 on hotels' SCM and on the introduction of ICTs for SCM. As it was identified that hotels faced difficulties in SCM due to COVID-19, future research should investigate that impact in more detail, i.e. what was the weakest point of the supply chain during the pandemic, what kind of difficulties hotels faced, and what strategies hotels employed to overcome those difficulties.

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## Conflict of interest

The authors declare no conflict of interest.

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## How Millennials and Generation Z organise travel during the COVID-19 pandemic

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**Abstract:** The subject of the paper is the consumer behaviour of Millennials and Generation Z as travellers in organising their travel. Through empirical research, conducted with online questionnaire in May 2021, the paper focuses on the way the above-mentioned generations in Serbia have organized travel (through a travel agency or on their own) before and during the COVID-19 pandemic, as well as the choice of accommodation during the pandemic, and the respondents' opinions on travel with COVID-19 passports. The aim of this paper is to discover the preferences and opinions of travellers when organizing travel under the new circumstances, as well as examining whether there are differences in the behaviour of Millennials and Generation Z as travellers before and during the pandemic, in order to provide significant information for the marketing decision making of tourism and hospitality organisations. Almost a quarter of the world's population is made up of Millennials, who, along with Generation Z, make up the current and future force that contributes the most to the income generation. Members of this population in Serbia are less and less opting for the services of travel agencies, especially during the pandemic, while the number of passengers of these generations who organize self-directed travel is on the increase. Quantitative statistical methods – descriptive statistics (frequency distribution) and comparative statistics (Pearson  $\chi^2$ -test) were used for analysis of the obtained research results.

**Keywords:** Millennials, Generation Y, Generation Z, travel, pandemic

**JEL classification:** M31

## Kako milenijalci i generacija Z organizuju putovanja tokom COVID-19 pandemije

**Sažetak:** Predmet rada je ponašanje potrošača, milenijalaca i generacije Z, kao turista u organizaciji putovanja. Putem empirijskog istraživanja, realizovanog tokom maja 2021. godine, razmatra se način organizacije putovanja (preko turističke agencije ili u sopstvenoj režiji) pomenutih generacija u Srbiji pre i tokom trajanja COVID-19 pandemije, kao i izbor vrste smeštaja tokom pandemije, i mišljenje ispitanika o putovanju uz COVID-19 pasoše. Cilj rada je dolaženje do saznanja koje su preferencije i mišljenja turista u vezi sa organizacijom putovanja pod novim okolnostima, kao i ispitivanje da li postoje razlike u ponašanju milenijalaca i generacije Z kao turista pre i tokom pandemije, kako bi se pružile

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značajne informacije za donošenje marketinških odluka turističkih i ugostiteljskih organizacija. Skoro četvrtinu svetske populacije čine milenijalci, koji uz generaciju Z predstavljaju trenutnu i buduću silu koja najviše, u odnosu na druge generacije, doprinosi ostvarivanju prihoda. Pripadnici ove populacije u Srbiji se sve manje odlučuju za usluge turističkih agencija, posebno tokom pandemije, kada raste broj putnika ovih generacija koji organizuju putovanja u sopstvenoj režiji. Za analizu dobijenih rezultata istraživanja korišćene su kvantitativne statističke metode – deskriptivna statistika (distribucija frekvencija) i komparativna statistika (Pearson  $\chi^2$ -test).

**Cljučne reči:** milenijalci, generacija Y, generacija Z, putovanje, pandemija

**JEL klasifikacija:** M31

## 1. Introduction

Several significant crises – epidemics, the World Economic Crisis, political crises, natural disasters have had a negative effect on the world tourism economy at the beginning of the 21st century. The most adverse effects until 2020 were caused by the World Economic Crisis, when indicators of tourism development were unfavorable worldwide. However, regardless of the type and duration of a crisis, tourism has shown an exceptional ability to recover (Milićević & Ervaćanin, 2016) until the outbreak of the COVID-19 pandemic, the effects of which have not yet been fully seen as the crisis continues.

Organisations strive to understand and determine the reasons for certain consumer behaviour as it affects the success of business. During the COVID-19 pandemic, there have emerged numerous changes in consumer behaviour. In order to ensure survival on the market in unstable and uncertain business conditions, it is necessary to conduct marketing research in a timely manner, among other business actions. The results of the research form a base for formulating an appropriate (marketing) strategy. Also, it is important for (marketing) managers in tourism to understand the behaviour of tourists in order to formulate marketing and destination management strategies that are based on accurate knowledge of tourist behaviour and future trends (Senić & Milojević, 2017).

*The subject of the paper* is the consumer behaviour of Millennials (also called Generation Y) and Generation Z as travellers in organising their travel. Through empirical research, we have analyzed the way the Millennials and Gen Zedders in Serbia have organised their travel (on their own or through a travel agency), before and during the COVID-19 pandemic, as well as their choice of accommodation during the pandemic, and the respondents' opinions on travel with COVID-19 passports. *The aim of this paper* is to discover the travellers' preferences and opinions when organising travel under the new circumstances, as well as to examine whether there are differences in the behaviour of Generation Z and Millennials as travellers before and during the pandemic, in order to provide important information for the process of making adequate marketing decisions of tourism and hospitality organisations. The desktop and field research in the paper contributes to understanding the travel behaviour of Millennials and Generation Z, both in Serbia and worldwide, during the COVID-19 pandemic. The specificity of the work is reflected in the empirical research that refers to the respondents as members of Generation Y and Generation Z in Serbia, which contributes to understanding the way they organise their travel during the COVID-19 pandemic.

“The Millennials’ generation is, in size, larger than any other adult cohort” (MSCI, 2020). In 2020, this generation made up 23% of the world's population (United Nations, 2019). Millennials will represent 50% of international travellers by 2025, and they “are already recognized by the tourism sector as a current and future driving force of revenues”, (Hospitality net, 2015). Because of certain similarities, Millennials are often associated with

Generation Z (ILTAM, 2020), assuming that Gen Z have limited financial power because they are younger and mostly in the process of education. Millennials (born from 1980 to 1995) and Generation Z (born from 1995 to 2010) know best how to use the internet to plan and organise their travel.

## **2. Trends in travel of younger generations**

It is a great challenge to offer products/services that are customized to consumers. Organisations need to be aware of important trends prevailing among the target group in order to keep up with the changes and formulate adequate marketing strategies. It is also important for tourism organisations to know the characteristics of their target group, as well as the latest trends of tourism consumers. The personality of travellers and the choice of destinations were the subject of research in the early seventies of the twentieth century (Plog, 1974), as well as the nature of tourism planning (Getz, 1986), which resulted in the formulation of models for application in tourism.

Some of the trends which emerged before the pandemic are the following ones: consumers are more aware of their needs and travellers are becoming more informed, more empowered and able to organise their travel independently; sustainable holidays; looking for a personal growth (meditation), usage of new technologies (Ortiz, 2019). Travellers increasingly value authenticity, destinations away from major tourist areas and options that reduce the negative impact on the environment. The most demanding tourists prefer to choose local places, looking for less crowded destinations or opt for large cities from which they visit smaller local places. The trend is tourism which focuses on rural locations where nature is dominant. There are tourism consumers who opt for tourism products that include activities to seek disconnection and relax, like meditation and yoga. Some consumers grouped around the “Joy of Missing Out” (JOMO) like to be disconnected from their smartphones to enjoy their free time, and more travellers are looking for JOMO experiences (Euromonitor International, 2019). And when it comes to the use of technology, the usage of the Internet to search for tourist destinations and reserve accommodation is becoming more commonplace. Serbian consumers frequently use internet to book their travels, more when staying abroad than for domestic stays, and the most popular booking platform in Serbia are Booking.com and Airbnb (Kalmić & Novaković, 2019).

According to a survey conducted by Booking.com (Donovan, 2021) on a sample of 20,934 respondents in 28 countries, during July 2020, travellers around the world (53%) had a greater desire to explore the world in a more sustainable way. Travellers from Colombia (74%), Brazil (71%) and India (70%) expressed a particularly strong desire to become more environmentally oriented. More than half of travellers (63%) intended to stay away from crowded tourist attractions; 51% of respondents will avoid travel during the season; and 48% of respondents will visit alternative destinations to prevent overcrowding. According to the next survey of the same company (Booking.com) on a sample of 29,349 respondents in 30 countries, during March 2021, 68% of travellers wanted the money they spent on travel to go to the local community; and 84% of passengers planned to reduce the waste and recycle plastic products when visiting a particular destination, and this percentage was growing among travellers from Thailand (94%), Croatia (91%) and Argentina (90%). Temporary suspension of travel had inspired 83% of travellers to make sustainable travel their priority in the future, while 70% of respondents were more likely to choose accommodation that applies sustainable practices. These data, in addition to revealing the motivations of passengers after the pandemic, also emphasize the importance of taking further steps to improve the sustainability of tourism and hospitality facilities.

Millennials are “the first generation that experience the *technological boom*”, and “they are the most readily involved in the world of social media influence” (ETC, 2016). According to ETC (2016), the following characteristics also apply to Millennials. Generation Y like to show off their trip online and they also like to stay in the most luxurious destinations they can afford. “Millennials love to travel, but not just for leisure. They prioritize adventure, learning about the world and discovering new places”. Millennials and Gen Z know better than other (older) generations how to use the internet to plan and organise their travel. CBI – Ministry of Foreign Affairs (2021) has stated the following characteristics of Millennials. They value green business practices, and “do not look for quality only, but for premium personalised service for a reasonable price”. Generation Y explore on the go to find the best travel options for themselves, and travel more often with friends, colleagues and relatives than other generations. It is characteristic of the millennial market that the share of female travellers is above average.

According to the Deloitte Global Millennial Survey (Deloitte, 2019, p. 5), 57% of Millennials and Generation Z reported that “travel the world was their number one ambition, even overtaking high earning, owning a home and having children”. Compared to previous generations, the life stage without family commitments has been shifted to older ages and this has resulted in consequences related to other dimensions of life: the pattern of savings, consumption and travel (MSCI, 2020). The Millennial generation is more likely than other age brackets (Gen X and Boomers) to consider returning to travel again after lifting the lockdowns and they are less risk-averse (ILTM, 2020).

### **3. The impact of the COVID-19 pandemic on Millennials and Generation Z travellers**

The COVID-19 pandemic and its resulting recession will have a long-lasting impact on younger generations – Generation Y and Generation Z. Their consumer behaviour is largely shaped by the following factors: increasing stress, home-oriented lives and rising unemployment. According to Environics Institute research (Environics Institute, 2021), a majority of Canada’s younger generations (aged 18-40) say that the COVID-19 pandemic has had at least a moderate impact on their lives, and most expect their lives to return to normal after the pandemic in a period of seven months to two years. Organisations need to adapt their (marketing) strategies in order to stay relevant to Millennials and Generation Z during the pandemic and beyond (Euromonitor International, 2020).

According to a study by Advantage (2020), 44% of Millennial travellers (25-34 years old; from UK) “who do not currently book through a travel agent would use one in future, indicating advice, expertise and the reassurance of having someone to help if travel plans need to change, as the main reasons for now favoring a human travel agent over booking online”. The 18-24 age group (76%) has demonstrated that the younger audience is open to booking with their local travel agent. The results also found that, the younger the age group, the more willing they are to pay for a COVID test to travel. 79% of 18-24 age group have confirmed they would pay for a test to travel, whilst 56% of respondents over 65 years old would not be prepared to do so.

During the crisis, there is an above average level of hope relative to the state of travel (DCI, 2020). Across all generations (Generation Z, Generation Y – Millennials, Generation X and Boomers) in the USA and Canada, “people are neither hopeless nor extremely hopeful, but somewhere in the middle” (DCI, 2020). Millennials have said that they will travel during the pandemic, engaging in riskier behaviour than older generations. Generation X and Boomers have stated that they are less afraid of COVID-19 than Millennials and Generation Z. It is common for all generations in terms of future travel that they are the least afraid to travel to

domestic locations, but going abroad creates the greatest concern. The youngest generation (Gen Z) are engaging in riskier travel than the older generations, but the results also indicate that Gen Z has planned the least travel in 2020.

According to the same survey (DCI, 2020), the greatest percentage of Generation Z are afraid of getting sick during/after travel (20%), then, Gen Z are afraid of being quarantined when they return home (16%), of flights cancelling (12%), of being stuck in the destination (12%), of getting denied access to a region/crossing borders (12%), attractions/restaurants being closed (8%), transmitting the virus (8%). Millennials are afraid of getting sick during/after travel (17%), transmitting the virus (16%), being stuck in the destination (15%), being quarantined when they return home (13%), flights cancelling (13%), of getting denied access to a region/crossing borders (9%). The youngest generation (Generation Z) said they would be willing to pay more money to travel somewhere without coronavirus threats (58%), and one quarter of Millennials (25%) would be willing to pay more for coronavirus-free destinations.

“The challenge for the tourism industry would be to bring back tourists’ travel confidence by introducing measures that ensure their safety against the present health crisis” (Seabra et al., 2021, p. 479). During the pandemic, tourists have asked questions about the hygiene conditions of the travel destinations, and they are looking for clarity regarding emergency services from tourism industry that are beyond the services and hospitality they are offering. Therefore, the managers of tourism organizations may be required to work with the government at the local and national levels to solve problems affecting the tourism industry due to new requirements regarding COVID-19 (Seabra et al., 2021).

Before COVID-19, Millennials travelled more than any other generation per year (an average is 35 days per year), and 83% of Millennials worldwide chose to vacation at all-inclusive resorts where they had everything they needed (Rezdy, 2018). “Many Millennials are already engaging with luxury travel in ways unexpected of them”, and they are very important in helping the luxury travel industry recover (ILTM, 2020).

According to Rezdy (2018), more than 72% of Millennial travellers said that a solid advertising promotion could convince them to book travel arrangements, therefore, “online advertising, including retargeting and other social strategies, is the best way to connect and engage with Millennials”. Amid the pandemic, consumer habits have changed and an effective presence on social media has become very important. Tourism and hospitality organisations should engage with influencers on social media and operate across multi-channel platforms to ensure a stronger position for recovery. During the COVID-19 pandemic, YouTube and Twitter have topped the list of widely-used platforms for travel promotions, but TikTok also holds marketing potential (GlobalData, 2020).

Based on the review of previous literature on the topic (Advantage, 2020; DCI, 2020; ILTM, 2020; Rezdy, 2018; Seabra et al., 2021) and the authors' assumptions, the following research hypotheses were defined:

Research hypothesis H1: There is a statistically significant difference in the respondents’ answers (according to gender, generations, the amount of income) in relation to the question regarding the organisation of travel (under their own direction, through a travel agency) before the outbreak of the pandemic.

Research hypothesis H2: There is a statistically significant difference in the respondents’ answers (according to gender, generations, the amount of income) in relation to the question regarding the organisation of travel (on their own, through a travel agency) during the pandemic.

Research hypothesis H3: There is a statistically significant difference in the respondents' answers (according to gender, generations, the amount of income) in relation to the choice of accommodation facilities during the pandemic (private accommodation for personal hygiene care, checked hotels, any accommodation).

Research hypothesis H4: There is a statistically significant difference in the respondents' answers (according to gender, generations, the amount of income) in relation to the question regarding the opinion about travel with the COVID-19 passport.

Research hypothesis H5: There is a statistically significant difference in the answers of Millennials and Generation Z as travellers before and during the pandemic.

#### **4. Methodology of the empirical research**

The quantitative, survey research was conducted by questionnaire in written form. The online survey was prepared specially for the needs of this research and was distributed to respondents aged 20 to 40 (to members of Generation Y – Millennials and Generation Z), in the period from 9th May to 21st May, 2021. Respondents from all regions of Serbia were included. The intentions of consumers as travellers regarding their travel organisation during the pandemic were examined.

The sample is stratified and consists of 300 respondents: 150 respondents of Generation Z (aged 20 to 26) and 150 respondents of Generation Y (aged 27 to 40). Older members of Generation Z, who can make travel decisions and travel independently, were taken into account. The structure of the sample according to gender is as follows: 50% of male respondents, 50% female; according to the employment status: student (36%), employed (51%) and unemployed (13%); and according to the amount of monthly income during the pandemic (taking into account those who earn an income): 20% of respondents with below average income, 69% of respondents with average income and 11% of respondents with above average income. The statistical error of the sample is 5.6%. Due to the insufficient number of respondents for reliable representativeness, this research represents a case study.

The SPSS was used for data processing and analysis, as well as for the interpretation of the obtained research results. From the quantitative statistical methods, the following were used: descriptive statistics (frequency distribution) and comparative statistics (Pearson  $\chi^2$ -test).

#### **5. Results of the empirical research**

Nearly half of Generation Y and Generation Z respondents (47%) would choose countries that abide by all epidemiological measures and where they would feel safe. Most respondents (45%) do not care where they would stay in the future, while 22% would choose only verified hotels in terms of implementing epidemiological measures, 11% would opt for private accommodation where they would themselves be in charge of hygiene, and 22% are undecided on this issue. According to  $\chi^2$ -test (Value = 94.404<sup>a</sup>, df = 3, p = 0.00 < 0.05), it was found that there is a statistically significant difference in the responses of respondents according to gender in relation to the question regarding the choice of accommodation facilities in the future (Table 1). There is a higher percentage of female respondents whose choice would be private accommodation where they would themselves be in charge of hygiene (19%) compared to male respondents (2%), and there is a higher percentage of male respondents who would choose verified hotels (38%) compared to female respondents (7%), (Table 4). According to  $\chi^2$ -test (Value = 24.069<sup>a</sup>, df = 3, p = 0.00 < 0.05), it was found that there is a statistically significant difference in the responses of the respondents according to

generations in relation to the choice of accommodation facilities in the future (Table 2). The percentage of Millennials whose choice would be private accommodation for hygiene reasons (15%) and verified hotels (27%) is higher compared to the Generation Z (private accommodation: 6%, hotels: 18%), a higher percentage of whom point out that they do not care where they would stay (59%) compared to Millennials (31%), (Table 5). According to Table 3, there is a statistically significant difference in the responses of respondents according to the amount of income in relation to the choice of facilities for accommodation ( $\chi^2$ -test, Value = 35.239<sup>a</sup>, df = 6, p = 0.00 < 0.05). The largest percentage of respondents with incomes at the average (45%) and above the average (54%) said that they do not care where they would stay (Table 6). 16% of respondents with below-average incomes and 10% of respondents with average incomes would choose private accommodation where they would themselves be in charge of hygiene. Verified hotels would be chosen by 12% of respondents with below-average incomes, 30% of respondents with average incomes and 32% of respondents with above-average incomes.

Table 1: Testing a statistically significant difference in the answers of the respondents according to *gender* in relation to the stated questions ( $\chi^2$ -test)

Questions in the questionnaire	Value	Df	P
Before the outbreak of the pandemic, I organised my travel: through a travel agency, on my own	0.230 <sup>a</sup>	1	0.632
During the pandemic, I have organised my travel: through a travel agency, on my own	6.839 <sup>a</sup>	1	0.009*
In the future, I will choose accommodation: exclusively in verified hotels, private accommodation where I would myself be in charge of hygiene, I don't care where I will be accommodated, I'm not sure	94.404 <sup>a</sup>	3	0.00*
Do you think that people should travel only with COVID-19 passports? Yes, because safety comes first; No, I do not think so; I'm not sure	42.222 <sup>a</sup>	2	0.00*

Notes: \* p < 0.05

Source: Author's research

Table 2: Testing a statistically significant difference in the answers of the respondents according to *generations* in relation to the stated questions in questionnaire ( $\chi^2$ -test)

Questions	Value	Df	P
Before the outbreak of the pandemic, I organised my travel: through a travel agency, on my own	0.919 <sup>a</sup>	1	0.338
During the pandemic, I have organised my travel: through a travel agency, on my own	6.840 <sup>a</sup>	1	0.009*
In the future, I will choose accommodation: exclusively in verified hotels, private accommodation where I would myself be in charge of hygiene, I don't care where I will be accommodated, I'm not sure	24.069 <sup>a</sup>	3	0.00*
Do you think that people should travel only with COVID-19 passports? Yes, because safety comes first; No, I do not think so; I'm not sure	8.495 <sup>a</sup>	2	0.0014*

Notes: \* p < 0.05

Source: Author's research

Table 3: Testing a statistically significant difference in the answers of the respondents according to the *amount of income* in relation to the stated questions ( $\chi^2$ -test)

Questions	Value	df	P
Before the outbreak of the pandemic, I organised my travel: through a travel agency, on my own	11.661 <sup>a</sup>	2	0.003*
During the pandemic, I have organised my travel: through a travel agency, on my own	11.991 <sup>a</sup>	2	0.002*
In the future, I will choose accommodation: exclusively in verified hotels, private accommodation where I would myself be in charge of hygiene, I don't care where I will be accommodated, I'm not sure	35.239 <sup>a</sup>	6	0.00*
Do you think that people should travel only with COVID-19 passports? Yes, because safety comes first; No, I do not think so; I'm not sure	32.970 <sup>a</sup>	4	0.00*

Notes: \*  $p < 0.05$

Source: Author's research

Regarding the organisation of travel, before the outbreak of the pandemic, 63% of Generation Y and Generation Z respondents organised travel on their own, and 37% through a travel agency, while during the pandemic, 81% of those who travelled organised the travel on their own, and 19% through a travel agency. According to  $\chi^2$ -test (Value = 0.230<sup>a</sup>, df = 1,  $p = 0.632 > 0.05$ ), it was found that there is no statistically significant difference in the answers of respondents according to gender in relation to the travel organisation before the pandemic (Table 1), that is, the percentage of the male and female respondents who organised self-directed travel (male: 62%, female: 65%) and through travel agencies (male: 38%, female: 35%) is approximate. On the other hand, when observing those who travelled during the pandemic, it was found that there is a statistically significant difference in the responses according to gender in relation to the organisation of travel during the pandemic ( $\chi^2$ -test, Value = 6.839<sup>a</sup>, df = 1,  $p = 0.009 < 0.05$ ), i.e. there is a higher percentage of female respondents who organise self-directed travel (89%) in relation to the services of travel agencies, and in relation to male respondents (75%), (Table 4).

Table 4: Distribution of respondents by gender and questions

Questions in the questionnaire	Gender		N	%
	Male	Female		
Before the outbreak of the pandemic, I organised my travel:				
through a travel agency	57 (38%)	53 (35%)	300	37
on my own	93 (62%)	97 (65%)		63
N (%)	150 (100%)	150 (100%)		
During the pandemic, I have organised my travel:				
through a travel agency	33 (25%)	10 (11%)	225	19
On my own	100 (75%)	82 (89%)		81
N (%)	133 (100%)	92 (100%)		
In the future, I will choose accommodation:				
exclusively in verified hotels	57 (38%)	10 (7%)	300	22
private accommodation where I would myself be in charge of hygiene	3 (2%)	29 (19%)		11
I don't care where I will be accommodated	81 (54%)	54 (36%)		45
I'm not sure	9 (6%)	57 (38%)		22
N (%)	150 (100%)	150 (100%)		
Do you think that people should travel only with COVID-19 passports?				
Yes, because safety comes first	56 (37%)	11 (7%)	300	22
No, I do not think so	74 (49%)	122 (81%)		65
I'm not sure	20 (14%)	17 (12%)		13
N (%)	150 (100%)	150 (100%)		

Source: Author's research

According to  $\chi^2$ -test (Value = 0.919<sup>a</sup>, df = 1, p = 0.338 > 0.05), it was found that there is no statistically significant difference in the responses of the respondents according to their age group in relation to the question regarding the organisation of travel before the pandemic (Table 2). The percentage of the members of Generation Z and Generation Y who organised travel both on their own (Z: 61%, Y: 66%) and through travel agencies (Z: 39%, Y: 34%) before the pandemic is approximate. When taking into account those who reported travel during the pandemic, there is a statistically significant difference in the respondents' responses according to their age group in relation to the organisation of travel during the



pandemic ( $\chi^2$ -test, Value = 6.840<sup>a</sup>, df = 1, p = 0.009 < 0.05), i.e. there is a higher percentage of Generation Z members who have organised self-directed travel (88%) compared to the services of travel agencies (12%), and in relation to members of Generation Y who have organised travel on their own (75%), (Table 5).

Table 5: Distribution of respondents by age group and questions in the questionnaire

Questions in the questionnaire	Generation		N
	Z	Y	
Before the outbreak of the pandemic, I organised my travel:			
through a travel agency	59 (39%)	51 (34%)	300
On my own	91 (61%)	99 (66%)	
N (%)	150 (100%)	150 (100%)	
During the pandemic, I have organised my travel:			
through a travel agency	12 (12%)	31 (25%)	225
On my own	91 (88%)	91 (75%)	
N (%)	150 (100%)	150 (100%)	
In the future, I will choose accommodation:			
exclusively in verified hotels	27 (18%)	40 (27%)	300
private accommodation where I would myself be in charge of hygiene	9 (6%)	23 (15%)	
I don't care where I will be accommodated	88 (59%)	47 (31%)	
I'm not sure	26 (17%)	40 (27%)	
N (%)	150 (100%)	150 (100%)	
Do you think that people should travel only with COVID-19 passports?			
Yes, because safety comes first	31 (21%)	36 (24%)	300
No, I do not think so	108 (72%)	88 (59%)	
I'm not sure	11 (7%)	26 (17%)	
N (%)	150 (100%)	150 (100%)	

Source: Author's research

When considering the distribution of the respondents according to the amount of income in relation to the organisation of travel before the outbreak of the pandemic (Table 3), there is a statistically significant difference in the respondents' responses ( $\chi^2$ -test, Value = 11.661<sup>a</sup>, df = 2, p = 0.003 < 0.05), i.e. 69% of respondents with an average income organised travel

under their own direction in relation to the services of travel agencies (31%), and 46% of respondents with below average and above average incomes organised self-directed travel (and 54% through travel agencies), (Table 6). When observing the distribution of respondents according to the level of income in relation to travel organisation during the pandemic, there is a statistically significant difference in the answers of respondents ( $\chi^2$ -test, Value = 11.991a, df = 2, p = 0.002 < 0.05), that is, 87% of respondents with average incomes have organised self-directed travel during the pandemic (and 13% through travel agencies), as well as 85% of respondents with below-average incomes (and 15% through travel agencies) and 57% of respondents with above-average incomes (and 43% through travel agencies), (Table 6).

Table 6: Distribution of respondents by amount of income and questions in the questionnaire

Questions in the questionnaire	Amount of income			N
	Below average	Average	Above average	
Before the outbreak of the pandemic, I organised my travel:				
through a travel agency	27 (54%)	54 (31%)	15 (54%)	251
On my own	23 (46%)	119 (69%)	13 (46%)	
N (%)	50 (100%)	173 (100%)	28 (100%)	
During the pandemic, I have organised my travel:				
through a travel agency	3 (15%)	19 (13%)	9 (43%)	188
on my own	17 (85%)	128 (87%)	12 (57%)	
N (%)	20 (100%)	147 (100%)	21 (100%)	
In the future, I will choose accommodation:				
exclusively in verified hotels	6 (12%)	52 (30%)	9 (32%)	251
private accommodation where I would myself be in charge of hygiene	8 (16%)	17 (10%)	0 (0%)	
I don't care where I will be accommodated	12 (24%)	78 (45%)	15 (54%)	
I'm not sure	24 (48%)	26 (15%)	4 (14%)	
N (%)	50 (100%)	173 (100%)	28 (100%)	
Do you think that people should travel only with COVID-19 passports?				
Yes, because safety comes first	6 (12%)	34 (20%)	18 (64%)	251

No, I do not think so	35 (70%)	117 (68%)	10 (36%)	
I'm not sure	9 (18%)	22 (12%)	0 (0%)	
N (%)	50 (100%)	173 (100%)	28 (100%)	

Source: Author's research

As for the attitude of passengers regarding COVID-19 passports, 65% believe that they are not necessary for travel; 22% think that this type of passport is needed, and 13% are undecided on this issue. According to Table 4, there is a higher percentage of male respondents who consider it necessary to travel with a COVID-19 passport (37%) compared to female respondents (7%). There is a statistically significant difference in the answers of the respondents according to gender in relation to this question ( $\chi^2$ -test, Value = 42.222<sup>a</sup>, df = 2, p = 0.00 < 0.05) (Table 1). Also, there is a statistically significant difference in the answers of the respondents according to generations in relation to this question ( $\chi^2$ -test, Value = 8.495<sup>a</sup>, df = 2, p = 0.0014 < 0.05) (Table 2), i.e. members of Generation Z in a higher percentage consider that this type of passport is not necessary (72%) in relation to members of Generation Y (59%), (Table 5). It was also found that there is a statistically significant difference in the answers of the respondents according to the amount of income in relation to the same question ( $\chi^2$ -test, Value = 32.970<sup>a</sup>, df = 4, p = 0.00 < 0.05) (Table 3). 12% of respondents with a below-average income, 20% of respondents with an average income, and 64% of respondents with an above-average income believe that a COVID-19 passport is necessary for security reasons.

## 6. Conclusion

The COVID-19 pandemic is affecting everyone across the planet. The majority of people have adapted their lives to the pandemic and live their lives according to the proscribed "rules". Consumer behaviour in tourism has also changed. Businesses around the world have been adapting to the changing needs and expectations of Millennials and Generation Z in the light of COVID-19 (Euromonitor International, 2020). The pandemic has also affected the consumers psychologically – they choose "safer" offers, opt for things that they can control to some extent, such as, for example, self-directed travel, where they will organise the whole travel and stay at a certain place and type of accommodation.

Based on the examined behaviour of consumers of tourist services – the members of Generation Y and Generation Z in Serbia, it can be concluded that they are less opting for the services of travel agencies in organising their travel, especially in the new conditions dictated by the COVID-19 pandemic. During the pandemic, the number of passengers who have organised travel under their own direction has increased (63% of respondents before the outbreak of the pandemic; 81% during the pandemic). Thus, the demand for travel arrangements through travel agencies has decreased during the pandemic. A larger percentage of the members of Generation Z and Millennials have decided to organise self-directed travel in relation to the services of travel agencies, both before and during the pandemic. There is a higher percentage of Generation Z who have organised self-directed travel during the pandemic (88%) compared to Millennials (75%), and a higher percentage of Millennials who use travel agency services (25%) compared to Generation Z (12%). There is a higher percentage of female respondents who organise travel on their own (89%) compared to male respondents (75%). During the pandemic, the highest percentage of respondents with average income have organised self-directed travel (87%) compared to the below-average

income earners (85%) and above-average income earners (57%). The percentage of the respondents with above-average income who use the services of a travel agency is higher (43%) compared to other categories with a lower income (below average: 15%; average amount of income: 13%). The results of the research show that there is a statistically significant difference in the respondents' responses according to gender, age group and the amount of income in relation to organisation of travel (under their own direction, through a travel agency) during the pandemic, while it is proven that there is no statistically significant difference in the respondents' responses by gender and age group in relation to travel organisation before the outbreak of the pandemic. There is only a statistically significant difference in the respondents' responses according to the amount of income before the pandemic. Hence, *the research hypothesis  $H_1$  is partially confirmed and hypothesis  $H_2$  is fully confirmed.*

As it has been determined that there is a statistically significant difference in the respondents' responses according to gender, age group and income in relation to the choice of accommodation (private accommodation where they would themselves be in charge of hygiene, verified hotels, any accommodation) while travelling during the pandemic, *research hypothesis  $H_3$  has been confirmed.* There is a higher percentage of female respondents whose choice would be to book private accommodation where they would themselves be in charge of hygiene (19%) compared to male respondents (2%), while male respondents prefer verified hotels (38%) compared to female respondents (7%). Generation Z members would choose private accommodation for hygiene reasons in a smaller percentage (6%), as well as verified hotels (18%) compared to Millennials (private accommodation: 15%, hotels: 27%). Also, Generation Z points out that they do not care where they stay in a higher percentage (59%) compared to Generation Y (31%). The highest percentage of private accommodation would be chosen by respondents with incomes below average, and the verified hotels would be chosen by respondents with above-average incomes.

It is proven that there is a statistically significant difference in respondents' responses according to gender, age group and the amount of income in relation to the opinion about travel with the COVID-19 passport, and *research hypothesis  $H_4$  has been confirmed.* There is a higher percentage of male respondents who consider it necessary to travel with a COVID-19 passport (37%) compared to female respondents (7%). A higher percentage of members of Generation Z consider that this type of passport is not necessary (72%) in relation to members of Generation Y (59%). 12% of respondents with a below-average income, 20% of respondents with an average income and 64% of respondents with an above-average income believe that COVID-19 passport is necessary for security reasons. 65% of these generations believe that this passport isn't necessary for travel and 22% believe that it is needed.

The research hypothesis  $H_5$  is mostly confirmed as it has been determined that there is a statistically significant difference in the answers of Generation Z and Millennials as travellers in relation to the choice of accommodation facilities in the future, than in relation to organisation of travel during the pandemic, as well as in relation to the question regarding the opinion about travel with the COVID-19 passport. The results of the research show that there is no statistically significant difference in the responses of these generations in relation to the organisation of travel before the pandemic. During the pandemic, there is a higher percentage of Generation Z members who have organised self-directed travel (88%) in relation to members of Generation Y (75%). Also, members of Generation Z consider that the COVID-19 passport is not necessary for travel in a higher percentage (72%) compared to members of Generation Y (59%). A higher percentage of Generation Y has stated that they choose private accommodation for hygiene reasons (15%) and verified hotels (27%) compared to Generation Z (private accommodation: 6%, hotels: 18%).

The global travel industry had one of the strongest expansion cycles in its history prior to the pandemic. It is believed that the Millennials will offer the industry a lifeline during the recovery (Gasdia & Jackson, 2020). “With or without a crisis, Gen Z and Millennials are of special interest, given their increasing spending power in the coming years and their ability to influence older generations” (Bona et al., 2020).

*Practical implication.* Given that there is a decrease in opting for the services of travel agencies, especially during the pandemic, among Generation Z and Millennials in Serbia, tourism and hospitality organisations need to be creative in order to attract members of these generations. Managers of tourism and hospitality organisations should take care of the image of the destination taking into account health, safety and hygiene requirements. They need to use social media like YouTube, Twitter, TikTok, Instagram, and travel influencers to attract travellers. Upon the completion of travel, organisations need to continue maintaining contact with their customers through their social networks. Marketing managers should also keep in mind that, while Millennial travellers have money to spend, they still like to have a great deal. “Approximately 92% of Millennials report that they won’t finalize their booking until they feel they have the best deal possible” (Rezdy, 2018).

*Limitations and recommendations for the future research.* The paper provides mainly factual answers to the questions regarding the organisation of travel by Millennials and Generation Z, without taking into consideration the motives for certain consumer behaviours of tourists during the COVID-19 pandemic, which may be a direction of some future research as an upgrade of the presented analyses in this work. This research represents a case study, as the sample consists of an insufficient number of respondents for reliable representativeness, so research on the same topic can be repeated with a larger number of respondents in Serbia.

## Conflict of interest

The authors declare no conflict of interest.

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## Dimensioning the extended capacity of Zlatar Ski Center using linear programming method

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**Abstract:** Zlatar Ski Center has an extremely high potential as a ski resort that could be among the most visited ones in Serbia. What characterizes this center is the proximity of Kokin Brod Lake, the Tara River and the like. Therefore, Zlatar should be considered both as a ski center and in terms of other diversities. The aim of this paper is to analyze the possibility of expanding the capacity of ski resorts by increasing the possible flow of skiers on new ski lifts and ski slopes. The methods used in this paper belong to operational research, specifically, the geometric interpretation of linear programming. It is also shown how to optimize the extended capacities. If the capacities of ski slopes are to be increased, it would initiate greater investment in accommodation capacities in the area of the municipality of Nova Varoš, which would affect its improvement in terms of tourism.

**Keywords:** linear programming, ski lifts and ski slopes, optimization of extended capacity

**JEL classification:** C44, Z32

## Primena linearnog programiranja na dimenzioniranje proširenog kapaciteta ski centra Zlatar u Novoj Varoši

**Sažetak:** Ski centar Zlatar poseduje izuzetno visok potencijal kao skijalište koje bi moglo da bude u rangu najposećenijih u Srbiji. Ono što ovaj centar ističe, i u pozitivnom smislu izdvaja od drugih, je blizina jezera Kokin Brod, reke Tare i slično. Prema tome, Zlatar ne bi trebalo razmatrati samo kao ski centar, već i sa aspekta posedovanja i drugačijih diverziteta. Cilj rada je analiza mogućnosti proširenja kapaciteta skijališta povećanjem mogućeg protoka skijaša na žičarama i kapaciteta žičara. U tom smislu, predviđa se i povećanje broja staza, kao i interkonekcija između njih. Metode koje su korišćene u radu pripadaju operacionim istraživanjima, konkretno, geometrijska interpretacija linearnog programiranja. Prikazano je da je na ovaj način moguće optimizovati proširene kapacitete. Povećani kapacitet ski staza inicirao bi veće ulaganje u smeštajne kapacitete na prostoru opštine Nova Varoš, čime bi se uticalo na njeno unapređenje u turističkom smislu.

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**Ključne reči:** linearno programiranje, ski liftovi i ski staze, optimizacija proširenog kapaciteta

**JEL klasifikacija:** C44, Z32

## 1. Introduction

The paper provides an approach to establishing the required number of lifts in the case of expansion of Zlatar Ski Center assuming an increase in the number of ski slopes. The starting point is that the chair lift that supplies more ski slopes must not have a capacity greater than the capacity of the ski slope with the lowest capacity that gravitates to that lift. The reason is a security aspect (Wheeler, 2012). In the event that some of the ski slopes are closed and the capacity of the chair lift to which these ski slopes gravitate is fulfilled, skiers would be directed to one or more of the remaining ski slopes in service. In that case, the open ski slopes that are in service should not be overloaded. The flow of skiers should not be higher than the maximum availability of the ski slopes (Poulhès & Miria, 2017; Revilloud et al., 2011). For this reason, the sizing of the chair lifts is realized in the stated way. In the following chapters a model for sizing the capacity of lifts in accordance with the existing system of ski slopes and the projected capacity of new ones (Wheeler, 2012) will be provided.

The main hypothesis of this research is that it is possible to resize the capacity of Zlatar Ski Center, and based on mathematical model and linear programming implementation the optimal solution of extended model dimensioning of ski slopes and ski lifts could be calculated.

Optimization of tourist capacities with the necessary logistics is permanently present topic (Jangra & Kaushik, 2021), and the application of the linear programming for that purpose was considered in papers published before (Borrelli et al., 2003; Knijff & Oosterhaven, 1990).

## 2. Mathematical models for ski slopes capacity dimensioning

The capacity of a ski lifts system is projected by applying flow analysis and Kirchhoff's rule that total input to the system is equal to the output from it. It is necessary to respect the equation of flow continuity (Mađarević, 1969). The flow of skiers on the ski lifts is the function of the capacity of ski slopes by which the system is getting relieved. Chair ski lifts that lead to the peaks have the largest capacity. They are directed from the accommodation facilities, like hotel complex or ski bus terminus to the highest peaks. From these points, there is a flow divergence to smaller capacity T – bar type ski lifts, which cover the complex of ski slopes (Marković, 2019a; Suvajdžić, 1972). According to the fact that the organization of skiers' flow is the main activity in the considered area (Zrnčić, 1993), ski center represents a big system of internal transport.

### 2.1. Chair lift dimensioning

The capacity of ski lifts is dimensioned on the basis of the required flow of skiers, i.e. the available accommodation capacity of the hotel or the capacity of the bus line by which the skiers are brought to the starting point of the chair lifts. The capacity of the ski lifts leading from the starting point is the largest and matches the sum of capacities of smaller ski lifts (often T-bar type) which gravitate to the ski slopes capacity. According to that, the possibility of shifting skiers from one ski slope to the other has also to be considered. It is important that percentage of such flows must not exceed the maximum allowed ski slope capacity. Presentation of such a situation is provided for a hypothetical ski center in Table 1 and Figure 1 (Marković, 2019a).

Table 1 represents the schema for the share of skiers per hour crossing from one ski slope (rows) to the other (columns). Values in the cells are expressed in percentage of the maximum capacity of the ski slope, in skiers per hour that are expected to cross from one slope to another.

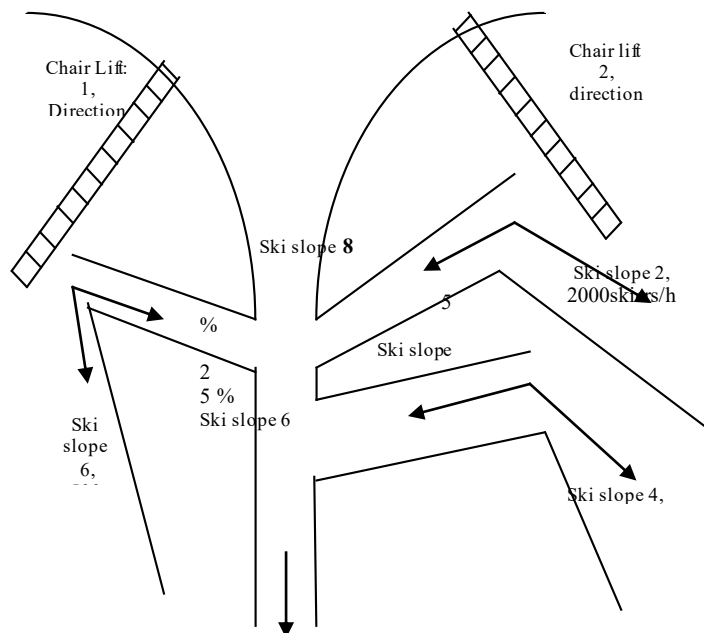
Table 1: Share of skiers per hour (%) crossings from one ski slope to another and ski slopes capacity of a hypothetical ski center

Ski slopes	1	2	3	4	5	6	7	8	Capacity [skiers/h]
1→		0	0	10	10	5	10	0	1000
2→	5		0	0	0	5	5	5	2000
3→	10	5		5	0	0	0	0	3000
4→	5	10	0		0	0	5	10	1000
5→	0	0	5	20		0	0	0	1000
6→	0	0	5	0	5		5	5	500
7→	5	0	5	10	0	5		0	2000
8→	0	0	10	0	0	0	0		

Source: Author's research

For example, the estimated share percentage of skiers crossing from the first ski slope to Slope 4, 5 and 7 is maximum 10%, while only 5% could be transferred to Slope 7. Accordingly, the capacity of each ski slope on which crossing is assumed has to be boosted according to enlarged number of skiers per hour. A similar approach is to be applied for other ski slopes (Marković, 2019a). In the case of designing a new ski slope, No. 8, which gravitates to the chair lift 2 from direction 1 and to the chair lift 1 from the same direction, including the inflow of skiers from other ski slopes, the layout will be as presented by scheme, Figure 1 (Marković, 2019a).

Figure 1: Ski slope 8 loading, by chair lifts and by adjacent ski slopes



Source: Author's research

Required capacity on the  $j$  of the total:  $n$  directions from the center of the ski resort,  $n = 3$ ; I, II and III direction, to the peaks is as follows:

$$Q_j [\text{skiers/h}] \leq \sum_{i=1}^m q_{ji} ,$$

where:

- $q_{ji}$  [skiers/h] – capacity of the  $i$  ski lift in the  $j$  direction,
- $m$  – total number of ski lifts in the  $j$  direction.

The total flow of all ski lifts in skiers per hour is expressed by:

$$\sum_{g=1}^s Z_g = \sum_{j=1}^n \sum_{i=1}^m q_{ji} .$$

## 2.2. Ski slopes dimensioning

Necessary capacity  $t_g$  of the ski slope  $g$  represents the projected hourly flow of skiers on that ski slope in the form:

$$t_g [\text{skiers/h}] = \sum_{j=1}^l Z_{gj} [\text{skiers/h}] + \sum_{i=1}^s p_{gi} \cdot Z_i [\text{skiers/h}] ,$$

where:

- $s$  – total number of ski slopes,
- $Z_g$  [skiers/h] – projected hourly flow of skiers on ski lifts to which the  $g$  ski slope gravitates,
- $p_g$  [%/100] – the share of capacity expressed through the hourly flow of skiers crossing from  $i$  ski slope to the  $g$  ski slope,
- $Z_i$  [skiers/h] – projected hourly flow of skiers on  $i$  ski slope,
- $l$  - total number of ski lifts by which the ski slope gravitates.

The capacity of all ski slopes is in the form:

$$T [\text{skiers/h}] = \sum_{g=1}^{\text{totalNo of all ski slopes}} t_g .$$

## 3. Design of necessary chairlifts and ski slopes capacity

Since the aim of this paper is analysis of possible capacity expansion of Zlatar Ski Center, it is necessary to present the current situation first. Zlatar Ski Center current state is represented in Figure 2 with ski slopes I and II, as well as the four-seat chairlift that leads from foot to the top, together with T-bar ski lift that leads from the fork point  $b_1$  to the peak point  $a_1$ . Peak point  $a_1$  is top point to which it is possible to get from the foot of the mountain as well as from the middle fork point:  $b_1$ , Figure 2. This paper estimates that in addition to the mentioned peak point and middle fork point  $b_1$ , new peak points should be designed:  $a_2$  and  $a_3$ , Figure 2. Skiers will be able to get to these points from the new base point S by newly designed chairlifts: 2, 3 and 4 as suggested in Figure 2. Skiers are expected to access several newly designed ski slopes, i.e. III to VI from top points  $a_2$  and  $a_3$ , and from those new slopes middle points  $b_2$  to  $b_5$ , Figure 2, skiers would be able to get to the top again by newly designed smaller capacity T-bar type ski lifts. According to that, skiers are not forced to descend to the base point in order to reach the top points again by high capacity ski lifts, but

with smaller capacity, T–bar type ones. Considering the unused benefits of this ski center due to high snow amount and average number of snow days during the year. Table 2. this paper proposes a solution to the possible capacity expansion of this ski center by introducing new fork points, new ski slopes and ski lifts as described.

Table 2: Average snowfall at Zlatar

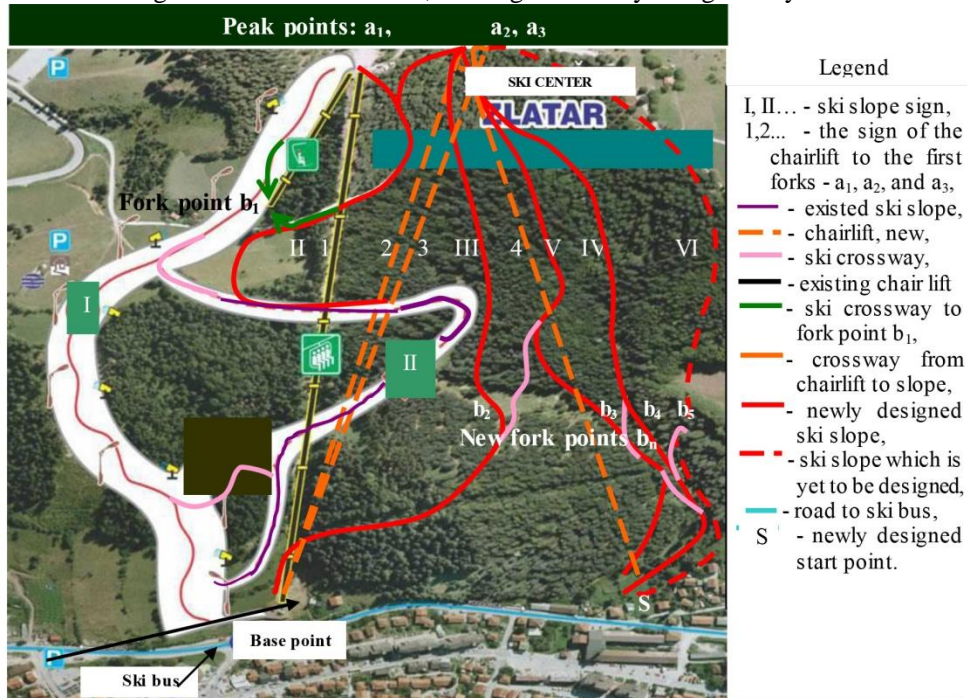
Month	Snow amount (week)	Snow days (week)
December	16 cm	2.8 days
January	20 cm	3.3 days
February	22 cm	3.5 days
March	23 cm	3.4 days
April	10 cm	1.6 days

Source: [Snow-forecast \(2021\)](#)

According to the abovementioned, newly designed T–bar ski lifts would be used for taking skiers from mid-points  $b_i, i = 2, \dots, n, n = 5$  to points  $a_i, i = 2, 3$  on the peak as they will not be forced to take chairlift from the starting point S, Figure 2.

Altogether, the existing and newly designed layout of the Zlatar Ski Center is shown in Figure 2. The full lines show ski slopes, the dashed lines represent newly designed chairlifts in the directions toward  $a_2$  and  $a_3$  points. The Arabic numerals refer to chairlifts while Rome numerals refer to ski slopes.

Figure 2: Zlatar Ski Center, existing and newly designed layout



Source: [ZlatarInfo Portal, Kornjacos, Tech \(2021\)](#)

In order to increase the number of ski slopes and the chair lifts of Zlatar Ski Center, a new starting point is planned towards the fork points  $a_2$  and  $a_3$ , as well as the crossing from one ski slope to another, Table 1 and Figure 2.

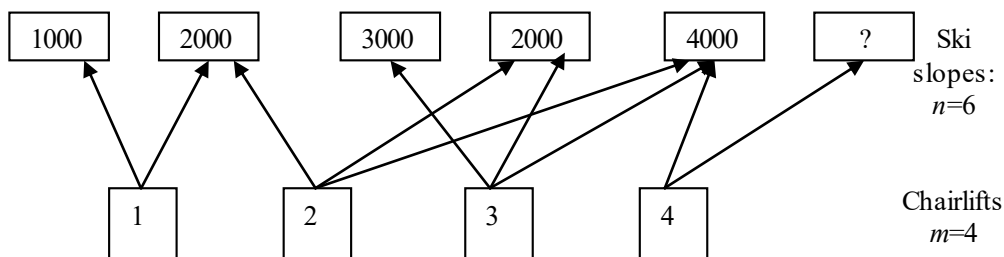
Newly designed concept introduces the expansion of the capacity of the Center, where it is necessary to harmonize the capacity of the newly designed ski slopes and the required capacity of the newly designed chair ski lifts, which leads to the optimization of the existing conditions. The required capacity of each of the four newly designed chair lifts that supply five ski slopes of the newly designed Ski center Zlatar is established. Ski center is to be designed with the ski slopes capacity of 1000, 2000, 3000, 2000 and 4000 skiers per hour.

The criterion for determining the required capacity of the ski lift is the fulfillment of the conditions that the capacity of the ski lift must be at maximum, but not higher than the capacity of the ski slope with the lowest through pass, comparing the through passes of all ski slopes that gravitate to that ski lift.

On the other hand, the capacities of chair lifts that supply a particular peak point “a”, Figure 2, must be approximately equal to the capacity of all smaller capacity T-bar ski lifts that gravitate to the point “a”. The capacity of chair lifts is in correlation to the capacity of the ski slopes that gravitate to them and is to be established in chapters that follow.

The required capacity of each of the newly designed chair lifts, including the existing one, is being established. The calculation is also realized in compliance with the principle that the total capacity of chair lifts that supply ski slopes must not be greater than the capacity of the lowest capacity ski slope from the aspect of the hourly flow of skiers. When performing the calculation (Marković, 2019a), the shifting of skiers from one ski slope to another is not foreseen while the chair lifts supply the ski slopes in the following way: ski lift No. 1 supplies the ski slopes 1 and 2; ski lift No. 2, supplies the ski slopes 2, 4, and 5; ski lift No. 3, supplies the ski slopes 3, 4 and 5; and ski lift No. 4, supplies the ski slope 5 as well as the newly designed one, i.e. No. 6, Figure 3.

Figure 3: Ski center scheme



Source: Author’s research

It is not allowed to achieve influx of skiers on the ski slope greater than its capacity. On the basis of this, through the geometric interpretation of linear programming (Nadler, 1973; Marković, 2019b; Borrelli et al., 2003; Kasana & Kumar, 2004), inequalities are formed for the maximum capacity (Nash & Sofer, 1996; Sarbjit, 2018) of each ski slope:  $i, i = 1, \dots, n = 5$ , in the form:

$$\begin{aligned}
 C_1 &\leq 1000, \text{ for ski slope 1,} \\
 C_1 + C_2 &\leq 2000 \Rightarrow C_2 \leq 2000 - C_1, \text{ for ski slope 2,} \\
 C_3 &\leq 3000, \text{ for ski slope 3,}
 \end{aligned}
 \tag{1}$$

$$C_2 + C_3 \leq 2000, \text{ for ski slope 4,} \\ \Rightarrow C_3 \leq 2000 - C_2, C_3 \geq 0 \Rightarrow 2000 - C_2 \geq 0 \Rightarrow C_2 \leq 2000, \quad (2)$$

$$C_2 + C_3 + C_4 \leq 4000, \text{ for ski slope 5,} \\ C_4 \leq 4000 - (C_2 + C_3), C_4 \geq 0 \Rightarrow \\ 4000 - C_2 - C_3 \geq 0, C_3 \geq 0 \Rightarrow C_2 \leq 4000. \quad (3)$$

Inequalities follow in the next form:

$$C_1 \leq 1000, C_2 \leq 1000, \text{ and } C_i \geq 0, i=1, \dots, m, m=4. \quad (4)$$

In this case  $C_i, i = 1, \dots, m, m = 4$ , represent the capacities of the ski lifts (Dedijer, 1983) that should weigh the highest possible value, whereby it is not possible to supply the ski slopes with the flow of skiers that exceed the capacity of the ski slope. It has to be noted that the requirement is that the capacity of the ski slope must not be exceeded even in the case of closing one of the ski slopes that are supplied by the same chair lift.

The objective function that represents the maximum flow of skiers on all ski slopes of the ski resort, and should strive for the maximum value is in the form:

$$0 \leq F_c = \sum_{i=1}^{n=4} C_i, i=1 \div 4, F_c = C_1 + C_2 + C_3 + C_4 \rightarrow \max. \quad (5)$$

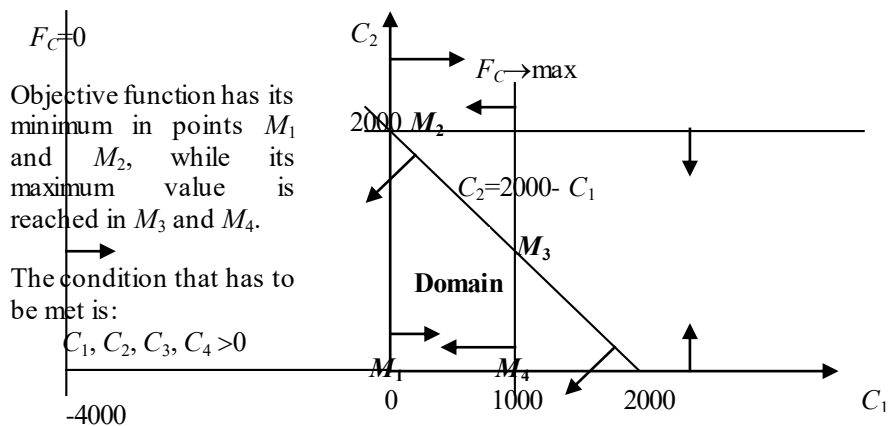
Hence:

$$F_c = C_1 + C_2 + (2000 - C_2) + (4000 - (C_2 + C_3)) = \\ = C_1 + C_2 + (2000 - C_2) + (4000 - (C_2 + 2000 - C_2))$$

$$F_c = C_1 + C_2 + (2000 - C_2) + 2000 = C_1 + 4000, F_c \geq 0. \quad (6)$$

Inequalities (1), (2), (3) and (4) are entered in diagram  $C_1 - C_2$ , Figure 4. A vertex coordinates of  $M_1, M_2, M_3$  and  $M_4$  represent capacities of chair lifts 1, 2, 3, and 4, Figure 4.

Figure 4: Chair lifts capacity domain and capacity of objective function (6)



Source: Author's research

These vertexes form the closed polygonal line that bounds the domain for the chair lifts capacities in skiers per hour, i.e.  $C_1, C_2, C_3, C_4$ , (Marković, 2019a), and are as follows:

$$M_i(C_{i1}, C_{i2}, C_{i3}, C_{i4}), i = 1, 2, 3, 4.$$

$$M_1(0, 0, 2000, 2000), M_2(0, 2000, 0, 2000),$$

$$M_3(1000, 1000, 1000, 2000), M_4(1000, 0, 2000, 2000). \quad (7)$$

The largest traffic on the chair ski lifts is realized in the vertexes  $M_3$  and  $M_4$  (7). As it is not possible for traffic on the chair lift to be zero, by the reason of its abolition in that case, the values of coordinates in vertex  $M_3$  are to be adopted as adequate. That means that the capacity of the chair lifts will be  $C_1=1000, C_2=1000, C_3=1000$  and  $C_4=2000$  skiers per hour (7). This state is to be considered as optimal.

The coefficient of ski slope utilization from the aspect of cableway capacity is in the form:

$$k_{is_1} = \frac{C_1}{S_1} = \frac{1000}{1000} = 1 \Rightarrow 100\%, k_{is_2} = \frac{C_1 + C_2}{S_2} = \frac{2000}{2000} = 1 \Rightarrow 100\%,$$

$$k_{is_3} = \frac{C_3}{S_3} = \frac{1000}{3000} = 0.3 \Rightarrow 30\%, k_{is_4} = \frac{C_2 + C_3}{S_4} = \frac{2000}{2000} = 1 \Rightarrow 100\%, \quad (8)$$

$$k_{is_5} = \frac{C_2 + C_3 + C_4}{S_5} = \frac{4000}{4000} = 1 \Rightarrow 100\%.$$

Where:  $S_i$  [skiers/h],  $i=1, \dots, 5$  – capacity of  $i$  - ski slope.

Authors of the paper created and ran the program SKIERS 6, based on Williams (2003), taking into account calculations presented in this chapter, (1) to (8). The results are presented in the chapter that follows. The difference is that in new cases the percentage of skiers crossing from one ski slope to the other is also included in account scheme. This option is described in the hypothetical example in chapter 2.

#### 4. Results of the analysis of ski flows at Zlatar Ski Center, Nova Varoš

By applying the SKIERS 6 program package, the results listed in the files were obtained as follows:

Total capacity of all ski slopes: 12000 [skiers/h]

Total capacity of all chair ski lifts: 5000 [skiers/h]

The percentage utilization of the ski slopes is 41.66666 [%]

Minimum of the capacity necessary for the ski slope 1, calculated with no crossing to this ski slope from the others is 1000 [skiers/h]

Minimum of the capacity necessary for the ski slope 2, calculated with no crossing to this ski slope from the others is 2000 [skiers/h]

Minimum of the capacity necessary for the ski slope 3, calculated with no crossing to this ski slope from the others is 1000 [skiers/h]

Minimum of the capacity necessary for the ski slope 4, calculated with no crossing to this ski slope from the others is 2000 [skiers/h]

Minimum of the capacity necessary for the ski slope 5, calculated with no crossing to this ski slope from the others is 4000 [skiers/h]

Minimum of the capacity necessary for the ski slope 6, calculated with no crossing to this ski slope from the others is 2000 [skiers/h]

The scheme of the anticipated percentage of crossings from each ski slope to all the others [skiers/h] is as follows:

Ski slope	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6
Ski slope No. 1	0	200	0	0	0	0
Ski slope No. 2	0	0	0	0	0	0
Ski slope No. 3	0	0	0	0	0	0
Ski slope No. 4	0	0	0	0	200	0
Ski slope No. 5	0	0	800	400	0	0
Ski slope No. 6	0	0	0	400	0	0

Minimum of the capacity necessary for the ski slope 1 is: 1200 [skiers/h]

Efficiency coefficient of the ski slope No. 1 is:  $\eta(1)= 1.2$

Minimum of the capacity necessary for the ski slope 2 is: 2000 [skiers /h]

Efficiency coefficient of the ski slope No. 2 is:  $\eta(2)= 1$

Minimum of the capacity necessary for the ski slope 3 is: 1000 [skiers /h]

Efficiency coefficient of the ski slope No. 3 is:  $\eta(3)= 0.3333333$

Minimum of the capacity necessary for the ski slope 4 is: 2200 [skiers /h]

Efficiency coefficient of the ski slope No. 4 is:  $\eta(4)= 1.1$

Minimum of the capacity necessary for the ski slope 5 is: 5200 [skiers /h]

Efficiency coefficient of the ski slope No. 5 is:  $\eta(5)= 1.3$

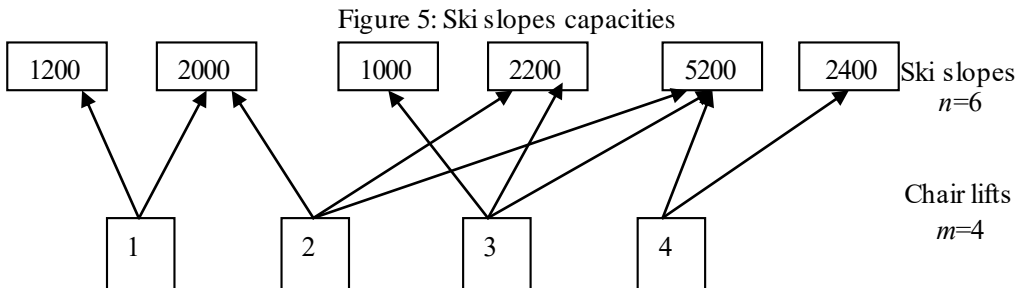
Minimum of the capacity necessary for the ski slope 6 is: 2400 [skiers /h]

Efficiency coefficient of the ski slope No. 6 is:  $\eta(6) = 1$

Minimum of the capacity necessary for the all ski slopes is: 14000 [skiers /h]

Efficiency coefficient of all ski slopes from the aspect of the minimum necessary capacity is in the sum of 0.53.

It is stated that on the ski slopes 1 and 5, the utilization coefficient is higher than one due to the anticipated possibility of skiers crossing from one ski slope to another. This causes the necessary increase in the capacity of the ski slopes in order to reduce the utilization coefficients of the ski slopes 1 and 5. The improved solution is presented in the scheme of the ski resort, Figure 5.



Source: Author's research

Based on Figure 5, through the geometric interpretation of linear programming, inequalities are formed for the maximum capacity of each ski slope:  $i, i = 1, \dots, n=6$ , in the form that follows:

$$C_1 \leq 1200, \text{ for ski slope 1,}$$

$$C_1 + C_2 \leq 2000, C_2 \geq 0 \Rightarrow C_2 \geq 2000 - C_1 \Rightarrow C_1 \leq 2000, \text{ for ski slope 2,} \quad (9)$$

$$C_3 \leq 1000, \text{ for ski slope 3,}$$



$$C_2 + C_3 \leq 2200, \text{ for ski slope 4,} \\ \Rightarrow C_3 \leq 2200 - C_2, C_3 \geq 0 \Rightarrow 2200 - C_2 \geq 0 \Rightarrow C_2 \leq 2200, \quad (10)$$

$$C_2 + C_3 + C_4 \leq 5200, \text{ for ski slope 5,} \\ C_4 \leq 5200 - (C_2 + C_3), C_4 \geq 0 \Rightarrow 5200 - C_2 - C_3 \geq 0, C_3 \geq 0 \Rightarrow C_2 - 5200 \geq 0 \Rightarrow \\ C_2 \leq 5200, \\ C_4 \leq 2400, \text{ for ski slope 6.} \quad (11)$$

According to inequalities (9), (10) and (11), there follows:

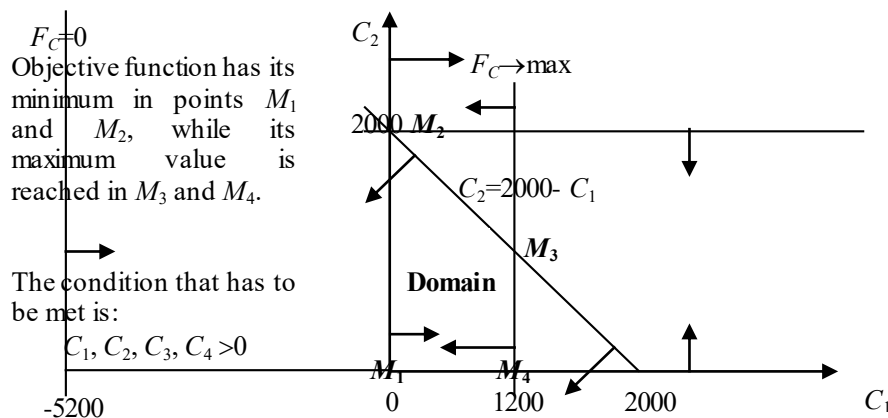
$$C_1 \leq 1200, C_2 \leq 2200, \text{ and } C_i \geq 0, i=1, \dots, m=4. \quad (12)$$

Here,  $C_i, i=1, \dots, m=4$ , according to (12), represent the capacity of the chair lifts that should strive for the highest possible value, while it is not possible to supply the ski slopes with a flow of skiers that exceeds the capacity of them. It should be noticed that the capacity of the ski slope should not be exceeded even in the case of closing one of the ski slopes that is supplied by the same chair lift.

The objective function that represents the maximum flow of skiers on all ski slopes of the ski resort, and should strive for the maximum value, is in the form:

$$0 \leq F_c = \sum_{i=1}^{n=4} C_i, i=1 \div 4, F_c = C_1 + C_2 + C_3 + C_4 \rightarrow \max, \text{ Figure 6.} \quad (13)$$

Figure 6: Chair ski lifts capacity domain



Source: Author's research

Vertex coordinates  $M_1, M_2, M_3, M_4$  of the domain, formed by closed polygonal line bounding the domain area that represents the chair lift capacities  $C_1, C_2, C_3, C_4$  [skiers/h], (12), are as follows:

$$M_i(C_{i1}, C_{i2}, C_{i3}, C_{i4}), i=1, 2, 3, 4. \\ M_1(0, 0, 1000, 2400), M_2(0, 2000, 2000, 2400), \\ M_3(1200, 800, 1000, 2400), M_4(1200, 0, 1000, 2400). \quad (14)$$

Objective function values in vertexes, according to (13), are as follows in (15):

$$F_{cM_1} = 3400, F_{cM_2} = 4600, F_{cM_3} = 5400, F_{cM_4} = 4600. \quad (15)$$

## 5. Discussion

According to previously mentioned in equation (14), the biggest flow on the chair lifts is assumed in vertex  $M_3$ . That concerns the chair lifts capacities in the sizes:  $C_1=1200$ ,  $C_2=800$ ,  $C_3=1000$  and  $C_4=2400$  [skiers/h], (14). This state is considered to be the optimal one.

Efficiency coefficients of the ski slopes according to chair lift capacities are as follows in (16):

$$\begin{aligned} k_{is1} &= \frac{C_1}{S_1} = \frac{1200}{1200} = 1 \Rightarrow 100\%, k_{is2} = \frac{C_1 + C_2}{S_2} = \frac{2000}{2000} = 1 \Rightarrow 100\%, \\ k_{is3} &= \frac{C_3}{S_3} = \frac{1000}{1000} = 1 \Rightarrow 100\%, k_{is4} = \frac{C_2 + C_3}{S_4} = \frac{1800}{2200} = 0.81 \Rightarrow 81\%, \\ k_{is5} &= \frac{C_2 + C_3 + C_4}{S_5} = \frac{4200}{5200} = 0.81 \Rightarrow 81\%, k_{is6} = \frac{C_4}{S_5} = \frac{2400}{2400} = 1 \Rightarrow 100\%. \end{aligned} \quad (16)$$

Where:  $S_i$  [skiers/h],  $i=1, \dots, 5$  – capacity of  $i$ - ski slope.

## 6. Conclusion

This paper presents a mathematical model, geometric interpretation of linear programming, as well as the Standard Maximum Method and its usage in the field of transport. The aim of the paper is to analyze the possibility of expanding the potential of Zlatar Ski Center by designing new ski slopes as well as installing additional chair lifts in order to complete the tourist offer of that Center. Additionally, the paper also provides a model for finding the optimal capacity of additionally designed ski slopes. The ski center is studied as a large system of internal transport, considering that the analysis of the flow is the main activity.

The obtained results showed that it is possible to confirm the hypothesis stated at the beginning of this paper and get the optimal solution of the expanded capacity of the ski center by applying linear programming and the presented methodology.

This paper also presents the application of a software program, developed by the authors, to establish the coefficient of utilization of the ski slopes as well as the entire ski resort. The percentage of skiers who cross from one ski slope to another is also covered, together with “goal” function of the problem and detecting its maximum. Finding the maximum capacity of the projected system is also achieved.

## Conflict of interest

The author(s) declare no conflict of interest.

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## Spa tourism statistics in the Kingdom of Yugoslavia

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**Abstract:** The paper presents statistical data on spa tourism in the Kingdom of Yugoslavia in the period from 1926 to 1940. The sources of data for the research were the Statistical Yearbooks of the Kingdom of Yugoslavia. The paper aims to show how spa tourism statistics and tourism statistics in general developed in the years between the two world wars. Furthermore, the paper aims to provide a picture of the level of development of spas and spa tourism in the Kingdom through the presented data. Illustrative data on hotel capacities for some of the most famous spas in the Kingdom of Yugoslavia are presented. A combination of historical and statistical methods was used to analyze statistical data on spa tourism and the financial effects of tourism. The existing data made it possible to calculate the share of revenues from spa tourism in both the total revenues from tourism and the national income of the Kingdom of Yugoslavia.

**Keywords:** spa tourism, spas, mineral waters, tourism statistics, Kingdom of Yugoslavia

**JEL classification:** Z31, Z32

## Statistika banjskog turizma u Kraljevini Jugoslaviji

**Sažetak:** U radu su prikazani statistički podaci o banjskom turizmu u Kraljevini Jugoslaviji za period 1926-1940. godina. Izvori podataka za rad bili su statistički godišnjaci Kraljevine Jugoslavije. Cilj rada je da prikaže kako se razvijala statistika banjskog turizma i statistika turizma uopšte u godinama između dva svetska rata. Još jedan cilj je da se kroz prikazane podatke pruži slika o nivou razvijenosti banja i banjskog turizma u Kraljevini. Prikazani su ilustrativni podaci o hotelskim kapacitetima za neke od najpoznatijih banja u Kraljevini Jugoslaviji. Kombinacijom istorijskog i statističkog metoda analizirani su statistički podaci o banjskom turizmu i finansijski efekti turizma. Postojeći podaci omogućili su izračunavanje udela prinosa od banjskog turizma u ukupnim prinosima turizma i u nacionalnom dohotku Kraljevine Jugoslavije.

**Ključne reči:** banjski turizam, banje, lekovite vode, statistika turizma, Kraljevina Jugoslavija

**JEL klasifikacija:** Z31, Z32

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## 1. Introduction

The beginnings of the rich and colorful history of spas and spa tourism in the Kingdom of Yugoslavia date back to the time of the ancient Romans, who were the first in this area to use mineral waters for healing purposes. In more recent past, in the 19th century, especially in Serbia, these beginnings were associated with the organized and systematic testing of mineral waters. In 1835, at the invitation of Prince Miloš Obrenović, the German geologist Baron Sigmund August von Herder performed the first tests of chemical composition of mineral waters from 16 places in Serbia (Ljušić, 2008, p. 72). Several more decades passed from then until the appearance of organized spa tourism. At the end of the 19th century, spa baths were arranged and the first hotels were opened. By the beginning of the First World War, all today known forms of tourism developed - going to the sea, hiking, excursion tourism and going to spas, and the most famous tourist places in the future Kingdom of Yugoslavia were Dubrovnik, Opatija and Vrnjačka Banja.

In Serbia, the establishment of the Society of Healing Mineral Hot Water in Vrnjci in 1868, the construction of roads and railways were important for the beginning of organized spa tourism (Lazić, 2015). The very next year, in 1869, the first data on tourism were recorded in Vrnjačka Banja. Thus, it was noted that Vrnjačka Banja was visited by 583 visitors who stayed there for a total of 16,140 days. Official statistical data on visits to this spa resort have been recorded since 1898. Until then, the records had been collected by district and county doctors who administered the resort (Ruđinčanin & Topalović, 2008). These were the beginnings of organized data collection on spas, until the State took over this activity. The first Law on Spas, Mineral and Hot Waters was passed in Serbia in 1914 (Krejić et al., 2017). With this law, all spas were nationalized: "...all mineral and hot waters are state property..." (Law on Spas, Mineral and Hot Waters, 1914). Until then, some of them were also privately owned (Marković, 1980). The first Law on Spas stipulated that the State would supervise and improve the work of spas. However, this had to wait until the end of the First World War.

Organized tourist activity in the Kingdom of Yugoslavia continued to develop after the end of the First World War. A congress was held in Zagreb on December 30, 1920, at which the Association of Baths, Spas, Climate Places, Mineral Springs and Sanatoriums in the Kingdom of Serbs, Croats and Slovenes was founded and a proposal was given for the establishment of the Department for Foreign Visitors at the Ministry of Trade and Industry (Lazić, 2015). At this Congress, a proposal was also made for the establishment of a special company that would have travel offices in all important places in the Kingdom. Thus, in 1923, the first travel agency in today's sense of the word was founded under the name "Putnik", as a joint stock company for passenger and tourist traffic in the Kingdom of Serbs, Croats and Slovenes (Krejić & Milićević, 2018). Among the branches of this company, the first one was opened in Vrnjačka Banja in 1927 (Krajčević, 1998). The establishment of this travel agency gave an additional impetus to the growth of tourist visits.

During the 1920s, organized visits of not only domestic but also foreign tourists began. The first official, although incomplete statistical data show that in 1924, Yugoslav resorts, spas, climatic places and cities were visited by 120,000 foreign tourists, of which an income of between 300-400 million dinars was recorded (Yearbook of the Kingdom of Serbs, Croats and Slovenes 1926., p. 434). In those first years after the end of the First World War, the number of visitors to certain tourist destinations and spas as well as the most important data on thermal waters in the Kingdom were recorded. Shortly afterwards, the organized collection of data on spa tourism and tourism in general began. Starting from 1929, those data were regularly published in the Statistical Yearbook. The categorization of spas and their division into three categories was undertaken in 1924. Thus, for example, Vrnjačka

Banja, Rogaška Slatina and Banja Lipik were ranked in the first category of spas (Rudinčanin & Topalović, 2008).

The number of visitors in the Kingdom of Yugoslavia grew from year to year. In 1932 and 1933, during the Great Depression, there was a stagnation. Then, after the end of the crisis, a rapid recovery of tourism occurred. The largest number of tourists was recorded in 1935, when 767,000 domestic tourists were registered in the Kingdom of Yugoslavia who stayed in coastal places, spas and at the mountains (Krejić & Milićević, 2018). That year, 45 spas were listed in the Kingdom of Yugoslavia (Niketić, 1935). In the following years, the total number of visitors was close to 700,000 per year where almost one fourth visited the spas. In 1938, for example, 160,295 persons visited spas (Statistical Yearbook 1938-1939, pp. 324–326) and 1939, their number amounted to 139,849 (Statistical Yearbook 1940, pp. 306–308). In more detail, data on tourist visits, as well as other statistical data on spas for the period from 1926 to 1940, are presented here in the paper.

## 2. Statistics on spa tourism

The first official statistical data on spas and spa tourism in the Kingdom of Yugoslavia were published in 1926, in the Statistical Yearbook of the Kingdom of Serbs, Croats and Slovenes. This was the first Statistical Yearbook published after the end of the First World War. Spa tourism has been extensively explained within the chapter *Public Health in Yugoslavia*, in the section entitled *Mineral waters, muds, sea baths and climate places*. Although in this Yearbook there were no detailed data on spas and their hotel capacities, as would be the case with the Yearbooks that followed, in the aforementioned section there is a large amount of data that provide insight into the level of development of spa tourism. Thus, it has been stated that the Standing Spa Committee at the Ministry of Public Health counted 300 mineral springs on the territory of the Kingdom, and that a number of these springs had been very well arranged and attracted a large visitor audience. It has been also noted that the most visited spa was Vrnjačka Banja in Serbia with 23,000 visitors, then Topusko in Croatia with over 7,000 visitors. Those two spas were followed by Rogaška Slatina and Rimske Toplice in Slovenia, Banja Iliđa near Sarajevo in Bosnia and Banja Koviljača in Serbia, with more than 5,000 visitors each. According to this source, among rather visited spas in Serbia were also Vranjska banja with 3,000 visitors and Ribarska banja, Sokobanja and Jošanička banja with 2,000 visitors each, as well as Krapinske Toplice in Croatia with 2,000 visitors. Then, the characteristics of water, chemical composition and temperature of well-known waters were described, as well as the treatments in which healing water was used (Yearbook of the Kingdom of Serbs, Croats and Slovenes 1926., pp. 375–384).

The official data on spas and spa tourism began to be published regularly starting with the Statistical Yearbook for 1929, which was the first Yearbook published after the one from 1926. In the Yearbook for 1929, within the chapter on *Health Conditions* there is a section entitled *Healing waters, climate and tourist places* which was dedicated to spa tourism. In this section, there is a table under the same name, in which it was noted that there were 288 healing waters on the territory of the Kingdom of Yugoslavia, of which 46 spas were of the first and second category (Figure 1). Since from 1929, the territory of the Kingdom of Yugoslavia was divided administratively in nine regions (banovina), with capital city each: Dravska (Ljubljana), Savska (Zagreb) Vrbaska (Banja Luka), Primorska (Split), Drinska (Sarajevo), Zetska (Cetinje), Dunavska (Novi Sad), Moravska (Niš) and Vardarska (Skoplje), statistical division of healing waters was made according to their regional location. Thus, the largest number of healing waters was located on the territory of Drinska Banovina (66), then on the territory of Moravska Banovina (62), followed by Vardarska Banovina (37) and Dunavska Banovina (29) (Statistical Yearbook 1929, p. 413).

Figure 1: Healing waters, climate and tourist places in the Kingdom of Yugoslavia in 1929

c LEKOVITE VODE, KLIMATSKA I TURISTIČKA MESTA c EAUX MÉDICINALES, STATIONS CLIMATIQUES ET CENTRES DE TOURISME							
10 Opšti pregled — 10 Aperçu général							
Banovina — Banovine	Lekovite vode Eaux médicinales			Klimatska i turistička mesta Stations climatiques et centres de tourisme			Ukupno Total
	banje I i II reda — villes d'eaux de I et II rang	ostale autres	svoga total	primorska du littoral	ostala autres	svoga total	
Dravska .....	10	6	16	—	100	100	116
Drinska .....	5	61	66	—	21	21	87
Dunavska .....	7	22	29	—	27	27	56
Moravska .....	7	55	62	—	19	19	81
Primorska .....	1	2	3	38	23	61	64
Savska .....	5	15	20	24	48	72	92
Vardarska .....	6	31	37	—	39	39	76
Vrbaska .....	3	26	29	—	16	16	45
Zetska .....	2	24	26	48	23	71	97
Ukupno — Total .....	46	242	288	110	316	426	714

Source: [Statistical Yearbook 1929](#)

In a separate table called *Spas*, significant spas located in particular regions are listed, the rank of the spa (I or II category) is recorded, the chemical composition of water for each spa is described as well as diseases treated in each spa ([Statistical Yearbook 1929, pp. 414–419](#)). Finally, a table entitled *Other mineral and healing waters* by regions is given, which lists all healing and mineral waters in the Kingdom of Yugoslavia ([Statistical Yearbook 1929, p. 420](#)). Data on spas could be also found in the chapter of this Yearbook called *Hotel Industry*. In this chapter, in the table entitled *Hotel industry in 1929 by banovinas and capitals of the banovinas*, the hotel capacities of the most important tourist places, number of hotels, their equipment, their distance from a railway or steamship station and many other data were presented. Among these data, information on individual spas was shown. From year to year, the number of tourist and spa places for which data on hotel capacities were published was increasing.

The data on spas and healing waters were presented in this way until the Statistical Yearbook for 1934 and 1935 (one joint Yearbook for these two years was published), in which there was a change in the way of presenting them. In this Yearbook, data on spas were presented within the chapter *Tourism*, instead of, as before, in the chapter dedicated to health conditions. There, within the table called *Visitors - Tourists* only data on the number and citizenship of visitors for all tourist places in the Kingdom were presented, among which were the data for spas. Healing water data were not published in this Yearbook and were not published at all afterwards. In the Statistical Yearbook for 1934 and 1935, the data on spas could only be found in the table called *Climate, spa and tourist places in 1935*, in which the number of tourist places in the Kingdom by their types was recorded (Figure 2). The table states that there were a total of 65 spas in the Kingdom of Yugoslavia in 1935 ([Statistical Yearbook 1934–1935, p. 245](#)).

Figure 2: Climate, spa and tourist places in the Kingdom of Yugoslavia in 1935

5 Климатска, бањска и туристичка места у 1935 години  
 5 Liste de stations climatiques, de villes d'eaux et de centres de tourisme en 1935

Бановина Banovine	Број места у бановини — Nombre de lieux par banovines				
	алпинска и субалпинска alpines et subalpines	бањска (купалишта) villes d'eaux (bains)	туристичка centres de tourisme	приморска littoraux	свега total
Dravska .....	19	11	74	—	104
Drinska .....	4	9	15	—	28
Dunavska .....	4	9	26	—	39
Moravska .....	1	8	20	—	29
Primorska .....	3	—	18	22	43
Savska .....	12	9	29	16	66
Vardarska .....	3	9	28	—	40
Vrbaska .....	—	7	14	—	21
Zetska .....	—	3	33	22	58
Beograd .....	—	—	2	—	2
Укупно — Total . . .	46	65	259	60	430

Source: [Statistical Yearbook 1934-1935](#)

In the Yearbook for 1936, data on tourism and spas were presented in the same way as in the Yearbook for 1934 and 1935. The tables called *Overview of tourism by years*, *Climate, spas and tourist places*, *Revenue from tourism* and *Visitors-Tourists* have been presented. New in this Yearbook are two tables dedicated to mountaineering: *Members of the union of mountaineering associations* and *Centers of the mountaineering associations*, while there were no more detailed data on spa tourism ([Statistical Yearbook 1936](#), pp. 287–295).

In the Yearbook for 1937, the way of statistical coverage of tourism changed again. The table *Climate, spa and tourist places*, in which the number and type of tourist places were previously recorded, in this Yearbook has not been presented. What has been presented in the table entitled *Visitors - Tourists in 1937* was an overview of visits to tourist places by banovinas in the Kingdom (number of visitors and their citizenship) ([Statistical Yearbook 1937](#), pp. 238–241). As in previous Yearbooks, data on tourist visits for all known spas have been presented among other data in this table. In the Yearbook for 1938. and 1939 (joint edition for both years) and the Yearbook for 1940, a table has been published entitled *Tourist traffic by banovinas*, in which all tourist places have been divided into tourist places in a narrower sense, tourist places of climatic-mountain character, tourist places of climatic-coastal character and tourist places of spa character and for all these tourist places the number and citizenship of visitors was shown (Figure 3). Then, in the table entitled *Visitors - Tourists by places*, the tourist visits to all important tourist places and the citizenship of the visitors have been shown. There were no other data on spa places, such as data on mineral waters or hotel capacities of spa places in these Yearbooks.



Figure 3: Part of the table entitled *Tourist traffic by banovinas in 1938, Kingdom of Yugoslavia*

**3 Туристички промет по бановинама у 1938 —**

Бановина Banovine	Врста туристичких места Genre des lieux touristiques	Држављанство туриста —								
		Југославија Yougoslavie	Аустрија Autriche	Белгија Belgique	Бугарска Bulgarie	Чехословачка Tchécoslovaquie	Данска Danemark	Енглеска Angleterre	Француска France	
Дрavska	Туристичка места у ужем смислу — Lieux touristiques dans un sens plus étroit . . . . . б	83.544	3.225	101	491	3.675	96	662	838	1
	Туристичка места климатско-планинског карактера — Lieux touristiques du caractère climat-alpin . . . . . б	193.969	12.869	147	915	8.548	127	1.012	1.747	2
	Туристичка места бањског карактера — Lieux touristiques du caractère balnéaire . . . . . б	35.600	398	77	109	1.600	32	1.264	354	3
	Укупно — Total . . . . . б	359.820	3.059	413	485	13.238	147	8.349	2.417	4
	Туристичка места климатско-планинског карактера — Lieux touristiques du caractère climat-alpin . . . . . б	17.171	623	1	7	147	2	11	7	5
Дрavska	Туристичка места у ужем смислу — Lieux touristiques dans un sens plus étroit . . . . . б	213.909	8.546	10	126	1.818	4	98	159	6
	Туристичка места климатско-планинског карактера — Lieux touristiques du caractère climat-alpin . . . . . б	138.405	4.246	179	607	5.422	132	1.937	1.199	7
	Туристичка места бањског карактера — Lieux touristiques du caractère balnéaire . . . . . б	767.658	24.474	570	1.526	23.604	278	4.459	4.323	8
	Укупно — Total . . . . . б	18.196	122	171	52	732	153	604	698	9
	Туристичка места климатско-планинског карактера — Lieux touristiques du caractère climat-alpin . . . . . б	25.729	293	317	100	1.250	296	1.101	1.018	10
Дрavska	Туристичка места у ужем смислу — Lieux touristiques dans un sens plus étroit . . . . . б	5.892	4	2	—	5	—	12	9	11
	Туристичка места климатско-планинског карактера — Lieux touristiques du caractère climat-alpin . . . . . б	64.677	26	28	—	77	—	252	133	12
	Туристичка места бањског карактера — Lieux touristiques du caractère balnéaire . . . . . б	13.658	11	—	24	97	—	16	7	13
	Укупно — Total . . . . . б	167.342	78	—	23	1.847	—	104	26	14
	Туристичка места климатско-планинског карактера — Lieux touristiques du caractère climat-alpin . . . . . б	37.746	137	173	76	834	153	632	624	13
Дрavska	Туристичка места у ужем смислу — Lieux touristiques dans un sens plus étroit . . . . . б	258.748	397	345	125	3.214	296	1.457	1.177	16
	Туристичка места климатско-планинског карактера — Lieux touristiques du caractère climat-alpin . . . . . б	27.931	85	7	86	248	2	23	29	17
	Туристичка места бањског карактера — Lieux touristiques du caractère balnéaire . . . . . б	45.733	598	53	680	2.342	15	134	165	16
	Укупно — Total . . . . . б	10.170	145	1	24	81	5	8	22	19
	Туристичка места климатско-планинског карактера — Lieux touristiques du caractère climat-alpin . . . . . б	30.433	604	1	185	411	8	12	89	20
Дрavska	Туристичка места у ужем смислу — Lieux touristiques dans un sens plus étroit . . . . . б	31.265	161	6	109	441	1	16	55	21
	Туристичка места климатско-планинског карактера — Lieux touristiques du caractère climat-alpin . . . . . б	110.490	328	17	224	2.453	5	56	90	22
	Туристичка места бањског карактера — Lieux touristiques du caractère balnéaire . . . . . б	69.696	391	14	219	770	8	47	106	23
	Укупно — Total . . . . . б	186.656	1.530	71	1.089	5.206	28	202	344	24
	Туристичка места климатско-планинског карактера — Lieux touristiques du caractère climat-alpin . . . . . б									

а Број туриста — б Број ноќивала.

Source: [Statistical Yearbook 1938-1939](#)

Data on spas, together with the data on climate and tourist places, were collected by the Ministry of Social Policy and Public Health. For data on tourism in general, also known as *hotel industry*, the Ministry of Trade and Industry was responsible. The source for data on the writings entitled *Lekovite vode, klimatska i turistička mesta* (*Healing waters, climate and tourist places*) in the Yearbook for 1929 was a publication of the Ministry of Social Policy and Public Health entitled *Lekovite vode i klimatska mesta* (1922) (*Healing Waters and Climate Places* (1922)). Furthermore, the unpublished official materials of the Ministry of Social Policy and Public Health as well as the documents of the Royal Regional Administrations served as a source of data for this analysis ([Statistical Yearbook 1929, p. 399](#)). These two unpublished sources were also cited as sources of data on spa tourism in the following Statistical Yearbooks, concluding with the Yearbook for 1933.

Starting from the Yearbook for 1934 and 1935, where the data on spas were presented within the chapter *Tourism*, the official reports of the Ministry of Trade and Industry, the Department of Tourism and the publication of the Department of Tourism entitled *Tourism Policy, Volume I for 1936* have been cited ([Statistical Yearbook 1934-1935, p. 235](#)). These same sources were cited as sources of data on tourism in the Yearbook for 1936 ([Statistical Yearbook 1936, p. 287](#)). In the Statistical Yearbook for 1937, in addition to those already listed, the source *Zvanični izveštaji pograničnih komesarijata koji vode evidenciju ulaska i izlaska putnika* (*Official Reports of Border Commissariats Keeping Records of Passengers' Entry and Exit*) has also been cited ([Statistical Yearbook 1937, p. 235](#)). These sources

remained the same in the Statistical Yearbook for 1938 and 1939 and in the Statistical Yearbook for 1940, which was published in 1941.

### 3. Hotel capacities of well-known spa resorts

Data on hotel capacities of tourist places appeared first in the Statistical Yearbook for 1929 and were published concluding with the Statistical Yearbook for 1933. The data were published within the chapter entitled *Hotel industry* for 1929 onwards and then from the Statistical Yearbook for 1933 this chapter was renamed *Tourism*. A large table on several pages entitled *Hotel industry by banovinas and the capital of the banovinas* showed in detail the data on hotel capacities in the largest tourist places. In the table, the number of hotels in tourist places can be seen as well as their distance from the railway or steamship station, and the number of hotels having a telephone, garage and elevator, reading room, theater, cinema, tennis court. We find out the number of hotels that had a salon, dance hall, variety and bar, and what the rooms in the hotels were like; the number of hotels that had a shared bathroom or en-suite one; the number of hotels with a warm or cold water and whether the rooms were mostly single, double or multi-bed. The special table called *Hotel visitors and their citizenship by banovinas* records the number of visitors by places, their citizenship and time of stay in tourist places (passers-by, up to 15 days and longer than 15 days).

Thus, we learn that Vrnjačka Banja, the largest and most visited spa in the Kingdom of Yugoslavia, located in Moravska Banovina, central Serbia, was visited in 1929 by 24,564 persons mostly from the Kingdom of Yugoslavia (24,415). There were some foreign tourists from Greece (106) and a few from Austria, Germany, France and the surrounding countries. In 1929, Vrnjačka Banja had 50 hotels, with a reading room (15 hotels), verandas and a terrace (6 hotels), a salon and an orchestra (3 hotels) and even a tennis court (1 hotel). All hotels had a restaurant, electric lighting and cold water in the rooms and 13 had a bathroom for the whole hotel. The rooms were mostly single (400 rooms) and double (250 rooms) and in total there were 900 beds in hotels. In 1929, 466,716 overnight stays were realized ([Statistical Yearbook 1929, pp. 318–321](#)). It has also been noted that the healing water in Vrnjačka Banja was alkaline acid homoeothermic and cured diseases of kidneys, liver and digestive organs.

At the western part of the Kingdom, Banja Bled in Dravska Banovina, in Slovenia, had 16 hotels. This Spa was known for its alkaline water springs that cured respiratory diseases and nerve diseases. Out of 16 hotels, 14 had a telephone, 10 a garage and six their own car. Seven hotels had verandas and terraces and three had their own reading room. All hotels had electric lighting and 13 had their own restaurant. There were 10 hotels with hot water in the rooms and the same number of hotels had a bathroom for the whole hotel. Banja Bled had 500 one-bed rooms, 450 twin rooms and no multi-bed rooms. There were 1,400 beds in 950 rooms. In 1929, 16,996 visitors spent 237,944 nights there. Most guests in hotels were from the Kingdom of Yugoslavia (6,460), followed by foreign visitors, from Germany (4,520), Austria (2,519) and Czechoslovakia (1,974), and there were also guests from Hungary (771), Italy (201), England (81) and France (41) ([Statistical Yearbook 1929, pp. 318–321](#)).

Banja Koviljača, a small but well-known spa in Drinska Banovina, in western Serbia, had only four hotels. All four hotels had their own thermal bathroom, two had verandas and terraces and two even a tennis court, orchestra lounge and dance floor. In 1929, Banja Koviljača had 6,321 visitors who spent 94,815 nights there. All visitors were from the Kingdom of Yugoslavia and all stayed there for more than 15 days. The spa had 134 single rooms and 67 double rooms. On the overall, there were 268 beds in 201 rooms ([Statistical Yearbook 1929, pp. 318–321](#)).

Bukovička Banja in Dunavska Banovina in the heart of Serbia has been known for its park and alkaline sulfur and very iron waters that treat skin and women's diseases, diseases of the digestive organs and stomach diseases. In 1929, it had 10 hotels and all hotels had their own restaurants. The Spa had 46 single rooms and 26 double rooms, which makes 72 rooms with 98 beds. That year, 3,000 visitors spent 9,000 nights in the hotels of Bukovička Banja. All visitors were from the Kingdom of Yugoslavia ([Statistical Yearbook 1929, pp. 318–321](#)).

In Primorska Banovina, in Croatia, Banja Split near the city of Split was well-known. Salty, sulfur-saline hypothermic water with a larger amount of bromide treated rheumatism and respiratory diseases. In the Statistical Yearbook for 1929, there was no information about the Spa itself, but it could be found that the city of Split had 10 hotels with a restaurant and electric lighting, 8 of which had a bathroom for the entire hotel. There were 157 single rooms, 168 double rooms and nine multi-bedrooms. In 334 rooms, there were 528 beds with 34,210 visitors staying in them. Most visitors (20,514) were from the territory of the Kingdom of Yugoslavia, and there were a lot of foreign tourists, mostly from Germany (4,844), Austria (3,675) and Czechoslovakia (2,277) ([Statistical Yearbook 1929, pp. 318–321](#)).

The methodology of presenting data on hotel capacities and tourist visits in spa places in the Kingdom of Yugoslavia was not changed in the period from 1929 to 1932. However, over time, the number of spas for which data were collected increased. Thus, in the Statistical Yearbook for 1933 we see data on hotels and tourist visits for other spas as well (Kuršumlijska Banja, Mataruška Banja, Niška Banja, Ribarska Banja, Soko Banja in Moravska Banovina; Vranjska Banja, Debarska Banja, Katlanovska Banja, Kosovratska Banja in Vardarska Banovina, Rogaška Slatina in Dravska Banovina, etc.). In the section devoted to health conditions, the mineral composition of the waters of these spas was given, as well as the diseases in the treatment of which they were used ([Statistical Yearbook 1933, pp. 245–254](#)). In the Statistical Yearbook for 1934 and 1935, all these data, as stated in the previous part of the paper, were no longer available. The mentioned Yearbook, as well as those that followed, focused on the recording of the total tourist visit. The total number of visitors, the number of overnight stays, the citizenship of the visitors and the financial effect of the tourist activity were recorded and published ([Statistical Yearbook 1934-1935, pp. 235–246](#)).

#### **4. Financial effects from spa tourism**

Data on tourism revenues were first published in the Statistical Yearbook 1934-1935. In the section *Tourism*, page 244, a table is given entitled “Financial effects from tourism”. It presents the financial revenues from tourism in the Kingdom of Yugoslavia in the period from 1930 to 1935. It also included the income from tourism for climate places (coastal and alpine and subalpine), spas, tourist places and finally, financial income from tourism – in total. The table with data on financial income from tourism was published once again, in the Statistical Yearbook for 1936, page 288 (Figure 4). After that, data on financial effects from tourism did not appear in the Statistical Yearbooks published until the Second World War.

Figure 4: Financial effects from tourism in the Kingdom of Yugoslavia 1930-1936

**2 Принос од туризма**  
**2 Effet financier de tourisme**

Година Année	Климатска места Stations climatiques		Бањска места Villes d'eau	Туристичка места Centres de tourisme	Укупно Total
	приморска du littoral	алпнска и субалпнска alpines et subalpines			
1000 динара -- 1000 dinars					
1936	298,129	94,441	170,467	282,526	845,562
1935	260,874	66,449	152,434	347,397	827,154
1934	264,344	66,122	128,159	352,481	811,107
1933	253,674	81,975	118,773	246,691	701,113
1932	202,664	63,203	94,234	132,804	492,905
1931	217,474	52,827	120,052	140,193	530,544
1930	244,512	62,926	124,771	173,144	605,354

Source: Statistical Yearbook 1936

Based on the data from Figure 1, the percentage share of the revenues from different forms of tourism in the total revenue generated from tourism was calculated and shown in Table 1. It can be seen that the share of spa revenues in total revenues generated from tourism was highest in 1931 when it amounted to 22.6%. Then, a decrease was recorded until 1934, when it amounted to 15.8%. The reason for this trend was relatively larger decline in revenues from spa tourism than the decline in total tourism revenues during the Great Depression that lasted from 1929 to 1933.

As shown in Table 1, after 1934, a positive trend in the share of spa revenues in total revenues from tourism was recorded. In 1936, the share of spa revenues in total revenues from tourism reached 20.2% and was almost at the 1930's level. This happened because spa tourism recovered from Great Depression more quickly than other forms of tourism in the Kingdom of Yugoslavia.

Table 1: The share of revenues from different branches of tourism in the total revenue generated from tourism, Kingdom of Yugoslavia, 1930-1936, in %

	Coastal climate places	Alpine and subalpine	Spas	Tourist places	Total
1930	40.4	10.4	20.6	28.6	100.0
1931	41.0	10.0	22.6	26.4	100.0
1932	41.1	12.8	19.1	26.9	100.0
1933	36.1	11.7	16.9	35.1	100.0
1934	32.6	8.2	15.8	43.5	100.0
1935	31.5	8.0	18.4	42.0	100.0
1936	35.3	11.2	20.2	33.4	100.0

Source: Author's research

Using the data presented in Figure 4, the share of revenues generated from tourism in general and spa tourism in particular in the national income of the Kingdom of Yugoslavia have been calculated. Regarding the data on the national income of the Kingdom of Yugoslavia, since the General Government Statistics of the Kingdom of Yugoslavia did not publish data on national income, they were taken from Stevan Stajić's study *National income of Yugoslavia 1923-1939 in constant and current prices* (Stajić, 1959). According to Gnjatović (2016), "This study has been accepted internationally as a relevant source of statistical data on the national accounts of the Kingdom of Yugoslavia" (p. 24).

Table 2: Share of the revenues from tourism and spa tourism in the national income of the Kingdom of Yugoslavia, 1930-1936, in %

Year	National income in current prices (thousand dinars)	Revenues from tourism (thousand dinars)	Revenue from spa tourism (thousand dinars)	Share of the revenues from tourism	Share of revenues from spa tourism
1930	50,418,200	605,530	124,771	1.2	0.2
1931	45,099,700	530,544	12,005	1.2	0.0
1932	36,480,900	492,905	94,234	1.4	0.3
1933	36,117,000	701,905	118,773	1.9	0.3
1934	34,065,700	811,107	128,159	2.4	0.4
1935	34,602,300	827,154	152,434	2.4	0.4
1936	40,744,000	845,562	170,467	2.1	0.4

Source: Data on the national income of the Kingdom of Yugoslavia: Stajić (1959); Data on revenues from spa tourism in the Kingdom of Yugoslavia: *Statistical Yearbook 1936* Author's research

Table 2 shows that the share of revenue from tourism in the national income of the Kingdom of Yugoslavia was 1.2% in 1930. Over time, this share increased, so that in the period 1930-1936, the share of tourism in national income doubled. In this period, the share of revenues from spa tourism in the national income also increased. As the share of revenues from spa tourism in total revenues from tourism was relatively stable, amounting to 20% (Table 1), its contribution to national income also doubled.

## 5. Conclusion

The General Government Statistics of the Kingdom of Yugoslavia regularly collected data on spa tourism and published them in Statistical Yearbooks from 1929 to 1940. Initially, data on thermal waters, hotel capacities of spa places and classifications of tourist and spa places were published. Over time, the method of statistical coverage of spa tourism changed, with more importance attached to tourist visits and financial effects than the spa and hotel facilities. Tourism in the Kingdom of Yugoslavia was expanding between the two world wars, thus spa tourism also flourished. The interest was to show the financial results of that expansion, and the growth of the number of visitors and the changes in their structure according to their country of origin.

Available data on revenues from spa tourism made it possible to analyze the financial effects of this industry and calculate the share of spa tourism revenues in both total tourism revenues

and national income. This was a challenging task given that data on national income were not available in the Statistical Yearbooks of the Kingdom of Yugoslavia, and that tourism was not a separate industry at the time and was statistically covered by the Ministry of Trade and Industry. The fact that today, at least in the Republic of Serbia, we do not have official statistical data on the realized revenues from spa tourism shows how advanced the tourism statistics was at that time. The achieved share of income from tourism in the national income of the Kingdom of Yugoslavia of 2.4% and the share of spa tourism amounting to 0.3% - 0.4% is not negligible having in mind the level of development and the difficult economic situation in the Kingdom between the two wars. Today, this share of tourism in the gross domestic product, for example, in the Republic of Serbia is 1.1% ([Statistical Yearbook of the Republic of Serbia, 2020](#)).

The wealth of statistical information provides numerous opportunities for further research and analysis of the development of spa tourism in the Kingdom of Yugoslavia. Presented data give an insight into the level of development of the General Government Statistics of the Kingdom of Yugoslavia between the two world wars and an insight into the achieved level of the statistical coverage of tourism. The data evoke the level of development of spa tourism and spa life at that time, an entire era that remains golden in the development of tourism. Based on the data, it is possible to further investigate how tourism developed and how tourist traffic grew, and in the period between the two wars to look for and find the roots of the growing popularity of spa tourism in the future Yugoslavia. So far, only a small number of researchers have dealt with this period in the development of tourism and the place and importance that tourism had in the economy of the Kingdom of Yugoslavia. Presenting statistics on tourism, through research on how to collect the sources of statistics, this paper has allowed this gap to slowly begin to be filled.

### Conflict of interest

The authors declare no conflict of interest.

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## **A model for preparing manuscripts for submission to the journal Hotel and Tourism Management**

### **Title of the paper in English**

Name Surname<sup>1\*</sup>, Name Surname<sup>2</sup>, Name Surname<sup>3</sup>

<sup>1</sup> Institution

<sup>2</sup> Institution

<sup>3</sup> Institution

**Abstract:** This document presents a model for preparing the camera-ready manuscripts to be submitted for publishing in the journal Hotel and Tourism Management. The abstract briefly summarizes the article, at the same time enabling a reader to assess its relevance. The author(s) should elaborate the **goal** of their research or state the reason for writing the paper. They are additionally required to describe the **methods** used during the research and give a brief description of the **results** and conclusions of the research. The abstract should be between **100 and 150** words long.

**Keywords:** 3-5 keywords

**JEL classification:** 10pt ([http://www.aeaweb.org/jel/jel\\_class\\_system.php](http://www.aeaweb.org/jel/jel_class_system.php))

### **Naslov rada na srpskom jeziku**

**Sažetak:** Ovaj dokument predstavlja obrazac za formatiranje radova tako da izgledaju kao da su već spremni za štampu. Sažetak predstavlja kratak informativni prikaz sadržaja članka koji čitaocu treba da omogući brzu i tačnu ocenu njegove relevantnosti. Autori treba da obrazlože **cilj** istraživanja ili navedu razlog zbog koga pišu članak. Zatim, potrebno je da opišu **metode** korišćene u istraživanju i ukratko opišu **rezultate** do kojih su došli u istraživanju. Sažetak treba da sadrži od **100 do 150** reči.

**Ključne reči:** 3-5 ključnih reči

**JEL klasifikacija:** 10pt ([http://www.aeaweb.org/jel/jel\\_class\\_system.php](http://www.aeaweb.org/jel/jel_class_system.php))

### **1. Introduction**

Papers should be written **in English** using Microsoft Word for Windows. The paper should be between **10** and **15** full pages long including the figures, tables, references list and appendices. The page should be formatted as **B5 (JIS)**. Allow **20mm** for the bottom and top margins and **25mm** for the left and right margins on a page. The line spacing within a paragraph is single whereas the spacing between two paragraphs is **6pt**. The text should be written using **Times New Roman** font. The maximum number of authors per paper is three.

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\* e-mail address of the correspondent author



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Author(s) is(are) encouraged to propose the **hypotheses** or **research questions** in the line with the aim and type of conducted research.

## 2. Background

The title page should contain the Title of paper in English (16pt). Names of authors, institutional affiliation, addresses and e-mail addresses should be typed as shown at the previous page. After the address of the last author, leave an empty row followed by a short abstract (10pt). Keywords should follow the abstract. Below the keywords, the title of paper and the abstract are to be given in Serbian.

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Materials and methods section should provide a reader with sufficient details and argue all the necessary aspects in order to allow other researchers to replicate the research and build the published results.

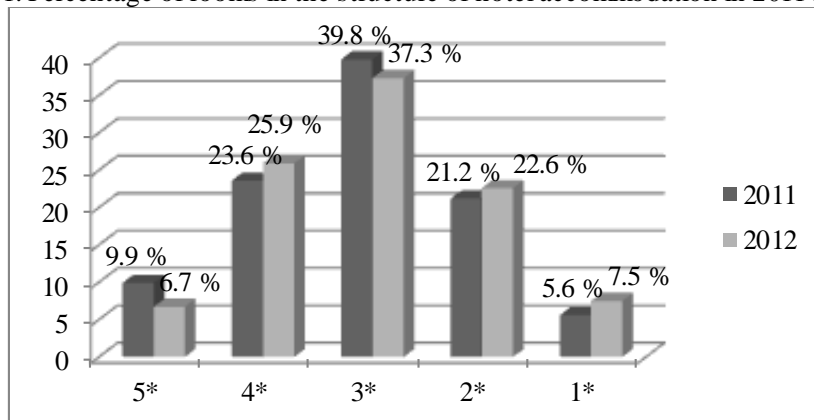
## 4. Results and discussion

The results obtained in the research should be described in this section. The discussion should highlight the main findings.

### Figures, tables and equations

All illustrations whether diagrams, photographs or charts are referred to as Figures. The name and number of figures should be centered on the line above a figure.

Figure 1: Percentage of rooms in the structure of hotel accommodation in 2011 and 2012



Source: [Ministry of Finance and Economy of the Republic of Serbia, 2013](#)

The equations are written using Microsoft Word (MathType); they are consecutively numbered and centered.

$$PV_0 = \frac{FV_n}{(1+i)^n} \quad (1)$$

The name and number of tables should be centered above the table.

Table 1: Percentage of rooms in the structure of hotel accommodation in 2011 and 2012

Category	2011	2012	Number of rooms (2011)	Number of rooms (2012)
5*	9.9	6.7	1,452	990
4*	23.6	25.9	3,486	3,911
3*	39.8	37.3	5,895	5,636
2*	21.2	22.6	3,102	3,420
1*	5.6	7.5	1,133	1,132
Total	100	100	15,068	15,089

Source: [Ministry of Finance and Economy of the Republic of Serbia, 2013](#)

If the study findings were presented graphically or in a table, author(s) is(are) encouraged to state the source below the picture or table in the following form: Author's research.

The paper with all tables and figures should be sent as one data bank. Besides, all figures and tables should be sent as separate files in JPF or TIFF formats with the smallest resolution of 300dpi.

## 5. Conclusion

The conclusion summarizes the results achieved during the research, along with the **limitations of the conducted research** and **future research recommendations**.

## Acknowledgement

For papers that came as a result of the project or programme, the title and number of the project, i.e. programme, and the name of the institution supporting the project would be appreciated. If persons other than authors were involved in important aspects of the preparation of the manuscript, their contribution should be acknowledged. If the paper was previously presented at a scientific conference (with the same or similar title), author(s) is(are) encouraged to specify it within this section.

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The author(s) declare no conflict of interest.

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If there are more authors, they are all named. Before the name of the last author ‘&’ is used. When there are more than seven authors, the names of the first six are given and the name of the last author is preceded by ‘...’.

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### **One-author paper published in a journal**

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If the cited paper is given a DOI number, it should also be included.

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<https://doi.org/10.1016/j.tourman.2011.02.005>

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<https://doi.org/10.1080/02642060701570586>

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