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Editorial

Менаџмент у 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, twenty-one issue have been published so far.

Менаџмент у 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, Australia, the Russian Federation, Sweden, Spain, Italy, the United Arab Emirates, India, Poland, Finland, Argentina, Greece, Slovenia, Bulgaria, Serbia, Croatia, Montenegro.

I am glad to announce that *Менаџмент у 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), CAB Abstract, SCIndeks (Serbian Citation Index), Scilit, 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 Board 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

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Has the tide turned? Marine tourism and female empowerment: The case of Galicia

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Abstract: Several fishing families on the Spanish coast use marine tourism as a means to complement their finances. The aim of this research is the analysis of this phenomenon characterised by a prominent mood of female empowerment, as a large number of the entrepreneurs and workers in this area are women, and also by its sustainable management, since it is an activity that respects and cares for the environment, while also safeguarding local identities and cultural traditions. The case study is the Galician coast, a pioneer region for this type of tourism. The methodology of analysis is qualitative, involving in-depth interviews with women representing the fishing communities of Redondela, Cambados and Cesantes, as well as the Galician Government's tourism plans. The research contributes to the theory by studying and conceptualising marine tourism as another way to reinforce local identity and sense of belonging. As for its practical implications, it highlights the predominant role of women (who are traditionally invisible in this sector) and the sustainable, bottom-up governance of this form of tourism.

Keywords: marine tourism, female empowerment, sustainability, governance, Galicia
JEL classification: L86, Q01

Da li se plima okrenula? Primorski turizam i osnaživanje žena: Slučaj Galicije

Sažetak: Nekoliko ribarskih porodica na španskoj obali koriste primorski turizam kao sredstvo za dopunu svojih finansija. Cilj istraživanja je analiza ove pojave koju karakteriše izraženo osnaživanje žena jer veliki broj preduzetnika i radnika u ovoj oblasti čine žene, kao i održivo upravljanje jer se radi o delatnosti koja poštuje i brine o životnoj sredini, a istovremeno čuva lokalni identitet i kulturnu tradiciju. Predmet studije slučaja je obala Galicije, pionirska regija za ovu vrstu turizma. Metodologija istraživanja je kvalitativna i uključuje dubinske intervjue sa ženama koje predstavljaju ribarske zajednice Redondela, Cambados i Cesantes, kao i turističke planove vlade Galicije. Istraživanje doprinosi teoriji proučavanjem i konceptualizacijom primorskog turizma kao još jednog načina za jačanje lokalnog identiteta i osećaja pripadnosti. Što se tiče njegovih praktičnih implikacija, ono naglašava dominantnu ulogu žena (koje su tradicionalno nevidljive u ovom sektoru) i održivo upravljanje ovim oblikom turizma na principu "odozdo prema gore".

Ključne reči: primorski turizam, osnaživanje žena, održivost, upravljanje, Galicija
JEL klasifikacija: L86, Q01

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1. Introduction

In recent decades, the primary sector, and particularly the fishing industry, has suffered a transformation due to its modernization, specialization, mechanization, and the intensification of production, despite the maintenance of the fishermen's association (Allison, 2001; López Losa, 2008). At the same time, also undergoes for a lack of generational replacement and an increasing aging of the fishing community what suggest difficulties for survival of fishermen's families. In this scenario, the diversification of economic activities has emerged as an essential strategy for littoral development and as a means to support and complement these fishermen's families. Marine tourism is in vogue, whereby visitors seek direct contact with the coast and the products generated therein, as well as the opportunity to connect and interact with the producers (Kinseng et al., 2018; Papageorgiou, 2016; Wang & Zhang, 2019). According to Moreno Muñoz (2018), marine tourism is a recently created activity, motivated by the serious financial, social and cultural crisis that the fishing sector has been suffering for decades, in the face of which tourism represents a complementary source of income for its families.

The essence of marine tourism is both the intangible and tangible cultural heritage of fishing communities, as well as local traditions, food and religious festivities. Its main attractions include lighthouses, harbours, fish markets, traditional fishing methods and the peculiar vocabulary of each community.

Italy has led the way in this type of tourism. In the 1980s in Sicily, the *Lega Pesca* cooperative was created, which endeavoured to combine fishing with tourism (Caamaño-Franco, et al., 2020). It was so successful that in 1992, the country produced the first legal definition of fishing tourism, which was modified in 1999 to include boating activities for families with children. This led to the FARO (Flexibility, Adaptability and Reconversion of Fishing Operators) project set up in 2002 and financed by the European Fund, designed to improve qualifications and encourage the start-up of new and more innovative companies in the fishing sector. Its goal was to make positive use of fishing and its workers, to transform and modernise the sector, to offer a profitable, complementary activity to fishing, and to end the inequalities that so often blight the fishing industry. Six regions of Italy (including Sicily), Spain and Portugal were the selected beneficiaries (Pardellas et al., 2011). Other projects, such as ACUIPESCA (2002) and SAGITAL (2004-2008) also sought to reconvert the fishing sector by creating complementary tourist activities that were sustainable, innovative and good for the environment and local workers, albeit with limited success.

In the case of Galicia, marine tourism exists thanks to the major efforts of the different fishing guilds, *Grupos de Acción Local* (Local Action Groups, GALP[*]), private enterprises and local councils (Moreno Muñoz, 2018). The first project was MAR DE LIRA, created in 2004 by the fishing guild in the town of Lira, which organised different cultural, gastronomic and environmental tourism activities to revitalise, generate exposure for and offer a platform to the fishing industry and its workers (Pena, 2010). Its most prominent activities were, and still are today, fishing workshops that provide visitors with an in-depth picture of coastal life, and even the chance to go out to sea on a fishing boat (so-called fishing tourism). Shortly after came the MARGALAICA brand, which covers the Muros-Noia estuary and a large part of Costa da Morte, which offers fishing tourism, coastal walks, accommodation in seaside

[*] GALP (*Grupos de Acción Local*) are non-profit associations constituted by virtue of Organic Law 1/2002, of March 22, regulating the right to association and applicable law of Spain and the Autonomous Community of Galicia. The following GALP are noted: Mariña-Ortegal, Golfo Ártabro Norte, Costa da Morte, Fisterra-Ría de Muros-Noia, Ría de Arousa, Ría de Pontevedra, Ría de Vigo-A Guarda, Golfo Ártabro Sur.

cottages, traditional local cuisine, and a visit to the fishing museum. The PESCANATUR project brought on board the communities of Cangas, Pontevedra and O Grove, which offer fishing tourism and *ititourism* (fishing, shellfishing and aquaculture activities), always respecting the environment and pursuing sustainability.

It is hypothesised that marine tourism entails a notable mood of female empowerment and leadership, for much of the work, such as shellfish harvesting on foot, is done by women. It is also assumed that marine tourism is a sustainable economic sector with a promising future, despite the current crisis in the fishing sector. Hence, this paper begins with a critical review of the literature and legislation on the sector. Due to its importance for marine tourism, the specific case of Galicia is then analysed, including in-depth interviews with women who work in the industry. The Galician Destination Management Organisation (DMO) and its firm commitment to this type of tourism is also taken into account.

2. Literature review

2.1. Marine tourism, fishing tourism and ititourism

"Tourism is one of the most important economic sectors worldwide and few environments are more important for tourism and recreation than coastal zones. For many centuries the coast has been a major resource for recreation and the intensity and diversity of activities is continuously growing" (Moreno & Amelung, 2009, p. 1140).

According to Hall (2001), "coastal tourism embraces the full range of tourism, leisure, and recreationally oriented activities that take place in the coastal zone and the offshore coastal waters. These include coastal tourism development (accommodation, restaurants, food industry, and second homes) and the infrastructure supporting coastal development (e.g. retail businesses, marinas, and activity suppliers) (…) Marine tourism (…) includes ocean-based tourism such as deep-sea fishing and yacht cruising" (p. 602). In this sense, academia defines marine tourism as activities that promote traditional fishing culture, making professional fishing compatible with tourist demand (Molina García, 2013; Pardellas & Espejo Marín, 2013; Patiño Romarís, 2016). It is a way to introduce visitors to the fishing world, and does so via the fishermen and women themselves. As Padín Fabeiro and Aboy García (2010) say, marine tourism involves complementary activities to those of maritime professionals, the people who work in fishing, shellfishing and aquaculture activities. Although marine tourism, fishing tourism and ititourism are frequently regarded as synonyms, and do indeed share many similarities, each of them also has its small differences.

The first Spanish law to define marine tourism was Act 11/2008, of December 3, on Fishing in Galicia, approved by the Galician parliament. Said law defined this typology of tourism as "*activities performed by professional groups of the sea, in return for financial compensation, aimed at the valorisation and dissemination of their work in the maritime environment, as well as maritime customs, traditions, heritage and culture.*" On a nationwide level, the first was Act 33/2014 on State Sea Fishing that defined marine tourism as "*activities performed by professional groups of the sea, in return for financial compensation, aimed at the valorisation and dissemination of marine activities and products, as well as maritime customs, traditions, heritage and culture that transcend mere extractive and commercial activity.*"

In the same Act 11/2008, Galicia also became the first region of Spain to define fishing tourism, which it did as "*activities carried out on board fishing vessels by professionals of the sea aimed at informing, valorising and disseminating their work in the marine*

environment." The national law adds the fact that tourists on board vessels cannot perform fishing activities themselves.

In academia, Molina García (2013) defined fishing tourism as activities carried out by sea fishing professionals whose purpose is to disseminate, valorise and promote the customs and culture of the people who work in the sea fishing industry, whereby third parties other than crew pay money to board the vessel to observe and learn about fishing operations, sailing instruments, coastal routes and the marine environment. Meanwhile, itit tourism is defined as activities linked to the fishing sector, with additional hospitality and catering elements such as accommodation in sailors' houses and tasting menus of fish products, as noted by Padín Fabeiro and Aboy García (2010).

Given the diversity of different authors and propositions, marine tourism is defined as complementary, sustainable activities that disseminate maritime culture, as showcased by seafaring professionals, who receive payment in exchange for developing, promoting and shedding light on the activities inherent to the sector.

2.2. Tourism and female empowerment

According to Gessa and Toledano (2011), tourism represents a source of employment and a local development opportunity for the female population, which ultimately leads to their emancipation and empowerment. However, it would be wrong to say that marine tourism is a completely egalitarian field, for the labour conditions are very different between men and women. According to the World Tourism Organization (UNWTO, 2010), tourism facilitates the presence of women in the industry in three main ways: a) it has a major multiplier effect on employment, few impediments to entry and is more inclined to hire women than other industries; b) it offers business opportunities in people's own homes, such as producing crafts and foods, among others; and c) it offers part-time and shift work, which is useful for women who have domestic and care responsibilities. Indeed, Baum (2013) claims that tourism produces all kinds of different opportunities for women in the accommodation sector. Similarly, Rodrigues Soares et al. (2017) suggest that tourism is a perfect means to achieve female empowerment. However, the data reveals the main problems that women still have to face, including the salary gap and little or no female presence in the most responsible and senior positions (Crespi-Vallbona, 2022a; Rodrigues Soares et al., 2017). In the aforesaid UNWTO (2010) report, women were shown to have poorer jobs in terms of pay, conditions and stability. Furthermore, they tend to stereotypically do work related to domestic duties. According to Huete et al. (2016), the most common jobs **in the Spanish tourism industry** for women are as housekeepers, chambermaids, receptionists or travel agents, while men tend to be senior administrators, hotel or travel agency managers and maîtres. Hence, Cánoves and Villarino (2000) claim that the tourism industry is an accurate reflection of the social and economic changes that the sector itself has triggered. However, there is a major gender divide when it comes to jobs, which leads to unequal labour conditions and the lack of visibility of the role of female workers (Nadel-Klein, 2000).

Sánchez-Fernández et al. (2016) maintain that appointing women to responsible positions is a "*socially responsible action*", as women have proven to be more highly trained, to better understand and apply diversity and to be more sensitive by nature to social responsibility issues, thus having a very positive impact on company management.

As for marine tourism, Caamaño-Franco et al. (2020) note that in recent years, women have been acquiring a fundamental role in the fishing industry, and now participate in all activities in the sector, from the extraction of resources to their marketing and sale. These authors have found that women play a key role in this particular workforce, mainly due to their high level

of education, experience and family knowledge of the industry. Furthermore, these individual factors (age, gender, education, work experience and role models) motivate a person's decision to start a business (Ashley-Cotleur et al., 2009; Smith et al., 2016; Yukongdi et al., 2017). Although older people are more capable of exhibiting behaviours and means to become an entrepreneur, younger people have more entrepreneurial intentions (Hatak et al, 2015). In general, women have been reported as having lower entrepreneurial intentions (Zhao et al., 2005). Different scholars confirm that advanced educational background and prior labour experience have a positive impact on one's entrepreneurship intention (Shane, 2000; Quan, 2012). Lastly, role modelling refers to learning by examples rather than direct experience, by informal and unintentional observation. In this sense, the exposure to entrepreneurship experience in the family business constitutes important intergenerational influence on entrepreneurship intentions (Carr & Sequeira, 2007), mainly in agricultural and rural development (Alsos et al., 2011).

2.3. Sustainability and governance

Marine tourism is sustainable, has strong future prospects and is respectful of the environment. It is also a financial diversification strategy to help traditional fishing families who have always lived from this sector (Moreno Muñoz et al., 2016). Thanks to the growing service and tourism sectors, both the tangible and intangible cultural heritage of the fishing industry has been conserved, while local food and fisheries have also become tourism resources (Jiménez de Madariaga & García del Hoyo, 2018). Hence, marine tourism has made a huge contribution to the promotion and valorisation of fishing culture, to the provision of a platform for traditional trades in the sector and, above all, to the preservation of the industry's heritage and identity (Claesson, 2011).

In this sense, Destination Management Organisations (DMO) play a crucial in this appearance, as they are the institutions in charge of planning, managing and/or marketing tourism destinations. Moreover, they are responsible for involving public and private stakeholders, as well as the local community, in tourism businesses (or programmes) and in decision-making processes (Hall, 2011). This community-based approach to the planning and management of local events or projects reinforces their sustainability and support when community participation and involvement are definitely assured (Crespi-Vallbona, 2022b). Then, it is also meaningless without the work done by administrations, tourism companies (either indirectly or directly with marine tourism) or the guilds and GALPs that drive actions to improve the situation of the fishing industry and make this tourism activity sustainable (Pardellas et al., 2011). For Chen (2010), these local entities are created for the purpose of improving the conditions and quality of life of the interested parties, as well as to diversify the local economy of areas dependent on the fishing industry. Furthermore, as Nadel-Klein (2000) propose, marine tourism is nothing without the presence of its female workers, called "*guardianas*", who are in charge of preserving the fishing culture. Ultimately, marine tourism helps to ameliorate the financial conditions of fishing families, and also to preserve the environment and the resources of the sector (Jiménez de Madariaga & García del Hoyo, 2018).

3. Methodology and objectives

The base hypothesis is that, in the fishing sector, and more specifically in marine tourism, there is a notable feeling of female empowerment and leadership, due to the fact that most jobs in this type of tourism are filled by women, such as shellfish harvesting on foot. Marine tourism is also considered a sustainable economic sector with a promising future, despite the crisis in which the fishing sector is immersed. Due to its relevance in the sector, the case

study is Galicia, and consists of in-depth interviews with women who work in this kind of tourism (Table 1). This primary data is analysed qualitatively, using the snowball technique, whereby the interviewees themselves contacted other women in the same field in order to achieve a higher number of responses. According to the Xunta de Galicia, there are more than 30 organizations which provide tourism marine activities, but only one-third of them are run by women (sharing this responsibility with their husbands or partners), mainly shellfish harvesters.

Practically 99% of the women interviewed are shellfish harvesters. 80% of them completed higher education, showing that they are well educated (Caamaño-Franco et al., 2020). However, only 10% studied tourism, because they come from traditional fishing families and are currently working in tourism as a complement to keep the main business going and support their homes. The interviews were held online in May 2022, and their contents were transcribed and analysed according to the core issues of this research.

Quantitative methodology is dominant in the field of tourism and creates some limitations that qualitative research can avoid as it can provide a more comprehensive outlook of the antecedents, determinants that trigger entrepreneurial, and empowerment behaviour among women in the fishing sector.

Table 1: Characteristics of the female interviewees

	Job	**Business group**	**Age**	**Location**
I1	Shellfish harvester	AMARTURMAR	>55	Redondela
I2	Shellfish harvester	GUIMATUR	>50	Cambados
I3	Shellfish harvester/*politiqueira*	AMARTURMAR	>40	Cesantes
I4	Sailor/Shellfish harvester	Private company	>35	Redondela

Source: Authors' research

The secondary data comes from TURGALICIA, the region's main tourism institution, which treats marine tourism as a specific product that it defines as a new one that *unites the authenticity and uniqueness of Galicia's maritime culture with a large amount of rural accommodation where the client can rest after a hard day of fishing or sailing.* Data was also taken from the Spanish Statistical Institute (INE), European Commission, *Instituto Social de la Marina* (Social Marine Institute, ISM) and the *Red Española de Mujeres en el Sector Pesquero* (Spanish Network of Women in the Fishing Sector, REMSP) to contrast the proposed hypotheses.

4. Results and discussion

In coastal areas where fishing is a form of subsistence, women do important work to foster economic diversification through the sale of crafts and local products, as well as other activities related to marine tourism. The first hypothesis proposed herein is that **there is a notable feeling of female empowerment and leadership in marine tourism**, because a good part of the jobs are filled by women, such as shellfish harvesting on foot. According to the report on *The Role of Women in Fisheries*, the female presence in this sector is low (43%), with just 1% of women working in extractive fishing, while 44% work in aquaculture and 75% do processing activities. As for management and administration, 37% of the positions of greater responsibility are filled by women.

According to INE (2023) data, 60% of workers in the Galician tourism industry are female, but in the most senior positions of responsibility, they are practically inexistent. Rodrigues Soares (2017) also finds that men hold the vast majority of managerial positions to the clear

detriment of women, who only have a prominent presence in Galician Tourism Agencies, where they make up 60% of the total, and the Galician Tourist Board, where 30% of senior jobs are served by women. In the private sector, men also dominate top management. Only two of the leading hotel chains in Galicia have female directors, namely Hotusa and Eurostars, with men predominating in all the others. It is also confirmed that women only get 70% of the salary that men earn.

As for the presence of women in the fishing sector and marine tourism, almost 99% of senior positions are held by men, especially in guilds, although almost half of the workers are women, bordering on 100% in the case of shellfish harvesters. According to data from the ISM, more than 16% of the 10,970 affiliates to the *Régimen Especial de la Seguridad Social del Mar* (Special Social Security Regime of the Sea, REM) are women. This percentage rises to 35% if women who work in processing, aquaculture and sales are taken into account. This female presence is analysed in greater detail below by the different sub-sectors and jobs.

Extractive fishing is fishing in the purest sense. In Spain, of the total number of 53,849 people working in this field, just 269 are women. With a mere 5% of the total, they are clearly under-represented in this sub-sector.

"*... the guys from the association are in charge of boat and txoco fishing trips, so we women offer tours and other activities, because none of us are professionals in that field (boat trips)*" (I2).

Shellfish harvesting, the most common job in the fishing sector, involves the collection, breeding or catching of shellfish. There are two main types of shellfishing, by boat and on foot. The former is typically done by men, the latter by women.

"*... there are two very different kinds of fishing. While on foot it was traditionally for women, boat fishing is for men. On foot is inclusive, there are no distinctions and newcomers are welcomed indiscriminately. Boats are different, fewer women go in for that because the bosses make it hard to hire women*" (I1).

Shellfishing on foot is viewed as a complementary economic activity, and not as important as extractive fishing or aquaculture. It is also an easy way for women to bring home some extra cash. Hence most people who harvest shellfish on foot, more than 60% of the total, are women (Europa Azul, 2019).

"*... shellfisherwomen like us clear the seaweed from the beaches where we go so that tourists can enjoy the sea. If we didn't do that, the beaches wouldn't be clean enough to put towels on nor would they look very appealing. Because of green issues, it has to be done very carefully so as not to destroy the environment (...) The number of kilos we catch is negotiated with the government so as not to completely eliminate the resource, even if that means smaller catches and earning less, because otherwise it would disappear. We have to be very careful when collecting the resource because it could disappear from one day to the next*" (I2).

As I2 says, shellfishing requires extreme knowledge of the activity and its environment, especially about the biological characteristics of the shellfish they catch. Care for and survival of resources thus depends on these shellfish harvesters, whose environmental awareness and wisdom is an important factor. And this knowledge has been passed down through generations. This confirms that a large experience in the family and role models play an important influence on the continuity of a traditional fishing activity/business.

Aquaculture consists of the cultivation of aquatic plant and animal species. In this sub-sector, there is more of a gender balance. In 2004, women made up 44% of the total and men 56% (European Commission, 2006). However, despite the notable female presence in aquaculture, specific jobs are still divided by sex, with men doing the more physically demanding work

while women, among other tasks, are responsible for selling the goods.

The main processing industries in the fishing sector are fish salting and hermetic canning. Far more than half of the workers in this sub-sector are women, 20,250 as opposed to 6,750 men (European Commission, 2006). However, they tend to be temporary workers (during fishing seasons), with lower wages than men, and a low level of education because of the limited interest in training people for casual support work.

The fish market has always been the main place for exchanging products, where the previous morning's catches are bought and sold. Traditionally, it has been women who have done the selling, as their husbands, fathers or brothers would go out to fish at night and the women would finish the job by selling what they had caught. This separation of responsibilities is a further cause of the limited female presence in decision-making and in the most senior jobs, because it was highly uncommon for women to be in charge of boats. Fortunately, this situation changed when the crisis hit the sector because the men went out to sea far less frequently, and many of them were forced to change their work or combine it with other jobs, and many women stepped aside so that men could work in the fish market to keep the family tradition alive. Nowadays, the numbers of male and female fishmongers have equalled out.

The netmaking trade has always been focused on women. The main duty is to assemble the nets that sailors then take out to sea. Netmakers start out very young, guided by their families, and especially their mothers, who had been taught the trade the same when they were young. Again, role models play an important influence on the continuity of a traditional fishing activity/business. Hence, it is another trade that is passed down the generations. Many of these women have their own workshops and others work for associations. According to REM estimates, more than half a million women work as netmakers, most of them in Galicia, the Basque Country, Asturias and Cantabria. Their main problem is unqualified labour, which, according to the *Federación de Redeiras Artesáns de Galicia* (Galician Federation of Artisan Netmakers) is in excess of 65%. This has led these women to form different associations to demand greater care, security and respect for their professions since they feel that they are not receiving the consideration they deserve. I2 supports this when she says: "*... we ask you to please put the focus on us. We are here and we contribute like any other job. We want them to listen to us, help us and be able to work to give back to the sea everything that it has given to us.*"

As can be seen, women have always played a major role in the fishing sector, but this presence has only recently begun to be appreciated. And this is due to the marine tourism projects that sea workers have promoted, as is the case of the AMARTURMAR and GUIMATUR marine tourism associations. Fishing tourism is a recent creation and the person who runs the only company in operation is a man, accompanied by his wife. He does the fishing and his wife supports him with such typical jobs as shellfish harvesting, selling seafood and tour guiding.

"*... fishing-tourism as such doesn't exist in Galicia, we do marine tourism, which is different. Fishing tourism is about going out to sea with a fisherman and coming back with the catch. It might be 8 hours, at night, whatever. In Galicia there are very few people and most are men. There are married couples and brothers and sisters who do it, but very, very few. And women, I tell you, there are fewer*" (I2).

Several authors (Alario & Morales, 2016; Gessa & Toledano, 2011) class this female empowerment as "*sustainopreneurship*", as the management of activities and associations is based, as I1 maintains, on the preservation of the nature and cultural heritage of the sea. Indeed, she defines herself as a "*guardian of the sea*". *The few women who run their own*

businesses say they have not had to put up with any criticism for having entered the fishing world, but they do recognise their limited presence in the most responsible positions. As E1 says: "*... most workers are women, especially in shellfishing on foot, but the leaders and the ones who make the big decisions in the different guilds are men, who are a much smaller percentage of the total number of workers... Most of the guild members are women, but we have no say, no visibility, no importance. Men have the power and that's not right when most of us are women. We don't feel represented in the governing bodies, despite being the most numerous sector, we're not part of the decision-making. For me there is no equality or fair balance when it comes to deciding (...) In shellfishing on foot, 99% of us are women and at the moment there are only six men.*"

Marine tourism is proving to be an alternative for the fishing sector. The GALP local action groups have a lot to do with that. Of the 290 companies in the maritime industry, 121 are involved in tourism and are linked, directly or indirectly, with the cultural heritage of the sea and its tangible and intangible elements, where 40% of workers are women. Most of these projects are run by men or by women together with their spouses (Caamaño-Franco et al., 2020; Gessa & Toledano, 2011).

In short, although the female presence in the fishing sector is a relevant one, in some sectors, such as extractive fishing, it is almost invisible. Meanwhile, the proposed hypothesis **regarding the mood of female empowerment is rejected** for although a high number of women work in **marine tourism**, it is **not a place where women feel empowered.** Maybe, as they say themselves, this is because of the age and mentality of the interviewees. Once again the level of formal education establishes a before and after in terms of gender equality.

"*... I think in order for that feeling of empowerment to exist there first has to be a feeling of inferiority or oppression. In my case, I've never had that feeling. I've never felt the need to prove anything... I don't think we feel special for having done this as women*" *(I1).*

"*... women all join the Marine Tourism association with the idea of being big, visible and getting noticed. We don't think that mood has spread across the whole sector, because otherwise we'd all be in the association, and we're not... As for feminist policies, we're a bit tired of everything just being all talk and no action. We need practice. People are attending fewer and fewer of these things because we don't think it's treated seriously enough (...). Most of the workers are older women with a different mentality who know what they have to do and don't want it to change*" *(I2).*

"*... (the feeling of empowerment) is starting to emerge, not in all women, as 60% are over 55 years old and are worried about other things*" *(I3).*

Although no particular female empowerment is noted in marine tourism, improvements are observed for combining work and family, as confirmed by the interviewees, as a form of economic subsistence and household budget collaboration.

"*Of course they can be combined, much more than with any other job. I'm the best example. I never miss my children's birthdays, or shows and workshops at school, or anything that I should experience as a mother (...) sea and shellfishing hours are flexible (...) the most important thing is to be with my son, I choose that. You don't have it so easy and flexible in other jobs*" *(I2).*

"*I'm from a seafaring family (...), but it was being able to reconcile my work life with my family life that introduced me to the sea, because with two babies, and after the company I worked for closed, I needed to spend time with my little ones and to work at the same time*" *(I3).*

The second hypothesis considers that **marine tourism is a financially sustainable sector**

with future potential. E2 maintains that "*... the association's main target is to raise the exposure of our professions because we believe that we are indebted to the sea. I'm eternally grateful to the sea for giving me the opportunity to be there throughout my kids' childhood and lives. I feel indebted and I want to give back to the sea all the good things it has given to me (...) we want to be heard and to be respected like any other profession*".

It is therefore important that local development in fishing areas is governed by GALPs and fishing guilds, which produce integrated, participatory strategies based on the particularities of each area. Both the fishing guilds and GALPs are responsible for promoting marine tourism. According to Felicidades García and Piñeiro Antelo (2017), GALPs adopt a plural, inclusive governance system, taking a bottom-up approach where every opinion counts, and with the particular goal of making women more visible (REMSP, 2017). Galicia has eight GALPs, more than any other region of Spain and operating with the biggest budgets in 2020. In short, marine tourism is sustainable in terms of the 'triple bottom line' of social, environmental and economic development. This is also corroborated by the interviewees, who agree that marine tourism is a sustainable activity. The AMARTURMAR association even has a marine biologist who issues constant reports on the status of resources, the amount of each species that can be caught and their state of health.

"*... without sustainability our seas would have no resources. So, we are the guardians of those resources, basically that's our job. When it comes to exposure of our profession, marine tourism helps our visitors respect the environment and learn things that they didn't know about respecting and helping to take care of the different resources (species) that we catch*" *(I3).*

"*... (sustainability) is our way of life. We show people the importance of recycling, the signs of climate change, which are already evident in the sea, and traditional and artisanal fishing as a sustainable form of exploitation. For us they are ways to ensure hope for the future*" *(I1).*

"*…We make the resource sustainable because we clear away its predators, we take care of the flora and fauna. We care about the resource. Who else apart from us is interested in making the activity sustainable and caring for the environment? (...) That there are no spills, leaks, poaching, etc. We do that and it isn't appreciated, but that's the way it is. Our enclave is in a Natura 2000 network and that's a job and a value that must be made visible. We women have had something to do with achieving that (...) Looking after the resource is part of our job and climate change isn't helping the resource to survive. We monitor, control and track the resource and we have a biologist in the guild who does analyses for us and gives us support. We keep a close eye on everything*" *(I3).*

As the interviewees comment, two of the main problems in the fishing sector are unqualified labour and climate change, which put the future of their profession in danger and therefore their way of life and family livelihood. So, they are not too optimistic about the future of the industry. All four of them agree that unless something gets done soon and, above all, if they do not get decent labour conditions, their professions will end up disappearing. As E2 says, "*nobody wants a job that doesn't give them a decent wage to take home... (The future) depends on now. It looks very dim to me. Unless we do something, we're doomed to disappear. We are at a point of no return. We need to get our act together now. We want to take the situation to Parliament, to the Ministry, to Europe. We want exposure, because if a solution can be found, the sea is a sector that could still provide a life and work for a lot of people. If it's worked until now, why can't it continue?*"

"*It does have a future if you really love the work you do. The only thing is that it can't be your main activity, at least in our case, it's another complement to our activity, because we don't get a decent salary that's attractive to anyone*" *(I3).*

"*I think it has a future, if it gets visibility and if the public administrations help us, because the sea is beautiful and people don't know about it. I hope the fishing sector in general doesn't disappear... It's something that worries me a lot and that's why we're calling for help and, most of all, for us to be given the respect that we deserve. It's time*" *(I4).*

As a sign of hope, the Ministry of Agriculture, Fisheries and Food has prepared a Draft Law on Sustainable Fishing and Fisheries Research whose objectives are the control of poaching, the digitalisation and use of new technologies, to make the sector more economically, socially and environmentally sustainable through the conservation of fishing resources, employment and social cohesion, as well as focusing on the optimal management of tourism resources, and especially on the environmental impact that the use of such resources can cause. As has been shown, the fishing sector is driven by families with a fishing tradition and so a key factor for the future of the sector is to encourage the next generation, also with the promotion of marine tourism. However, the interviewees are unsure about this. They claim that the fishing sector is an unattractive one because people cannot make a living from it, there are no decent wages and it is not appreciated or recognised, meaning that young people do not want to work in the profession. So, rather than following the family tradition, they look to other professions instead.

"*(Future) There is none because if people are looking for work they don't think the sea offers a decent wage to live off, they don't come here to work. They don't even contemplate it as a possibility (...) And there are increasingly fewer resources and you earn less, the sector is less attractive. At the end of the day, the people working here are the ones who don't fit in anywhere or find it hard to find another kind of work, and that's fine, but we want people who want to work in the sea and who want to earn a bit of cash*" *(I2).*

"*My children had no intention of working in the sea, no chance, because they've seen me come home from work with nothing. It isn't stable. Who'd want to work in something like that? This kind of work and the sector need to be made more dignified and more profitable through proper management, because we contribute to culture and tradition ... There needs to be motivation to work for a salary, and not for peanuts like has happened and is happening*" *(I2).*

"*That's difficult because of the times we're in, it's a build-up of pollution, climate change, administrative decadence… all that affects the health of our estuaries and of course young people's interest in continuing these jobs. It looks very bleak to me*" *(I3).*

"*I think the only people working in the sea these days are the ones that need to, or who love the maritime way of life, because the labour conditions aren't attractive at all and young people don't want to do something that doesn't feel like dignified work. It's something that has to change urgently (...) If the labour conditions improve, I'm sure young people in our area will want to work in the sea instead of having to emigrate to other countries far from their families, because we are very much family people in Galicia*" *(I4).*

Consequently, this research indicates that despite a family business and parental role model having a role to play in enhancing the development of entrepreneurship among family members, children show a low level of entrepreneurial intention and willingness to go on with family background.

As is also maintained by Hernández-Aguado (2013), traditional fishing could be the future for the fishing sector because that system involves treating fish populations as public assets

that should therefore be exploited in a responsible manner to ensure their sustainability and respect for the environment. This is in keeping with the definition of marine tourism as an activity that takes into account the environment and the health of sea resources. The conclusion could thus be reached that **marine tourism** could be the salvation of the fishing sector or, at least, **could help to make this industry more visible and prevent it from disappearing**.

"*I hope it has a good future. But right now I think it's undervalued. It seems like an interesting way to spend your holidays, and at the same complements the income of a primary sector that's suffering in so many ways (...) this kind of tourism could show the population the social and ecological benefits of traditional trades, at the same time offering new work opportunities to new generations of seafarers, hoteliers and workers in the tourism industry in general, leading to new businesses and new ways of getting people closer to the sea and vice versa … Tourism helps to get us known and we are very grateful to the people doing our activities. Thanks to them we're becoming a bit more visible*" *(I1).*

"*Marine tourism is starting to give us a say and might be our salvation because a lot of people prefer tourism over other professions because there can be money to be made and it's a nice line of work, where you learn stuff every day about culture, languages, etc. We just want to be appreciated and heard, and guided tours might be starting to do that for us, but there is still a lot, an awful lot, left to be done*" *(I2).*

"*Well, I hope not. That would mean no more sailors. Then our seas would have no resources, we are the guardians of those resources, that's basically our job (…). But it shouldn't be the solution, or otherwise the focus would be on the economy and not on the preservation of our trade and getting us heard*" *(I3).*

"*As I was saying earlier, I hope it isn't (the salvation of the sector) because if it is, we'll end up like what has happened to sun and sea tourism, completely depending on tourists, and that's not good if something happens like we had with Covid-19. I hope it will be a help, because marine tourism is a very nice, unique activity that everyone should experience, but it can't be our salvation because we are much more than that*" *(I4).*

In short, and as has been shown, female workers in the sector are not very hopeful about the future of their professions and are calling for actions to preserve both the resources and their jobs. However, based on the (scarce) research analysed and the government's move to create a Draft Act on Sustainable Fishing and Fishery Research, there is room for some hope for the future of the sector, or at least for its survival thanks to marine tourism. As we have seen, these tourism activities are giving workers in the sector more of a say and exposure, although there is a lot of work still to be done. As noted by Abrahamsson (2008), women are characterised by bottom-up entrepreneurship, that is to say in governance and cooperation with the agents involved in the sector (institutions, small and medium enterprises, associations, guilds, etc.) that will guarantee the survival of the activity. In this sense, the Xunta de Galicia and its DMO, has a key role in establishing links and collaborations with the fishing community and private businesses, reinforcing marine tourism and sustainable governance, as it happens in other tourism contexts.

5. Conclusions

Marine tourism has no **uniform definition** that differentiates the different concepts that it entails, such as fishing tourism and itinerary tourism. The different Autonomous Communities of Spain that feature this tourism activity have different laws that imply certain things or others, and neither has academia unified the definition. Therefore, considering the analysed laws and research, marine tourism is defined as "*complementary and sustainable activities that*

promote maritime culture, valorised by professionals of the sea, who receive payment in return for developing them, giving value, exposure and a say to the inherent activities of the sector".

Regarding the **hypotheses**, the first on the mood of female empowerment and leadership in the sector **is refuted**, as the interviewed women do not feel that they are doing anything special simply by being women. Although there are female entrepreneurs, only 20% of tourism businesses in Galicia are managed by women, and in many of these, they share the responsibility with their husbands. There is therefore no corroboration that there is a feeling of female empowerment in marine tourism, something which needs to change given that most of the workers are women. Neither do women have many positions of responsibility. Considering that women are as educated or better educated than men and should be a highly attractive asset for companies due to their greater capacity for sensitisation and innovation, businesses are urged to be socially responsible and to put the focus on a female presence in order to thus ensure that women get the same pay, responsibilities and exposure as men. In this sense, this research confirms the lack of presence of women in management positions at fishing companies and associations, despite their constant involvement in family businesses as a contribution to household income. Their usual job position has to do with netmaking and shellfishing. Hence, this research confirms that a large experience in the family and role models play an important influence on the continuity of a traditional fishing activity/business, even on the entrepreneurship intentions as it is considered by other scholars (Alsos et al., 2011; Carr & Sequeira, 2007) but in other economic sectors.

The **second hypothesis is partly confirmed** as **marine tourism is sustainable** because it respects the environment and cares about the health of resources before exploiting them. This is corroborated by the female interviewees, the different local action groups and the guilds. However, marine tourism **does not have a clear future** as the culture and professions of the sea are undervalued and in crisis. There is a need for **cooperation** between public and private administrations to make the professions of the sea more visible and treated more seriously, and also to improve the labour conditions and pay of each profession to make work in the sea as attractive as other jobs and thus attract young, talented people that specialise in the marine sector and will help to make this industry profitable, attractive and sustainable. It is the same situation as that of another primary sector, namely that of agriculture in Catalonia, which also has a highly uncertain future (Crespi-Vallbona & Plana-Farran, 2022; Noguer-Juncà et al., 2021).

Regarding managerial implications, it is worth highlighting that DMO is commonly perceived as key stakeholder in the key tasks of event planning, implementation, promotion and management. In the specific case of marine tourism, policy-makers should implement a visitor data system that will allow gathering of information that will enhance tourism activities and eventually visitors' satisfaction. Moreover, network of different businesses should be established with an aim to offer additional experiences to tourists and battle seasonality. Thus, involving local community in the design of these experiences would be seen as necessity. Lastly, it is suggested a specific education program addressed to young people which combines the art of sustainable fishing with marine tourism opportunities to ensure the continuity of this primary sector.

This research is focused on the Galicia context, which may limit the extent of the conclusions and limits conclusions. Hence, it would be interesting to conduct a comprehensive analysis of marine tourism and female empowerment and entrepreneurship intention in other Spanish regions in order to generalize the findings. The limitation of the study also comes as a result of case study approach, as it has been perceived as descriptive (storytelling) rather than critical (analytical). However, it is possible to overcome these

issues by using theory from the start rather than producing theory based on the study findings. Furthermore, we may have a positive perspective on marine tourism and female empowerment, and this bias could influence the results and the discussions. Recommendations for future research may be initiated in the direction of further acknowledging the role of the women within the fishing community and its contribution to the community economy, and depicting the marine tourists' motivations.

Conflict of interest

The authors declare no conflict of interest.

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Destination competitiveness and sustainability indicators: Implementation of the European Tourism Indicator System (ETIS) in Serbia

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Abstract: Incorporating sustainability into the Destination Management Organization (DMO) policies is important because it is a competitive factor. Additionally, this is due to the requirement for effective planning and the proper management of tourism development. To promote and evaluate the sustainability aspect of tourism destination competitiveness, it is essential to create a system of sustainable tourism indicators and ensure effective stakeholder involvement and communication as a key strategy for the implementation of the indicators. This paper addressed the issues of Serbian tourism stakeholders' awareness and knowledge regarding the importance of the European Tourism Indicator System (ETIS) for the evaluation of sustainability aspect of tourism destination competitiveness. The results indicate that there is a significant knowledge gap regarding the availability of sustainable indicators and collection methods. The authors suggest that significant efforts need to be made to raise awareness of ETIS and its importance for tourism destinations governance, while DMOs need to continuously improve the methods they use to collect key sources of information.

Keywords: European Tourism Indicator System (ETIS), destination competitiveness, sustainable tourism development, stakeholders' involvement
JEL classification: Z32, Z39

Indikatori konkurentnosti i održivosti destinacije: Implementacija Evropskog sistema indikatora turizma u Srbiji

Sažetak: Uključivanje održivosti u politiku destinacijske menadžment organizacije (*Destination Management Organization – DMO*) je važno jer predstavlja konkurentski faktor. Pored toga, podrazumeva i potrebu za efektivnim planiranjem i adekvatnim upravljanjem razvojem turizma. Za promovisanje i evaluaciju aspekta održivosti konkurentnosti turističke destinacije, neophodno je stvoriti sistem indikatora održivog turizma i obezbediti efektivno uključivanje zainteresovanih strana i komunikaciju kao ključnu strategiju za implementaciju indikatora. Ovaj rad se bavi pitanjima svesti i znanja

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zainteresovanih strana u turizmu Srbije o značaju Evropskog sistema indikatora turizma (*European Tourism Indicator System – ETIS*) u proceni aspekta održivosti konkurentnosti turističke destinacije. Rezultati pokazuju da postoji značajan jaz u znanju u pogledu dostupnosti održivih indikatora i metoda prikupljanja. Autori sugerišu da su potrebni značajni napori da se podigne svest o Evropskom sistemu indikatora turizma i njegovom značaju za upravljanje turističkim destinacijama, dok destinacijske menadžment organizacije moraju stalno da unapređuju metode pomoću kojih će prikupljati važne izvore informacija.

Ključne reči: Evropski sistem indikatora turizma, konkurentnost destinacije, održivi razvoj turizma, uključenost zainteresovanih strana
JEL klasifikacija: Z32, Z39

1. Introduction

Nowadays, the tourism competitiveness of certain destinations is inevitably linked with destination sustainability, as tourism development can be seen as fully beneficial only in its sustainable form (Ritchie & Crouch, 2000). If not managed sustainably, tourism can cause a plethora of negative effects on local communities, biodiversity and ecosystems (UNWTO, 2017). The majority of EU Policies for tourism highlight the sustainability issue as one of the key aspects of destination successful development. This is why many destinations have tried to develop and implement various systems of sustainable indicators (Fernandez-Tabales et al., 2017; Ocampo et al., 2018; Tshipala et al., 2019), with even the European Commission (2007) calling for such measures. One of the indicator systems that is most widely accepted and implemented in European destinations is the European Tourism Indicator System (ETIS), developed by the European Commission in 2013. After being tested in over 100 countries, the tool was revised in 2016 and now contains 43 indicators (European Commission, 2016). This indicator system relies on the stakeholder engagement in measuring the implementation of tourism-sustainable indicators in destination development, and such an approach is widely encouraged by academia and practitioners (Pérez et al., 2017). The tool was created to support sustainable destination management through monitoring, managing and improving sustainable development (Tudorache et al., 2017).

However, some problems often occur in monitoring and implementation of the indicators due to a lack of information, an undeveloped monitoring system, or data collection issues (Gasparini & Mariotti, 2021). This is especially the case with less developed countries such as Serbia, as they often lack centralized monitoring systems and analytics for such data collection. Moreover, apart from the lack of available data, a lack of awareness of sustainability issues' importance could prevent successful indicator monitoring. Although monitoring indicators can be very challenging, the need for improved planning and policy related to sustainable destination management is especially important for the tourism competitiveness of such countries. With this in mind, and given the lack of studies of the implementation of ETIS in less developed countries, this study aims to explore the possibilities and awareness of the need to implement such a system in less developed countries such as Serbia. The current study is the first to explore the perceptions of tourism stakeholders in Serbia regarding the importance of ETIS indicators in the evaluation of the sustainability aspect of tourism destination competitiveness. Additionally, the study explores the level of knowledge and information of stakeholders about individual indicators, which could shed some light on the possibilities of ETIS implementation in Serbia and barriers that may occur during that process. Contrary to previous studies on ETIS implementation, this study explores important issues prior to the actual tool implementation, such as the availability of information needed for indicator evaluation and the level of stakeholders' knowledge to evaluate indicators. In this way, less developed countries could identify

possible implementation issues before the actual implementation phase and try to overcome and surpass those challenges prior to the evaluation and monitoring phase. Thus, the paper opens some discussions related to the proving monitoring system of sustainable indicators in developing countries, demonstrating the importance of such a process for destination competitiveness in the example of Serbia.

2. Literature review

In order to establish the guiding principles of sustainable tourism, promote the idea as a whole, and attain competitiveness in the tourism market, it is critical to determine the process of developing indicators that will make sustainable tourism operational (Blancas et al., 2015; European Commission, 2007). Sustainable tourism indicators represent an important instrument in the processes of measuring the impact of sustainable tourism, as well as tourism planning and monitoring processes for the purpose of lowering potential risks in tourist destinations (Matiku et al., 2020). However, for sustainable development to be measured and monitored, the decision-making process itself and development policy must be realistically applicable (Liu, 2003; Tudorache et al., 2017). As certain authors state, indicators can be important in raising awareness of tourism and conveying influence to all stakeholders in order to encourage their involvement in the industry's development and heighten decision-maker's accountability (Moreno Pires et al., 2014). According to UNWTO (2004), the indicators only restructure the destination's existing data in order to better connect it to sustainability issues. They do not add to the amount of information available.

Several approaches have been proposed to establish sustainable tourism indicators. Tanguay et al. (2013) suggested seven selection criteria for developing an indicator system. The system's primary indications must adhere to scientific standards and be pertinent to decision-makers. This means that the fundamental standards of sustainable development should be aligned with the destination's policy objectives and top priorities of the destination. Kristjansdottir et al. (2018) emphasize the importance of creating integrated sustainable tourism indicators aimed at supporting decision-makers and policy in assessing the varied functions of tourism within composite socio-ecological systems.

There is no uniform indicator set that can be used in all situations and circumstances for the construction of sustainable tourism indicators (Ocampo et al., 2018). In recent years, indicators for sustainable tourism have been developed for various applications and geographical areas due to the underlying variations in their unique conditions and requirements (Brătucu et al., 2015; Cannas & Theuma, 2013; Dulyadaweesid & Sirisunhirun, 2018; Huang & Coelho, 2017; Tshipala et al., 2019). The key theme in the literature on sustainable tourism indicators relates to the establishment of indicators to facilitate information gathering (Font et al., 2021; Torres-Delgado & Saarinen, 2014), the context of sustainable tourism policy implementation (Blancas et al., 2011; Fernandez-Tabales et al., 2017; Ocampo et al., 2018; Tshipala et al., 2019), indicators that have the potential as a tool for tourism planning (Brščić et al., 2020; Font et al., 2021; McLoughlin et al., 2018; Núñez-Lara et al., 2015). Further, sustainability indicators have also been developed "through the lens of the local community" (Islam et al., 2021, p. 1658), emphasizing the examination of how sustainability indicators are integrated within the smart paradigm within a smart tourism and smart destination context (Foronda-Robles et al., 2020; Ivars-Baidal et al., 2021). Taking into account sustainable tourism indicators as crucial guidance for community-driven tourism initiatives, all-stakeholder-oriented models were proposed (Chris Choi & Sirakaya, 2006; Matiku et al., 2020).

Numerous sets of indicators have been created in an effort to apply the concept of sustainable tourism in practice. Also, previous research provided several options for scaling down a

sizably large number of indicators to match a particular situation and measure sustainability. Blancas et al. (2018) used the following six criteria to narrow down the indicator set from the UNWTO framework (presented from 1996 to 2004) to 65 indicators: usability in the decision process, frequency of usage, the relevance of the indicators that are more closely related to the evaluated issue, conceptual coverage to assess every component of sustainability that is thought to be important, temporality, and availability of statistical data. Lee and Hsieh (2016) in Taiwan's wetland reduced the indicators to 141 indicators through the Fuzzy Delphi approach and, based on expert evaluation, divided them into two systems: the ecological and the human system. However, Torres-Delgado and López Palomeque (2014) emphasize that the system offers additional and varied information, compared to what is presented by a single indicator, thus combining these two methods for sustainability measurement can be a good option. Similarly, Ocampo et al. (2018) identify 39 sustainable ecotourism indicators (out of 666) for the Philippine ecotourism sites that represent the interests of the various stakeholders and can be used in a developing country with conditions comparable to those in the Philippines. This approach allows greater flexibility because decision-makers have a simpler approach in situations where an increase or decrease of indicators is required. Tshipala et al. (2019) identified the key indicators for fostering sustainable adventure tourism and categorized them into three fundamental groups: Conserving resources; Reducing pollution; Conserving biodiversity, ecosystems and landscapes. Authors state that it is not enough to develop indicators, moreover, it is important to adopt a sustainable strategy in almost all aspects of development in order to enrich cultural legacy, minimize any unfavorable effects on the environment, and maximize socio-economic advantages for communities.

One of the topics the literature addresses concerns whether the indicators should be comprehensive or tailored to the context, i.e. destination features (Moreno Pires et al., 2014). In this regard, several viewpoints equally advocate adopting only those indicators required for monitoring the development of tourism, as well as flexibility in the selection of indicators owing to various conditions at the destination. Rasoolimanesh et al. (2020) suggest that both subjective and objective indicators should be explored with the aim of achieving sustainable development. Therefore, it is equally important to examine indicators measuring of tourism income, employment rates, evaluation tools like energy efficiency, biodiversity conservation, etc., in addition to context-based indicators, such as the stakeholder's perception, attitudes or experiences. Another discussion relates to stakeholders in the assessment of indicators. The literature shows that businesses, government and residents are key actors in studies on sustainable tourism indicators, with tourists being the least involved group of stakeholders (Rasoolimanesh et al., 2020). Certainly, a deeper understanding of the significance of sustainable tourism indicators requires stakeholders' engagement and communication as a key strategy for indicator implementation (Cannas, 2019). Font et al. (2021) highlight that there is significant variation in the number of sustainable tourism indicators integrated into the statistical systems of different destinations. Economic statistics are typically easy to obtain, whereas the most difficult data to gather are environmental and social impact indicators. In addition to sustainable indicators, there are also smart indicators that develop and improve progressively. They contribute to sustainability indicators in many ways, and what stands out, in particular, is an integration of technology and innovation components, which could encourage green innovation processes and point out the importance of socioeconomic and tourism digitalization (Ivars Baidal et al., 2021).

In recent years, an increasing number of researchers and institutions emphasize the need for the development of more comprehensive indicators of sustainable tourism, as well as the need to combine available and create a system of indicators that links tourism with ecological, social, and economic issues in the destination (Pivčević et al., 2020). So far,

organizations such as UNWTO, OECD, European Commission (EC) have contributed to the development of substitute sets of sustainability indicators. Among these indicator frameworks, the European Commission introduced the ETIS in 2013 with the aim of monitoring sustainability, providing valuable tools for policymakers and stakeholders to enhance the management of tourism destinations (European Commission, 2016; Tudorache et al., 2017) and achieve economic benefits (Önder et al., 2017). ETIS points to the importance of evidence-informed planning and highlights the need for indicators that go beyond the capacity and spending of tourists (McLoughlin et al., 2018), therefore its "monitoring results are based on data collection and analysis by the destinations themselves" (European Commission, 2016).

Although many destinations have expanded the knowledge of ETIS, emphasizing the advantage of the methodology and common framework for European destinations (Law et al., 2017), only a small number of destinations have been able to continue producing ETIS-informed indicators (Font et al., 2021). As stated by Golja and Slivar (2014), some barriers were found in the implementation of this system, such as inadequacy of data, short-term approach to the destination, lack of financial resources and difficulties in involving stakeholders. Anyway, it is established that ETIS is recognized as a significant instrument for impacting destination management and governance, and there is a number of research focused on examining the implementation of ETIS (Cannas & Theuma, 2013; Font et al., 2021; Krajnović et al., 2020; Law et al., 2017; Tudorache et al., 2017).

Torres-Delgado and López Palomeque's (2014) study focused on the ETIS implementation in Barcelona to evaluate the level of sustainability of 35 tourism locations. Similar to what Golja and Slivar (2014) note, certain shortcomings were observed during implementation, including a lack of information and challenges when interpreting the results for some indicators, difficulties involving various stakeholders given the need for collaboration and data sharing, and the fact that some of the data was outdated and had not been updated. Cannas and Theuma (2013) focus on the implementation of ETIS in Malta. The authors emphasize that the main aspect of ETIS is the elimination of gaps between different stakeholders, engaging them in the process of planning and developing sustainable tourism, including raising awareness of sustainable principles. Two studies undertaken in Braşov (Romania), where a system of sustainable tourism indicators has been developed, could also be added. Brătucu et al. (2015) identified a total of 27 indicators as a part of the ETIS, divided into four categories: social and cultural impact, economic value, destination management, and environmental impact. Tudorache et al. (2017) emphasize that the selection of ETIS indicators is an adaptable procedure that must be tailored to the features of each destination, taking into consideration the needs of interested parties, the availability of useful information and their periodicity. Additional indicators, also tailored to destination's needs, should be used when some of the available indicators are just insufficient for assessing sustainable development (Tudorache et al., 2017). Moreover, the literature clearly emphasizes the importance of involving all stakeholders in the development and implementation of the indicator system.

3. Methodology

According to previous literature indicators it is important to point out that there is no uniform indicator set that can be used in all situations and circumstances to create of sustainable tourism indicators. This research was conducted according to the ETIS program, which consists of 43 main indicators. The study included a total of 51 tourism stakeholders from various organizations and institutions in the field of tourism in Serbia. The main characteristics of respondents are shown in Table 1.

Table 1: Study sample characteristics

Gender	**%**	**Type of organisation**	**%**
Male	23.5	Tourist Organization	82.4
Female	76.5	Hotel	3.9
Age		Travel Agency	1.9
up to 24	2.0	Nongovernment organization	1.9
25-35	29.0	Development agency	3.9
36 – 45	49.0	Public institution	1.9
over 46	20.0	Regional Development Agency	1.9
Work experience	**%**	Institution for cultural activities, tourism and librarianship	1.9
up to 5 years	25.5		
5 – 10 years	39.2		
10 – 20 years	33.3		
more than 20 years	2.0		

Source: Authors' research

The data were collected through a survey consisting of two main parts. The first part contained the general sociodemographic characteristics of respondents. The second part included 43 ETIS indicators. First, the respondents were asked to rate on a five-point Likert scale (1-not important at all, 5 - very important) how important each indicator is in the context of measuring the tourism destination competitiveness of Serbia. Afterwards, the respondents were asked to estimate how much data is available for the mentioned indicators at the level of Serbia or individual destinations in Serbia, using the following scale: 1 –they are not available, 2 - I do not know, 3 - they are available at the level of individual municipalities, regions, 4 - they are available at the state level.

The online survey was conducted from June to October 2022. The researchers made a database of the main tourism stakeholders in Serbia, containing around 250 contacts from all regions. The collected data were analysed by Statistical Software for Social Sciences (SPSS) version 23.

4. Results

Representatives of the tourism industry assessed the importance of certain ETIS indicators in the context of measuring Serbia's competitiveness as a tourist destination. Out of the total 43 indicators, 22 indicators (51%) were rated with a mean score of more than 4, which means that respondents believe that the proposed indicators are important or even very important when it comes to measuring Serbia's competitiveness as a tourist destination, 20 indicators were rated with a mean of more than 3, while only one indicator (percentage of tourism companies in which a woman holds the position of managing director, 2.92) was rated with a mean of less than 3, and respondents consider it unimportant when it comes to assessing the competitiveness of a destination. The most important indicators, i.e., those with the highest mean values, stand out: percentage of visitors satisfied with their overall experience in the destination, percentage of repeat/return visitors (within 5 years), daily spending per overnight tourist, the average length of stay of tourists (nights) and a number of tourist nights per month.

The results show that respondents with less than 10 years of professional experience in tourism rate the importance of the indicator slightly higher than respondents whose professional experience in tourism is longer than 10 years. The differences in respondents'

answers are not large and only 17 indicators (39.5%) show some statistical significance, mostly at the $p<0.05$.

Regarding the availability of data for the above indicators, the respondents believe that for most of the indicators (83.7%), particularly environmental indicators, either no data is available or that they, as representatives of the tourism industry, do not have information on whether it is available. Only for 7 indicators (16.3%) do respondents believe that data is available at the level of individual municipalities/regions or at the national level.

Table 2: Importance of ETIS in measuring Serbia's competitiveness as a tourist destination and assessment of data availability

	N	Indicators	Importance		Data availability*	
			Mean	Std	Values	%
Destination management	1	Percentage of tourism enterprises/ establishments in the destination using a voluntary verified certification/ labelling for environmental/quality/ sustainability and/or CSR measures	3.96	0.871	1	9.8
					2	64.7
					3	23.5
					4	2.0
	2	Percentage of visitors satisfied with their overall experience in the destination	4.76	0.586	1	9.8
					2	25.5
					3	51.0
					4	13.7
	3	Percentage of repeat/return visitors (within 5 years)	4.63	0.631	1	13.7
					2	43.1
					3	33.3
					4	9.8
Economic value	4	Number of tourist nights per month	4.47	0.731	1	0.0
					2	0.0
					3	37.3
					4	62.7
	5	Number of same-day visitors per month	4.06	0.732	1	7.8
					2	29.4
					3	45.1
					4	17.6
	6	The relative contribution of tourism to the destination's economy (% GDP)	4.45	0.808	1	0.0
					2	13.7
					3	37.3
					4	49.0
	7	Daily spending per overnight tourist	4.61	0.532	1	9.8
					2	39.2
					3	39.2
					4	11.8
	8	Daily spending per same-day visitors	4.43	0.608	1	11.8
					2	52.9
					3	29.4
					4	5.9
	9	The average length of stay of tourists (nights)	4.49	0.703	1	0.0
					2	7.8
					3	33.3

					4	58.8
	10	The occupancy rate in commercial accommodation per month and the average for the year	4.37	0.720	1	2.0
					2	23.5
					3	33.3
					4	41.2
	11	Direct tourism employment as percentage of total employment in the destination	4.31	0.735	1	0.0
					2	31.4
					3	33.3
					4	35.3
	12	Percentage of seasonal jobs in tourism	4.02	0.787	1	2.0
					2	39.2
					3	47.1
					4	11.8
	13	Percentage of locally produced food, drinks, goods and services sourced by the destination's tourism enterprises	4.45	0.673	1	7.8
					2	37.3
					3	49.0
					4	5.9
Social and cultural impact	14	Number of tourists/visitors per 100 residents	3.94	0.759	1	0.0
					2	25.5
					3	33.3
					4	41.2
	15	Percentage of residents satisfied with tourism in the destination (per month/season)	4.33	0.683	1	7.8
					2	39.2
					3	39.2
					4	13.7
	16	Number of beds available in commercial accommodation establishments per 100 residents	4.31	0.648	1	0.0
					2	21.6
					3	47.1
					4	31.4
	17	Number of second homes per 100 homes	3.63	1.183	1	7.8
					2	43.1
					3	37.3
					4	11.8
	18	Crime rate - Percentage of tourists who register a complaint with the police	4.00	1.000	1	7.8
					2	58.8
					3	19.6
					4	13.7
	19	Percentage of men and women employed in the tourism sector	33.22	1.316	1	5.9
					2	43.1
					3	29.4
					4	21.6
	20	Percentage of tourism enterprises where the general manager position is held by a woman	2.92	1.262	1	7.8
					2	41.2
					3	37.3
					4	13.7
	21	Percentage of rooms in commercial accommodation establishments accessible for people with disabilities	4.16	0.809	1	5.9
					2	39.2
					3	39.2

					4	15.7
	22	Percentage of commercial accommodation establishments participating in recognized accessibility information schemes	3.76	0.764	1	7.8
					2	49.0
					3	33.3
					4	9.8
	23	Percentage of public transport accessible to people with disabilities and specific access requirements	4.10	0.831	1	5.9
					2	49.0
					3	35.3
					4	9.8
	24	Percentage of tourist attractions accessible to people with disabilities and/or participating in recognized accessibility information schemes	4.22	0.702	1	5.9
					2	37.3
					3	51.0
					4	5.9
	25	Percentage of residents satisfied with the impacts of tourism on the destination's identity	4.14	0.800	1	9.8
					2	43.1
					3	37.3
					4	9.8
	26	Percentage of the destination's events focused on traditional/local culture and heritage	4.24	0.764	1	2.0
					2	33.3
					3	52.9
					4	11.8
Environmental impact	27	Percentage of tourists and same-day visitors using different modes of transport to arrive at the destination (public/private and type)	3.59	0.876	1	3.9
					2	49.0
					3	37.3
					4	9.8
	28	Percentage of visitors using local/soft mobility/public transport services to get around the destination	3.76	0.839	1	9.8
					2	47.1
					3	37.3
					4	5.9
	29	Average travel (km) by tourists and same-day visitors from home to the destination	3.59	1.043	1	15.7
					2	51.0
					3	19.6
					4	13.7
	30	Average carbon footprint of tourists and same-day visitors travelling from home to the destination	3.47	1.065	1	13.7
					2	62.7
					3	19.6
					4	3.9
	31	Percentage of tourism businesses involved in climate change mitigation schemes—such as: CO_2 offset, low energy systems, etc.—and "adaptation" responses and actions	3.63	0.958	1	11.8
					2	56.9
					3	21.6
					4	9.8
	32	Percentage of tourism accommodation and attraction infrastructure located in "vulnerable zones"	3.67	1.033	1	3.9
					2	64.7
					3	23.5
					4	7.8
	33	Waste production per tourist night compared to general population waste production per person (kg)	3.63	0.916	1	13.7
					2	58.8
					3	21.6

					4	5.9
	34	Percentage of tourism businesses separating different types of waste	4.00	0.748	1	9.8
					2	56.9
					3	27.5
					4	5.9
	35	Percentage of total waste recycled per tourist compared to total waste recycled per resident per year	3.51	0.967	1	11.8
					2	60.8
					3	25.5
					4	2.0
	36	Percentage of sewage from the destination treated to at least secondary level prior to discharge	3.63	0.958	1	9.8
					2	64.7
					3	19.6
					4	5.9
	37	Water consumption per tourist night compared to general population water consumption per resident night	3.57	0.878	1	11.8
					2	56.9
					3	23.5
					4	7.8
	38	Percentage of tourism enterprises taking actions to reduce water consumption	3.63	0.848	1	5.9
					2	56.9
					3	29.4
					4	7.8
	39	Percentage of tourism enterprises using recycled water	3.45	0.923	1	13.7
					2	52.9
					3	27.5
					4	5.9
	40	Energy consumption per tourist night compared to general population energy consumption per person night	3.47	1.027	1	13.7
					2	52.9
					3	23.5
					4	9.8
	41	Percentage of tourism enterprises that take actions to reduce energy consumption	3.61	1.002	1	13.7
					2	52.9
					3	21.6
					4	11.8
	42	Percentage of annual amount of energy consumed from renewable sources (Mwh) compared to overall energy consumption at destination level per year	3.55	0.986	1	9.8
					2	52.9
					3	25.5
					4	11.8
	43	Percentage of local enterprises in the tourism sector actively supporting protection, conservation, and management of local biodiversity and landscapes	4.06	0.904	1	5.9
					2	41.2
					3	41.2
					4	11.8

Note: 1 – not available, 2 – not known, 3 – available at the level of individual municipalities and regions, 4 – available at the national level
Source: Authors' research

5. Discussion and conclusions

Most tourism destinations, especially developing countries such as Serbia, have not yet reached the transformational stage, which involves implementing organizational changes in working methods as a result of collecting sustainability indicators. One of the most challenging tasks a destination management organization must complete is using indicators to pinpoint the need for change. Finding key areas where real action is required is frequently difficult and laborious. Therefore, this paper addressed the issues of tourism stakeholders' awareness and knowledge of the importance of individual ETIS indicators in evaluating the sustainability aspect of tourism destination competitiveness. The research findings indicate that the monitoring system for ETIS indicators in Serbia could be quite complex. According to the respondents' feedback in Table 2, a significant portion of stakeholders perceive obtaining data for most indicators as challenging. Consequently, the implementation of ethos indicators could face numerous initial hurdles. This primarily pertains to the collection and dissemination of data at both the local and national levels, including statistical information related to several quantitative indicators, which stakeholders have identified as crucial. These indicators hold significant importance and offer valuable insights for individuals tasked with managing tourist destinations (including the percentage of visitors who express satisfaction with their overall destination experience, percentage of repeat/return visitors (within 5 years), daily spending per overnight tourist, etc). Nonetheless, the results suggest there is potential for enhancement since respondents have a certain level of awareness regarding the significance of sustainable indicators in assessing competitiveness. They are capable of offering valuable recommendations for gathering data that has not been adequately monitored thus far.

The examination of stakeholders' perceptions regarding ETIS use in monitoring and measuring destinations' sustainability sheds light on a number of important issues. First of all, to track tourism in their region, policy makers typically rely on a small set of information, such as number of visitor arrivals, repeated visits, tourism employment and visitor satisfaction scores (European Commission, 2013), or they have relied on traditional metrics like GDP. According to the stakeholders' opinion, this study revealed that the most important indicators are those related to tourist arrivals data and their satisfaction. However, the whole picture of tourism's effects is not provided by these numbers. Destinations can better understand the situation by gathering data on a variety of topics related to how tourism affects the local economy, community, and environment. These indicators were singled out because the respondents believe their measurement is feasible under the given conditions. When it comes to surveys examining the satisfaction of tourists, they were most often conducted for the purposes of preparation of strategic documents - by the Statistical Office of the Republic of Serbia, but the survey is not conducted periodically (RZS, 2021). In order to monitor the above-mentioned indicator, it is necessary to conduct research in municipalities and tourism destinations in Serbia according to the proposal of the European Commission (2013). According to Serbian stakeholders, the indicator that shows the percentage of repeated visits is of great importance, but the availability of data is still insufficient. It is crucial to keep monitoring the percentage of repeat visitors. For example, the data from the RZS (2021) show that among the foreign tourists who visited Serbia in 2021, 64% had already visited the country before, while 36% visited Serbia for the first time. Notably, variations in tourist loyalty toward Serbia were anticipated based on the tourists' countries of permanent residence. Visitors from neighboring countries exhibited greater familiarity with Serbia's offerings (only 10% of them were in Serbia for the first time), whereas among tourists from Asia, 79% of all tourists were in Serbia for the first time. The ratio of repeat visitors/returning visitors (Table 2) is very important because returning visitors often provide greater economic benefits.

Besides this, previous studies have revealed some barriers to applying ETIS, such as the difficulty for stakeholders to contribute data, the lack of reliable data, insufficient knowledge required for new field research, and the unavailability of certain indicators. According to stakeholders in Serbia, for most indicators, either data are not available or they think that there is no information on whether they are available. Besides that, another problem regarding the availability of the indicators data relates to environmental data. Although there have been previous studies that address sustainable tourism development and environmental management, particularly in protected areas in Serbia (e.g., Obradović and Stojanović, 2022; Stojanović et al., 2014, Stojanović et al., 2021), the country is at the very back in these areas in comparison to other countries in the region (WEF, 2022 in Cimbaljević et al., 2023). The European Commission (2013) notes that it is initially difficult to obtain data for all indicators and suggests collecting data for those indicators for which data can be obtained and then considering, with the involvement of relevant stakeholders in the group, what data could be collected in the future. Namely, Serbia has not yet developed an appropriate system for monitoring tourists in terms of their impact on water consumption, electricity, air pollution or waste generation. Also, there are no available data on how much tourism businesses invest in the protection of the environment and natural resources. First and foremost, there is a need to raise awareness of the importance of environmental indicators for sustainable tourism development in Serbia and for improving its competitive position in the international tourism market. On the other hand, social indicators are singled out that stakeholders believe are less important and for which data do not exist or are more difficult to access. In this category, it is more difficult to obtain statistical data at the local level, and quite often the methodologies differ.

Additionally, when a destination determines to use ETIS to measure its sustainability, it is crucial to involve as many local stakeholders as possible and compile all relevant data in one location to create a comprehensive picture of the destination and tourism development. This can be an effective way to raise awareness of tourism stakeholders about the value of the destination and its engagement in sustainable tourism management, as well as to promote the future initiatives brought by the outcomes of the indicators' measurement. Also, it could be effective strategy to develop a common understanding of sustainable tourism.

Something that the management of the destination should pay attention to when improving the monitoring system of sustainable indicators in developing countries is the time frame for data collection, particularly when it comes to economic and social data, in order to avoid system efficiency reductions. It implies that it is crucial to improve data collection methods and procedures first. The suggested course of action for Serbia is to initially gather data for indicators that are currently obtainable, and subsequently, once a more robust collaboration is established consider the potential collection of data for other indicators. Stakeholders should increase their awareness of the significance of generating additional data for decision-making. Incorporating the list of supplementary indicators that can be adjusted for a specific type of destination could be crucial in measuring and monitoring destination sustainability. It could include some sustainability indicators that are considered under the smart paradigm within a smart tourism and smart destination context. It should certainly be borne in mind that some sustainability measurement indicators are more challenging to include due to their technological nature, but the one that should not control the results can be used. As stated by Ivars-Baidal et al. (2021), to aid in decision-making, these indicators must be highly analytical, reflect systemic relationships, and be interoperable. However, consensus should be reached in defining supplementary indicators. It means it is crucial to establish an objective for measuring sustainability, so that all stakeholders comprehend and agree, regardless of the motives they have. The reliable and verified indicators can help destination managers make the necessary decisions to avoid resource waste and improper use. Verified

indicators as ETIS, can assist developing countries such as Serbia, in becoming competitive and sustainable in tourism development.

In summary, to a certain extent, different stakeholders in Serbia have acquired knowledge about the importance of sustainability indicators, but there is still a significant knowledge gap in terms of data availability and collection methods. Significant efforts are required to raise awareness of ETIS or sustainable tourism indicators in general and its role in tourist destination governance and DMOs must continually improve the methods by which they will gather important sources of information. In addition, it is important to learn to cooperate with other stakeholders, to come to an understanding of what data is reliable, how to interpret it, and what are implications for future activities.

This research served as the foundation for the future involvement of stakeholders in the assessment and tracking of the sustainable tourism development indicator system, aligning with the guidance outlined in ETIS standards. Indicators of sustainability can help stakeholders make wiser decisions and take more effective action in monitoring sustainable development, and then achieving the competitiveness of the tourism destination. As stated in previous research (Moreno Pires et al., 2014; Pérez et al., 2017; Rasoolimanesh et al., 2020) and it can also be observed in the case of Serbia, the active participation of stakeholders represents a very important basis in the assessment of sustainability and the environment management processes, and further in achieving and maintaining a competitive position in the international tourism market.

6. Implications for further research

One of the main limitations of the study concerns the uneven distribution of respondents' backgrounds, with a majority being employed in tourism organizations. A certain number of respondents stated that they are not competent to assess the importance of certain indicators, which clearly implies the importance of the data availability, data sharing, and a deeper understanding of collection methods.

In terms of further research, it is suitable to propose a model of additional indicators that can be put into use in Serbia. This means that in order to measure sustainability and competitiveness, it is useful to propose additional subjective and objective indicators so that there is no excessive variation from one destination to another. In this way, different stakeholders in their destinations can have a deeper understanding of the importance of each indicator within the ETIS and the possibility to adapt a complementary and more comprehensive set of indicators in accordance with the characteristics of the destination. This could also mean including additional indicators specific to a particular destination, e.g., mountainous regions, spas, villages, etc., due to the underlying variations in their unique conditions. Also, in order to implement this goal, conducting a case study would be important in order to avoid stakeholders' perceptions of ETIS as merely a statistical tool, and also to avoid a lack of indicators understanding.

Furthermore, it would be useful to conduct similar research in other developing countries and examine whether there are differences in the perception of the importance of ETIS indicators for measuring sustainability. Later, time comparisons could be made regarding stakeholders' involvement in measuring the implementation of tourism sustainability indicators. It is a prerequisite for implementing good practices in monitoring sustainable policies and destination competitiveness.

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Conflict of interest

The authors declare no conflict of interest.

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A statistical assessment of tourism development disparities at the district level: The case of Serbia

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Abstract: Tourism is a sector of immense importance and its advancement plays a crucial role in improving national and promoting balanced regional socio-economic development. This study presents a complex multivariate methodological approach for categorization of 25 districts in Serbia into internally-more similar and externally-more dissimilar clusters by implementing hierarchical agglomerative clustering procedure and analysis of present interdependencies between selected indicators of tourism demand. The statistical validity and quality of the extracted optimal clustering structure are evaluated and confirmed based on the adequate optimality criteria and corresponding results of the non-hierarchical clustering procedure. The proposed categorization of districts clearly and unambiguously confirms the presence of significant tourism development asymmetries between NUTS 3 territories in Serbia, and the existence of intra-regional tourism activity polarization with the developed east and south-west (including the city of Belgrade) on the one end of the spectrum and the less developed north and central areas of Serbia.

Keywords: cluster analysis, tourism development, regional disparities, Serbia
JEL classification: C38, L83, R11

Statistička ocena turističkih razvojnih dispariteta na nivou okruga: Studija slučaja Srbija

Sažetak: S obzirom na značajnu ulogu sektora turizma i njegovog razvoja u promovisanju nacionalnog i podsticanju ravnomernog regionalnog socio-ekonomskog razvoja, u ovom radu, kompleksan multivarijacioni metodološki pristup za klasifikaciju 25 okruga u Srbiji u interno-homogene / eksterno-heterogene klastere, zasnovan primarno na hijerarhijskoj proceduri grupisanja i ispitivanju prisutnih međuzavisnosti između odabranih indikatora turističke aktivnosti / tražnje je primenjen i prezentovan. Statistička validnost i kvalitet izdvojene optimalne klasifikacione strukture dodatno su evaluirani i potvrđeni na osnovu vrednosti adekvatnih kriterijuma optimalnosti i rezultata nehijerarhijske procedure grupisanja. Predložena kategorizacija okruga jasno i nedvosmisleno potvrđuje prisustvo izraženih nejednakosti u razvijenosti sektora turizma između NUTS 3 teritorijalnih jedinica u Srbiji i postojanje unutar-regionalne polarizacije turističke aktivnosti / tražnje, primarno u pravcu: razvijeni istočni / jugozapadni deo, sa gradom Beogradom – manje razvijeni severni / centralni deo Srbije.

Ključne reči: klaster analiza, razvijenost sektora turizma, regionalni dispariteti, Srbija
JEL klasifikacija: C38, L83, R11

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1. Introduction

In a global context, tourism, as "an area of the economy, which includes and connects various industries, branches and activities aimed at providing services that enable tourists to meet their needs" (Petrović et al., 2020, p. 167), represents "the largest service industry in the world" (Roman et al., 2020, p. 1) and "one of the fastest growing and most profitable, constantly developing, sector of the economy" (Morozova et al., 2016, p. 2). According to the World Travel and Tourism Council (WTTC, 2022), prior to the pandemic, the travel and tourism sector accounted for 10.3% of global gross domestic product (GDP), i.e. USD 9.2 trillion, with a growth rate of 3.5%, and 333 million jobs, or 10.4% of total employment in the world in 2019. With such global economic statistics, it is not surprising that the following metaphors are often used by scholars when describing this sector of economy: "an accelerator of the socio-economic development" (Gabdrakhmanov et al., 2016, p. 5291), "the largest generator of wealth and employment in the world, the economic engine for developed and developing economies around the world" (Rita, 2000, p. 434), "a driving force for economic development" (Petrović et al., 2020, p. 169), etc. However, the effects of the COVID-19 crisis and significant restrictions on tourism mobility emphasized "the tremendous importance and positive contribution of tourism industry, causing the decline of its global contribution to GDP by 50.4% in 2020, and decrease of employment by 18.6% across this sector globally" (WTTC, 2022, p. 2). Confirming its resilience and ability to bounce back, the tourism sector began its recovery in 2021, although slower than expected, but with a positive future outlook, increasing its share in global GDP from 5.3% in 2020 to 6.1% in 2021, and "gaining 18.2 million jobs, representing an increase of 6.7%, compared to previous, 2020" (WTTC, 2022, p. 2).

Viewed from the perspective of national economies, tourism unequivocally represents a significant economic activity, a specific, well-paid export product (Gajić et al., 2014), which "contributes, to a higher or lower degree, to the country's overall economic development" (Roman et al., 2022, p. 1). According to the modern concept key postulates called tourism-driven development, the tourism sector plays an important role in solving economic and social problems in a country. Actually, by providing new employment opportunities, additional tax revenues and foreign exchange reserves for the governments, tourism development directly contributes to the GDP increase and residents welfare in a host country. Additionally, its indirect contribution to the national economy development is reflected in stimulating many tourism-related economic activities, such as agriculture, gastronomy, transport, trade, construction, etc. (Gabdrakhmanov et al., 2016; Petrović et al., 2020; Roman et al., 2022). Owing to these positive multiplier effects, the tourism industry is one of the essential tools for the "revival of many economic and non-economic activities, the development of underdeveloped areas" (Gajić et al., 2014, p. 113), and thus achieving sustainable economic growth in most countries (Petrović et al., 2020).

Finally, when it comes to the position of a regional economy within the country, the tourism sector and its development must be considered from a slightly different, more specific angle. Namely, the regional potential for development of tourism, the dominant type of tourism, and intensity of tourist traffic largely depend on nature-given factors (i.e. geographical location and climatic features of the regions, spatial distribution of natural resources and attractions, etc.) as well as human-created conditions (i.e. accessibility, development of road infrastructure and sports–recreational facilities, development of supporting services sector, etc.) (Bećirović et al., 2011; Gorina et al., 2020). Inequality in the regional distribution of these factors inevitably leads to tourism development disparities among regions. Given the important role of "tourism as a catalyst in national and sustainable regional socio-economic development" (Gall, 2019, p. 452), it is not surprising that tourism sector is increasingly being regarded as "a savior of the countryside, with many governments recognizing its potentials in fostering regional economic

development" (Jackson & Murphy, 2006, p. 1018). Accordingly, the quantitative assessment of the development level of tourism in individual regions represents the first analytical step, which is necessary in order to create suitable conditions for balanced regional economic development through the reduction of the existing disparities. It provides useful and reliable informational input for formulating programs and strategies to foster regional tourism development and thus achieve balanced regional and overall economic development.

Consequently, this study presents the analysis of tourism development in Serbia at regional level (i.e. at the level of districts, or territorial units of NUTS 3 level), and regards it as a specific (multi-dimensional) tourism-economic phenomenon. The following research objectives were formulated: (1) presentation and popularization of implementation possibilities of cluster analysis methods in the field of regional tourism development; (2) creation of a statistically based and evaluated categorization of selected NUTS 3 territories into internally-more similar and externally-more dissimilar clusters, according to the representative indicators of tourism demand; and (3) analysis of profiles of identified groups of districts in Serbia, in terms of tourism development achieved in 2019. The practical contributions of the conducted research are reflected in providing: (1) a clear and thorough demonstration of statistically valid application of cluster analysis in the domain of regional tourism development research; (2) an informative snapshot of the situation, regarding the recorded level of tourism activity and development of districts in Serbia in 2019. The proposed classification can serve as a useful tool for identifying the extent of regional tourism development disparities among the observed territorial units, as well as a suitable basis for decision makers and experts in the field of planning and implementation of appropriate regional (and national) tourism (and overall economic) development activities and strategies aimed at mitigating the identified disparities. Finally, this paper adds to the existing literature by filling a specific research gap, elaborated in Section 2.

2. Research background

Since tourism plays a significant part in national economies, it is hardly surprising that numerous scholars conduct research related to tourism development achieved by territorial units at different NUTS level. More precisely, previous analyses use different methodologies in order to empirically examine and / or verify the possible economic benefit and impact of tourism sector, that is, its growth and employment potential, competitiveness, present disparities, and particular regions or countries development levels. The scope of official tourism development indicators (for details: Eurostat, 2014) and multidimensional nature of related activities make the multivariate statistical methods a suitable tool to analyze the aspects discussed above (for details: Dwyer et al., 2012). One of the most applicable multivariate statistical methods in previously conducted studies was the cluster analysis that was used for identifying the extent of regional tourism development disparities between territorial units at different NUTS levels. The Table 1 presents selected relevant research papers with similar research objectives, which applied various clustering methods on territorial units at different NUTS levels, using a diverse set of tourism sector development indicators.

In spite of the obvious similarities among the studies above, their results cannot be seen as comparable with ours due to the differences in terms of the used tourism variables, spatial-temporal scope of analysis, and certain methodological specificities, which directly influence the objectivity and reliability of the conclusions. In this regard, although there are clearly numerous scientific papers dealing with the research topic related to tourism development and territorial classification using cluster analysis (CA), it is important to point out that, according to the authors' knowledge, there is no research on regional tourism development disparities between NUTS 3 territories in Serbia.

Table 1: Selected studies on territorial classification according to different regional tourism development levels

Author(s) / (publication year)	Temporal coverage	Spatial units [NUTS / LAU level]	Spatial coverage [Country(ies) Area]	Methodology approach
Duarte–D. et al. (2021)	2018	87 Municipalities	Santander Dep. (Colombia)	HCA
Chalupa et al. (2013)	2010	77 Districts (LAU-1)	Czech Republic	HCA
Li et al. (2021)	2018	16 Cities in Anhui	Anhui Province (PRC)	HCA & FA
Batista et al. (2021)	2018	1165 NUTS 3 regions	EU-27 Countries	HCA & GIS
Morozova et al. (2016)	2014	65 NUTS 3 regions	Russian Federation	HCA & FA
Gall (2019)	2018	21 Regions of tourism	Slovakia	HCA
Qiao (2018)	2016	12 Provinces (Cities)	PR of China (West)	HCA
Lascu et al. (2018)	2016	17 NUTS 2 regions	Spain	two-step CA
Kolvekova et al. (2019)	2014	54 NUTS 2 regions	10 CEE Countries	HCA
Gorina et al. (2020)	2018	25 NUTS 2 regions	Ukraine	HCA
Vysochan et al. (2021)	2019	25 NUTS 2 regions	Ukraine	Non-HCA

Notes: HCA (Hierarchical cluster analysis), FA (Factor Analysis), Non–HCA (Non–Hierarchical cluster analysis), GIS (Geographical Information Systems)
Source: Authors' tabular representation

In addition, through a detailed analysis of methodological approaches used in the aforementioned 11 studies, the following methodological specificities were identified: (a) Except in the case of the research conducted by Gall (2019), in 8 out of 9 studies in which the hierarchical clustering procedure was applied, Ward's method was used by default, solely based on the subjective assessment of the author(s), without clear statistical justifications. (b) The use of statistical criteria in determining the final number of groups was recorded in approximately 55% of analyzed studies. (c) The quality examination of the obtained final clustering solution, based on the application of various statistical criteria, was conducted only by Morozova et al. (2016) and Vysochan et al. (2021). Also, the use of Non-HCA for the purpose of checking the quality of the derived HCA classification was not recorded in any of the mentioned works. Consequently, compared to the studies in Table 1, the research presented in this paper provides a detailed presentation of a statistically valid implementation of CA in the field of tourism, with the previously observed methodological specificities eliminated, thus providing a triple contribution from a methodological perspective.

3. Materials and methods

In this section, we present detailed descriptions of used numerical indicators, sources of data, temporal-spatial scope of the conducted research, and the applied statistical methodology.

3.1. Variables, data sources and spatial-temporal coverage of research

Secondary data used for calculating the values of the three representative indicators of the achieved level of tourism activity and development were collected and analyzed for each of the 24 official districts and the Belgrade area (i.e. NUTS 3 territorial units) in the Republic of Serbia (RS). Table 2 contains the list of formed tourism variables, supplemented by a detailed procedure used for determination of their values. Data were obtained from the thematic publication of the Statistical Office of the Republic of Serbia (acronym, SORS), *Municipalities and Regions of the RS* (SORS, 2020). Districts belonging to the Autonomous Province of Kosovo and Metohija are not included in the research because the SORS has not provided any information about these territories since 1999. Although the latest available data refer to 2021 (the second year of the COVID-19 pandemic), when tourist activity worldwide was drastically reduced as a result of measures for mitigating and preventing the spread of the pandemic, for this study, we collected and used the data from 2019, since it was the last pre-pandemic year.

Table 2: List of used indicators of tourism activity at district level

Symbols	Tourism activity variables
X_1	Number of domestic tourist arrivals (DTAs) per 1,000 inhabitants
X_2	Number of foreign tourist arrivals (FTAs) per 1,000 inhabitants
X_3	Number of nights spent by tourists (domestic & foreign) per capita

Notes regarding the way of determining the values of selected tourism activity indicators:

- The values of X_1 are calculated as ratio of total number of domestic tourist arrivals in 2019 and corresponding total number of inhabitants for particular district, multiplied by 1,000;
- The values of X_2 are calculated as ratio of total number of foreign tourist arrivals in 2019 and corresponding total number of inhabitants for particular district, multiplied by 1,000;
- The values of X_3 are calculated as ratio of total number of nights spent by domestic & foreign tourists in 2019 and corresponding total number of inhabitants for particular district.

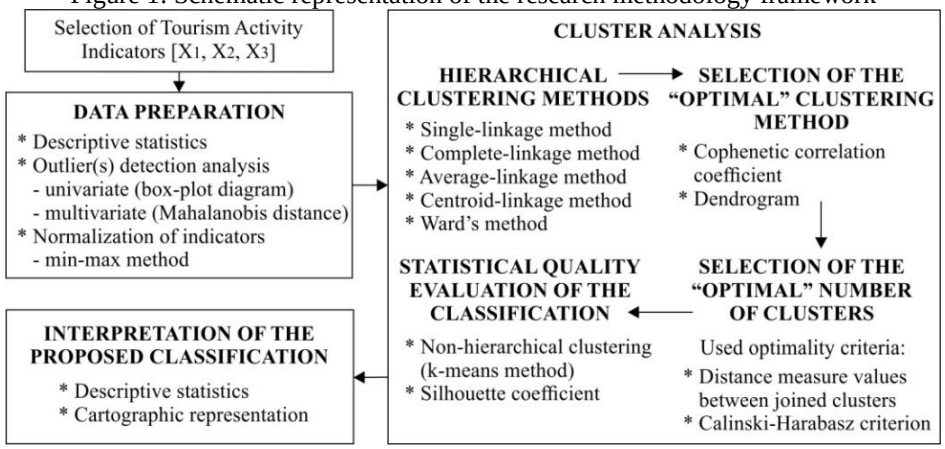
Source: Authors' tabular representation

The selected core variables (i.e. the number of DTAs, FTAs and total nights spent) are the most commonly used indicators by the World Travel & Tourism Council (WTTC) for measuring the volume of tourism expansion and level of tourism activity. In addition, as can be seen in Table 2, instead of total absolute values, their values are expressed per 1,000 inhabitants, or per capita for individual districts. These calculations were performed, according to the suggestions made by Kolvekova et al. (2019), Li et al. (2021) and Morozova et al. (2016), with the aim of neutralizing or mitigating the effects of population size of individual districts on the selected tourism indicators' values and, consequently, the clustering results. This approach enables the creation of a comparable database, suitable for providing the best insight into the actual tourism attractiveness of the analyzed NUTS 3 territories.

3.2. Research methodology framework

Figure 1 presents the methodological framework primarily based on the implementation of cluster analysis (acronym, CA), one of the most commonly used non-parametric multivariate statistical methods. As a specific, unsupervised learning classification method, CA enables the simultaneous examination of interdependencies between selected tourism activity indicators at NUTS 3 level RS territories in 2019 and, consequently, the discovery of natural, not so obvious, classification structure within the described set of multivariate observations.

Figure 1: Schematic representation of the research methodology framework



Source: Authors' representation

The CA application is supported by appropriate methods of one-dimensional statistical analysis, mainly exploited in the domain of initial data preparation and interpretation of CA results. As can be seen from the given framework, after conducting one-dimensional and multivariate outlier analysis, the normalization of values of selected tourism indicators is performed using the *min–max* method, considering the different measurement units in which they are expressed. Also, by extending the initial range of normalized values (i.e. from 0 to 1) to a new scale ranging from 1 to 10, a more precise comparative basis is provided. This conversion is done using the following expression (Stamenković & Savić, 2017, p. 110):

$$x'_{ij} = 9 \times \frac{x_{ij} - x_j^{\min}}{x_j^{\max} - x_j^{\min}} + 1. \quad (1)$$

Within this expression, the symbols denote the following: x_{ij}' represents normalized and x_{ij} original value of j^{th} tourism indicator for i^{th} district (for i = 1, 2,..., 25, and j = 1, 2, 3), while x_j^{max} and x_j^{min} are the largest and smallest original values of j^{th} tourism variable.

In order to obtain a classification solution of the highest statistical quality, the selection of the most suitable hierarchical CA method was made based on the comparison of cophenetic coefficient values, determined for different HCA procedures. Contrary to the default application of Ward's method, the cophenetic-based approach is considered more objective, thus ensuring the necessary scientific basis and confirmation of the CA results. It is application of this approach that presents the first methodological advantage of the present research in comparison to the studies in Table 1. In addition, the selection of the optimal HCA classification, in terms of the final (a priori unknown) number of mutually exclusive, internally-more similar and externally-more dissimilar groups of districts, was performed using two optimality criteria. Their use represents another methodological advantage of this research, since it ensures objectivity in the selection of the final clustering solution, compared to the (highly subjective) approach where the most interpretable classification is chosen on the basis of the researcher's opinion. A comprehensive statistical quality evaluation of the proposed classification of NUTS 3 territories in RS was conducted using the silhouette coefficient values and Non-HCA procedure, based on the application of the *k*-means clustering method. This step in the research framework represents the third methodological advantage of this empirical analysis. For the realization of presented steps of statistical analysis, the software package *IBM SPSS Statistics*, version 20, and *Microsoft Office Excel* were used.

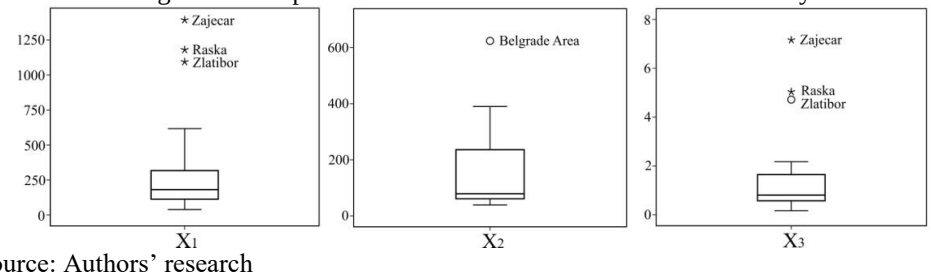
4. Results and discussion

This section presents preprocessing of input multivariate observations and CA classification of 25 districts in RS into internally similar clusters according to the recorded level of tourism activity in 2019. Also, this section focuses on corresponding interpretation of the proposed classification, the comparison of clusters' profiles, and the discussion of results.

4.1. Classification of districts in Serbia by tourism activity indicators

Before the application of CA, during the data preparation phase, the outlier detection analysis was performed in a set of univariate and multivariate observations, based on the adequate graphical representations (i.e. box plots) and Mahalanobis distance values (determined for individual observation units), respectively.

Figure 2: Box-plots for individual indicators of tourism activity



Source: Authors' research

Box-plot diagrams in Figure 2, constructed for each of the three tourism indicators, clearly reveal the presence of several atypical observations (i.e. stars) within the values of variables X_1 and X_3, while X_2 contains only one value identified as a suspected outlier (i.e. circle). Substantial differences between average and median values, as well as those between the highest and lowest values of analyzed indicators (Table 3), unequivocally confirm previously made statements.

Table 3: Descriptive statistical measures for selected tourism demand indicators

Tourism activity indicators		**Average**	**Median**	**Minimum**	**Maximum**
Domestic tourist arrivals per 1000 inhabitants	X_1	322.00	181.00	39 [Podunavlje]	1393 [Zaječar]
Foreign tourist arrivals per 1000 inhabitants	X_2	154.88	79.00	39 [Kolubara]	624 [Belgrade area]
Total nights spent by tourists per capita	X_3	1.50	0.81	0.17 [Podunavlje]	7.16 [Zaječar]

Source: Authors' research

In addition, observation units corresponding to the Belgrade area and Zaječar district were marked as multivariate outliers, since their values of Mahalanobis distance measure (i.e., $MD_{BELGRADE} = 17.973$ and $MD_{ZAJEČAR} = 13.931$) are significantly above the 97.5 percentile of chi-square distribution, defined as critical threshold (i.e., $\chi^2_{(3;\ 0.975)} = 9.348$). Regardless of the sensitivity of CA to the presence of outliers, they were not excluded from further analysis, due to the relatively small size of the data set and the fact that these observations contain information valuable for comparison and creation of a comprehensive classification map of the achieved level of tourism activity in RS at NUTS 3 level territories. It is expected that these districts will form single-member clusters, or perhaps be identified as members of so-called outlier-clusters, together with units of similar tourism properties. After the *min–max* normalization of tourism indicators, following the methodology guidelines given in Figure 1, five different HCA agglomeration methods were implemented on the pre-processed multivariate data set, using the squared Euclidean distance, as an adequate distance measure of their mutual proximity. In order to ensure statistically-based and therefore more objective selection of the most appropriate HCA method for classifying the analyzed territories, for each of the obtained clustering solutions, the corresponding values of cophenetic correlation coefficient (r_{cp}) were determined. Calculated r_{cp} values, representing a specific measure of the overall quality of obtained clustering solutions, are presented in Table 4.

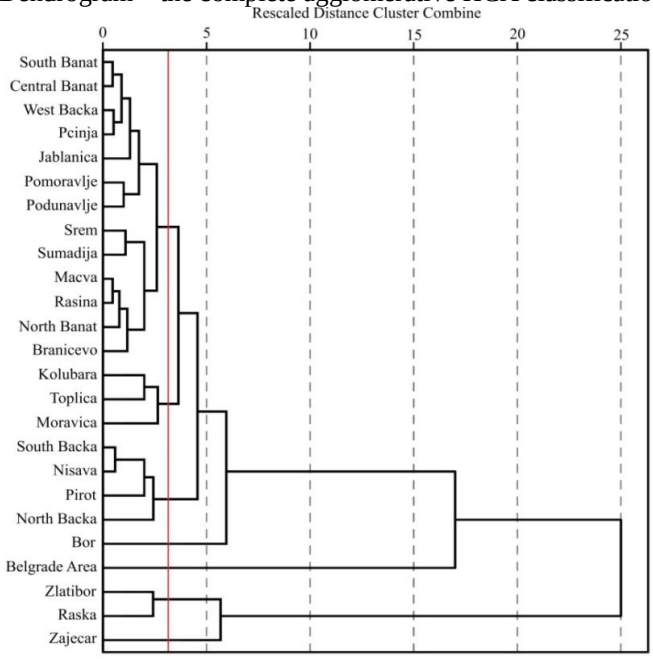
Table 4: Values of cophenetic coefficient for the obtained hierarchical CA solutions

Applied HCA methods	Single-linkage	Complete-linkage	Average-linkage	Centroid-linkage	Ward's method
Cophenetic values	0.9078	0.9175	0.9254	0.9251	0.8954

Source: Authors' research

Although some clustering solutions are characterized by highly approximate cophenetic values (e.g. average- and centroid-linkage methods), the hierarchical classification obtained by applying the average-linkage method was identified as optimal, since it has, generally, the highest r_{cp} value. In addition, a value this high ($r_{cp} = 0.9254 \approx 1$) indicates the presence of an almost perfect correlation between the corresponding values of the initial (Euclidean) and derived (i.e. obtained by average-linkage method) distance matrices, and therefore very high quality of the singled out clustering results. It is also interesting to note that the classification results obtained by Ward's method, according to the presented r_{cp} values, are characterized by the worst quality in this case, even though it represents a HCA method that is most frequently used in CA, but mainly as a consequence of the subjective will of researchers. Precisely from this methodological observation follows justification of the implementation of cophenetic coefficient. The complete (step-by-step) classification structure obtained as a result of selected hierarchical (average-linkage) clustering of 25 NUTS 3 territories in RS, according to the values of analyzed tourism activity indicators in 2019, is given in Figure 3 in the form of specific multilayer tree-based graphical representation, called dendrogram.

Figure 3: Dendrogram – the complete agglomerative HCA classification structure



Source: Authors' research

The presented dendrogram contains and shows 24 different clustering solutions to the analyzed classification problem, regarding the possible number of clusters. The decision about the optimal number of groups was specified, based on the comparative analysis of values of adequate statistical criteria of optimality, calculated for individual classification alternatives, consisting of two to nine groups (Table 5).

By analyzing the evident and expected growing tendency of distance measure values under which single districts or clusters of districts merge within selected consecutive steps of agglomeration process, as well as the size of its corresponding absolute changes, it can be noticed that their first large, sudden increase occurs at the moment of creating a classification alternative with 6 groups of districts. The magnitude of the mentioned increase is even more evident if the fact that the increment of distance value achieved in this step of agglomeration

(2.85) is nearly 7 times higher than the value recorded in the previous step (0.41) is taken into account. In addition, the tendency of pseudo *F* statistic' values suggests an identical conclusion. In fact, the previously emphasized agglomeration step that results in the classification of districts in 6 different groups, is recognized, by this criterion as well, as one within which the most pronounced value decrease of pseudo *F* statistic (i.e. from 100.88 to 62.12) occurred. This decrease (–38.76) is the largest recorded among the analyzed solutions. Having in mind the fact that observed drastic changes in optimality criteria values occur mainly as a consequence of merging two highly dissimilar clusters, the classification solution consisting of 7 clusters is selected as the optimal since it precedes the previously described, less desirable, hierarchical agglomeration results. Viewed from a graphical perspective, the moment of achieving the optimal CA classification of districts, during the process of agglomeration, is marked on the constructed dendrogram with a red vertical line (Figure 3).

Table 5: Optimality indicators' values for different clustering solutions

Used optimality indicators		**Possible classifications with different numbers of clusters**							
		9	8	7	6	5	4	3	2
Distance between joined clusters	value	2.06	2.14	2.55	5.40	7.94	12.78	13.37	66.68
	change	0.65	0.08	0.41	2.85	2.54	4.84	0.89	53.01
Pseudo-*F* statistic	value	95.05	96.09	100.88	62.12	39.24	44.69	55.65	46.08
	change	-	1.04	4.79	-38.76	-22.88	5.45	10.96	-9.58

Source: Authors' research

For the purpose of a statistical evaluation of the quality of the obtained classification, in terms of the specified structure of extracted 7 clusters, a non-HCA approach (i.e. *k*-means clustering method) was applied to normalized values of observed three tourism variables. The main reason for doing so lies in the fact that non-HCA approach, unlike HCA agglomeration, represents a reversible classification process, since it allows reallocation of individual observations during the clustering. As a result of this activity, the identical allocation was obtained for all districts, in terms of their membership within previously identified 7 clusters, thus confirming the statistical quality of the formed classification. The final step in statistical quality evaluation of obtained 7-cluster classification results is based on the interpretation of the silhouette coefficient values, calculated for the overall solution and individual clusters within its structure. Representing a comprehensive statistical measure of the achieved level of internal homogeneity and external heterogeneity at the mentioned levels of observation, these values are presented in Table 6.

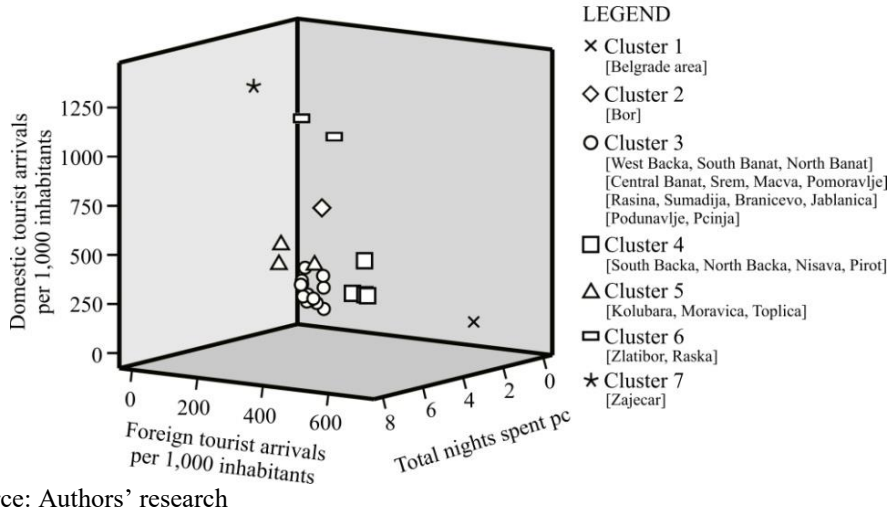
Table 6: Silhouette coefficient values for the obtained CA classification of districts

Coefficient	**Individual clusters' code**							**Overall solution**
	C-1	C-2	C-3	C-4	C-5	C-6	C-7	
Silhouette values	1.00	1.00	0.79	0.76	0.58	0.83	1.00	0.85

Source: Authors' research

The obtained overall silhouette value (0.85), since it is within the range from 0.70 to 1.00, suggests that the extracted 7-clusters classification is of very high quality. According to guidelines given in Izenman (2008), the proposed clustering structure can be defined as strong. The validity of this conclusion is confirmed by individual clusters' silhouette values, because for 6 groups the same level of quality as the overall was recorded. The exception is only cluster marked as C-5, characterized by a moderate level of quality.

Figure 4: 3D Scatter diagram of classification of districts in RS by tourism activity indicators



Source: Authors' research

A graphical representation of the obtained tourism activity classification of 25 districts in RS into 7 clusters is given in Figure 4. It should be noted that the identified real multivariate (i.e. Belgrade, Zaječar) or the one-dimensional outliers (i.e. Zaječar, Raška and Zlatibor) were isolated, as expected during the data preparation phase, as members of so-called outlier clusters, created in a form of single-member clusters (i.e. C-1, C-7) or very small size group (i.e. C-6). The reason why the Bor district represents the only member of C-2 lies in the fact that this unit was identified as a suspected atypical multivariate observation.

4.2. Interpretation of the obtained classification and discussion

The interpretation of the proposed multivariate typology of districts in RS, together with the corresponding values of selected indicators of tourism activity and demand in 2019, is presented below. The overview of main numeric characteristics for extracted clusters is given in Table 7, together with appropriate cartographic representation (Figure 5).

Table 7: Min / max / average (or individual) values of tourism activity indicators per clusters

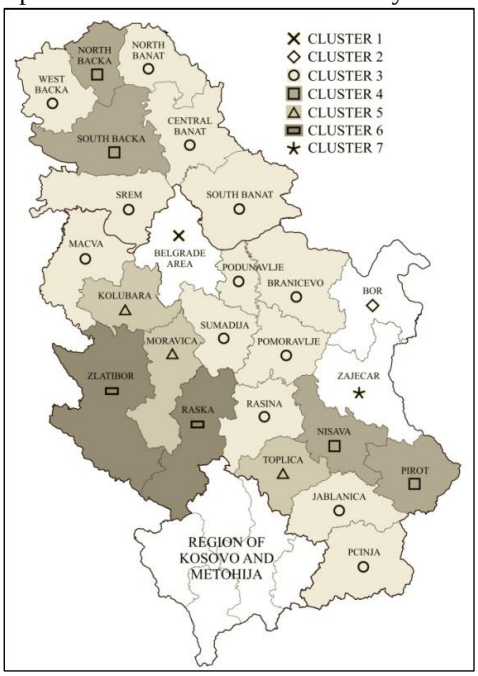
Clusters of districts		**Number of DTAs per 1,000 inhabitants**			**Number of FTAs per 1,000 inhabitants**			**Number of total nights spent per capita**		
Code	Size	min	max	average	min	max	average	min	max	average
C-1	1	-	-	119	-	-	624	-	-	1.6
C-2	1	-	-	617	-	-	178	-	-	1.9
C-3	13	39	261	140	41	114	68	0.2	1.2	0.6
C-4	4	151	342	201	192	257	234	0.6	1.1	0.8
C-5	3	313	395	342	39	149	84	1.7	2.2	1.9
C-6	2	1094	1180	1137	309	390	350	4.7	5.0	4.9
C-7	1	-	-	1393	-	-	293	-	-	7.2
National average		322			155			1.5		

Source: Authors' research

Four, out of a total of 7 extracted groups of districts, previously identified as outlier-clusters, represent single-member or two-member clusters. Together, they comprise only 5 out of a total of 25 observed districts, or 20% of the sample. By comparing the presented individual / average values of tourism activity indicators with the corresponding country's mean values,

it can be seen that these districts are characterized mainly by the numbers of DTAs and FTAs per 1,000 inhabitants, as well as the nights spent per capita that are significantly above the corresponding averages determined at the national level, and even for most of other 3 (multi-member) groups of districts. Therefore, it can be stated that these 5 districts, in proportion to the size of their populations, are characterized by the highest tourism sector development level, compared to the districts allocated within the remaining 3 clusters. Consequently, it would be justified and logical to merge them into one common cluster, whose descriptive name can be formulated as: a *high level of tourism sector development*. However, regardless of this common characteristic, each of these clusters is distinguished by the corresponding specificities in terms of the considered indicators of tourism activity.

Figure 5: Cartographic representation of districts in Serbia by tourism activity classification



Source: Authors' research

More precisely, Zaječar district, as the only member of C-7, stands out as an extremely attractive and desirable destination for the largest number of DTAs (i.e. ≈ 1,393 per 1,000 inhabitants), with the highest average number of overnight stays per capita (i.e. ≈ 7.2). These observations are fully expected, since this district is considered very rich in terms of the available tourist offer, comprising numerous natural attractions and resources (e.g. Rtanj and Stara Planina mountain with nature park and ski-center, Sokobanja and Gamzigrad spa resorts, Bogovina Cave – the longest cave in RS, Ripaljka waterfall, etc.), cultural-historical sites and monuments (e.g. Felix Romuliana – the archaeological site of the ancient Roman complex, Zaječar National Museum, etc.), medieval monasteries (e.g. Suvodol, Grlište, etc.), and popular musical events (e.g. Guitariada, the rock manifestation with the longest tradition in Europe). The wide and diverse range of tourist sights that this district offers to visitors, manifested in the form of different types of tourism, from spa, mountain, adventure, countryside, urban, archeological to cultural-entertainment tourism, stimulates the arrival of a large number of tourists throughout the year. As the most receptive tourist area within this district, Sokobanja, the oldest spa in Serbia, stands out, since it was visited by 108,151

domestic and 16,726 foreign tourists in 2019, which makes up 73.2% of the total number of DTAs and 53.9% of the total FTAs recorded in Zaječar district that year.

Cluster 6 includes only Zlatibor and Raška districts. It is also characterized by extremely favorable values of tourism activity indicators, in proportion to the population size. Out of a total of 1.84 million domestic and 1.85 million foreign tourists who visited Serbia in 2019, 35.3% and 10.7% of them, respectively, visited some of the tourist attractions located in these districts. With a population of about 570,000 inhabitants, nearly 1137 DTAs and 350 FTAs per 1,000 inhabitants, and ≈ 5 overnight stays per capita, these two districts can be classified as the most visited tourist areas in RS. Compared to the C-7, and taking into account the population ratio of 5.4:1 in favor of C-6, the position of this cluster, in terms of the tourism development level, can be considered more favorable, due to the larger number of FTAs, regardless of the slightly lower values of the other two indicators. Also, mountain and countryside tourism plays a dominant role in the tourist offer of C-6 districts, thanks to their numerous mountains and ski centers famous for their beauty, intact nature and various recreational facilities (Kopaonik, Zlatibor, Tara, Zlatar and Golija). Although this specificity reflects one of the key differences between C-6 and C-7, Zlatibor and Raška districts are also characterized by highly developed spa tourism, given the huge tourism potential of their numerous spa resorts, such as: Jošanička, Mataruška, Bogutovačka spa, and of course Vrnjačka Banja spa, officially the most visited spa in Serbia.

The district of Bor is the only member of cluster C-2 and is characterized by nearly double number of DTAs, and slightly higher number of FTAs per 1,000 inhabitants and nights spent per capita compared to the country's averages. These values are twice, or even more, lower than the comparable values in C-6 and C-7, indicating the lower level of tourism sector development, in spite of the great potential. The dominant types of tourism are recreational, adventure, countryside, religious and archeological-historical tourism, since the central part of tourist offer of this district includes the Djerdap National Park, numerous monuments of nature and beauty spots (e.g. Bor Lake, Rajko's Cave, Vratna Gates, the Great Kazan gorge on Danube), Lepenski vir (one of the largest archaeological sites from the Stone Age), and cultural-historical monuments of exceptional importance (e.g. Rajac and Rogljevo wine cellars).

With nearly 4 times the number of FTAs, approximately 3 times lower number of DTAs per 1,000 inhabitants, and a slightly higher number of nights spent per capita, compared to the values of national averages, the Belgrade area (C-1), stands out. Regarding the tourism indicators' values and observed specificities, it can be stated that C-1 shows similar tendencies as C-2, but in the opposite direction. In fact, in terms of the number of FTAs, this territory holds a record value per 1,000 inhabitants, which is especially evident if the size of population (nearly 1.7 million inhabitants, i.e., ≈ 25% of the population in RS) is taken into account. A completely opposite tendency is present in the case of the number of DTAs. The numerical characteristics of C-1 are not a surprise, since it covers the territory of Belgrade city, the capital of the RS. The dominant types of tourism are city, business, urban-adventure, archeological-historical, shopping, health tourism, etc.

The remaining 20 districts, or nearly 80% of the observed NUTS 3 territories, were placed into three other clusters. The average values of selected tourism indicators determined for these clusters (Table 7) are significantly below the corresponding national averages, but also below the average values of the previously interpreted 4 outlier-clusters. Therefore, it is logical to conclude that these 3 clusters are characterized by the level of tourism development that is lower than that of clusters C-1, C-2, C-6 and C-7.

The fact that tourist destinations located in the territories of 5 districts (i.e. Belgrade, Bor, Raška, Zlatibor and Zaječar), distributed within clusters characterized by a high level of

tourism activity and development (C-1, C-2, C-6, C-7), recorded 57.9% and 70.7% of the total number of registered DTAs and FTAs in 2019, respectively, with more than 64% of the total registered overnight stays in RS, unequivocally indicates the supremacy of these clusters of NUTS 3 territories, in terms of tourism activity, compared to the remaining 20 districts. The observed differences in the level of tourism activity are even more striking in the light of the fact that these 5 districts together cover only 23% of the total territory and include almost 35.7% of the total population of RS. Also, they are responsible for ≈ 55.6% of total regional gross added value in the Wholesale / retail trade, transportation / storage, and accommodation / catering services sector (SORS, 2022). It is also interesting to note that 4 clusters of high tourism activity, in general, differ in terms of the dominant type of tourism, namely: mountain (C-6), spa (C-7), adventure / natural beauties (C-2) and urban / business tourism (C-1). Consequently, it can be stated that Serbia, unfortunately, is characterized by very noticeable and emphasized interregional inequalities, present among the analyzed NUTS 3 territories, regarding the recorded level of tourism activity and development level in 2019. This observation is fully consistent with the statement made by Gajić et al. (2014) about the significant disproportions between regions in the RS in terms of the volume of tourist traffic, as well as by Bećirović et al. (2011) who point out the small dispersion of tourist activity at the regional level, highlighting the city of Belgrade, Zlatibor and Raška districts as the main bearers of tourism activity. In this context, it should be noted that a further and more detailed comparison and discussion of our research results with these or other (similar) empirical analyses conducted in the field of tourism on the territory of Serbia is not generally feasible, due to very noticeable differences in terms of selected temporal scope of research, observation units' NUTS level, used tourism activity indicators, applied statistical methodology framework, etc. Regardless of these notes, the proposed classification of NUTS 3 territories in Serbia can be used as a useful analytical basis for further quantitative analysis, and as an additional source of potentially valuable information for creators of policies and strategies for (regional) development of this economic activity.

5. Conclusion

Given the indisputable importance of information regarding the tourism sector development at different NUTS level territories for planning and efficient implementation of appropriate regional (and national) tourism (and overall economic) development strategies and measures aimed at mitigating (eventually) present regional disparities, in this paper, according to the formulated research objectives, a statistically demanding multivariate methodology framework (based on combined implementation of non-hierarchical and hierarchical agglomerative clustering procedures), intended for classification of districts in Serbia, in terms of the selected tourism activity indicators' values in 2019, is applied and presented. Based on a thorough statistical examination of its validity and quality, the proposed optimal classification, composed of seven internally–homogeneous / externally–heterogeneous clusters of districts, unambiguously verifies the existence of noticeable and large tourism development disparities between NUTS 3 territories, and intra-regional tourism activity disproportion in Serbia, present in the following direction: developed east / south-west, with the city of Belgrade – less developed north / central part of Serbia.

The presented multivariate statistical approach, intended for the analysis of regional tourism development inequalities, is characterized by certain methodological advantages, in comparison to similar studies, namely: (a) it enables simultaneous examination of interdependencies between representative tourism indicators, unlike the approach based on evaluation and analysis of individual indicators' values and separate interpretation of numerous one-dimensional classifications; (b) the selection of the optimal HCA method and the best quality classification structure is conducted by using the appropriate, statistically

based criteria rather than the researcher's subjective decision; and (c) statistical validity of interpreted classification was additionally verified by non-hierarchical allocation results, thus ensuring objectivity and scientific justification of the obtained classification results.

Finally, due to the methodological specificities of our analysis, the findings of this study may be insufficiently comparable to the results of other scholars. This, together with the impossibility to use a larger number of tourism variables, due to the unavailability of useful data for the territories of selected NUTS level in Serbia, can be singled out as key limitation of this empirical research. On the other hand, the conducted analysis is highly applicable and the applied methodology is flexible, which suggests that in future research, it can be used with different spatial (i.e. territories' NUTS level / a country) and / or temporal (i.e. year) data coverage, and the same or an expanded list of representative tourism indicators. In addition, further studies may also incorporate other statistical methods.

Conflict of interest

The authors declare no conflict of interest.

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Does the acceptance of insects as food depend on sociodemographic characteristics: The case of Serbia

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Abstract: Animal-based food has historically been considered dietary staples because it offers many essential nutrients. Due to their high nutrient content, edible insects have the potential to partially replace animal-based food as healthy and sustainable alternatives. The aim of this research is to determine if sociodemographic characteristics of respondents play important role in acceptance or rejection of insects as food. The results showed that male respondents have favourable attitudes towards acceptance, motivation and general attitude compared to female respondents. In terms of age, it was determined that older people are more likely to accept insects. Results also showed that highly educated people express a higher level of acceptance of insects, while the effects of income level are not significant. As Serbia is not a country where insects have been traditionally consumed, it is not expected that consumption will become widespread in foreseeable future.

Keywords: insects, food, acceptance, sociodemographic characteristics, Serbia
JEL classification: L66

Da li prihvatanje insekata u ishrani zavisi od sociodemografskih karakteristika: Studija slučaja Srbija

Sažetak: Hrana životinjskog porekla se kroz istoriju smatrala osnovom svake ishrane jer pruža mnoge neophodne nutrijente. Zbog svoje velike nutritivne vrednosti, jestivi insekti imaju potencijal da delimično zamene namirnice životinjskog porekla i nameću se kao zdrava i održiva alternativa. Cilj ovog istraživanja je da odredi da li sociodemografske karakteristike ispitanika imaju važnu ulogu u prihvatanju ili odbijanju insekata u ishrani. Rezultati su pokazali da muškarci imaju veću motivaciju, pozitivniji odnos i viši stepen prihvatanja insekata u ishrani od žena. Što se starosti tiče, stariji ispitanici su dali pozitivnije ocene. Ispitanici koji imaju viši stepen obrazovanja su pokazali viši nivo prihvatanja, dok mesečna primanja nisu bila značajan faktor. S obzirom na to da Srbija nije država u kojoj su insekti tradiconalno korišćeni u ishrani, u doglednoj budućnosti se ne očekuje da dođe do promene.

Ključne reči: insekti, hrana, prihvatanje, socio-demografske karakteristike, Srbija
JEL klasifikacija: L66

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1. Introduction

Today, humanity is facing population growth which means we will need more food (UN, 2020). The standard of living is rising in most countries regardless of their development (Roser, 2016).That brings an increase in the consumption of meat and other animal products (Bruinsma, 2003; FAO, 2017). Global warming is also a big issue and many authors (e.g. Monteny et al., 2001; Vaghar Seyedin et al.., 2022) believe that animal husbandry is an important factor in greenhouse gas emissions. That is why there is a strong pressure to reduce the use of animal products (Eshel et al., 2014; Hedenus et al., 2014), despite the fact that there are 957 million hungry people on the Earth (UN, 2020). The custom of eating insects is called entomophagy. It has been a habit since the ancient times and is even mentioned in the Bible. The production of insects has many benefits. The most important ones are less land (Van Huis et al., 2013), water and energy needed (Miglietta et al., 2015; Oonincx & de Boer, 2012), lower greenhouse gas and ammonia emission (Oonincx et al. 2010; Van Huis et al., 2013) and the possibility to use waste products of agriculture and food industry as feed (Collavo et al., 2005; Oonincx et al., 2015; Sorjonen et al., 2019; Van Broekhoven et al., 2015). Besides these benefits, edible insects are also nutritionally valuable. They have high protein content, polyunsaturated fat, energy, vitamins and micronutrients (EFSA, 2021a; EFSA, 2021b; EFSA, 2021c; EFSA, 2021d; EFSA, 2022; Janssen et al., 2017).

Insect consumption as food and feed has received a lot of attention recently from academics and the public, particularly in Western nations. There is plenty of research on the topic of consumer approval of insects as food in some countries in Europe and worldwide (Giotis & Drichoutis, 2020; Hartman et al., 2015; Laureati, 2016; Liu et al, 2020; Naranjo-Guevara et al., 2020; Schäufele et al., 2019; Szendro et al., 2020; Verneau, 2016). In most European countries insects are considered disgusting, dangerous, dirty and consumption of insects is usually associated with "primitive" people's eating habits (Van Huis et al., 2013). Studies discovered that consumers in Nordic countries are more open to consuming insects in relation to those in Hungary, Poland and Italy (Kostecka et al., 2017; Piha et al., 2018; Sogari, 2015; Szendrő et al., 2020).

So far, there have been no scientific articles issued the approval of edible insects by Serbian consumers. This study aims to evaluate knowledge, rejection, acceptance, and motivation of consuming insects as type of food among Serbian consumers. The organization of the paper is as follows. The description of relationship between sociodemographic characteristics and motivation and rejection is provided in the section on literature review. The selection of the hypotheses was justified by citing the literature that are presented in the literature review section. The following parts of the paper present the research methods, the outcomes of testing the hypotheses, and the discussion of the findings. The results section of this paper contained the interpretation of the results, while the conclusion, theoretical and practical implications, the study's limits, and suggestions for future research and model expansions were saved for the final section.

2. Literature review

Studies respecting consumer approval of insects as food are numerous (e.g. Gmuer et al., 2016; Hartman & Siegrist, 2016; Tan et al., 2016). In many studies it was found that sociodemographic characteristics such as gender, age or education level affect consumers' readiness to consume insects as a food.

2.1. Gender

Men are more positive about entomophagy than women (Barsics et al., 2017; Menozzi et al., 2017; Schösler et al., 2012; Szendrö et al., 2020; Tan et al., 2016). According to Vartiainen et al. (2020), women, students, people under 25 years old, those who live in rural areas displayed a lower inclination to eat food derived from insects. Consumers with higher knowledge of insects as food have a higher acceptance rate for their use in the human diet. Neophobia is an important factor when it comes to rejection. Only slight increase in neophobia drastically increases rejection. Woman are less inclined to accept insects probably due to higher neophobia (Hartmann et al., 2015). Cicatiello et al. (2016) found that males were more inclined to try insects. On the other hand, many studies (e.g. de Boer et al., 2013; Hartmann et al., 2015) did not discover a notable relationship between gender and the acceptance of insect-based food products. Similarly, Bakkaloglu (2022) and Mancini et al. (2019) did not find significant impact of gender on readiness to try insects.

2.2. Age

Orsi et al. (2019) found that younger people have more favorable attitudes regarding entomophagy. Detilleux et al. (2021) emphasize in their research that male respondents are more willing to consume insects than female respondents even though this study was aimed at Belgian children (9-17). Also, younger children were more open towards whole insects than older kids. Younger people are considered to be more open towards edible insects so that is why they were chosen for this study. Knowledge about insects increases scores given for a taste test. This could indicate that higher level of knowledge could increase the overall acceptance of insects in human diet (Megido et al., 2016). In addition to this, they found positive significant influence of age on tendency to eat edible insects. On the contrary, several studies (e,g. Cicatiello et al., 2016; Rumpold & Langer, 2019; Schäufele et al., 2019; Woolf et al., 2019) did not found substantial influence of age on willingness to try insects.

2.3. Education level

There are not many studies examining how education level affects consumer approval of insect food. According to Cicatiello et al. (2016), consumers with higher levels of education were more likely to be open to eating insects as food. Anankware et al. (2017) discovered favorable associations between eating insects and education. To explain this, they noted that reople with higher education tend to travel and be more receptive to novel experiences. Additionally, people with higher levels of education might be more conscious of the nutritional advantages of edible insects and consume them more frequently as a result (Liu et al., 2020). According to Mancini et al. (2019), it appears that young men with high levels of education are typically the most likely early adopters. On the other hand, Lammers et al. (2019) found no discernible impact of education on approval of insects as food. According to research by Pambo et al. (2018), intention to eat food created from edible insects solidified over time relative to their less educated counterparts. Surprisingly, Brunner and Nuttavuthisit (2019) discovered that the influence of education varied between cultures, with early adopters of eating insects in Switzerland being better educated than those in Thailand.

2.4. Income level

When it comes to income, different results were obtained. Carolyne (2018) and Manditsera et al. (2018) found a unfavorable link between income level and edible insect consumption. Manditsera et al. (2018) in their research in urban areas found negative relationship between income level and consumption of insects. According to them, as incomes rise, consumers

have more choice for different animal proteins. Egan (2013) found that those with lower incomes eat more edible insects, probably because they spend less money on food when insects are widely available. In their study, Liu et al. (2020) found that age, income level and household size positively influence their intention to buy insects. In other words, consumers are more expected to purchase edible insects when they are older, have a higher level of income and a larger family size. Contrary to this, Bakkaloglu (2022) did not prove noteworthy effect of income on the readiness to try insects.

Based on this, the authors propose the following hypotheses:

H_1: Men have a higher level of acceptance of insects as food.
H_2: Younger people have a higher level of acceptance of insects as food.
H_3: Highly educated people have a higher level of acceptance of insects as food.
H_4: People with lower level of income have a higher level of acceptance of insects as food.

3. Methodology

The aim of this paper is to determine knowledge, rejection, acceptance and motivation among Serbian consumers. The research was conducted during summer of 2022. Target group was adult citizens of Serbia. The survey was conducted online and it was on a voluntary basis and anonymous. The basis for this research was found in research conducted by Szendrö et al. (2020). All factors and items used in the research used as a base were completely adopted and translated into Serbian. Questionnaire used in the research consisted of two parts. Questions about sociodemographic characteristics of respondents (such as gender, age, education level, level of income, place of residence) made up the first part of the questionnaire. Second part of the questionnaire consisted of 5 factors with items related to the consumption of insects as food. The first factor, *Knowledge* consisted of five items related to respondents' knowledge about insects as food (e.g. *"Insects are often consumed in some parts of Africa, Asia and South America")*. Second factor, *Rejection* is described through one item (e.g. *"Food containing edible insects disgusts me").* The third factor, *Acceptance,* consisted of five items related to the approval of insects and insect products (e.g. *"I think insects would be prepared in a good way in restaurants"*). Fourth factor, *Motivation* is described through three items related to motivation for consuming insects (e.g. *"If I learned that a close person is consuming insects, I would try it too").* The last factor, *Attitude,* contained items related to general attitudes towards insects as food (e.g. *"I think food containing insects is tasty"*). Respondents were asked to assess the degree of their agreement with provided statements on 5-point Likert scale (1 – completely disagree, 5 – completely agree). A total of 502 questionnaires were completed, but 443 were valid (response rate 88.3%).

4. Results and discussion

Table 1 presents the information about socio-demographic characteristics of respondents. There are 302 females (68.2%) and 141 males (31.8%). Regarding the age of respondents, they were divided into four age groups: *18-29* (49.2%), *30-39* (12.4%), *40-49* (12.4%) and *Over 50* (26.0%). Most respondents are highly educated (34.3%), followed by those who completed high school (32.7%). The smallest number of respondents has a PhD degree (12.2%). When it comes to place of residence, most of the respondents live in big cities (73.1%), followed by those who live in small cities (16.3%). The smallest number of respondents lives in villages (10.6%). Regarding income level, the most of respondents have incomes higher than the republic average (32.7%).

Table 1: Sociodemographic characteristics of respondents

Sociodemographic characteristics	Frequency	Percent
Gender		
Male	141	31.8
Female	302	68.2
Age		
18-29	218	49.2
30-39	55	12.4
40-49	55	12.4
Over 50	115	26.0
Level of education		
High school	145	32.7
College/Faculty	152	34.3
Master's Degree	92	20.8
PhD	54	12.2
Place of residence		
Village	47	10.6
Small city (<100.000 inhabitants)	72	16.3
Big city (>100.000 inhabitants)	324	73.1
Income		
No income	116	26.2
Under the republic average (< RSD 81.359)	**70**	**15.8**
Republic average (RSD 81.359)	112	25.3
Above the republic average (> RSD 81.359)	145	32.7

Source: Authors' research

Table 2 shows the results of a descriptive statistical analysis of items related to consumption of edible insects. Within this table, the distribution by grades is shown, as well as the arithmetic mean and standard deviation for each statement. Generally, the highest score was given to the statement *"Insects are often consumed in some parts of Africa, Asia and South America"* (4.25) within factor 1 (Knowledge), which led to the conclusion that the respondents are well-informed about the parts of the world in which insects are considered regular food. On the other hand, the lowest score was registered for the item *"I think insects are food only for "primitive" people"* (1.70). Factor *Rejection* has a relatively high score (3.59), which is not surprising due to the fact that insects are not traditionally consumed in Serbia. Low scores for *Acceptance* (2.57), *Motivation* (2.54) and *Attitude* (2.73) only support the high scores obtained for item related to rejection of insects as food in Serbia.

Table 2: Descriptive statistical analysis

FACTORS AND ITEMS	Answers (grade)					Mean	Std deviation
	1	2	3	4	5		
KNOWLEDGE (M=3.304)							
Insects are often consumed in some parts of Africa, Asia and South America.	16	12	62	107	246	4.25	1.033
In some European countries, food containing edible insects is available.	21	36	124	118	144	3.74	1.137
I think insects can be served to "civilized" people.	50	26	102	88	177	3.71	1.342
I think insects are food only for "primitive" people.	287	53	71	13	19	1.70	1.106
A silk bug drink can be nutritious.	49	21	253	66	54	3.12	1.055
REJECTION (M=3.59)							
Food containing edible insects disgusts me.	48	53	94	85	163	3.59	1.368
ACCEPTANCE (M=2.57)							
I think insects would be prepared in a good way in restaurants.	70	38	129	130	76	3.23	1.283
I would try products that have processed insects (e.g. cookies).	166	50	70	85	72	2.65	1.530
I would try whole fried insects (e.g. mealworms, grasshoppers, crickets).	224	58	43	60	58	2.26	1.504
I would use flour made from insects to prepare food at home.	204	54	83	56	46	2.29	1.417
I would try products that do not emphasize it on the package but they are listed in declaration.	190	50	80	79	44	2.41	1.434
MOTIVATION (M=2.54)							
If I learned that a close person is consuming insects, I would try it too.	136	59	90	72	86	2.80	1.506
As a guest at someone's home I would not reject food containing insects.	153	59	81	74	76	2.69	1.508
I would try edible insects in another country.	200	78	94	48	23	2.13	1.245
ATITUDE (M=2.73)							
I think insects are exotic food.	80	25	89	118	131	3.44	1.428
I would like to try food containing insects.	182	47	81	66	67	2.52	1.511
I am interested in food which contains insects.	189	56	83	54	61	2.42	1.474
I think food containing insects is tasty.	127	46	200	41	29	2.55	1.184

Source: Authors' research

Table 3 shows that there is no statistically notable difference between males and females when it comes to knowledge but it is shown that females have a higher level of rejection of food containing insects and males have a higher level of acceptance and motivation and generally more positive point of view towards using insects as food. This is because women are more neophobic than man, which was proven by multiple research papers (Chang et al., 2019; De Boer et al., 2013; Hartmann et al., 2015; Schösler et al., 2012; Verbeke, 2015;). Although males have a higher chance of having a positive attitude towards insects as food, it should be noted that grades obtained by male respondents are still low. These findings are somewhat similar to the results shown by Szendrö et al. (2020) and provide support for H_1.

Table 3: T-test for gender

Factor	Gender		T-value	Sig (p)
	Male	Female		
Knowledge	3.80	3.84	-0.574	0.567
Rejection	3.38	3.69	-2.255	0.025
Acceptance depending on the way of preparation and shape	2.84	2.44	3.113	0.002
Motivation	2.78	2.43	3.030	0.003
Attitude	2.91	2.65	2.274	0.024

Source: Authors' research

From Table 4, it is evident that age is an important factor when it comes to the acceptance of respondents. The respondents from the youngest age group (18-29) showed the lowest approval of edible insects. Their approval of edible insects is statistically significantly lower in comparison to respondents from age groups 30-39 and over 50. The oldest group (over 50 years of age) showed the highest acceptance. That is somewhat surprising as in most studies (e.g. Megido et al., 2016; Schösler et al., 2012; Verbeke, 2015) younger people were more willing to try edible insects. Although obtained results did not provide support for H_2, they are likewise prior studies' results (e.g. Liu et al., 2020).

Table 4: One-way Anova test for age

Factor	Age				F value	p	LSD post-hoc test
	18-29	30-39	40-49	>50			
Knowledge	3.86	3.85	3.69	3.81	0.783	0.504	-
Rejection	3.71	3.45	3.67	3.39	1.631	0.181	-
Acceptance depending on way of preparation and shape	2.42	2.80	2.32	2.85	4.571	0.004	1<2.4 4>1.3
Motivation	2.44	2.66	2.40	2.75	2.368	0.070	-
Attitude	2.62	2.87	2.62	2.93	2.237	0.083	-

Source: Authors' research

Table 5 shows that education is an important factor when it comes to acceptance, motivation and attitude. It is evident that the respondents with higher education gave higher scores when it comes to items within these three factors. LSD post-hoc test showed that the respondents with higher education degree (PhD) have a higher level of acceptance of insects than those with lower education degree. These results confirmed H_3 and they are in accordance with the findings got by Laureati et al. (2016) and Szendrö et al. (2020).

Table 5: One-way Anova test for education

Factor	Education				F value	p	LSD post-hoc test
	Elementary and high school	Faculty/ college	Master's degree	PhD			
Knowledge	3.82	3.77	3.90	3.88	0.633	0.594	-
Rejection	3.61	3.73	3.50	3.30	1.515	0.210	-
Acceptance depending on way of preparation and shape	2.44	2.45	2.73	2.99	3.832	0.010	4>1.2
Motivation	2.32	2.51	2.72	2.91	4.380	0.005	4>1.2
Attitude	2.57	2.64	2.97	3.01	3.730	0.011	4>1.2

Source: Authors' research

Table 6 presents that there is no notable distinction between respondents with different incomes. These results match with results obtained in Bakkaloğlu (2022) and Szendrö et al. (2020) studies and reject H_4.

Table 6: One-way Anova test for income

Factor	Income				F value	p	LSD post-hoc test
	No income	Under the national average	National average	Above national average			
Knowledge	3.83	3.83	3.76	3.87	0.513	0.674	-
Rejection	3.71	3.80	3.52	3.46	1.409	0.239	-
Acceptance depending on way of preparation and shape	2.43	2.53	2.54	2.72	1.260	0.288	-
Motivation	2.42	2.48	2.52	2.68	1.244	0.293	-
Attitude	2.54	2.79	2.68	2.90	2.352	0.072	-

Source: Authors' research

5. Conclusion

The future of entomophagy and, generally, the production and eating of peculiar food proteins depend on the ability to identify the aspects that might influence consumers' perceptions of edible insects. Nevertheless, when people associate insects with human food, they have two very different mental responses. In cultures where eating insects as food is traditional or popular, people view them as a vital source of food that has been passed down through the years. On the other side, according to studies by Dobermann et al. (2017) and Sogari and Vantomme (2014), insects in Western cultures can evoke powerful negative psychological reactions.

The aim of this paper was to enable understanding of socio-demographic variables that might influence customers' perceptions of edible insects. This could be crucial for the future of entomophagy and more generally, for the production and consumption of peculiar food proteins. Since in Serbia there is no custom of consuming insects, there are no programs to

promote consumption. The findings of this research uncovered that men are more likely to eat insects than women, which confirms H_1. These results are in accordance with prior studies (e.g. Barsics et al., 2017; Menozzi et al., 2017; Tan et al., 2016). Many studies confirmed that younger people have more favorable attitudes towards entomophagy (e.g. Detilleux et al., 2021; Orsi et al., 2019). Contrary to authors' expectations, the findings of this study revealed that older people are more likely to accept insects as food. These results did not prove H_2, but they are in line with prior studies' results (e.g. Liu et al., 2020). Considering this, the proposal made by Tranter (2013) should be applied. He proposed that children should be the primary target of many projects which are made to facilitate the spread of insect-based food. The basis for this proposal lies in the fact that children are the next generation of customers and they can influence perceptions of their peers. It was shown that education level plays a notable role in the approval of insects as food. The results showed that people with higher level of education (PhD) have a higher level of acceptance of insects in contrast to those with lower level of education. These results confirmed H_3 and they are in line with the results obtained by Laureati et al. (2016) and Szendrö et al. (2020). Although there were a lot of different results when it comes to income level, in this study the authors failed to find any notable influence of income level on approval of insects as food. Even though these results did not provide support for H_4, the obtained results are in the line with results obtained by Bakkaloğlu (2022) and Szendrö et al. (2020). The results of this research can help in profiling people who are willing to consume insects. In the sample from Serbia, these would be men, of an older age and with a higher level of education.

In many studies, psychological factors such as neophobia, have been examined as a significant factor for comprehending consumer approval (Hartman et al., 2015; La Barbera et al., 2018). Neophobia significantly reduces person's willingness to consume insects, according to the scientific evidence (Piha et al., 2018; Tan et al., 2016; Vartiainen et al., 2020). For this reason, future research should include psychological factors, in order to understand better the mechanism of acceptance of insects as food. Also, acceptance or rejection of novel foods, such as insects, is mostly influenced by emotional and cultural beliefs rather than product-related characteristics (price, taste, etc.) (Hartmann & Siegrist, 2016; Meixner & Mörl von Pfalzen, 2018). Since this study did not consider these before mentioned factors, it could be included in future research. In previous studies (e.g. Sogari et al., 2019), consumers' prior exposure to insects has a positive impact on their expectations of sensory attributes (taste and appearance), which raises their willingness to try them.

Conflict of interest

Authors have no conflict of interest.

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Credit risk analysis of Serbian luxury hotels: Impact of COVID-19

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Abstract: The aim of this research is to analyse credit risk levels of Serbian luxury hotels, before, and during the COVID-19 pandemic. The purpose is to highlight the need for state-supported measures and proactive strategies to ensure financial sustainability and resilience in the luxury hotel industry. A dataset of 192 observations from 2019 to 2021 is employed, using predictive models including the Altman Z'-score, Altman Z"-score, Kralicek DF score, Springate S-score, and Zmijewski X-score, to assess creditworthiness of 64 selected mostly 4-star hotels. Data analysis involved the use of statistical tests such as the Kolmogorov-Smirnov test, Shapiro-Wilk test, and Wilcoxon signed-rank test. All models, except Zmijewski, show statistically significant results. The findings reveal a significant impact of the pandemic on credit risk levels in 2020, followed by positive trends in 2021, indicating successful adaptation and resilience. Policymakers, financial institutions, and hoteliers can use these insights to navigate the post-pandemic era effectively.

Keywords: hotel industry, pandemic, financial statements, financial sustainability, predictive models.
JEL classification: M21, M41

Analiza kreditnog rizika srpskih luksuznih hotela: Uticaj COVID-19 pandemije

Sažetak: Cilj ovog istraživanja jeste analiza nivoa kreditnog rizika luksuznih hotela iz Srbije, pre i tokom COVID-19 pandemije. Istraživanje ukazuje na potrebu za merama podrške države i proaktivnim strategijama kako bi se osigurala finansijska održivost i otpornost u ovoj industriji. Korišćen je uzorak od 192 jedinice posmatranja u periodu od 2019. do 2021. godine. Upotrebljeni su sledeći prediktivni modeli: Altman Z'-score, Altman Z"-score, Kralicek DF score, Springate S-score i Zmijewski X-score, kako bi se procenila kreditna sposobnost 64 uzorkovana hotela sa uglavnom 4 zvezdice. Za analizu podataka korišćeni su statistički testovi Kolmogorov-Smirnov test, Shapiro-Wilk i Wilcoxonov test. Svi modeli, osim Zmijewski modela, pokazali su statistički značajne rezultate. Rezultati potvrđuju značajan uticaj pandemije na nivoe kreditnog rizika u 2020. godini, koji su praćeni pozitivnim trendom u 2021. godini, što ukazuje na uspešno prilagođavanje uprave hotela i otpornost poslovanja. Rezultate istraživanja mogu koristiti različiti donosioci politika, finansijske institucije i hotelijeri kako bi se efikasno nosili sa postpandemijskom erom.

Ključne reči: hotelijerstvo, pandemija, finansijski izveštaji, finansijska održivost, modeli predviđanja
JEL klasifikacija: M21, M41

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1. Introduction

In today's intricate and interconnected financial landscape, credit analysis has emerged as a crucial discipline for assessing the viability and stability of borrowers. Credit analysis plays a pivotal role in enabling financial institutions to make informed lending decisions and manage credit risk effectively. At its core, credit analysis involves evaluating the creditworthiness of individuals, businesses, or industries by examining their financial health, past repayment behavior, and overall capacity to fulfill their debt obligations (Gootkind, 2023). Credit risk refers to the potential of financial loss arising from the failure of a borrower to repay a debt or meet their contractual obligations (Brown & Moles, 2014). It encompasses the probability of default, delayed payments, or inadequate collateral, which can lead to significant financial consequences for lenders. Therefore, understanding and managing credit risk is paramount to the sustainability and profitability of financial institutions, as well as the broader economic ecosystem (Gootkind, 2023). Recent global events, primarily COVID-19, affected all industries in the world and the financial health of businesses, making it challenging to meet their financial obligations (Ghorbani et al., 2023; Mijailović et al., 2023). Due to travel and many other restrictions, the tourism and hospitality industry suffered the most (Nagaj & Žuromskaitė, 2021; Nicola et al., 2020; Skare et al., 2021). The COVID-19 pandemic has dealt a severe blow to the global tourism and leisure sector, including the hospitality subsector, as well as the hotel industry, and its entire value chain (Duro et al., 2021). Over the past few decades, tourism represented one of the world's largest and fastest-growing industries and is widely recognized as a significant contributor to employment growth for numerous countries (Vasilakakis et al., 2023). Prior to the pandemic, from 2014 to 2019, the travel and tourism sector along with its direct, indirect, and induced effects had been responsible for generating 20% of the new jobs worldwide. In 2019, the sector contributed to 10.3% of total employment (equivalent to 334 million jobs) and 10.4% of global GDP (equivalent to US$ 10 trillion) (WTTC, 2023). The outlook for tourism development was exceptional and tourism was given a lot of official attention in the country until the COVID-19 crisis. In 2020, the travel and tourism sector suffered a significant blow from the COVID-19 pandemic, resulting in a significant GDP decrease of approximately USD 4.9 trillion and 62 million job losses (WTTC, 2022). In 2019, the global market size of the hotel and resort subsector reached its highest point at 1.52 trillion U.S. dollars. However, due to the impact of the COVID-19 pandemic, the market size fell under 1 trillion in 2020 and 2021. Projections for 2023 indicated a forecast market size of 1.21 trillion U.S. dollars (Statista, 2023). The unparalleled characteristics and subsequent consequences of the pandemic, followed by geopolitical instability, have created a significant economic and financial impact on global tourism and hospitality, underlying that hotels have been particularly exposed to negative consequences. Within the hotel industry, credit risk assumes a distinct significance due to the unique characteristics and inherent vulnerabilities of this sector Clark et al. (2021), such as high leverage ratios, and a significant portion of property, plant, and equipment (PP&E) in their total asset structure, as well. Hotels heavily rely on credit facilities to finance their operations, expansion projects, and infrastructure development. The financial stability of a hotel is significantly influenced by factors such as seasonality, market concentration, and proximity to the tourist destination centre. "Other factors related to hotel characteristics that prove significant are diversification, liquidity, indebtedness, operational efficiency, and profitability" (Vivel-Búa, et al., 2018, p. 110). Therefore, it is not only essential to focus on fast recovery but also to build resilience to new challenges and the inevitable transformation that the post-COVID era brought (Gössling et al., 2020; Koh, 2020). Consequently, a comprehensive understanding of credit risk is imperative for stakeholders, including lenders, investors, and policymakers, to effectively assess, mitigate, and navigate the associated challenges and opportunities (Brown & Moles, 2014) and that is essential in the hotel

industry, as well. In Serbia, tourism has emerged as a vital economic sector, advancing economic growth and regional development (Stakić & Stakić, 2020). The travel and tourism sector made up 5.9% of Serbia's GDP in 2019. However, it decreased to 3.7% in 2020 due to the pandemic's adverse effects. There was a partial recovery in 2021, with a growth to 3.6% (Statistical Office of the RS, 2023). According to the data of the OECD (2022), "in 2019, tourism provided 4.2% of total employment or 85,092 direct jobs and it remained stable at 4.3% of employment in 2021 with the number of jobs increasing to 99,216". In 2019, despite 3.6 million tourist arrivals, the negative effect of the pandemic caused a drop in tourist arrivals to 1.8 million in 2020. There was a rebound in 2021, with total tourist numbers rising to 2.5 million, followed by an increase to 3.8 million in 2022 (WTTC, 2022a). At the heart of the tourism experience in Serbia, the hotel industry stands as a central pillar representing one of the foremost components of tourism offering (Jovanović & Ilić, 2017). Beyond their fundamental function of providing accommodation, these hotels play a multifaceted role in shaping the perception, satisfaction, and overall experience of travelers. Since the hotel industry is an important sector of the Serbian economy, it is important to increase its resilience by providing stable financing. While Serbian tourism began its recovery in 2021 with an upturn in foreign and domestic tourist arrivals and overnight stays, the concern remains whether this level of rebound can adequately counteract the adverse financial consequences stemming from the ongoing impact of the COVID-19 crisis (Matejić et al., 2022). Based on the OECD (2022), Serbia is expecting a return of inbound tourism to pre-pandemic levels by 2025. According to Crespí-Cladera et al. (2021), the survival of hotels will hinge primarily on their financial resilience emphasizing the importance of financial variables in the overall strategy for overcoming the challenges caused by crisis. This paper investigates the multifaceted landscape of credit risk analysis specific to luxury hotels by exploring a range of variables, including the most commonly used the Altman Z-scores, Kralicek DF score, Springate S-score, and Zmijewski X-score. In doing so, the intention is to assist financial institutions, hoteliers, and other stakeholders in making informed credit decisions, mitigating potential risks, and optimizing their lending strategies in the post-COVID era. Therefore, the primary aim of the research is to analyse the difference between credit risk levels of Serbian luxury hotels, before, and during the COVID-19 pandemic. The paper is structured as follows - the next section offers a literature review when it comes to credit risk analysis in hospitality, as well as the COVID-19 pandemic effect on it. This will be followed by the research methodology section where both statistical methods used in this research and the process of research will be explained. The results of the conducted research will be presented in the following section. Finally, conclusions will be drawn, and suggestions for future research endeavours will be made.

2. Literature review

The credit risk of an entity has a substantial impact on stakeholders, including investors, managers, and financial institutions (Altin et al., 2016). Understanding the factors contributing to credit risk empowers managers and policymakers to mitigate potential consequences effectively. Previous studies have analyzed credit risk in various industries, including the hotel industry, highlighting the significance of factors such as location, diversification, liquidity, indebtedness, operational efficiency, and profitability (Vivel-Búa et al., 2018). Studies in the hotel industry have explored credit risk and financial performance. Researchers have emphasized the importance of liquidity and profitability indicators in assessing credit risk, especially during periods of economic downturn in 2008 (Mizdraković et al., 2015). Additionally, previous research has shown that weakened global economies can influence overall business solvency and increase bankruptcy risks across industries, including hotels (Mizdraković et al., 2015). Regarding the financial sustainability of the hotel

sector, Metaxas and Romanopoulos (2023) have pinpointed the financial determinants associated with hotel default. The research results have demonstrated that measures of debt and liabilities elevate the risk of default, whereas indicators of profitability and size in terms of total assets mitigate the risk.

The COVID-19 pandemic had a significant impact on industries worldwide, including Serbia, with a notable 3.4% decline in global GDP during 2020 (Statista, 2023). The hotel industry experienced one of the most severe impacts, as almost all hotels experienced closures and decreased revenues (Abraham et al., 2020; Chan et al., 2021; Ghorbani et al., 2023; Jiang, 2023; Radivojević et al., 2023). Previous studies have extensively investigated the financial repercussions of the pandemic on the hospitality industry (Clark et al., 2021; Wieczorek-Kosmala, 2021), highlighting the need for financial resilience to overcome the challenges posed by the crisis. Studies have emphasized the importance of financial resilience for hospitality companies in the time of the COVID-19 crisis. Researchers have analyzed the financial performance and creditworthiness of hotel businesses during the pandemic, particularly focusing on liquidity and profitability indicators (Radivojević et al., 2023). Certain hotels have prioritized liquidity over profitability in response to the pandemic's severe impact, leading to a prolonged and challenging recovery period (Radivojević et al., 2023). Statistical models and financial ratio analyses have been used to predict bankruptcy risk in the hotel industry. Susetyo and Susilowati (2023) were engaged in predicting bankruptcy for the years 2020–2021 among hotel chains with stocks listed on the NASDAQ and NYSE, using the Altman, Springate, and Zmijewski models. According to the study's findings, the Springate model exhibited the highest accuracy (80.56%) in forecasting bankruptcy. Studies have identified significant determinants of bankruptcy, such as indicators of profitability or liquidity (Papana & Spyridou, 2020; Zainol Abidin et al., 2021). Recent research has specifically examined the credit risk of Serbian luxury hotels during and after the COVID-19 crisis. Studies have utilized methodologies such as financial ratio analysis, comparative analysis, and multiyear predictions to assess the impact of the pandemic on credit risk (Matejić et al., 2022). The findings indicate a negative impact on bankruptcy risk, with a significant number of hotel entities facing the risk of bankruptcy (Matejić et al., 2022).

The research findings call for state-supported measures and business policies to ensure the long-term sustainability of hotel entities amid the COVID-19 crisis. Providing financial stability and credit support to the industry is crucial for its survival and recovery (Kozhamzharova et al., 2022). Policymakers need to consider the dynamic transitions of firms among risk zones to implement effective strategies for business resilience (Matejić et al., 2022). As a conclusion of this section, the reviewed studies highlighted the significance of financial resilience and the need for state-supported measures to ensure the survival and sustainability of the hotel industry in the face of the crisis.

3. Research methodology

To support the research aim stated in the Introduction section the hypothesis was designed: *There is a statistically significant difference between credit risk levels of Serbian luxury hotels, before, and during the COVID-19 pandemic*.

The following study has been conducted based on the financial statements of selected hotels. The research sample consists of a total of 64 entities (Serbian 4- and 5-star hotels), comprising 192 observation units in total. The observed research period spans 3 years (from 2019 to 2021), which is considered suitable for analysing the credit risk of Serbian luxury hotels. It should be noted that the pandemic was officially declared in Serbia in March 2020. Consequently, the 2019 reporting period was not affected by the negative effects of the

pandemic, while the first impacts were felt in 2020 and progressed through 2021 and further on.

The data used in the research were collected from the Serbian Business Registers Agency (SBRA) website based on the ID numbers of the sampled entities. The same hotels were observed throughout the different periods to enable a comparison of the obtained research results. The selection of luxury hotels was done using the official site of Booking.com, one of the largest worldwide touristic agencies. The results were filtered for 4- and 5-star hotels exclusively, as other types of accommodation do not need to be registered as business entities in order to operate and, consequently, are not obliged to prepare and disclose financial statements. Hotels are mostly categorised as 4-star, and app. one-quarter of them are 5-star hotels.

The financial statements that were gathered have been utilized to compute financial indicators, which are employed to assess the credit solvency level of Serbian hotels during the observed period. For this purpose, we have selected the following, most commonly used, multivariate predictive models: Altman's Z'-score for private companies, Altman's Z''-score for emerging economies, Kralicek's Diversification Failure (DF) score, Zmijewski X-score, and Springate S-score.

Altman Z-Score model is a bankruptcy prediction model used to evaluate the financial stability of a company. It combines multiple financial ratios to generate a single score, which is then used to classify the company into different risk categories. The model primarily focuses on analyzing a company's financial statements, such as profitability, leverage, liquidity, solvency, and activity ratios. It is commonly used by investors, creditors, and analysts to assess the likelihood of a company experiencing financial distress or bankruptcy. Professor Edward Altman is credited with developing the most widely recognized approach to assessing the risk of corporate bankruptcy. The original formula was meant for public companies, but later professor Altman created two additional formulas. The first one (Z') is suitable for forecasting the likelihood of private company insolvency, while the second one (Z'') is better suited for entities operating within emerging markets. Therefore, those revised formulas were used in this research having in mind that almost all sampled hotels are private companies operating within an emerging market (Altman, 1968; Altman, 2002):

$$Z' = 0.717 \times X_1 + 0.847 \times X_2 + 3.107 \times X_3 + 0.420 \times X_4 + 0.998 \times X_5 \quad (1)$$

$$Z'' = 6.56 \times X_1 + 3.26 \times X_2 + 6.72 \times X_3 + 1.05 \times X_4 \quad (2)$$

where: Z = Value of the discriminant function; X_1 = Working Capital to Total Assets; X_2 = Retained Earnings to Total Assets; X_3 = EBIT to Total Assets; X_4 = Book Value of Equity to Total Liabilities, and X_5 = Sales to Total Assets. If the calculated value is lower than 1.23 for the first formula, or 1.2 for the second, the observed entity is in the distressed zone.

In the 1990s, Professor Peter Kralicek, following the framework of Altman's Z-score model, developed a financial indicator known as Kralicek's DF indicator (Lončarević, 2015). The abbreviation *DF* stands for *discriminatory function*. This indicator was created based on a sample of European companies operating in Austria, Germany, and Switzerland. Professor Kralicek utilized official financial statements and conducted a multivariate discriminatory analysis to establish a bankruptcy prediction model, thereby formulating a comprehensive business model (Zenzerović & Peruško, 2006; Mizdraković et al., 2015). DF indicator is a risk management tool that focuses on the potential failure of a portfolio due to diversification issues. It is primarily used in the context of portfolio management and investment strategies. The indicator helps assess the risk of inadequate diversification within a portfolio by

considering the distribution of returns. Professor Kralicek derived the following model, which can be represented by the following formula (Zenzerović & Peruško, 2006):

$$DF = 1.5 \times X_1 + 0.008 \times X_2 + 10 \times X_3 + 5 \times X_4 + 0.3 \times X_5 + 0.1 \times X_6 \quad (3)$$

where: DF = Value of the discriminant function; X_1 = Net Cash Flow to Total Liabilities; X_2 = Total Assets to Total Liabilities; X_3 = Earnings before Interest and Taxes (EBIT) to Total Assets; X_4 = EBIT to Total Revenues; X_5 = Inventories to Total Revenues, and X_6 = Sales Revenues to Total Assets. Kralicek suggests that values lower than 0.3 indicate that observed entity has entered the beginning stage of insolvency.

In 1978, Springate utilized a step-wise multiple discriminate analysis approach to choose four out of the nineteen widely used financial ratios and thus created new model. These ratios were employed to differentiate the bankruptcy status of a company. This model, referred to as the S-Score, is structured as follows (Susetyo & Susilowati, 2023):

$$S - Score = 1.03 \times X_1 + 3.07 \times X_2 + 0.66 \times X_3 + 0.4 \times X_4 \quad (4)$$

where: S-Score = Value of the discriminant function; X_1 = Working Capital to Total Assets; X_2 = EBIT to Total Assets; X_3 = EBIT to Current Liabilities; and X_4 = Sales to Total Assets. In the case of Springate's S-score, a value below 0.862 is frequently considered a red flag.

Finally, Zmijewski (1984) developed a bankruptcy prediction model using a cumulative normal probability distribution. Probit analysis was applied to a dataset comprising 40 companies that had encountered bankruptcy and 800 companies that remained operational during that specific period. The model introduced by Zmijewski, also known as the X-Score, follows the calculation formula (Susetyo & Susilowati, 2023):

$$X - Score = -4.3 - 4.5 \times X_1 + 5.7 \times X_2 + 0.004 \times X_3 \quad (5)$$

where: X-Score = Value of the discriminant function; X_1 = Net Income to Total Assets; X_2 = Total Assets to Total Debt; and X_3 = Current Assets to Current Liabilities. When it comes to this score, a value below 0.00 predicts financial distress.

For the purpose of determining data normality, common tests such as The Kolmogorov-Smirnov test and the Shapiro-Wilk test will be used. These tests are usually used when research sample consists of a relatively small number of observations (in this case 192 units). To validate the hypothesis, the non-parametric Wilcoxon rank-sum test will be employed along with previous normality tests. This test is suitable when the data does not meet the assumptions required for a parametric test like the t-test or when dealing with small sample sizes. The test operates by ranking the values from each sample and evaluating if there exists a significant difference in medians between the two groups:

$$U = W - \frac{n_2 \times (n_2 + 1)}{2} \quad (6)$$

where: W = Test statistic, n_2 = Number of observations in the other group whose ranks were not summed.

Finally, all previously mentioned tests will be operated with SPSS IBM (*Statistical Package for the Social Sciences*).

4. Results and discussion

4.1. Data distribution and normality tests

The following table presents the results of descriptive statistics for selected prediction models across different reporting periods. Each row corresponds to a specific model, and the columns show the statistical measures for each reporting year (2019, 2020, and 2021). Additionally, when interpreting the results, it can be concluded that luxury hotels in the Republic of Serbia operate with moderate to high credit risk overall, with a significant spike in 2020. Only Altman Z"-score mean values showed that observed hotels were in a "safe" zone during 2019 and 2021. Specifically, selected indicators were calculated for each sampled hotel during each reporting period. Descriptive statistics were then performed using IBM SPSS based on these values.

Table 1: Results of descriptive statistics for selected models

Model	Year	Mean	Median	Min	Max	Range	Std. Error	Std. Deviation
Altman Z' - score	2019	2.54	1.00	-6.57	42.15	48.72	0.76	6.09
	2020	-0.70	0.63	-172.74	33.92	206.66	2.81	22.44
	2021	2.11	0.97	-3.31	32.24	35.55	0.56	4.48
Altman Z''-score	2019	4.26	0.72	-34.83	105.25	140.08	2.08	16.61
	2020	-2.66	0.47	-370.91	84.93	455.85	6.12	48.97
	2021	3.48	1.28	-28.10	80.65	108.76	1.56	12.44
Kralicek DF score	2019	-0.41	1.34	-102.89	16.57	119.46	1.75	14.00
	2020	-7.97	-0.70	-397.10	5.62	402.72	6.21	49.68
	2021	0.06	1.25	-55.45	14.12	69.57	1.03	8.23
Springate S-score	2019	0.03	0.21	-9.16	4.97	14.13	0.22	1.76
	2020	-60.13	-0.27	-3,810.97	1.08	3,812.05	59.54	476.30
	2021	0.18	0.21	-4.63	2.62	7.25	0.14	1.12
Zmijewski X-score	2019	29.43	4.15	-2.34	636.75	639.09	10.80	86.37
	2020	31.44	4.62	-2.15	514.98	517.13	9.68	77.43
	2021	23.13	4.94	-3.92	484.19	488.11	8.07	64.55

Source: Authors' research

When comparing the mean and median values of selected models in 2019 and 2020 respectively, all scores suggest that credit risk increased (some of them dramatically). Unexpectedly, when comparing the 2020 and 2021 reporting periods, the financial health of selected hotels improved. Having in mind that the level of credit risk was approximately the same in 2019 and 2021, it can be inferred that the management of these hotels adapted to the changed circumstances with great success, even though the most severe effects of the COVID-19 pandemic to whole economy were felt in 2021.

With the aim to assess whether the data from each reporting period follows a normal distribution, two different statistical tests Kolmogorov-Smirnov, and Shapiro-Wilk, were used. The following table presents the results across selected reporting periods, with statistics and significance values reported for each predictive model and test.

Table 2: Test of normality

Model	Year	Kolmogorov-Smirnov			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Altman Z' - score	2019	0.287	64	0.000	0.532	64	0.000
	2020	0.440	64	0.000	0.233	64	0.000
	2021	0.244	64	0.000	0.516	64	0.000
Altman Z'' - score	2019	0.234	64	0.000	0.624	64	0.000
	2020	0.375	64	0.000	0.299	64	0.000
	2021	0.241	64	0.000	0.625	64	0.000
Kralicek DF score	2019	0.379	64	0.000	0.339	64	0.000
	2020	0.404	64	0.000	0.169	64	0.000
	2021	0.280	64	0.000	0.488	64	0.000
Springate S-score	2019	0.228	64	0.000	0.746	64	0.000
	2020	0.531	64	0.000	0.106	64	0.000
	2021	0.144	64	0.002	0.904	64	0.000
Zmijewski X-score	2019	0.356	64	0.000	0.341	64	0.000
	2020	0.350	64	0.000	0.432	64	0.000
	2021	0.345	64	0.000	0.355	64	0.000

Source: Authors' research

It can be noticed that for all models and reporting periods, the Kolmogorov-Smirnov test statistic and Shapiro-Wilk test statistic are greater than zero, indicating that the data deviates from a perfect normal distribution. The significance values for all tests are very close to zero ($p < 0.005$), indicating that the deviations from normality are statistically significant. In general, the Shapiro-Wilk test appears to be slightly more sensitive to deviations from normality, as the test statistics are generally lower than the corresponding Kolmogorov-Smirnov test statistics. To conclude, the results suggest that the data for all selected models and reporting periods deviates significantly from a normal distribution.

4.2 Testing hypothesis

In order to test the previously defined hypothesis: *There is a statistically significant difference between credit risk levels of Serbian luxury hotels, before, and during the COVID-19 pandemic;* Wilcoxon signed rank test was used with related groups feature selected. For this purpose, data were reorganised for two different periods (2019-2020 and 2020-2021), in order to show if there were any statistically significant differences between credit risk levels when pandemic started and during the pandemic (Table 3).

Overall, the results show that there are statistically significant differences in credit risk levels for most models when comparing the periods 2019-2020 and 2020-2021. Altman Z' – score, Kralicek DF score, and Springate S-score, indicate the same results, that defined hypothesis should be rejected, meaning that there is a statistically significant difference in these scores between these periods. Results for Altman Z"-score show that there was a statistically significant difference for 2019-2020 period, but not for 2020-2021. However, for the Zmijewski X-score, there is no statistically significant difference between these periods.

Table 3: Testing hypothesis by using Wilcoxon signed ranks test

Model	Period	Z	Asymp. Sig. (2-tailed)	Decision
Altman Z'-score	2019-2020	-3.036	0.002	Reject the null hypothesis.
	2020-2021	-3.029	0.002	Reject the null hypothesis.
Altman Z''-score	2019-2020	-2.474	0.013	Reject the null hypothesis.
	2020-2021	-1.685	0.092	Retain the null hypothesis.
Kralicek DF score	2019-2020	-4.198	0.000	Reject the null hypothesis.
	2020-2021	-4.238	0.000	Reject the null hypothesis.
Springate S-score	2019-2020	-4.601	0.000	Reject the null hypothesis.
	2020-2021	-4.875	0.000	Reject the null hypothesis.
Zmijewski X-score	2019-2020	-.120	0.904	Retain the null hypothesis.
	2020-2021	-1.886	0.059	Retain the null hypothesis.

Source: Authors' research

Training data used to create predictive models might be one of the explanations for having different results for selected predictive models. Namely, the scoring systems might have been trained on a larger and more diverse dataset that includes a wide range of companies, including hotels. This broader training data can result in more robust and accurate models for predicting bankruptcy risk across different industries, including hotels.

Furthermore, the Altman, Kralicek, and Springate scoring systems might have better generalization capabilities, allowing them to perform well across different industry segments, including hotels. It is not a rare situation that scoring system created for specific industries or companies might not perform as effectively for them due to overfitting or limitations in the available data.

5. Conclusion with future implications and limitations

This research provides insights into the credit risk landscape of the luxury hotel industry in Serbia, with a specific focus on the impact of the COVID-19 pandemic. Critical role of credit analysis and risk management in ensuring the financial sustainability and resilience of hotels in the face of unprecedented challenges is highlighted. The literature review demonstrated that the pandemic's outbreak brought about severe disruptions, leading to an abrupt decline in revenue and financial instability for many hotels. The results of descriptive statistics show that credit risk of observed hotels increased for most models of bankruptcy prediction during 2020, which corresponds to the initial impact of the pandemic. However, by 2021, there were improvements in credit risk levels for some models, suggesting that the management of these luxury hotels in the Republic of Serbia adapted successfully to the challenging circumstances imposed by the COVID-19 pandemic. Results of Wilcoxon test are in line with the previous, indicating that creditworthiness of hotels worsened during 2020, reflecting the initial shock of the pandemic. Nevertheless, a positive trend can be observed in 2021, indicating that

hotels adapted and implemented effective strategies to cope with the crisis. This resilience is commendable and reflects the industry's determination to recover and thrive in the post-pandemic era. The pandemic has underscored the importance of financial resilience and prudent credit risk management in the hotel industry. It is imperative for stakeholders to recognize the significance of continuous monitoring and proactive measures to maintain the financial health of hotels, especially in times of crisis. Although the Republic of Serbia imposed significant amount of financial measures in order to aid impacted industries (hotels among else), it is important to monitor their financial stability and provide necessary credit support to ensure the survival and recovery of the luxury hotel industry. Policymakers should consider the dynamic transitions of firms among risk zones to implement effective strategies for business resilience. Finally, it is essential to acknowledge limitations of this research. The sample size and focus on luxury hotels in Serbia may limit the generalizability of the findings to the broader hotel industry. Future research could explore credit risk in different segments of the hospitality sector and expand the study to other regions, enabling a more comprehensive understanding of the industry's credit risk landscape.

Conflict of interest

The authors declare no conflict of interest.

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The impact of Enterprise Resource Planning (ERP) on business process outcomes in tourism companies

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Abstract: Enterprise Resource Planning (ERP) is a system that allows managers to predict, plan, control, measure and analyze all resources within the business system. Such systems help companies improve their business, allowing them to create a single database for the realization of various business processes among different areas, such as production, finance, supply chain management, human resources, customer relationship management. Accordingly, the aim of this study is to test the relationship between the use of ERP and business process outcomes in tourism companies. Based on the DeLone and McLean (D&M) theoretical model, the paper identifies the key factors for the successful implementation of ERP systems in tourism companies. Research results show that ERP system quality, ERP information quality, ERP service quality, and external pressures positively influence the perceived usefulness and satisfaction of ERP system users. The organization factor, top management support, perceived usefulness and satisfaction of ERP system users have a positive effect on the outcomes of business processes.

Keywords: enterprise resource planning, business processes, tourism, business process outcomes, hotel industry
JEL classification: Z32

Uticaj sistema za planiranje resursa na ishode poslovnih procesa u turističkim kompanijama

Sažetak: Sistem za planiranje resursa (*Enterprise Resources Planning – ERP*) u preduzeću je sistem koji omogućava menadžerima predviđanje, planiranje, kontrolu, merenje i analizu svih resursa unutar poslovnog sistema. Takvi sistemi nude strateška i operativna unapređenja kompanijama tako što im pružaju mogućnost da kreiraju jedinstvenu bazu podataka za realizaciju različitih poslovnih procesa između različitih funkcionalnih oblasti, kao što su proizvodnja, finansije, upravljanje lancem snabdevanja, ljudski resursi, upravljanje odnosima sa kupcima. Shodno tome, focus ovog istraživanja usmeren je ka sistemima za planiranje resursa preduzeća i ishoda poslovnih procesa u turističkim kompanijama. Na osnovu teorijskog modela DeLone i McLean (D&M) u radu se identifikuju ključni faktori koji definišu uspešnu primenu ERP sistema u turističkim kompanijama. Rezultati istraživanja pokazuju da kvalitet ERP sistema, kvalitet ERP informacija, kvalitet ERP usluga i spoljni pritisci, pozitivno utiču na uočenu korisnost i zadovoljstvo korisnika ERP sistema. Organizacijski faktori, podrška top menadžmenta, uočena korist i zadovoljstvo korisnika ERP sistema pozitivno utiču na ishode poslovnih procesa.

Ključne reči: sistem za planiranje resursa, poslovni pocesi, turizam, poslovni ishodi, hotelska industrija
JEL klasifikacija: Z32

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1. Introduction

In order to adapt to the complex and dynamic business environment, modern organizations have adopted one of the most prominent technological innovations, the enterprise resource planning (ERP) system. In the early 1990s, ERP system proved to be one of the largest IT investment ventures as the development model of the manufacturing resource planning system (MRP II) (Wibowo & Sari, 2018).

Today, ERP allows companies to integrate a multitude of different information, data and business processes into a single database, with the aim of improving business efficiency and productivity, which later brings companies a better market position. By integrating business processes, the ERP system simplifies the production of various type assets, which directly improves productivity, profitability, better resource management and accelerates business growth and development (Ahmadzadeh et al., 2021; Al-Okaily et al., 2021). Shakkah et al. (2016) point out "that the ambition of the ERP system is to integrate all sectoral areas in the enterprise into one common computer system" (p. 1921). Companies dealing with multi-million-dollar projects and complex business processes that require additional time and effort need cross-sector collaboration in order to successfully implement an ERP system (Vargas & Comuzzi, 2020). According to the latest 2022 Market Research Furniture reports, ERP system manufacturers generated revenue of $50 billion and the revenue growth trend is expected to continue in the coming years. ERP Cloud has been particularly interesting in the last few years, allowing its users to access the platform anytime and anywhere with the help of an internet browser. Cloud computing is a software model that is implemented over the Internet and provides security at a privileged price. Implementing and running the ERP system over the cloud offers many advantages and opportunities, despite numerous difficulties and challenges (Abd Elmonem et al., 2017).

However, the implementation of various information system models often has a high failure rate. Some studies reveal that the implementation of information systems in American firms was unsuccessful in more than 50% of cases (Umble, 2003). Also, a large number of authors find that the implementation of ERP systems in various companies was either difficult or unsuccessful (Costa et al., 2020). A typical example is Dell, a company that wrote off 115 million euros for an ERP system investment due to doubts about whether the system would be able to calculate its sales volume (Al-Okaly et al., 2021; Nkasu, 2020). Due to inadequate leadership in transformation, lack of material and non-material resources and complex organizational problems such as centralized organizational structure and inflexible organizational culture, the implementation of ERP systems in transition countries is difficult (Amid et al., 2012). Over time, ERP systems developed and improved for greater functionality and more integration possibilities. ERP manufacturers and vendors such as "Oracle, SAP, PeopleSoft, J. D Edward, etc. developed different modules to cover and support all functional units of the enterprise" (Abd Elmonem et al., 2017, p. 2).

The ERP system provides an opportunity for tourism companies (hotels and travel agencies) to incorporate almost all data, information and business processes to improve their business efficiency, productivity and profitability. Beldona et al. (2001) point out that the application of a resource planning system in tourism enterprises significantly improves business given the volume of information that the system offers. Through the ERP system, hotel companies automate certain business activities and thus provide users of the system with a timely overview of their operations.

The research subject in this paper is the application of the ERP system, as well as the influence of various factors of the system on business processes in tourism companies. The aim of the study is to test the relationship between the use of ERP systems and business

process outcomes in tourism companies. Bearing in mind the research subject and objective, qualitative and quantitative methodology is applied. Qualitative methodology is primarily applied, as it provides a theoretical view of the identified research subject through a review of relevant literature, thus creating the basis for the application of quantitative methodology, used to test the research hypotheses. Studies on ERP system emphasize quantitative methodology and the unified theory of acceptance and use of technology, since it allows analyzing the relationship between different independent and dependent variables. Empirical research was conducted in the Republic of Serbia, where employees of tourism companies expressed their views on the questions in the defined survey questionnaire.

2. Literature review

The ERP system is defined as a business strategy that enables the integration of production, finance, and distribution, with the aim of dynamic balancing and optimization of enterprise resources (Singh & Singh, 2013). According to Molina-Castillo et al. (2022), "ERP is a software package that is able to identify, collect, integrate, structure, store and process data of different types of departments within the company, and to provide employees with the information they need in an appropriate and timely manner" (p. 1). ERP systems allow organizations to define sales prices, create financial reports and manage tangible and intangible resources (human, financial, etc.), based on the previous integration of data on finance, sales and human resources (Singh & Singh, 2013; Vogt, 2002). By implementing an ERP system, managers make timely decisions based on a lot of meaningful data organized through the system.

In its first years, the ERP system focused mainly on manufacturing enterprises. Over time, as various ERP systems developed with the support of information and communication technology and Internet-oriented solutions, other industries got the opportunity to start implementing the system. In recent years, organizations in the tertiary sector have invested significant financial resources in order to implement an ERP system and achieve better cost efficiency and provide top-quality services (Mohamed & Farahat, 2020). The dominant factor in the tertiary sector is tourism, including companies that provide tourist services such as travel agencies, hotels, city tourism organizations, museums, etc.

Effective ERP systems today are the primary tools which employees use to perform daily business activities. ERP and business process improve systems integrating corporate data, especially inventory management (Oliverio et al., 2023). According to Lin (2010), "the success of ERP system implementation partly depends on the intensity of use, which can be indirectly related to system quality, information quality, service quality, perceived usefulness and user satisfaction" (p. 339). The dominant factors that can influence the implementation of ERP systems in tourism companies are external pressure and support from top management (Wibowo & Sari, 2018). Accordingly, this study is based on the extended model of ERP system success conceived by DeLone and McLean (D&M) (2003).

Many success models underlying the application of information systems was the reason to carry out a detailed review of the literature and develop a multidimensional model, which would integrate a large number of these individual measures into one comprehensive model. In that first version of the D&M model, information obtained from information systems, their quality as well as the quality of the system itself are relevant factors that influence the overall satisfaction of their users. On the other hand, user satisfaction and system usage directly affect the companies' business process outcomes (DeLone & McLean, 1992; Karimi et al., 2007). A few years after the creation of the first version of the model, it faced numerous criticisms and one of them highlighted the importance of service quality and the necessity of including it in the model (Pitt et al., 1995). In addition, the dimension related to system usage

implies its mandatory character, which indirectly affects user dissatisfaction. Therefore, the dimension related to the use of an information system should have a voluntary character (Seddon, 1997). Comments, criticisms and numerous research papers gave rise to an improved version of the model, which included the following success factors: system quality, information quality, service quality, perceived usefulness, user satisfaction and net benefits. The model itself was widely accepted from the very beginning, especially for evaluating the success of ERP implementation. Previous studies rarely used this model to evaluate the success of ERP system implementation in the organizational context of tourism companies (Mohamed & Farahat, 2020).

3. Research model and hypotheses

Literature points to several different methods to test the connection between the success factors of the ERP system implementation and to identify the factors that ultimately have an impact on the efficiency of business processes in tourism companies (Hart & Snaddon, 2014). This research presents a theoretical model with thirteen research hypotheses. In this model, ERP system quality refers to system flexibility and reliability in use (DeLone & McLean, 1992). Information quality refers to data timeliness and usefulness that an ERP system offers (Okaily et al., 2021). According to Petter et al. (2008), service quality refers to the support of internal and external experts in the field of integrated information systems to the final users of the ERP system. The level of service reliability, speed of response, amount of knowledge and skills and empathy towards system users affects the level of service quality. The implementation of ERP systems in tourism companies is significantly influenced by factors such as the degree of technological changes, external support, legal and state regulations, competitive pressures, market instability (Anaya & Qutaishat, 2022; Ojiabo & Ojiabo, 2016). Some authors believe that external pressures from the environment are strategically important for the adoption and implementation of innovations in companies. Competitive pressures are relevant primarily because they restructure the industry and thus influence market participants to implement modern technology in their operations in order to increase competitive advantage (Chauhan & Singh, 2017; Jeyaraj et al., 2006). Some authors believe that the usefulness of the ERP system is a key determinant that influences positive attitudes about the application of technologies in tourism. In tourism companies, during the implementation and adaptation of the ERP system, the quality of the ERP system, the quality of ERP information and the quality of ERP services are crucial in successful implementation (Mohamed & Farahat, 2020). It is assumed that an ERP system with high technical-technological performance, together with accurate and timely ERP information and excellent ERP support and numerous competitive pressures, can probably affect the perceived usefulness of the ERP system and user satisfaction when using it. Accordingly, the following hypotheses were formulated:

- H1a: ERP system quality has a statistically significant positive impact on the perceived usefulness of the ERP system in tourism companies.
- H1b: ERP system quality has a statistically significant positive impact on user satisfaction when using ERP systems in tourism companies.
- H2a: Quality of ERP information has a statistically significant positive impact on the perceived usefulness of the ERP system in tourism companies.
- H2b: Quality of ERP information has a statistically significant positive impact on user satisfaction when using ERP systems in tourism companies.
- H3a: Quality of ERP services has a statistically significant positive impact on the perceived usefulness of ERP systems in tourism companies.
- H3b: Quality of ERP services has a statistically significant positive impact on user satisfaction when using ERP systems in tourism companies.

- H4a: External pressure has a statistically significant positive impact on the perceived usefulness of ERP systems in tourism companies.
- H4b: External pressure has a statistically significant positive impact on user satisfaction when using ERP systems in tourism companies.

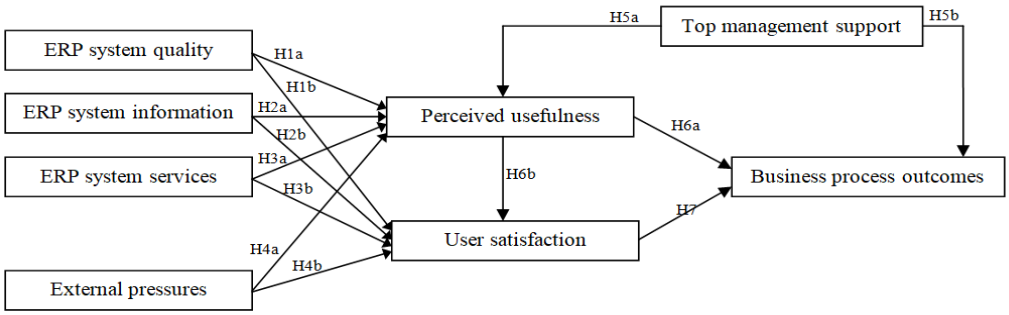
Successful implementation of the ERP system in tourism companies also depends on several different stakeholders, mostly on top management. If a strategically important project appears in the company, its successful implementation mostly depends on the support of the top management. One of the company's strategic projects is the implementation of the ERP system. Top management support refers to the support of the top management and the degree of participation of the management in the implementation of the ERP system (Nah et al., 2006). This research proposes the following hypotheses:

- H5a: Top management support has a statistically significant positive impact on the perceived usefulness of ERP systems in tourism companies.
- H5b: Top management support has a statistically significant positive impact on business process outcomes in tourism companies.

Perceived usefulness of the ERP system refers to improving business skills and individual performance, which later leads to their satisfaction when using the given system (Seddon, 1997). Cheng (2019) provides evidence that there is a greater chance that the user will be satisfied with the ERP system if he previously found that the same ERP system improves business performance in the company. In the context of the relationship between perceived usefulness and business process outcomes, some empirical studies, such as Rajan and Balan (2015) and Okaily et al. (2021), find that perceived usefulness has an impact on business process outcomes. Therefore, it is assumed that in tourism companies ERP systems correspond to the set tasks and consequently increase user satisfaction and improve the operational performance of those companies. Accordingly, the following hypotheses are set:

- H6a: Perceived usefulness of the ERP system has a statistically significant positive impact on business process outcomes in tourism companies.
- H6b: Perceived usefulness of the ERP system has a statistically significant positive impact on user satisfaction in tourism companies.
- H7: User satisfaction with the use of ERP systems has a statistically significant impact on business process outcomes in tourism companies.

Figure 1: Research model



Source: Authors' research

4. Research methodology

With the aim of conducting research on the impact of the ERP system on the business process outcomes, an empirical study was conducted that included users of the ERP system in tourism companies in the Republic of Serbia. In order to obtain relevant answers, the questionnaire was distributed only to respondents with experience in using different resource planning systems in the period from February to June 2023. That is, when sending the questionnaire, it was clearly indicated in its description that only those who actively use or once used the resource planning system in tourism companies should fill it out. The adapted questionnaire included items described by a five-point Likert scale (1 – I do not agree at all, 5 – I completely agree), and items referring to the quality of the ERP system (adapted from: Okaily et al., 2021), information quality obtained from the ERP system (adapted from: Ouiddad et al., 2020), service quality provided by the ERP manufacturer (adapted from: Ifinedo et al., 2010), external pressures from the environment (adapted from: Ghobakhloo et al., 2011), perceived usefulness of ERP system implementation (adapted from: Rezvani et al., 2017), ERP system user satisfaction (Frejik & Powell, 2015), top management support for ERP system use (adapted from: Zhu et al., 2010), business process outcomes in tourism companies (adapted from: Karimi et al., 2007), as well as general data on respondents related to gender and age, level of education, years of service, working position and years of work with the ERP system.

Table 1: Structure of the sample (Users)

Characteristics of the respondents (Users)		**Frequency**	**Percentage**
Gender	Men	50	45.9%
	Women	59	54.1%
Age	<26	24	22%
	25-35	61	56%
	36-45	19	17.4%
	>45	5	4.6%
Education	High school	4	3.7%
	Faculty	63	57.8%
	Master	42	38.5%
	PhD	0	0%
Work experience	<5	40	36.7%
	5-10	26	23.9%
	11-20	41	37.6%
	>20	2	1.8%
Working position	Operational level	60	55%
	Managerial level	49	45%
ERP experience	<1	32	29.4%
	1-3	12	11%
	4-6	45	41.3%
	>6	20	18.3%
Total		109	100%

Source: Authors' research

The sample included 109 respondents, ERP system users, employed in the tourism sector. In the research, the tourism companies were hotels, travel agencies and city tourism

organizations. The survey questionnaire was distributed to 430 different addresses where 112 respondents responded and filled out the questionnaire. Of the 112 respondents who responded to the questionnaire, 109 of them filled it out completely. The percentage of responses to the distributed questionnaire is 25.34%.

Table 2: Structure of the sample (Tourism companies)

Characteristics of the respondents (Tourism companies)		**Frequency**	**Percentage**
Type of tourism company	Hotel	28	77.8%
	Travel Agency	6	16.67%
	City tourism organization	2	5.56%
Years of company using ERP	Under 2 years	7	19.44%
	2-10 years	20	55.56%
	Above 10 years	9	25%
Number of employees	Under 20	4	11.11%
	20-100	22	61.11%
	Above 100	10	27.78%
Geographical regions in the Republic of Serbia	Belgrade Region	7	19.44%
	Region of Vojvodina	12	33.33%
	Region of Šumadija and Western Serbia	10	27.78%
	Region of Southern and Eastern Serbia	7	19.44%
	Region of Kosovo and Metohija	0	0%
Total		36	100%

Source: Authors' research

The collected data were analyzed in a statistical package SPSS, version 23.0. The Cronbach Alpha coefficient was used to measure the reliability and internal consistency of variables. Descriptive statistical analysis was used to measure the arithmetic mean and standard deviation of the analyzed variables. Research hypothesis testing was conducted using multiple regression analysis.

5. Results and discussion

In order to examine the agreement of the answers and the homogeneity of their attitudes by calculating the values of the arithmetic mean and standard deviation, it is necessary to conduct a descriptive statistical analysis. Based on the calculated arithmetic mean shown in Table 3, it can be concluded that respondents agree most with Quality of ERP information. On the other hand, respondents agree least with External pressures. The results of reliability and internal consistency analysis of variables show that all variables have a high level of reliability and internal consistency, since the acceptable values of the Cronbach's Alpha coefficient are above 0.6 (Robinson et al., 1991). The highest degree of reliability is characteristic of business process outcomes ($\alpha = 0.961$) and perceived usefulness ($\alpha = 0.956$), with other variables also showing high level of reliability (top management support: $\alpha = 0.942$, quality of ERP services: $\alpha = 0.912$, ERP information quality: $\alpha = 0.888$, user satisfaction: $\alpha = 0.836$, ERP system quality: $\alpha = 0.822$).

Table 3: Arithmetic means, standard deviations and Cronbach's Alpha coefficients of the analyzed variants

Variables	Mean	Std. Dev.	Cronbach's Alpha
ERP system quality	4.11	0.66	0.822
Quality of ERP information	4.19	0.75	0.888
Quality of ERP services	3.99	0.76	0.912
External pressures	3.83	0.81	0.766
Perceived usefulness	4.17	0.84	0.956
User satisfaction	4.03	0.66	0.836
Top management support	3.86	0.96	0.942
Business process outcomes	4.15	0.78	0.961

Source: Authors' research

To test the strength of the correlation between the variables, a correlational statistical analysis was conducted, the results of which are shown in Table 4.

Table 4: Correlational statistical analysis

Variables	ERP system quality	Quality of ERP information	Quality of ERP services	External pressures	Perceived usefulness	User satisfaction	Top management support	Business process outcomes
ERP system quality	1							
Quality of ERP information	0.603**	1						
Quality of ERP services	0.615**	0.709**	1					
External pressures	0.619**	0.624**	0.677**	1				
Perceived usefulness	0.718**	0.757**	0.855**	0.782**	1			
User satisfaction	0.771**	0.831**	0.856**	0.763**	0.904**	1		
Top management support	0.509**	0.615**	0.691**	0.709**	0.804**	0.749**	1	
Business process outcomes	0.673**	0.671**	0.723**	0.709**	0.835**	0.859**	0.851**	1

Source: Authors' research

The correlation analysis findings indicated a significant correlation between all pairs of variables. The highest degree of linear dependence is present between user satisfaction with the ERP system and the perceived usefulness when using the ERP system (0.904**), while the lowest degree of linear correlation is between the quality of ERP information and the quality of the ERP system (r = 0.603**). Between other pairs of variables, there is a strong correlation, because the value of the Pearson coefficient between those variables is on average above 0.6.

In order to verify the previously stated hypotheses, the paper used a multiple regression analysis that examines the influence of several independent variables on the dependent

variable, and the results are shown in Table 5. First of all, it is necessary to fulfill the condition of multicollinearity in order to successfully conduct a multiple regression analysis. According to the obtained results, ERP system quality, ERP information quality, ERP service quality, external pressures and top management support predicted and described 87.7% (R^2 = 0.877) of the variability of the perceived usefulness of the ERP system in the tourism sector. The first regression analysis in the paper shows that the quality of the ERP system (β = 0.194, $p < 0.01$), the quality of ERP information (β = 0.137, $p < 0.01$), the quality of ERP services (β = 0.351, $p < 0.01$), external pressures (β = 0.141, $p < 0.05$) and top management support (β = 0.277, $p < 0.1$) significantly affect the perceived usefulness of ERP systems in tourism companies, which confirms hypotheses **H1a, H2a, H3a, H4a, H5a**. The second regression model indicates the existence of a statistically significant influence of ERP system quality (β = 0.222, $p < 0.01$), ERP information quality (β = 0.285, $p < 0.01$), ERP service quality (β = 0.241, $p < 0.01$), external pressure (β = 0.082, $p < 0.1$) and perceived usefulness (β = 0.259, $p < 0.01$) on user satisfaction with ERP systems in tourism companies, which proves the research hypotheses **H1b, H2b, H3b, H4b, H6b**. Based on the analysis, it can be seen that the coefficient of determination is 0.911, which means that 91.1% of the variability of user satisfaction with the ERP system is explained by a specific regression model. According to the last regression model, it can be concluded that the perceived usefulness of ERP system, user satisfaction with ERP system and top management support in tourism organizations have a statistically significant impact on the final outcomes of business processes in tourism companies. 83.6% of the dependent variable, business process outcomes, is explained by a specific regression model, according to the coefficient of determination, which is 0.836.

Table 5: Regression statistical analysis

	Hypothesis	**B**	**t**	**p**	**R^2**	
H1a	QS → PU	0.194	4.090	0.000***		Accepted
H2a	QI → PU	0.137	2.622	0.010**		Accepted
H3a	QS → PU	0.351	6.035	0.000***	0.877***	Accepted
H4a	EP → PU	0.141	2.525	0.013**		Accepted
H5a	TM → PU	0.277	5.119	0.000***		Accepted
H1b	QS → US	0.222	5.176	0.000***		Accepted
H2b	QI → US	0.285	6.179	0.000***		Accepted
H3b	QS → US	0.241	4.166	0.000***	0.911***	Accepted
H4b	EP → US	0.082	1.722	0.088*		Accepted
H6b	PU → US	0.259	3.450	0.001***		Accepted
H6a	PU → BO	0.245	4.142	0.002***		Accepted
H5b	TM → BO	0.474	7.108	0000***	0.836***	Accepted
H7	US → BO	0.511	5.494	0.000***		Accepted

Source: Authors' research

Research results point to the conclusion that the quality of ERP services is the strongest indicator of the perceived usefulness of the ERP system in tourism companies while the support of top management, the quality of the ERP system, the quality of ERP information and external pressures follow it in terms of influence intensity. Several previous research studies (Chen et al., 2015; Floropoulos et al., 2010; Karimi et al., 2007; Okaily et al., 2021; Seddon, 1997; Wibowo & Sari, 2018;) confirm a statistically significant impact of ERP system quality, quality of ERP information and quality of ERP services on the perceived usefulness of ERP systems in tourism companies. When the ERP system in a tourism

company is of high quality, when it provides up-to-date, accurate and timely information to users, when it provides the possibility of 24/7 system support for its users, when the top management supports the implementation of the ERP system in the company and when the environment exerts partial pressure on the implementation of the ERP system, the perceived usefulness of the ERP system in tourism companies will be at a high level. From the organizational perspective, the positive perceived usefulness of the ERP system in tourism companies has a positive statistically significant impact on user satisfaction with the ERP system, as is the case with Cheng (2019). However, the impact of technology and environment is inevitable in defining the overall impact on ERP system user satisfaction. Therefore, the quality of the ERP system, together with the quality of ERP information and the quality of ERP services, has a positive statistically significant impact on user satisfaction in tourism companies, while external pressure has a somewhat weaker statistical impact (Ouiddad et al., 2020; Wibowo & Sari, 2018). Users of the ERP system in hotels will be more satisfied if the ERP system is of higher quality, confidential and accurate with the information it provides and if it provides technical and customer support in the use and implementation of the system.

As for the results of business processes, user satisfaction from working in an ERP system ensures not only improved individual performance, but also greater productivity, organizational efficiency and effectiveness, and overall business performance. The support of top management when using the ERP system leads to improved business process outcomes (Harr et al., 2019; Lin, 2010). ERP software tools can help tourism companies develop and reduce their costs, increase operational efficiency and increase guest loyalty. The importance of integration information system is reflected in its potential to achieve synergy with all participants in business, which leads to greater satisfaction of customers, flexibility, reduced costs, innovation and finally, to a better response to the needs of end customers. In this way, the company achieves a better competitive position and higher profitability (Milovanović et al., 2022). ERP systems in tourism companies integrate various business operations, allowing management to control the movement of financial resources in a simpler way (Chou & Hong, 2013; Okaily et al., 2021).

6. Conclusion

The aim of the paper was to examine the influence of ERP system implementation factors on business process outcomes in tourism companies. The application of this research approach, which is not frequently employed, is important because it can ensure the benefits of ERP system implementation in tourism companies. Based on the conducted empirical research, the conclusion is reached that the success of ERP is determined by the quality of the ERP system, the quality of ERP information, the quality of ERP services, external pressures from the environment, the perceived usefulness of the ERP system, user satisfaction with the ERP system, top management support and the outcomes of business processes in tourism organizations. The research model in this paper included additional variables such as top management support and external pressures and confirmed the impact on perceived usefulness of ERP users and business process outcomes.

The special contribution of this paper is reflected in the analysis of the impact of resource planning systems in tourism companies on their business process outcomes, which enables a deeper analysis of the observed research area. According to the abovementioned, it can be concluded that the paper offers a holistic view of the relevant factors that influence primarily the perceived usefulness and user satisfaction with the ERP system in tourism companies, and later the final results of business processes.

This work has important implications for producers of resource planning systems and for the management of tourism enterprises. First, according to the research findings that the quality of the ERP system positively affects its perceived usefulness, it is recommended that manufacturers create an ERP system that will be simplified with the ability to adapt to the end user's requirements. Second, the management of tourism companies should implement ERP systems, as their use in the tourism industry contributes to increasing productivity and business efficiency. Third, the management of tourism companies should support employees to use the ERP system considering its benefits.

As with any study, there are some significant limitations to this analysis. First, the research was conducted exclusively in the Republic of Serbia and it is assumed that the countries of the Western Balkans recorded significant results in the application of the resource planning system in tourism enterprises. Subsequent research on this topic should analyze other countries of the Western Balkans. Second, insufficient sample size may affect the reliability of the results and conclusions. Directions for future research indicate the necessity of including a larger number of respondents, especially users with more work experience in the ERP system. Third, the research did not analyze the influence of moderator variables, such as gender, age, job position, and work experience in the ERP system between independent and dependent variables. It is assumed that focus on the influence of gender, age, work position and work experience when analyzing the determinants of resource planning systems in tourism companies in the Republic of Serbia and their impact on the outcomes of their business processes would significantly enrich the study. Accordingly, future research directions may include these analyses.

Conflict of interest

The authors declare no conflict of interest.

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The impact of global crises on international tourism in the Southern and Mediterranean Europe

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Abstract: The global character of international tourism makes this industry vulnerable to the effects of global shocks of an economic or non-economic nature. Crises in international tourism are becoming more frequent. The 2009 Global Economic Crisis and the Covid-19 pandemic are the two biggest crises that have hit the international tourism market in the twenty-first century and have had a global character. This paper aims to examine and compare the impact of these crises on international tourism in the countries of the Southern and Mediterranean Europe by applying the methods of comparative analysis and cluster analysis. The study results indicated the difference in the impact of the observed crises on the international tourist traffic of the analysed countries, as well as the heterogeneity across the countries of the Southern and Mediterranean Europe themselves in terms of the impact of these global crises.

Keywords: international tourism, crisis, arrivals, receipts
JEL classification: Z30, Z32

Uticaj globalnih kriza na međunarodni turizam u Južnoj i Mediteranskoj Evropi

Sažetak: Globalni karakter međunarodnog turizma čini ovu delatnost osetljivom na delovanje globalnih potresa ekonomske ili neekonomske prirode. Krize u međunarodnom turizmu su sve učestalije. Globalna ekonomska kriza 2009. godine i pandemija Covid-19 su dve najveće krize koje su u dvadeset prvom veku pogodile međunarodno turističko tržište i koje su imale globalni karakter. Cilj rada je ispitivanje i poređenje uticaja ovih kriza na međunarodni turizam zemalja Južne i Mediteranske Evrope, primenom metoda komparativne i klaster analize. Rezultati istraživanja ukazali su na razliku u uticaju posmatranih kriza na međunarodni turistički promet zemalja analizirane grupacije, kao i na heterogenost samih zemalja Južne i Mediteranske Evrope u pogledu uticaja ovih globalnih kriza.

Ključne reči: međunarodni turizam, kriza, dolasci, prihodi
JEL klasifikacija: Z30, Z32

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1. Introduction

The dynamic growth of international tourism since the 1950s is periodically interrupted by exceptional events influenced by economic and non-economic factors, such as terrorism, epidemics or natural disasters. Given the increasing global interconnectedness, interdependence, and the resulting increased vulnerability to the effects of crises, globalization has caused crises to take on a global character (Keller & Bieger, 2010). As a global phenomenon, tourism is not immune to the adverse effects of crises. The vulnerability of international tourism is particularly noteworthy. The increasing frequency and variety of causes are the fundamental features of the crisis in international tourism, particularly since the turn of the 21st century.

The growing public awareness of international terrorism, especially after the 9/11 attacks, has significantly increased interest in the crisis-tourism nexus (Blake & Sinclair, 2003), and the ways they affect regional and global tourism demand (Araña & León, 2008). The Global Economic Crisis that spread from the United States of America (USA) to the whole world, bringing it into recession in 2009, aroused the interest of many researchers in studying its impact on tourist flows and their behavior. The effect of the Covid-19 crisis on tourism, which turned into an economic crisis, has also been the focus of research conducted by many authors. The volume of tourist movements between source and destination regions is directly influenced by such catastrophes.

The severe recession, the most intense since World War II, hit the global economy in 2009. The significant decline in world commodity exports and industrial production, the growth of unemployment and the sharp deterioration of consumer confidence in the stability of most countries, which are also the main emitting tourism markets, had a severe adverse effect on the travel and tourism sector (Smeral, 2010). The economic crisis spread from the USA to most world countries in 2008 and 2009, while in certain countries it lasted even longer, and took on the character of a global economic crisis. According to the World Bank (2023), the world's gross domestic product (GDP) declined by 3.41% in 2009, compared to 2008. Even though the roots of the crisis came from one of the world's most significant emitting tourism markets, i.e., the USA, back in 2007, international tourism was most severely impacted by the Global Economic Crisis in 2009, when it was largely of a global nature. Globally, the volume of international tourist arrivals declined by 3.8%, while international tourism receipts decreased by 5.6% in 2009 compared to 2008 (UNWTO, 2011).

Rapidly spreading throughout the economic sphere, the Covid-19 pandemic has affected almost every area of the economy and it caused a crisis that can hardly be compared to any previous one (Đokić, 2021). Economic activities were brought to a halt by rigorous blockade protocols and a lockdown. The tourism industry was one of the hardest hit. Tourism demand has always been highly elastic related to the impact of external variables. However, the tourism industry has historically demonstrated a remarkable capacity for recovery. In the years following the crisis, tourist traffic quickly surpassed or even reached the pre-crisis level. The Covid-19 pandemic, which is still a health concern today, has had the most severe negative repercussions of any crisis that has been identified so far in the modern evolution of tourism. According to the World Bank (2023), the world GDP in 2020 compared to 2019 decreased by 5.7%. In the same period, the number of international tourist arrivals decreased by 72.1%, while international tourism receipts decreased by 62.7% (UNWTO, 2022).

There are numerous academic articles investigating the impact that either the Global Economic Crisis or the Covid-19 have on tourism. However, there are still not enough studies dealing with the comparative analysis of the two mentioned crises on tourism. Furthermore, there have been no significant attempts to conduct a comparative study

between countries. Considering that only these two crises had a global character in recent history, it is understandable to compare the two. This paper is therefore the authors' attempt to address these needs and gaps. The subject of this paper is studying the impact of the Global Economic Crisis and the Covid-19 pandemic on international tourism in the Southern and Mediterranean Europe. The aim of the paper is to examine and compare the impact of these two global crises on international tourism in the countries of the Southern and Mediterranean Europe.

The remaining structure of the paper is as follows. The first part deals with the theoretical background on the effects of the Global Economic Crisis and the Covid-19 crisis on tourism. The methodological framework of the research is given in the second part. The third section, divided into two parts, contains study findings and the discussion. First, a cross-country comparison is conducted using data from two years' number of international tourist arrivals and tourism receipts for both crises (2008 and 2009, and 2019 and 2020) and data on percentage changes of these indicators. The results of the cluster analysis are then presented. The paper ends with the Conclusion.

2. Background

The Global Economic Crisis had strong negative implications for international tourism, and the reasons are all those that reduce tourism activities in the affected areas. Credit constraints activated the liquidity problem and reduced consumption, overall demand, GDP and disposable income also decreased, while unemployment increased. Consequently, the demand for tourism-related services declined. Because international and domestic tourist flows can typically be more affected than the consumption of other goods and services, the tourism industry is extremely susceptible to economic cycles. Therefore, during an economic downturn, luxury consumer spending declines significantly, which directly affects tourist arrivals and destination economies (Eugenio-Martin & Campos-Soria, 2014; Smeral, 2009). Due to its profoundly adverse consequences on the world economy overall and on tourism in particular, the Global Economic Crisis that began in the USA in 2007 was the one that received the most attention in academic public (Page et al., 2012; Smeral, 2009; Smeral, 2010; Song & Lin, 2010).

The tourism industry was significantly impacted by the decline in economic activity. Employees started to postpone, change, or cancel their travel plans because of possible layoffs and more stringent financing requirements, which considerably reduced travel budgets. Fears of recession, rising oil prices, rising inflation, and a decline in foreign demand for tourism services in the destinations led to a further decline in travel (UNWTO & ILO, 2011). Individual disposable income and consequently overall consumption were both significantly impacted by the slowdown in economic activity. Due to its high-income elasticity in these conditions, tourism consumption is especially susceptible to decisions to reduce consumption (Lanza et al., 2003; Smeral, 2012). As a result, fewer people were traveling abroad from the affected countries, significantly reducing the number of arrivals to tourist destinations (Page et al., 2012; Papatheodorou et al., 2010).

The Global Economic Crisis influenced the tourism industry by lowering sales, decreasing tourist consumption (Hociung & Francu, 2012), and altering travel behaviors. The distance and the length of travel were reduced and cheaper types of accommodation were chosen (Bronner & Hug, 2012). The crisis also resulted in travel plans being changed and canceled by tourist consumers, considerably cutting back on their travel expenses. Fear of a recession, coupled with high oil prices and growing inflation rates, resulted in further reductions in travel budgets. This has limited the international demand for tourism services. Along with fewer visitors in hotels, restaurants, and congress centers, etc., the crisis also caused a large decline in the average amount spent by each visitor (Pizam, 2009).

There are differences in how tourists are responding to the economic downturn. Some people are still interested in traveling despite the crisis, while others are unwilling to do so and would rather save money by minimizing travel expenses (Eugenio-Martin & Campos-Soria, 2014). When the crisis is of global proportions and of great intensity, more people belong to the second group. Apart from the change in tourism expenditure depending on the disposable income level, it is interesting to note that, in times of crisis, households in bad-climate regions are less inclined to reduce consumption compared to those in good-climate regions. The Global Economic Crisis undoubtedly results in a decline in foreign travel, but depending on the nation, it may also present new prospects for domestic travel by enhancing its comparative competitiveness with other locations due to new financial constraints. This can benefit the economy in terms of employment and production, minimizing leaks that can occur during a crisis (Sheldon & Dwier, 2010). However, not all regions have experienced the same change in the tourist destination. Eugenio-Martin and Campos-Soria (2014) have shown that locations with favorable climates shift between domestic and foreign tourism more frequently, whereas this is not true for countries with unfavorable climates.

The crisis caused by the Covid-19 pandemic hit the world in 2020, with the first cases of recorded in China towards the end of 2019. The pandemic negatively affected practically every economic sector, but tourism was one of the most affected due to a specificity of the crisis, as well as tourism itself as an economic activity. The coronavirus pandemic has had the substantial impact on tourism, like no other event in the history (Sigala, 2020). This especially applies to international tourism. The pandemic was accompanied by the closure of the state borders, the restriction of people's freedom of movement, and the introduction of specific restrictions, or even closure of hotels, restaurants and other tourist-oriented facilities. According to the World Tourism Organization (UNWTO, 2020), 96% of tourism destinations worldwide imposed travel restrictions, and fully or partially closed their borders to tourists. Tourists, fearing for their safety and security, canceled trips themselves or substituted for domestic ones (Stanišić et al., 2022). Although the tourism industry was considered to have remarkable resilience and the ability to respond to unexpected or unforeseen events and recover quickly, the Covid-19 pandemic has severely stressed the industry (Romagosa, 2020).

Research has shown that international tourism can contribute to the spread of the pandemic. Travel increases the risk of airborne infection (Su et al., 2021), and tourists contribute significantly to the spread of viruses between destinations (Hollingsworth et al., 2006; Zhong et al., 2021). Farzanegan et al. (2020) proved that countries with more developed international tourism and a larger number of international tourists also have a higher rate of infection with the Covid-19 virus. Pandemics negatively affect tourist behavior and mental well-being (Park et al., 2019) regarding personal safety, trust, and consumption (Chebli & Ben Said, 2020). Due to the fear of contagion in hotels and restaurants (Gajić et al., 2022), and the inability to prevent virus spread while traveling (Meadows et al., 2019), many tourists canceled their trips, which led to significant financial losses for the hotel and tourism industry (Kumar & Nafi, 2020).

Numerous countries depend heavily on tourism for their economic prosperity, and the rapid spread of Covid-19 has had negative repercussions on it (Estrada et al., 2020). Due to their heavy reliance on foreign tourists, which makes them more vulnerable, major receptive tourist destinations are particularly exposed to the crisis' effects (Nicola et al., 2020; Robina-Ramirez et al., 2021). The virus's spread has prompted alarm among tourists and the broader tourism industry. Thereafter, travel plans were canceled and postponed worldwide. The data of the International Air Transport Association (IATA, 2020) indicate that the Covid-19 pandemic was expected to cause a reduction in worldwide air transport revenues of 29.3 billion US dollars in 2020. This expected decrease was the first of that level since the Global

Economic Crisis in 2009 and carriers from the Asia-Pacific area accounted for nearly 95% of the anticipated loss (Folinas & Metaxas, 2020). The situation was unprecedented. Places that only a few months ago suffered from excessive tourism (Dodds & Butler, 2019; Seraphin et al., 2018) became eerily peaceful (Milano et al., 2019). Most events of all types were postponed or canceled, while museums, hotels, and restaurants were closed. The economic effects have undoubtedly been catastrophic, particularly for travel destinations or even nations that largely rely on tourism (Ioannides & Gyimóthy, 2020).

The literature offers examples of papers that analyse the effect of the Covid-19 crisis on tourism using cluster analysis. Using the number of overnight stays in tourist destinations, Vărzaru et al. (2021) classified the European Union member states into clusters according on how the Covid-19 crisis affected the tourism. The cluster analysis led to the conclusion that travel restrictions and a general decline in travel during the pandemic had resulted in an exceptional drop in tourism, particularly in the countries most severely hit by the Covid-19 pandemic. The effect of the Covid-19 crisis on the economic indicators of tourism (contribution to GDP and employment) in the CESEE countries was examined by Stanišić et al. (2022). Using cluster analysis, the authors found that countries with higher tourism-related economic importance are more impacted by the pandemic crisis.

to the scholarly literature not only examines how the pandemic has affected consumer behavior, tourism development indicators, and tourism businesses, focusing on the delicate nature of the hotel and air transport industries, but also pays special attention to the fact that "the new circumstances represent both a challenge and an opportunity for significant changes in tourism and the establishment of a particular new, more desirable paradigm of development" (Stanišić et al., 2022, p. 157). Almost all tourist organizations define tourism success as an increase in the number of visitors. This paradigm has already been criticized in light of the Global Economic Crisis (Hall, 2009) and as the difficulties caused by overtourism, climate change, and the Covid-19 crisis have further demonstrated, this viewpoint is out of date. The Covid-19 pandemic can be seen as a chance to rethink the global model of tourism volume growth and to doubt the logic of the statement that more arrivals equal more advantages (Gössling et al., 2020). Fletcher et al. (2020) imply that despite the proclamation that the Covid-19 outbreak is over, the world does not permit tourism to resume its old levels and patterns. Excessive mass tourism harms the ecosystem by polluting the environment and depleting its resources. Despite the uncertainty generated by "the health and economic crisis in the tourism sector, one of the key effects is the consolidation of local tourism, particularly domestic tourism" (Vărzaru et al., 2021, p. 4). That is why it is important to emphasize that the Covid-19 crisis provides a chance to consider the way of tourism's further development, with the necessity to place that development on a more sustainable basis, while minimizing its negative impacts.

3. Materials and methods

In view of the previously defined subject and aim of the research, the following hypotheses are set:

- There is a difference in the impacts of the Global Economic Crisis and Covid-19 pandemic on the international tourism of the Southern and Mediterranean Europe.
- The countries of the Southern and Mediterranean Europe are heterogeneous in terms of the impact of the Global Economic Crisis, as well as in terms of the impact of the Covid-19 pandemic on the results achieved in international tourism.

The methods used in the research are comparative analysis and cluster analysis. The former primarily aims, first of all, to identify the countries that achieve relatively significant results concerning international tourist traffic, and those with relatively modest results. In addition,

the comparative analysis enabled an overview of the impact intensity of the observed crises in individual countries belonging to the two groups. The cluster analysis enabled the formation of subgroups of countries within the two analysed group by taking into account the impact of the aforementioned crises on the two observed variables, i.e. by taking into account the percentage changes in the international tourist arrivals and the percentage changes in the international tourism receipts in the years with the most intensive impact of the observed crises compared to the previous year (2009/2008 and 2020/2019).

The sources of data on international tourist arrivals and international tourism receipts are the relevant reports of the World Tourism Organization (UNWTO, 2011; UNWTO, 2022). The classification of countries within the Southern and Mediterranean Europe is also done in the same way as the World Tourism Organization does in its official reports. This resulted in Israel being included in the analysis. There are a total of 17 countries within this group. In this study, 15 out of 17 countries of the Southern and Mediterranean Europe are included in the analysis. Andorra and San Marino were omitted from the research because of the lack of data on the analysed variables in certain years.

4. Results and discussion

a) Cross-country comparison

The data on international tourist arrivals in the countries of the Southern and Mediterranean Europe in selected years, as well as the percentage change in this indicator in the year of the most intense effect of the observed crisis compared to the previous year, are shown in Table 1. The absolute data on international tourist arrivals enables an assessment of the role and significance of international tourism for the analysed countries of the Southern and Mediterranean Europe, while the percentage change of the observed variable enables an assessment of the intensity of the crisis in the selected countries.

Table 1: International tourist arrivals in the Southern and Mediterranean Europe

Country	**International tourist arrivals (in thousands)**					
	2008	2009	09/08 (%)	2019	2020	20/19 (%)
Albania	1,330	1,775	33.5	5,919	2,521	-57.4
Bosnia and Herzegovina	322	311	-3.4	1,198	197	-83.6
Croatia	9,415	9,335	-0.9	17,353	5,545	-68.0
Cyprus	2,404	2,141	-10.9	3,977	632	-84.1
Greece	15,939	14,915	-6.4	31,348	7,374	-76.5
Israel	2,572	2,321	-9.8	4,552	831	-81.7
Italy	42,734	43,239	1.2	64,513	25,190	-61.0
Malta	1,291	1,182	-8.4	2,753	659	-76.1
Montenegro	1,031	1,044	1.3	2,510	351	-86.0
North Macedonia	255	259	1.6	758	118	-84.4
Portugal	6,962	6,439	-7.5	24,600	6,480	-73.7
Serbia	646	645	-0.2	1,847	446	-75.9
Slovenia	1,940	1,803	-7.0	4,702	1,216	-74.1
Spain	57,192	52,178	-8.8	83,509	18,933	-77.3
Turkey	24,994	25,506	2.0	51,192	15,894	-69.0
Average	*11,268*	*10,873*	/	*20,049*	*5,759*	/

Source: UNWTO, 2011; UNWTO, 2022

In the first observed period (the period of Global Economic Crisis), Spain, Italy, Turkey and Greece can be singled out as countries of great importance for international tourism, i.e. with a number of international tourist arrivals that is higher than the average recorded in the Southern and Mediterranean Europe. North Macedonia, Bosnia and Herzegovina and Serbia can be singled out as countries with the lowest number of international tourist arrivals. This applies to both observed years (2008 and 2009). The greatest intensity of the impact of the Global Economic Crisis was recorded in Cyprus (10.9% decrease in international tourist arrivals), while Albania was the country with the largest positive change in this indicator in 2009 compared to 2008 (increase of 33.5%). In the year before the Covid-19 pandemic (2019), Spain, Italy, Greece, Turkey and Portugal were the most important tourist countries in the Southern and Mediterranean Europe, with the number of international tourist arrivals higher than the group average. North Macedonia and Bosnia and Herzegovina were the countries that recorded the lowest number of the international tourist arrivals in 2019. This ranking is also valid for 2020. Montenegro was the country with the largest and Albania was the country with the smallest percentage decrease in the number of the international tourist arrivals in 2020 in comparison to 2019. Table 2 shows the data on international tourism receipts in the observed years, as well as their percentage change in the year of the most intense effect of the observed crisis compared to the previous year.

Table 2: International tourism receipts in the Southern and Mediterranean Europe

Country	**International tourism receipts (in USD million)**					
	2008	2009	09/08(%)	2019	2020	20/19 (%)
Albania	1,720	1,816	5.6	2,332	1,129	-51.6
Bosnia and Herzegovina	913	753	-17.5	1,175	431	-63.3
Croatia	10,971	8,898	-18.9	11,753	5,569	-52.6
Cyprus	2,737	2,162	-21.0	3,260	728	-77.7
Greece	17,114	14,506	-15.2	20,351	4,933	-75.8
Israel	4,279	3,741	-12.6	7,620	2,500	-67.2
Italy	45,727	40,249	-12.0	49,596	19,797	-60.1
Malta	950	881	-7.3	1,901	392	-79.4
Montenegro	859	792	-7.8	1,230	165	-86.6
North Macedonia	262	232	-11.5	396	252	-36.4
Portugal	10,943	9,635	-12.0	20,477	8,814	-57.0
Serbia	1,114	986	-11.5	1,606	1,249	-22.2
Slovenia	2,820	2,511	-11.0	3,183	1,413	-55.6
Spain	61,628	53,177	-13.7	79,670	18,507	-76.8
Turkey	21,951	21,250	-3.2	34,305	13,330	-61.1
Average	*12,266*	*10,773*	/	*15,924*	*5,281*	/

Source: UNWTO, 2011; UNWTO, 2022

The countries that recorded a higher amount of receipts from international tourism than the group average in 2008 were Spain, Italy, Turkey and Greece. North Macedonia had the smallest amount of international tourism receipts in this year. This situation was also recorded in 2009. The greatest negative impact of the Global Economic Crisis on international tourism receipts was recorded in Cyprus (a decrease of 21.0%), while Albania was the only country with a positive change in this indicator in 2009 compared to 2008 (an increase of 5.6%). Spain, Italy, Turkey, Greece and Portugal were the countries that recorded a higher amount of international tourism receipts than the group average in 2019, while the lowest amount was recorded in North Macedonia. The Covid-19 pandemic, unlike the period

of the Global Economic Crisis, brought certain changes in this ranking of countries in 2020. The countries with the value of international tourism receipts higher than the average in 2020 were Croatia, Italy, Portugal, Greece, Turkey and Spain, while Montenegro was the country with the smallest amount. The greatest negative impact of the Covid-19 pandemic on international tourism receipts in 2020 in comparison to 2019 was recorded in Montenegro (-86.6%), and the least negative impact was recorded in Serbia (-22.2%).

b) Cluster analysis

For the classification of the countries of the Southern and Mediterranean Europe by the intensity of the impact of the observed crises, a cluster analysis is performed. The classification of countries is carried out separately according to the variables through which the impact of the Global Economic Crisis on the international tourism of the observed countries was assessed (percentage changes of international tourist arrivals and international tourism receipts 2009 compared to 2008) and according to the variables through which the impact of the Covid-19 crisis on international tourism of the observed countries was assessed (percentage changes of international tourist arrivals and international tourism receipts 2020 compared to 2019). The countries of the Southern and Mediterranean Europe are grouped into three clusters in both observed periods. The final cluster centers are shown in Table 3.

Table 3: Final cluster centres

Global Economic Crisis				**Covid-19**			
Variables	**Cluster**			**Variables**	**Cluster**		
	1	2	3		1	2	3
ITA [08/09(%)]	33.50	1.18	-7.01	ITA [20/19(%)]	-67.20	-80.15	-80.76
ITR [08/09(%)]	5.60	-9.20	-14.36	ITR [20/19(%)]	-56.33	-29.30	-75.26

Legend: ITA – international tourist arrivals; ITR – international tourism receipts
Source: Authors' research

Taking into account the clusters singled out for the first period (the period of the Global Economic Crisis), cluster 1 may be characterized as the cluster with the best results. The country/countries belonging to this cluster did not record a decrease in the international tourist arrivals and international tourism receipts under the influence of the Global Economic Crisis. Cluster 2 is a cluster of medium performance, with a still positive growth rate in the international tourist arrivals and a negative growth rate in the international tourism receipts. Cluster 3 may be characterized as the lowest performing cluster, with a negative value of both observed variables. When it comes to the clusters formed for the second period (Covid-19 pandemic period), the situation is specific. Namely, cluster 3 is also the cluster with the worst performance. However, it is not possible to clearly separate the cluster with the best and medium performance. The countries in cluster 1 are the countries with the lowest negative impact of the Covid-19 pandemic on international tourist arrivals and the medium intensity of the negative impact of the Covid-19 pandemic on international tourism receipts. The countries in cluster 2 are the countries with the least negative impact of the Covid-19 pandemic on international tourism receipts and the medium intensity of the negative impact of the Covid-19 pandemic on international tourist arrivals. The membership of the countries in the selected clusters for both observed periods is presented in Table 4.

Table 4: Cluster membership

Global Economic Crisis		**Covid-19**	
Cluster	**Cluster membership**	**Cluster**	**Cluster membership**
1	Albania	1	Albania, Croatia, Italy, Portugal, Slovenia, Turkey
2	Italy, Montenegro, North Macedonia, Serbia, Turkey	2	North Macedonia, Serbia
3	Bosnia and Herzegovina, Croatia, Cyprus, Greece, Israel, Malta, Portugal, Slovenia, Spain	3	Bosnia and Herzegovina, Cyprus, Greece, Israel, Malta, Montenegro, Spain

Source: Authors' research

Bearing in mind the membership of countries in defined clusters, Albania may be singled out as the country which, in terms of the impact of both observed crises, is in the cluster with the best performance. Bosnia and Herzegovina, Cyprus, Greece, Israel, Malta and Spain are the countries that are in the third cluster, the cluster with the lowermost results in both the observed periods. Namely, these are the countries of the Southern and Mediterranean Europe where the greatest negative impact of both observed crises on international tourism was recorded. Taking these results and the results of the conducted cross-country comparison into account, it can be concluded that the first initial hypothesis has been proven. There is a difference in the impacts of the Global Economic Crisis and the Covid-19 pandemic on the international tourism of the Southern and Mediterranean Europe. This difference is not only evident in the intensity of the impact of these crises, but is also reflected in the fact that individual countries were affected differently by the observed crises. Thus, regarding the impact of the Global Economic Crisis on international tourism, Croatia, Portugal and Slovenia are in cluster 3 (which is characterized as the cluster with the lowermost results in both periods), while these countries are located in cluster 1 when it comes to the impact of the Covid-19 pandemic on international tourism.

The statistical significance of the differences between the formed clusters with regard to each variable separately has been tested using an analysis of variance. The results of the testing are shown in Table 5.

Table 5: Analysis of variance

		Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
ITA [08/09(%)]	Between Groups	1534.167	2	767.084	112.535	0.000
	Within Groups	81.797	12	6.816		
	Total	1615.964	14			
ITR [08/09(%)]	Between Groups	391.687	2	195.844	11.641	0.002
	Within Groups	201.882	12	16.824		
	Total	593.569	14			
ITA [20/19(%)]	Between Groups	649.135	2	324.568	10.708	0.002
	Within Groups	363.742	12	30.312		
	Total	1012.877	14			
ITR [20/19(%)]	Between Groups	3558.606	2	1779.303	39.731	0.000
	Within Groups	537.410	12	44.784		
	Total	4096.016	14			

Legend: ITA – international tourist arrivals; ITR – international tourism receipts
Source: Authors' research

The results of the analysis of variance confirm the existence of a statistically significant difference between the formed clusters. This fact is valid for the formed clusters of countries in both observed periods and considering all variables. In this way, the second research hypothesis has been proven. The countries of the Southern and Mediterranean Europe are heterogeneous regarding the impact of the Global Economic Crisis, as well as regarding the impact of the Covid-19 pandemic on the results achieved in international tourism. This heterogeneity is manifested both in terms of the impact of observed crises on international tourist arrivals, and considering their impact on international tourism receipts.

5. Conclusion

History has repeatedly shown that crises arising out of health diseases, natural disasters, economic downturns or terrorist attacks have had an instant damaging impact on tourism activity, due to its high vulnerability to crises situations. While localized crises do not have a serious impact on global travel, the spread of any economic crisis or infectious disease around the world is sure to have catastrophic consequences for the tourism industry. This is evident from the way in which the Global Economic Crisis led to a decline in tourist movements around the world, and even more pronounced in the case of the Covid-19 crisis, which led to an almost complete cessation of international tourism results. Taking the above into account, the aim of the study was to examine and compare the effect of these two global crises on international tourism results. Additionally, the goal was, using cluster analysis, to group the countries of the Southern and Mediterranean Europe based on how strongly crises affected tourist arrivals and tourism receipts.

The research results showed that there are differences in the impact that the observed crises had on the international tourism of the Southern and Mediterranean Europe, as well as that these differences are not only reflected in the different intensities of the impact of the crises. On the one hand, it is possible to single out the country that is in the cluster with the best performance in terms of the impact of both observed crises (Albania) or countries that were extremely negatively affected by both crises (such as Bosnia and Herzegovina, Cyprus, Greece, Israel, Malta and Spain). On the other hand, for the remaining countries of the Southern and Mediterranean Europe, no such clear conclusions can be drawn about the impact of the two observed crises. The second conclusion relates to the fact that the countries of the Southern and Mediterranean Europe are heterogeneous regarding the impact of the observed crises on international tourism. In addition to this heterogeneity, the very heterogeneous structure of the observed clusters should be mentioned. Namely, individual clusters are not formed from countries whose tourism has some generally similar characteristics, for example, only from countries that are leaders in the global tourism market, or only from countries that rely heavily on tourism in their development, or only from countries in which tourism has no special significance. All this points to the difficulty of predicting the impact of crises on the countries' tourism of, regardless of the type of crisis.

The study has attempted to contribute to the existing literature and academic discussion on the negative effects of the Global Economic Crisis and the Covid-19 crisis on tourism by comparing the two. When it comes to practical implications, some significance of the results for the tourism policy makers of individual countries can be found by highlighting those countries where the crisis's detrimental effects on the analysed indicators were substantially less severe. The limitation of the paper can be reflected in the sample of countries characterized by high heterogeneity. Namely, the Southern and Mediterranean Europe consists of very different countries, both in terms of the achieved level of economic development, and in terms of the role and importance of international tourism for their overall development. In this sense, future research can be focused on comparing the impact

of observed crises on international tourism of countries with similar economic and tourist performances. In addition, there are various crises in many regions of the world today, such as war conflicts, etc., so the impact of new crises on international tourism in the Southern and Mediterranean Europe, as well as in other countries around the world, should be continuously researched, following all current global and other relevant events and challenges.

Conflict of interest

The authors declare no conflict of interest.

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Artificial intelligence in the hotel industry in Slovakia

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Abstract: Artificial intelligence in the hotel industry streamlines processes, personalizes services, enhances customer service, and analyzes data. It helps reduce costs, increase security, and improve competitiveness. In the current technology-driven era, it is essential for efficient operations and customer satisfaction. The main goal of the presented article is to explore and analyze the application of artificial intelligence in the hotel industry and map the effects it brings to hotels and other accommodation facilities in Slovakia. Using a sociological survey method in the form of a questionnaire, this article analyzes the extent of artificial intelligence technology implementation in accommodation facilities in Slovakia and the effects it brings. Based on the results of our primary research, we can conclude that artificial intelligence is not widely adopted in the Slovak hotel industry to its full potential, considering its possibilities and utilization in various operational areas of accommodation facilities.

Keywords: artificial intelligence, technologies, hotel industry, accommodation facility, Slovakia
JEL classification: L83, O32, Z32

Veštačka inteligencija u hotelskoj industriji u Slovačkoj

Sažetak: Veštačka inteligencija u hotelskoj industriji pojednostavljuje procese, personalizuje usluge, poboljšava korisničku uslugu i analizira podatke. Pomaže u smanjenju troškova, povećanju sigurnosti i poboljšanju konkurentnosti. U trenutnoj eri vođenoj tehnologijom, veštačka inteligencija je od esencijalnog značaja za efikasno poslovanje i zadovoljstvo kupaca. Osnovni cilj predstavljenog članka je istraživanje i analiza primene veštačke inteligencije u hotelijerstvu i mapiranje efekata koje ima na hotele i druge smeštajne objekte u Slovačkoj. Koristeći metod sociološkog istraživanja u formi upitnika, ovaj članak analizira stepen primene tehnologije veštačke inteligencije u smeštajnim objektima u Slovačkoj i efekte koje ona donosi. Na osnovu rezultata primarnog istraživanja može se zaključiti da veštačka inteligencija nije široko prihvaćena u slovačkom hotelijerstvu u svom punom potencijalu, s obzirom na njene mogućnosti i primenu u različitim operativnim oblastima smeštajnih objekata.

Ključne reči: veštačka inteligencija, tehnologije, hotelska industrija, smeštajni objekti, Slovačka
JEL klasifikacija: L83, O32, Z32

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1. Introduction

Over the past few years, the field of artificial intelligence and its applications have continuously evolved. Thanks to advancements, particularly in simulating human thinking and the continuous learning processes of artificial intelligence devices, artificial intelligence is no longer limited to personal use but has also found its place in the business sector across all branches of the national economy.

The fact that information can be stored, retrieved, and conclusions drawn from it through suitable programs makes artificial intelligence particularly intriguing for the hotel industry. The hotel industry, which gathers vast amounts of data in various forms, benefits from artificial intelligence and automation, offering businesses in the travel industry numerous opportunities to enhance their daily operations and provide high-quality services to their customers (Koo et al., 2021). Depending on the accommodation facility or provider, individual solutions can be employed here, such as reservation options, room service management, guest wake-up services, personalized advice based on previous reservations and requests, as well as various accounting tasks of accommodation facilities (Smrutirekha Sahoo & Jha, 2022).

Operators and employees of accommodation facilities must understand the latest trends in artificial intelligence, as they can significantly impact how they work and serve their guests. Artificial intelligence can automate repetitive tasks, allowing hotel staff to focus on more strategic activities, such as building relationships with key customers and delivering personalized services to guests. Predictive analytics can help hospitality professionals analyze data and predict customer behavior and market trends, enabling them to make data-driven decisions and develop more efficient marketing strategies. AI-powered personalization and recommendation tools can provide individual guests with more targeted and tailored experiences based on their preferences, past behavior, and demographic information. Chatbots and virtual assistants using artificial intelligence allow hotel staff to communicate with guests in real-time and provide personalized recommendations and assistance. Artificial intelligence can also be used to monitor and predict room maintenance needs, optimize pricing and inventory decisions, forecast demand, and adjust room availability accordingly, optimize energy efficiency, and reduce hotel management and operation costs. Understanding these trends can help hotel professionals stay competitive and better serve their guests (Bhaskar & Sharma, 2022; Kaur & Chauhan, 2023; Rawal et al, 2023).

For this reason, the presented article should provide answers to the defined research questions: What artificial intelligence technologies can be used in accommodation facilities? What are the advantages and disadvantages of implementing artificial intelligence technologies in accommodation facilities? What artificial intelligence technologies are used in accommodation facilities in Slovakia?

2. Theoretical background

Artificial intelligence has existed for centuries, with references even found in Greek mythology to human-like machines that mimicked human behavior. The journey of artificial intelligence, as we know it today, began in the 1950s when computing technology was a fraction of what it is today. Artificial intelligence started with generating predictions through programs using available statistics. The initial development of artificial intelligence relied mainly on statistical techniques. The evolution of present-day artificial intelligence applications started with the use of traditional statistical techniques, which were successfully employed in the development of so-called artificial intelligence programs. These programs

are referred to as the "so-called" because the artificial intelligence programs utilized today are much more complex and employ techniques far beyond the statistical methods used by earlier artificial intelligence programs (Tandon et al., 2019).

For the hotel industry and the accommodation facilities themselves, a key position in the competitive market is related to the constant improvement of business processes and active interaction and fulfillment of the needs of their customers. This also includes improving conditions for its employees. In the hotel industry, employees often face difficult working conditions and are often paid less compared to the demands of their work. This situation creates a negative image of work in accommodation facilities and leads to a high turnover of employees, which in turn does not contribute to a positive evaluation of services by customers and their overall satisfaction with the services they receive. Another challenge facing the hotel industry is the growing cultural change. This change reflects the fact that today's customers are more demanding, with a richer traveling experience, and therefore expect a higher level of service to maintain memorable experiences. Accommodation service providers are therefore forced to transform their strategies using new technologies to keep up with modern trends (Jayawardena et al., 2013). Integrating these technologies into their business requires not only investment in property and training, but also the ability to attract new potential customers willing to use the new products. Thanks to innovative technologies such as artificial intelligence, it is possible to improve the quality of services provided and ensure greater customer satisfaction. In this way, accommodation facilities can compete and increase their income (Miguéis & Nóvoa, 2016).

From the available literary sources, it is evident that artificial intelligence plays a crucial role in the hotel industry from various aspects:

- Robotic technologies are the most common applications of artificial intelligence in the tourism sector, including the world's first robot hotel, Henn-na in Japan (Lewis-Kraus, 2016), humanoid robots serving as receptionists (Chestler, 2016; Davis, 2016), robotic bartenders (Tussyadiah, 2020), robotic chefs (Troitino, 2018), or robotic waiters (Ivanov & Webster, 2019).
- Biometric technologies are based on utilizing physical characteristics of individuals, such as eyes, iris, fingerprints, face, hand geometry, and voice (Ivanov & Webster, 2019). According to The Business Research Company (2023), the facial recognition technology market is projected to grow from USD 5.43 billion in 2022 to USD 6.28 billion in 2023.
- Software program – Chatbot, enables users/consumers to communicate with the system in their native language (Shawar & Atwell, 2007). Phaneuf (2020) mentions that Marriott International allows its guests to make reservations at any of its 4,700 hotels through a chatbot on the Facebook Messenger platform.

Ivanov and Webster (2019) state that in the field of travel, tourism, and the hotel industry, robotic technologies, artificial intelligence, and service automation are being globally applied, although the success rate of implementing these technologies varies across different tourism sub-sectors. Currently, there are several studies and publications addressing the application of artificial intelligence in accommodation facilities and evaluating its effectiveness or ineffectiveness. For example, the authorial team of Štilić et al. (2023) contributes to the growing body of literature on the use of artificial intelligence through case studies of hotels belonging to leading hotel companies such as Marriott International, Hilton Worldwide, and InterContinental Hotels Group. Sharma and Rawal (2021) evaluate the impact and role of artificial intelligence technologies in improving the quality of services provided by accommodation facilities, expanding on the study by Nam et al. (2020), who conducted an in-depth survey of factors influencing the implementation of artificial

intelligence and robotics technologies in a sample of selected hotels in Dubai. The issue of artificial intelligence and its application in the hotel industry is not adequately represented in the conditions of the Slovak Republic compared to other European or global countries. Currently, there is no study mapping its implementation using Slovak accommodation facilities as an example.

The implementation of artificial intelligence carries risks such as the loss of jobs with low levels of technology, increased autonomy of robots that can lead to a loss of control, and serious concerns about safety, privacy protection, and related risks (Tussyadiah, 2020). Furthermore, some businesses in the tourism and hotel industry are concerned about the risks and security implications of implementing artificial intelligence and robotics, given their accessibility and consistency (Lu et al., 2020). The increase in leisure time resulting from automated travel facilitation has the potential to further boost the demand for travel, which can contribute to issues such as overtourism and overall stress on destination ecosystems (Tussyadiah, 2020). These are risks associated with advancements in artificial intelligence that need to be considered when implementing it, including in the hotel industry.

3. Materials and methods

The main goal of the presented article is to explore and analyze the application of artificial intelligence in the hotel industry and map the effects it brings to hotels and other accommodation facilities in Slovakia.

The article aims to identify specific areas where artificial intelligence technologies can be applied, such as personalized recommendations, chatbots, automated reservations, smart rooms, and human resource management. Another partial goal is to evaluate the advantages, disadvantages, and challenges associated with the application of artificial intelligence in the hotel industry, as well as assess its impact on operational efficiency and financial performance.

The results of this study are expected to provide practical recommendations for accommodation facility operators and managers when making decisions regarding the implementation and optimization of artificial intelligence within their businesses.

In direct link to the main goal set out above, the following key research questions (RQ) have been formulated:

RQ1: *What artificial intelligence technologies are used in accommodation facilities in Slovakia?*
RQ2: *What are the advantages and disadvantages of implementing artificial intelligence technologies in accommodation facilities?*

The analysis was conducted based on primary sources obtained through a sociological survey using a questionnaire. The questionnaire consisted of 16 questions, which were closed-ended, open-ended, and scaled questions, and were thematically divided into three sections. The first part consisted of questions that allowed for a general characterization of the surveyed accommodation facilities. The second part examined the application of artificial intelligence technologies, the reasons, advantages, and disadvantages associated with their implementation. The third part focused on the impact of artificial intelligence technologies on the efficiency of the accommodation facility and its financial performance. A total of 350 accommodation facilities of all categories and classes were contacted, based on the original categorization of accommodation facilities according to the Decree of the Ministry of Economy of the Slovak Republic No. 277/2008, which establishes classification features for

accommodation facilities when classifying them into categories and classes. The decree lost its validity in February 2021.

To interpret the obtained and sorted results, we used the graphical method, which involved organizing the data into graphs and tables. In the final part of the presented article, we addressed the research questions that were formulated using the deductive method.

4. Results and discussion

Considering the nature of the research problem being addressed in the presented article, we have selected only the most relevant questions from the questionnaire to fulfil the main objective. These selected questions will be presented in the following section.

The questionnaire was distributed online by reaching out to respondents via e-mail, during the period of February to May 2023. The questionnaire was completed by 235 respondents, which represented 67.14 % of the total contacted sample. Table 1 presents the profile of the respondents who took part in the questionnaire research.

Table 1: Profile of respondents – category and class of surveyed accommodation facilities

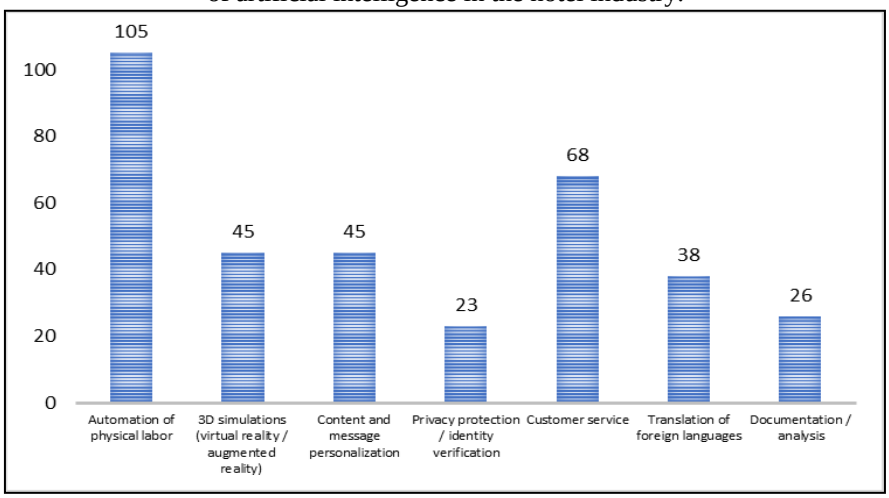
		Number (n = 235)	**% of number**
category of accommodation facility	hotel	159	67.66 %
	motel	3	1.28 %
	guesthouse	33	14.04 %
	apartment house	28	11.91 %
	tourist hostel	12	5.11 %
class of accommodation facility	*	12	5.11 %
	**	60	25.53 %
	***	104	44.26 %
	****	51	21.70 %
	*****	8	3.40 %

Source: Author's research, 2023

From Table 1, it is evident that the largest proportion of respondents in terms of the category of accommodation facilities were hotels (159, i.e. 67.66%). The second largest representation was from guesthouses (33, i.e. 14.04%), followed by apartment houses (28, i.e. 11.91%). When examining the second parameter, the class of accommodation facilities, the majority of respondents were from three-star accommodation facilities (104, i.e. 44.26%). On the other hand, the least representation was from five-star accommodation facilities – hotels (8, i.e. 3.40%). In the questionnaire survey, we did not specifically investigate the size of accommodation facilities in terms of the number of employees. We believe that artificial intelligence is utilized in various types of accommodation facilities regardless of their size. The adoption of artificial intelligence in accommodation facilities depends more on their goals, technological development, and investment opportunities. Larger accommodation facilities, such as hotels, often have greater financial resources for the implementation and development of artificial intelligence technologies. However, even smaller accommodation facilities, such as guesthouses, apartment houses, and tourist hostels, can leverage artificial intelligence to improve their operations and service delivery. In these cases, low-budget technologies, such as the implementation of chatbots and automation of reservation processes, may be more commonly utilized.

In the introduction of the questionnaire survey, we were interested in assessing the level of knowledge and awareness of the respondents regarding the use of artificial intelligence technologies in the hotel services market in Slovakia, as well as abroad, and their understanding of artificial intelligence. Figure 1 presents the responses of the respondents to the question regarding their perception of the term "artificial intelligence in the hotel industry".

Figure 1: Knowledge of operators/managers of accommodation facilities about the concept of artificial intelligence in the hotel industry.



Source: Author's research, 2023

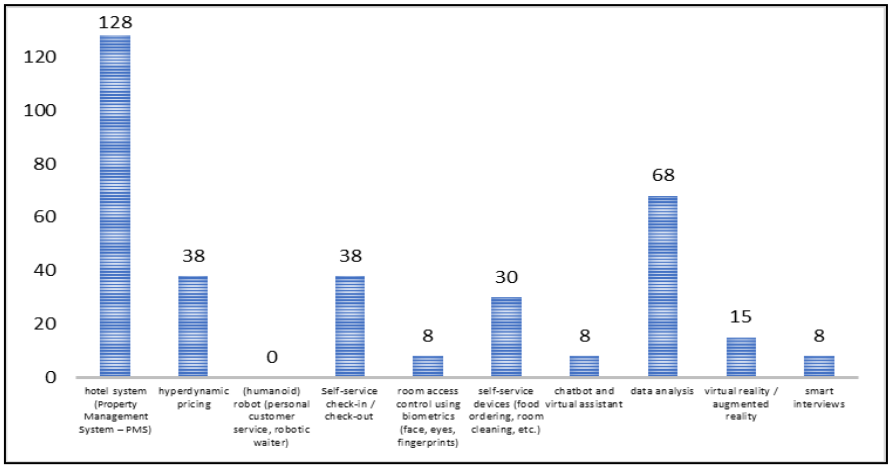
The respondents had the opportunity to select multiple answers. As we can see, respondents mostly associate artificial intelligence with process automation, which involves replacing human employees with robotic technologies (such as receptionists, bartenders, waiters, housekeeping, etc.). In this case, it reflects a lack of knowledge among operators or managers of accommodation facilities, as artificial intelligence technologies applicable in the hotel industry can include: AI-powered chatbot programs that allow interaction with guests through chat interfaces, answering questions, providing reservation information, and offering recommendations to potential customers; programs focused on analyzing vast amounts of data using algorithms and machine learning to predict room demand, prices, and trends; programs focused on ensuring guest privacy and security, such as identity verification systems based on biometric data like facial recognition or fingerprint scanning; technologies that assist in automating and optimizing inventory and supply chain management processes in accommodation facilities, leading to more efficient operations and reduced potential losses; and software solutions aimed at automating various hotel processes such as reservation management, guest check-in and check-out, billing, and more.

This lack of knowledge can have several reasons. The first reason is a lack of information and education about artificial intelligence and its applications in the hotel industry. This is evident from the question we asked the respondents – What is your knowledge of the use of artificial intelligence technologies in the hotel services market in Slovakia and abroad? The result was that a total of 176 respondents (75% of the total) answered that their knowledge is at a good to insufficient level. Many operators or managers do not have access to relevant information or do not have the time and resources to dedicate to in-depth study of this field. Some operators or managers are concerned that implementing artificial intelligence can be financially demanding or challenging to implement, and they believe that its implementation

would require changing work procedures and processes, which can lead to uncertainty and resistance to change. Another factor is the lack of visible examples of successful use of artificial intelligence in the hotel industry. Many operators or managers find it difficult to identify specific examples and cannot envision how this technology could impact their specific operations and improve results.

In the next question, we focused on the use of artificial intelligence technologies in accommodation facilities, giving respondents multiple options to choose from. The responses to this question are presented in Figure 2.

Figure 2: Implemented artificial intelligence technologies in accommodation facilities in Slovakia

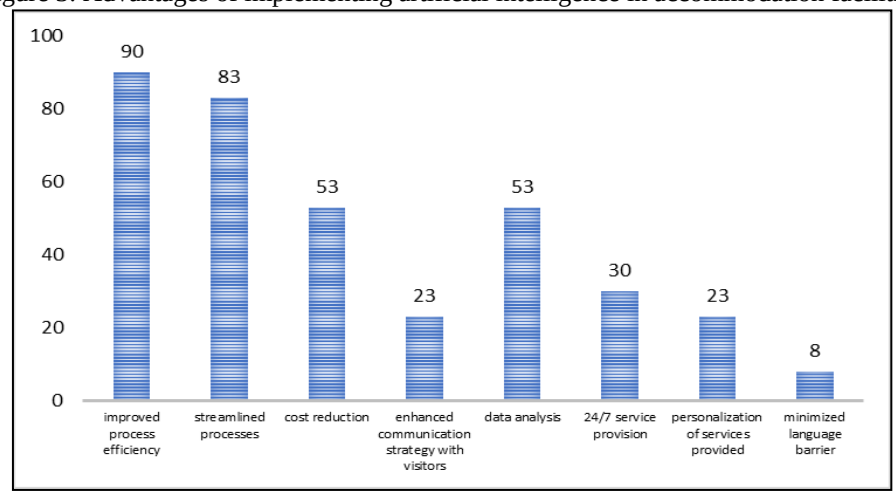


Source: Author's research, 2023

We can see that the most commonly used artificial intelligence technologies in the hotel industry in Slovakia are the application of Property Management Systems (PMS), which are used for the automation and centralization of hotel operations management, such as reservations, guest management, billing, and inventory management. In terms of data analysis, artificial intelligence helps in analyzing large amounts of data from various sources, such as customer preferences, reviews, and demand forecasting. This information helps accommodation facility operators and managers better understand their customers and optimize their business operations. On the other hand, we observe that humanoid robots are not widely adopted in the Slovak hotel industry. This finding is supported by the additional question responses, where respondents indicated that the purchase and maintenance of humanoid robots are financially demanding, humanoid robots pose various technical challenges that may lead to unsatisfied customer demands or create a negative impression of the hotel experience, and customers value personal contact with hotel staff. Human interaction is associated with empathy and understanding, which leads to a higher level of service provision and satisfaction. In some cases, the work of humanoid robots may be less efficient and slower compared to human labor. The analysis of respondents' answers, presented in Figure 2, also provides an answer to our ***RQ1:*** *What artificial intelligence technologies are used in accommodation facilities in Slovakia?*

Answering the defined ***RQ2:*** *What are the advantages and disadvantages of implementing artificial intelligence technologies in accommodation facilities?* will be aided by the analysis of questions aimed at identifying the benefits and drawbacks brought by the implementation of artificial intelligence in the surveyed accommodation facilities. Figure 3 presents the benefits of implementing artificial intelligence technologies.

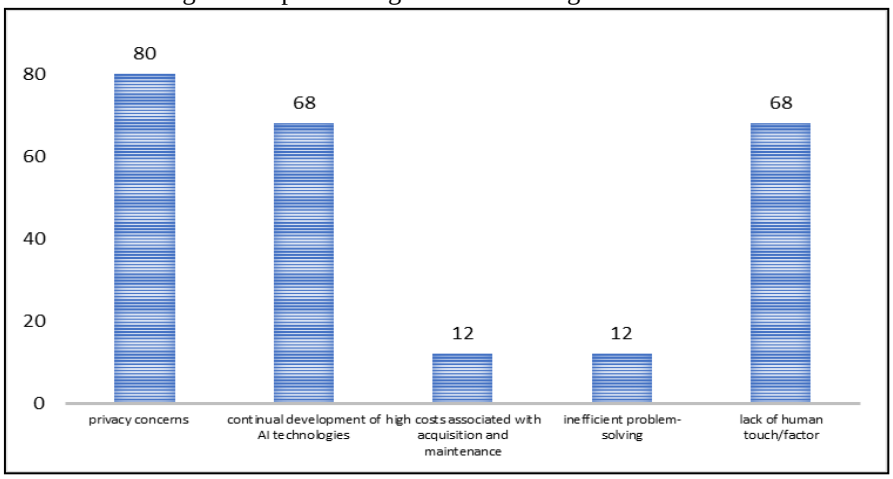
Figure 3: Advantages of implementing artificial intelligence in accommodation facilities



Source: Author's research, 2023

As we can see, the implementation of artificial intelligence in accommodation facilities brings several advantages. It helps streamline processes, leading to faster processing of reservations, check-in and check-out procedures, and overall facility operations. Artificial intelligence also enables personalized services and enhances the customer experience. The communication strategy with visitors improves as technologies provide faster responses to customer inquiries and assist in fulfilling guest requirements. As mentioned earlier, the implementation of artificial intelligence enhances security and protection for both guests and the property itself, contributing to effective management and decision-making by operators and managers. Ultimately, all these advantages enhance the competitiveness of accommodation facilities in the market and customer (and potential customer) satisfaction.

Figure 4: Disadvantages of implementing artificial intelligence in accommodation facilities



Source: Author's research, 2023

The implementation of artificial intelligence in accommodation facilities brings several advantages, but it also has certain disadvantages (Figure 4). One of the main drawbacks is the potential loss of personal touch. With the application of artificial intelligence, customers

may miss the human factor and personal interaction that some prefer. Some interactions and services provided through artificial intelligence can feel cold and impersonal. Another disadvantage is the higher cost associated with implementing artificial intelligence technologies. The initial costs of acquiring and maintaining these technologies can be significant. Security risks are also a challenge. As the use of artificial intelligence technologies expands, the risk of data breaches and cyber threats increase. Improper implementation or inadequate security measures can jeopardize customer privacy and operational security. Dependency on technology is another concern. If an accommodation facility becomes too reliant on artificial intelligence and experiences outages or malfunctions, it can have a negative impact on service provision and customer satisfaction. Limited flexibility in addressing complex situations or specific guest requests is another disadvantage. In such cases, the presence of experienced staff may be necessary to provide individualized solutions. Concerns about job losses are another factor mentioned by respondents in the supplementary question of our survey. It is true that the implementation of artificial intelligence and automation can result in job reductions, which can have negative social and economic implications. Therefore, it is crucial for accommodation facilities to consider all the advantages and disadvantages and ensure a balanced approach to the implementation of artificial intelligence technologies that considers customer needs while minimizing potential negative consequences.

The implementation of artificial intelligence in accommodation facilities also involves financial costs. Initial costs include the acquisition of necessary hardware and software infrastructure, as well as potential expenditures on staff training. It is important to consider the costs of ongoing maintenance and technology updates, as well as possible fees for licenses and service provided by providers. The overall costs can depend on the scope of implementation and the complexity of selected technologies. In this context, we asked respondents about the amount of financial resources invested in the implementation of artificial intelligence technologies in their accommodation facility.

The decision to invest in technology with an amount ranging from EUR 0 to EUR 5,000 corresponds to the results of the question focused on the most commonly used artificial intelligence technologies in the hotel industry (Figure 2). Property Management Systems (PMS) are nowadays essential for maintaining smooth operations in accommodation facilities. The facilitation and acceleration of processes offered by the implementation of this technology are significant and financially accessible for any accommodation facility with any budget. Surprisingly, 10% of respondents (24 accommodation facilities) invested a financial amount higher than EUR 50,001 in artificial intelligence technologies. In this case, it was primarily hotels in the four- and five-star category. In terms of return on investment, half of the respondents (50%) indicated an estimated period within 0 to 2 years. Subsequently, 40% of respondents mentioned an estimated period within 3 to 5 years results.

5. Conclusion

The goal of the presented article was to examine and analyze the application of artificial intelligence in the hotel industry and map out the effects it brings to hotels and other accommodation facilities in Slovakia. Our key focus was to map out the technologies utilized in accommodation facilities in Slovakia and identify the advantages and disadvantages resulting from the implementation of new technologies.

To evaluate the utilization of artificial intelligence and its effects on accommodation facilities, we decided to conduct primary research using the method of sociological survey through a questionnaire. From the responses of our respondents, we can conclude that operators or managers of accommodation facilities are generally conservative when it comes

to implementing artificial intelligence technologies and do not invest significant financial resources in their implementation. The biggest challenge when considering the implementation of artificial intelligence comes with the potential loss of a personal touch. Even though respondents currently view it as a disadvantage, artificial intelligence can improve many aspects of hotel operations. However, it is essential to find the optimal balance between artificial intelligence and the "human touch", a personal approach to guests. An important finding for us was that a large number of respondents lacked sufficient knowledge and necessary information about artificial intelligence technologies that can be implemented in accommodation facilities. This is also reflected in the survey results, where the majority of respondents associate "artificial intelligence in the hotel industry" mainly with process automation – replacing human employees with robotic technologies (such as receptionists, bartenders, waiters, housekeeping staff, etc.), which indeed require significant financial investment. Despite these results, there are entities in the market that were not afraid to invest a larger amount of financial resources in innovating their accommodation facilities and selected technologies that significantly improved problematic processes associated with facility operations or service provision.

To overcome the lack of awareness about the possibilities of using artificial intelligence in the hotel industry, it is important to increase the knowledge of operators or managers of accommodation facilities about the benefits and opportunities that artificial intelligence brings to the hotel industry. Proven examples and success stories should be shared and disseminated so that everyone can be inspired and see concrete results and advantages of this technology. Additionally, educational programs and training should be made available to help operators or managers gain a better understanding and skills in the field of artificial intelligence, so that they can effectively and efficiently utilize it in their operations. Based on a study of available literature (Huang et al., 2021; Limna, 2023), we would recommend accommodation providers in Slovakia to regularly monitor and evaluate the performance of artificial intelligence, allowing them to identify issues and adapt strategies as needed. One of the recommendations is the inclusion of clients – guests of accommodation facilities in the process of gathering feedback on their experiences with artificial intelligence technologies, as their feedback will help providers tailor their services (Ameen et al., 2021). With a focus on data security, it is important to invest in security solutions and comply with relevant regulations. For accommodation facilities that have not yet experienced the implementation of artificial intelligence technologies, we recommend securing access to artificial intelligence experts who can assist in selecting the most suitable technological solutions and designing their effective implementation.

The implementation of artificial intelligence technologies in the hotel industry brings a multitude of advantages and disadvantages, but it requires careful planning and management. To achieve success in implementing artificial intelligence, service providers in accommodation facilities should consider the practical recommendations mentioned above and draw inspiration from them in their day-to-day practices.

The results of this study provide practical recommendations for accommodation facility operators and managers when deciding on the implementation and optimization of artificial intelligence within their businesses. However, there are limitations and challenges that need to be taken into account and addressed or minimized (Bounatirou & Lim, 2020). Quality and sufficient data are crucial for accurately assessing the results of artificial intelligence implementation. The lack of relevant data can restrict the ability to analyze and evaluate success. Some accommodation facilities may have outdated IT infrastructure or limited access to modern technologies, which can hinder their ability to implement artificial intelligence technologies. The financial cost of implementing artificial intelligence can be substantial, posing a challenge for accommodation facilities with limited budgets. Employees

and clients, the guests of accommodation facilities, may be hesitant to accept artificial intelligence in their daily interactions, which can affect the success of its implementation. Changes in the preferences and needs of artificial intelligence users can impact the effectiveness of artificial intelligence implementation.

Therefore, it is important to consider these limitations and challenges and strive to overcome or minimize them when implementing artificial intelligence technologies in the hotel industry. It is necessary to find the optimal balance between utilizing artificial intelligence to improve operations and maintaining a personal approach to customers, the guests of accommodation facilities.

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Conflict of interest

The author declares no conflict of interest.

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Review Article

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Personal and organizational factors impacting burnout syndrome among hotel employees: A bibliometric and content analysis

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Abstract: The hotel industry is very vulnerable to unexpected external changes, which have an impact on employees as the major success factors of hotel functioning and success. The aim of this paper is to establish, by conducting a bibliometric and content analysis, the characteristics of existing research in the sphere of hotel employee burnout syndrome and to single out the main factors that influence it. The bibliometric analysis conducted in the beginning of September 2023 found that only 37 papers dealing with burnout among hotel employees were published in only eight journals from the sphere of tourism and hospitality indexed in the *Web of Science* database (*Clarivate Analytics Journal Citation Report*). The majority of authors who write about this subject are from the USA and China. Content analysis revealed that burnout syndrome among hotel employees is largely dependent on the personal characteristics of employees, as well as on organizational factors.

Keywords: hotel employees, burnout, bibliometric analysis, content analysis
JEL classification: J28, M12, M54

Lični i organizacioni faktori koji utiču na sindrom sagorevanja zaposlenih u hotelima: Bibliometrijska analiza i analiza sadržaja

Sažetak: Hotelska industrija je veoma ranjiva na neočekivane eksterne promene koje utiču na zaposlene, kao glavni faktor funkcionisanja i uspeha hotela. Cilj ovog rada je da sprovođenjem bibliometrijske analize i analize sadržaja predstavi karakteristike postojećih istraživanja u sferi sindroma sagorevanja kod zaposlenih u hotelima i da ukaže na glavne faktore koji na to utiču. Bibliometrijska analiza sprovedena početkom septembra 2023. godine identifikovala je samo 37 radova koji se bave izučavanjem sindroma sagorevanja kod zaposlenih u hotelima, objavljenih u samo osam časopisa iz sfere turizma i ugostiteljstva indeksiranim u *Web of Science* bazi (*Clarivate Analytics Journal Citation Report*). Većina autora koji pišu o ovoj temi je iz SAD i Kine. Analiza sadržaja ukazala je da sindrom sagorevanja kod zaposlenih u hotelima u velikoj meri zavisi od ličnih karakteristika zaposlenih, kao i od organizacionih faktora.

Ključne reči: zaposleni u hotelima, sagorevanje, bibliometrijska analiza, analiza sadržaja
JEL klasifikacija: J28, M12, M54

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1. Introduction

The hospitality industry is heavily reliant on human resources (Elbaz et al., 2020; Kim et al., 2007), due to the fact that all services involve human work, commitment and attention (Cheung et al., 2014). Human resources are one of the most significant factors not only in achieving, but also in maintaining business success in the hotel industry (Ognjanović, 2023). Constant and unpredictable environmental occurrences cause significant changes in the hotel industry (Baquero, 2023). Hotel employees are frequently exposed to significant pressure due to the complex nature of the hospitality industry. They are typically facing long work hours, working nights, weekends, and public holidays, demanding customers, and managerial pressure to achieve high outcomes (Ahmad et al., 2021; Elbaz et al., 2020; Ghosh, 2022; Wallace & Coughlan, 2023). Hotel employees are frequently required to complete a variety of unrelated duties under time constraints (Rao & Goel, 2017). Furthermore, employees who have direct contact with guests must be pleasant and smile, even in challenging situations that might be exhausting and unpleasant (Kim, 2008; Pienaar & Willemse, 2008). As a result, service employees tend to exhibit a high rate of occupational burnout (Ayachit & Chitta, 2022; Lu & Gursoy, 2016). According to the results of a Statista global survey conducted in 2019 with 1,001 employees aged 19 to 81, the hotel, food services, and hospitality industries had the highest employee burnout rate at 80.3% (Dyvik, 2022). Not only is there a significant rate of occupational burnout, but there is also a growing trend of burnout among hospitality employees (Yin et al., 2022). Employees suffering from burnout syndrome have a negative impact on overall organizational results, as well as consumer satisfaction and loyalty (Ali et al., 2022). As a result, the hospitality industry's primary goal is to eliminate or at least reduce occupational burnout among employees (Cheng & O-Yang, 2018; Dai et al., 2021). Burnout has gained popularity in the media and popular science in recent years (Heinemann & Heinemann, 2017); however, it has not been thoroughly explored or analyzed in the hospitality setting. For that reason, in this paper, bibliometric and content analyses are conducted with the goal of examining existing published papers that deal with burnout syndrome among hotel employees and highlighting the most prominent journals, countries, authors, methodology used in published papers, as well as key personal and organizational factors that cause burnout.

The subject of this paper is the burnout syndrome of hotel employees. The aim of this paper is to establish, by conducting a bibliometric and content analysis, the characteristics of existing research in the sphere of hotel employee burnout syndrome and to single out the main personal and organizational factors that influence it.

2. Background

The first definition of burnout stated that this syndrome represents inappropriate attitudes toward clients and toward oneself, and that it is often interrelated with physical and emotional illness (Freudenberger, 1974). Burnout is manifested as "stress that had gotten out of control" (Hamann, 1990, p. 31). Further definitions explained this phenomenon as inadequate individuals' resources needed to meet work demands (Brewer & Shapard, 2004), which weakens the motivation of employees and the overall level of their commitment and engagement (Wang, 2020). Initially, burnout was associated with vocations connected to caregiving and service providing; but, during the 1990s, this phenomenon began to show and be noticed in other occupations and professions (Nápoles, 2022). However, the research findings clearly show that this syndrome is most prevalent in terms of frequency and intensity in vocations that need a high level of interpersonal connection (Maslach & Leiter, 1997).

The Maslach burnout inventory categorizes burnout into three components: emotional exhaustion, depersonalization and reduced personal accomplishment (Maslach & Jackson, 1981). Emotional exhaustion refers to the feeling of being overworked and exhausted of one's emotional resources, whereas depersonalization refers to a negative or overly detached attitude to many aspects of one's profession in which the person purposefully places distance between them and intentionally ignores others. When there is a lack of effort and productivity at work, as well as a sense of incompetence, personal accomplishment is reduced (Maslach et al., 2001).

Burnout refers to an individual's mentally and emotionally depleted state as a result of chronic interpersonal workplace stresses (Maslach et al., 2001). The key job and organizational attributes that contribute to burnout are: hard working conditions, less job recognition (Freudenberger, 1977), work overload, lack of control, insufficient rewards, absence of fairness, conflicting values (Maslach & Leiter, 1997), unclear goals and roles, bureaucratic organizational structure, unclear and unsupportive communication (Maslach, 1982), restrictive rules and procedures, poor management (Nápoles, 2022), as well as blurred job nature and more diverse work responsibilities (Ali et al., 2022). As a result, burnout is defined as a job-related psychological syndrome induced by long-term uncontrolled and unresolved stress at work (Khammissa et al., 2022).

Employees and organizations may suffer from the burnout effect in a variety of ways (Prentice & Thaichon, 2019). Burnout can cause tiredness, separation, boredom, impatience, worry, sleeplessness, alcohol usage, weight loss or increase, high blood pressure, headaches, as well as anxiety, melancholy, other psychological diseases, and even suicide (Nápoles, 2022). Employees exposed to burnout tend to have a greater absenteeism rate, devote less time and energy to their jobs, do only what is necessary and demanded of them, have no or little passion or enthusiasm for their work, have low morale, and show lower job quality (Maslach, 1982). Burnout also causes job dissatisfaction, low commitment and engagement, high turnover, and poor performance (Elbaz et al., 2020; Han et al., 2016; Wang, 2020).

3. Materials and methods

In this paper, a bibliometric and content analysis is conducted with the aim to answer on the following research questions (RQ):

RQ1: Which journals and countries have published the most papers on burnout syndrome among hotel employees?
RQ2: Who are the most well-known authors on burnout syndrome among hotel employees?
RQ3: What are the most significant publications on burnout syndrome among hotel employees?
RQ4: What are the key personal and organizational factors that cause burnout among hotel employees?

Data were collected from journals whose title refers to tourism and hospitality with an impact factor in the *Web of Science* (*WoS*) academic database, which includes a large number of social science and humanities journals and recognizes hospitality tourism as an independent academic category (Chen et al., 2023). This approach in the selection of journals was previously used in other papers (Anđelić et al., 2019; Garabinović et al., 2021; Garabinović et al., 2023; Papić et al., 2023). In the *Clarivate Analytics Journal Citation Report* (*JCR*) for 2022, there were 27 journals matching these criteria. Advanced search options were used on the publishers' websites: *Elsevier/Science Direct* (eight journals); *Taylor & Francis online* (eight journals); *Sage journals* (six journals); *Emerald*

Insight/Emerald Publishing (three journals); *Wiley Online Library* (one journal); *Springer/Springer Nature* (one journal).

Data collection was conducted in September 2023, using the string (burnout OR "burning out" OR "burn out" OR "burns out" OR "burned out" OR "burnt out") AND (hotel OR hotels) for searching its appearance in title, abstract and keywords of the published papers using the advanced search options available on the websites of the publishers of the mentioned journals. English was selected as the main language, with the unlimited time period of publications. By reading the title, abstract and keywords, each paper was additionally checked to see if it really corresponds to the stated topic.

Following the collecting of all papers that fulfil the required criteria, the number of citations for each of them was compiled using *Google Scholar* on November 21, 2023.

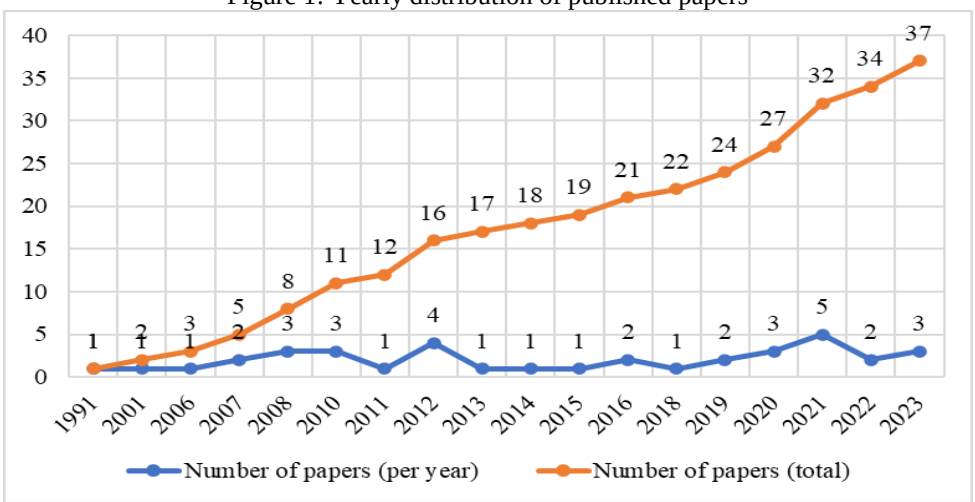
Data analysis was performed during October 2023 using *Microsoft® Excel® 2019*, and *VOSviewer 1.6.19*. A performance analysis of the most prominent authors, countries, journals, and citations was performed.

4. Results and discussion – bibliometric analysis

4.1. Yearly distribution of published papers

A total of 37 papers on the topic were identified (Figure 1). The first paper addressing employee burnout in hotels was published in 1991. After a decade, in 2001, another paper on this subject was published. Since 2006, there has been a surge in interest in this subject. The most papers were published in 2021 (5 papers) and 2012 (4 papers).

Figure 1: Yearly distribution of published papers



Source: Authors' research

Observing the distribution of papers by decade, it is noticeable that the number of papers related to the analyzed topic increases with each new decade. This is supported by the data that in the period 1991-2000, only 1 paper was published (2.70%), then in 2001-2010 10 papers (27.03%) and in 2011-2020 16 papers (43.24%). Since 2021, 10 papers have been published, which suggests that 27.03% of all papers on the subject of burnout were published in less than three years alone.

4.2. Journals with most published papers

The papers were published in eight analyzed journals (29.63%) (Table 1). Almost half of the papers (48.65%) were published in the "International Journal of Hospitality Management", with the "International Journal of Contemporary Hospitality Management" coming in second place (29.73%). The remaining six journals published one or two papers on this subject.

Table 1: The number of published papers in journals

No.	Journal	No. of published papers	% of published papers
1	International Journal of Hospitality Management	18	48.65
2	International Journal of Contemporary Hospitality Management	11	29.73
3	Journal of Hospitality and Tourism Management	2	5.40
4	International Journal of Tourism Research	2	5.40
5	Tourism Review	1	2.70
6	Journal of Hospitality and Tourism Research	1	2.70
7	Journal of Hospitality Marketing & Management	1	2.70
8	Journal of Hospitality, Leisure, Sport & Tourism Education	1	2.70
Total		**37**	**100**

Source: Authors' research

4.3. Authors – characteristics, frequency and cooperation

The total number of authors, including multiple repetitions of the same authors, is 94. Comparing the above data with the data on the total number of papers (37), it is concluded that the average number of authors per paper is 2.54. The majority of papers are co-authored by two authors (15 papers; 40.54%). This is followed by papers with three authors (8 papers; 21.62%), four authors (7 papers; 18.92%), one author (6 papers; 16.22%) and six authors (1 paper; 2.70%), which also represents the highest established number of authors per paper. It is concluded that 31 papers, that is, the vast majority of papers (83.78%), were written in collaboration by two or more authors.

The following table (Table 2) shows the total number of papers by country. In addition, the papers are presented according to whether they were written by authors from one country or if there was collaboration with authors from other countries. In this research, the term "state" means a full member of the United Nations.

Table 2: Number of papers by country

Country	Collaboration – No. of papers				Total	
	No		Yes			
	No.	%	No.	%	No.	%
USA	6	40.00	9	60.00	15	40.54
China	6	54.55	5	45.45	11	29.73
South Korea	1	20.00	4	80.00	5	13.51

Country	Collaboration – No. of papers				Total	
	No		Yes			
	No.	%	No.	%	No.	%
Cyprus	3	75.00	1	25.00	4	10.81
Turkey	1	33.33	2	66.67	3	8,11
UK	1	33.33	2	66.67	3	8.11
Canada	1	50.00	1	50.00	2	5.41
Egypt	1	50.00	1	50.00	2	5.41
Australia	1	100.00	0	0.00	1	2.70
Greece	1	100.00	0	0.00	1	2.70
India	1	100.00	0	0.00	1	2.70
Ireland	1	100.00	0	0.00	1	2.70
KSA	0	0.00	1	100.00	1	2.70
South Africa	0	0.00	1	100.00	1	2.70
Spain	1	100.00	0	0.00	1	2.70

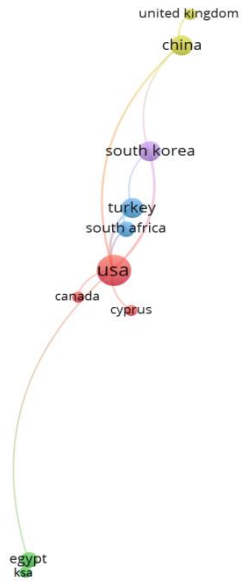
Source: Authors' research

Authors from the USA made the greatest contribution to the analyzed topic when the number of papers is taken into account (40.54%). Besides the USA, China (29.73%) and Cyprus (10.81%) had a significant share in the number of published papers.

The largest number of papers were written by authors from the same country (24 papers; 64.86%). The collaboration of authors from two different countries was realized in 11 papers (29.73%). The collaboration of authors from three different countries is the least represented – only 2 papers (5.41%).

Authors from the seven mentioned countries published most/all of their papers in collaboration with authors from other countries (KSA, South Africa, South Korea, USA, Turkey, UK), while authors from two countries collaborated with authors from other countries in writing half of the papers (Canada and Egypt). The following figure made using *VOSviewer* (Figure 2) shows the collaboration between authors from different countries.

Figure 2: Collaboration between countries



Source: Authors' research

Authors from the USA collaborated with authors from seven countries. According to the number of authors from different countries with whom they have collaborated, the authors from China and South Korea follow, who collaborated with authors from three countries each. Authors from Egypt and South Africa collaborated with authors from two countries each. Authors from Canada, Cyprus, Saudi Arabia and the UK collaborated with authors from only one country. Unlike those previously mentioned, authors from Greece, Spain, India, Ireland and Australia did not collaborate with authors from other countries.

The most significant collaboration of authors from the USA was with authors from South Korea (3 papers). This is followed by collaboration with authors from Turkey and China (2 papers each). In one paper each, authors from the USA collaborated with authors from Canada, Cyprus, South Africa and Egypt.

The most significant collaboration of authors from China was with authors from the USA and the UK (2 papers each). This is followed by a collaboration with authors from South Korea (1 paper).

The most significant collaboration of authors from South Korea was with authors from the USA (3 papers). This is followed by a collaboration with authors from China and Turkey (1 paper each).

Authors from Egypt collaborated with authors from the USA and Saudi Arabia in one paper each. Authors from South Africa collaborated with authors from the USA and Turkey in one paper each. Authors from Canada and Cyprus collaborated in one paper each only with authors from the USA, while authors from Saudi Arabia collaborated in one paper only with authors from Egypt. Authors from the UK collaborated only with authors from China in two papers.

The total number of authors, without multiple repetitions, is 84. Only eight authors (9.52%) published more than one paper on this subject, according to the number of published papers by authors (Table 3). The only two authors who have written three papers on this topic are Hyun Jeong Kim and Osman M. Karatepe. The first author worked in the USA and received a total of 1,391 citations for all three papers, whereas the second author worked in Cyprus and received a total of 591 citations for all three papers. All of the authors work in different institutions. Five of them work in the USA, while two work in China. In addition to the mentioned countries, South Africa and Cyprus are also present as author countries in one case each.

Table 3: The information of impactful authors

No.	Author	No. of published papers	No. of citation	Country	Affiliation
1	Hyun Jeong Kim	3	1,391	USA	Washington State University
2	Osman M. Karatepe	3	591	Cyprus	Eastern Mediterranean University
3	Chihyung (Michael) Ok	2	821	USA	Kansas State University/ Temple University
4	JungHoon (Jay) Lee	2	821	USA	Kansas State University / East Carolina University
5	Dogan Gursoy	2	669	USA/South Africa	Washington State University / University of Johannesburg

No.	Author	No. of published papers	No. of citation	Country	Affiliation
6	Amarjit S. Gill	2	584	USA	Touro University International
7	Wen-Long Zhuang	2	74	China	Hung Kuang University
8	You De Dai	2	74	China	National Chi Nan University

Source: Authors' research

Two collaborations between specific authors were achieved (Figure 3). The first is between JungHoon (Jay) Lee and Chihyung (Michael) Ok, and the second is between You-De Dai and Wen-Long Zhuang. Both collaborations were realized in two papers each.

Figure 3: Collaboration between authors

Source: Authors' research

The number of authors according to the criteria of the country they come from is shown in the following table (Table 4).

Table 4: Top countries regarding number of authors that dealt with this topic

Country	No.	%
USA	23	27.71
China	21	25.30
South Korea	6	7.23
Turkey	5	6.02
Cyprus	4	4.82
Greece	4	4.82
Egypt	4	4.82
UK	4	4.82
Spain	3	3.61
Canada	3	3.61
Ireland	2	2.41
Australia	2	2.41
South Africa	1	1.20
India	1	1.20
KSA	1	1.20

Source: Authors' research

The USA has the most authors who have written about burnout syndrome among hotel employees. There are 23 authors in all (27.71%). China ranks second, with 21 authors (25.30%). South Korea is placed third, but it has only six authors that wrote about this topic (7.23%) in comparison with the USA and China.

4.4. The most cited papers (*Google Scholar*)

The analyzed papers have a total of 7,100 citations. The average number of citations per paper is 191.89. Six papers have more than 500 citations, thus contributing to the total number of citations ≥7.00% (Table 5). With 689 citations, the most cited paper was published in 2008 by author Hyun Jeong Kim. Two of the most cited papers presented in Table 5 were written by only one author.

Table 5: Papers with more than 500 citations

No.	Author(s) (Year of publication)	No. of citations	% of total citations
1	Kim (2008)	689	9.70
2	Lu & Gursoy (2016)	621	8.75
3	Yang (2010)	605	8.52
4	Kim et al. (2007)	556	7.83
5	Lee & Ok (2012)	540	7.61
6	Gill et al. (2006)	510	7.18
Note: Number of citations is based on *Google Scholar* results on November 21, 2023.			

Source: Authors' research

On the other hand, in order to obtain more relevant data on the influence of the analyzed papers, it is necessary to take into consideration the average annual number of citations per paper. The average annual number of citations per paper was calculated using the following formula: *total number of citations / (2024 – year of publication)*. The results showed that there are a total of five papers that have an average annual citation of more than 40.00 (Table 6). The average annual citation of papers is 20.93.

Table 6: Papers with the highest average annual number of citations

No.	Author(s) (Year of publication)	No. of citations
1	Lu & Gursoy (2016)	77.63
2	Cheng & O-Yang (2018)	62.17
3	Lee & Ok (2012)	45.00
4	Yang (2010)	43.21
5	Kim (2008)	43.06
Note: Number of citations is based on *Google Scholar* results on November 21, 2023.		

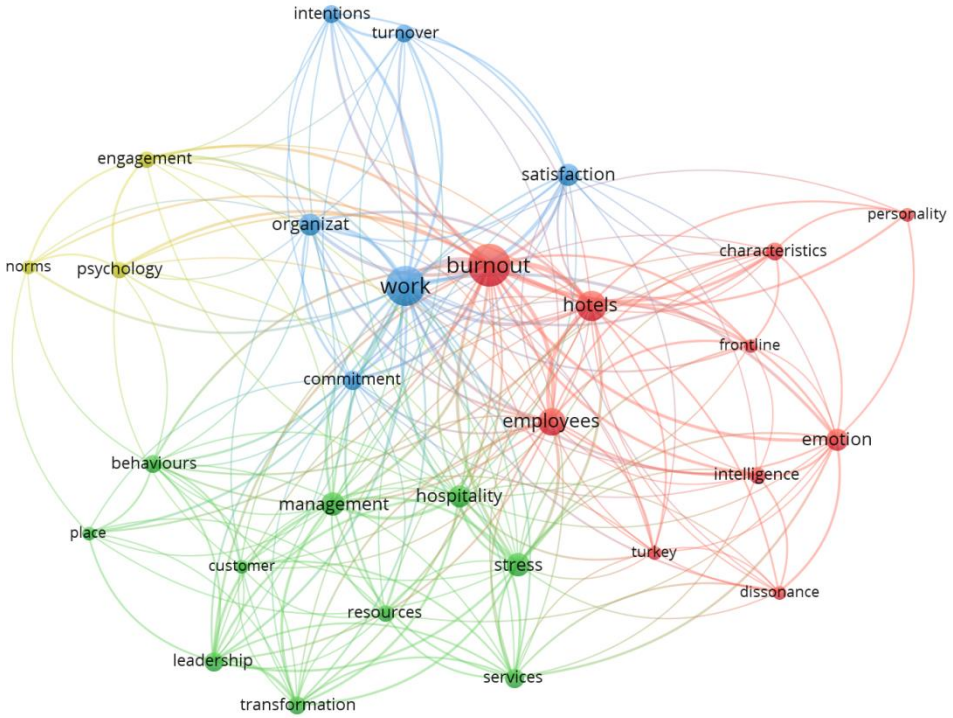
Source: Authors' research

5. Results and discussion – content analysis

In order to analyze the content in more detail and obtain more relevant results, the analysis of keywords was carried out applying the principle of completeness of names (instead of abbreviations), decomposition of complex expressions, finding synonyms, and avoiding false frequency by accepting only one occurrence of a certain word per paper.

VOSviewer was used in order to more precisely determine the connection of keywords. Using this tool, a visual representation of the connection of the analyzed topics was created. In order to emphasize the most important topics, as well as for a simpler visual representation, those topics with a frequency of ≥3 were taken into consideration. In the described way, four clusters were formed (Figure 4).

Figure 4: Interconnection of the most important topics



Source: Authors' research

The first cluster (coloured red) includes burnout, characteristics, dissonance, emotion, employees, frontline, hotels, intelligence, personality, and Turkey. On the basis of the obtained cluster, the factors affecting the burnout syndrome among hotel employees can be singled out. The "Characteristics" factor implies job performance, including high-performance work systems, as well as essential personality traits. The "Dissonance" factor includes emotional dissonance. The "Emotion" factor includes to the greatest extent emotional labour, followed by emotional intelligence and dissonance, as well as emotional exhaustion and effort. The "Employees" factor includes factors arising from hotel staff, primarily frontline employees, but also employee well-being, reactions, attitudes, and commitment, as well as the role of domestic migrant workers. The "Frontline" factor emphasizes the role of hotel frontline staff and can be considered as part of the "Employees" factor. The "Intelligence" factor primarily includes emotional intelligence, but also artificial intelligence. The "Personality" factor includes the personality characteristics of employees.

The second cluster (coloured green) includes behaviours, customers, hospitality, leadership, management, place, resources, services, stress, and transformation. The "Behaviour" factor includes different ways of behavior of employees that can occur as a cause or consequence of burnout at work. It is based on the need to focus on customers, social and organizational citizenship behaviour, extraroles, including various forms of disobeying business rules, unethicality (for one's own benefit), as well as numerous counterproductive activities. The "Customer" factor includes the actions of users of services, and activities related to them. It is based on a focus on users, customer service management, as well as dysfunctional customer behavior. The "Hospitality" factor includes the influence of the specifics of hospitality in various aspects – industry, management, services, etc. The "Leadership" factor

includes the influence of different forms of leadership, among which transformational leadership stands out, but it also includes other elements – transactional leadership, leader-member exchange, etc. The "Management" factor includes the influence of managerial activities, especially human resources management, middle management, customer service management, etc. The "Place" factor includes the role of the workplace in burnout syndrome at work, which is expressed through loneliness, social descriptive norms, counterproductive behaviour, etc. The "Resources" factor is primarily based on human resource management, but conservation of resources theory also has its role. The "Services" factor is based on the characteristics and specifics of hospitality services, then sabotages, quality, and customer service management. The "Stress" factor includes the role of stress at work, as well as stressors in the sense of challenge and hindrance. The "Transformation" factor implies transformational leadership.

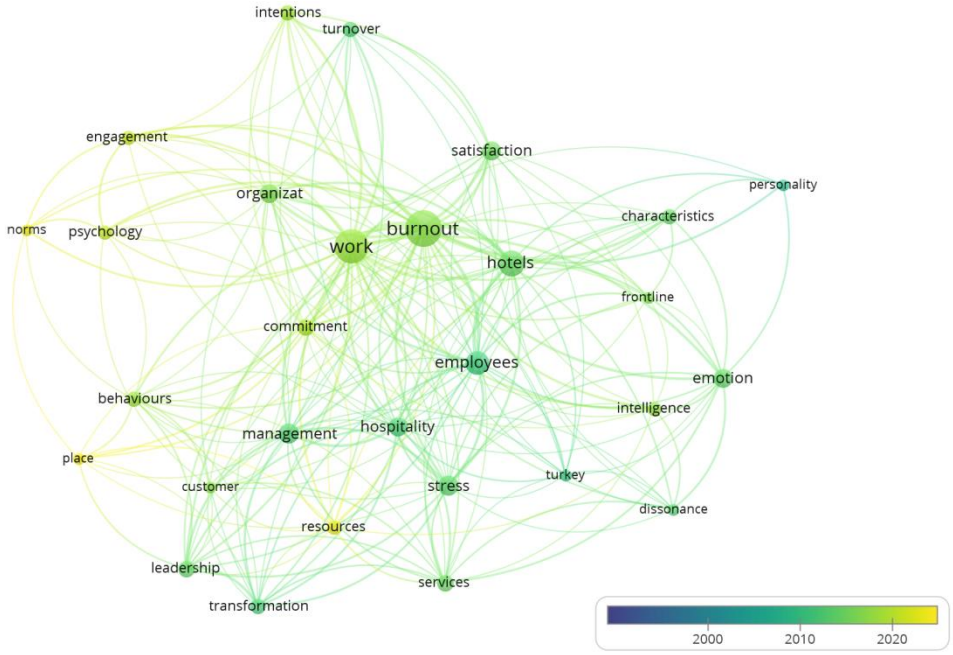
The third cluster (coloured blue) includes commitment, intentions, organizational, satisfaction, turnover, and work. The "Commitment" factor includes the organizational commitment of employees. The "Intentions" factor includes turnover intentions, i.e. intentions of leaving employees. This factor can be identified with the "Turnover" factor and viewed together as the "Turnover intentions" factor. The "Organizational" factor includes various organizational factors, such as organizational commitment, politics, perceived organizational support, supervisors' organizational embodiment, organizational citizenship behaviours, etc. The "Satisfaction" factor primarily includes job satisfaction, but also life satisfaction. The "Work" factor includes numerous factors that arise directly from the work process, among which the most important are job satisfaction and emotional labour, then work engagement, work-leisure conflict, and job performances/characteristics, but other factors are also present – workplace factors (loneliness, social descriptive norms, counterproductive behaviour), telework/work from home, high performance work systems, quality of work life, workload, work values, job crafting, job stress, violation of work rules, etc.

The fourth cluster (coloured yellow) includes engagement, norms, and psychology. The "Engagement" factor includes the influence of work engagement of employees. The "Norms" factor includes social descriptive norms in the workplace, behaviour aimed at violating business rules, and regulatory foci. The "Psychology" factor includes various psychological factors, such as psychological ownership, but also psychological capital and safety.

The content analysis results are consistent with those of other studies that demonstrate how frontline hotel employees who interact with customers are more likely to experience stressful situations and burnout syndrome, and how their personalities, emotions, and intelligence influence their behaviour (Choi et al., 2019; Wang, 2020). Additionally, content analysis results align with research indicating that managers and leaders play a major role in setting up procedures, resources, and workplace atmosphere in the tourism and hospitality industry (Chi et al., 2021; Kloutsiniotis et al., 2022). They aim to reduce workload, job stress, job crafting, loneliness, and unproductive behaviour while simultaneously fostering organizational citizenship behaviour, quality of work life, satisfaction, commitment and engagement (Dorta-Afonso et al., 2023; Kara et al., 2013).

In order to observe the interconnection of the most important topics depending on the year of paper publication, overlay visualization was performed using *VOSviewer* (Figure 5).

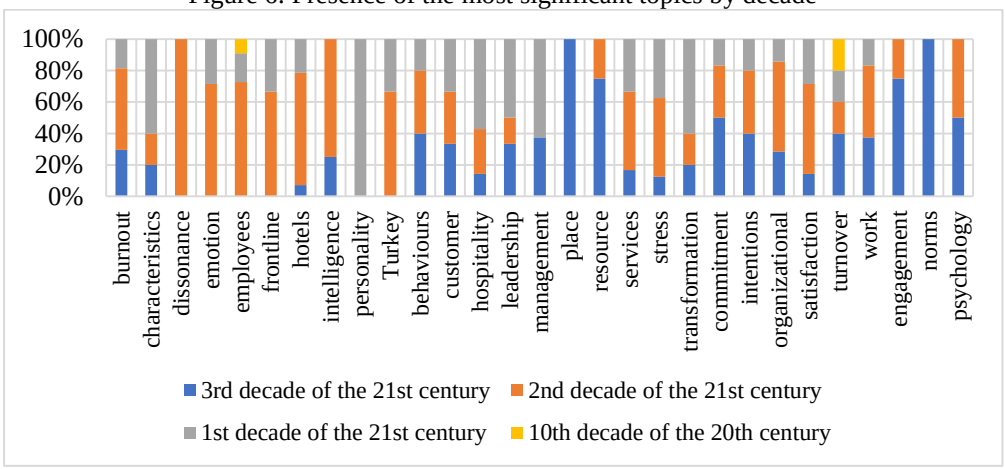
Figure 5: Interconnection of the most important topics (overlay visualization)



Source: Authors' research

The analysis of the presence of the most important topics in the published papers, with the aim of a simpler overview of the influence of time on the study of burnout syndrome, was also carried out according to decades (Figure 6).

Figure 6: Presence of the most significant topics by decade



Source: Authors' research

During the last decade of the 20th century, of the defined factors, only "Employees" and "Turnover (intention)" were present. During the first decade of the 21st century, the factors "Dissonance", "Intelligence", "Place", "Resource", "Engagement", "Norms", and "Psychology" were not present. During the second decade of the 21st century, the factors "Personality", "Management", "Place", and "Norms" were not present. During the current

part of the third decade of the 21st century, the factors "Dissonance", "Emotion", "Employees", "Frontline", "Personality", and "Turkey" were not present. During the first decade of the 21st century, all the papers on personality, most of the papers on management, characteristics, and hospitality, and half of the papers on leadership were published. During the second decade of the 21st century, all papers on the topic of dissonance, most of the papers on the topic of intelligence, employees, emotion, hotels, frontline, Turkey, organizational, satisfaction and burnout, as well as half of the papers on services, stress and psychology were published. During the analyzed part of the third decade of the 21st century, all papers on the subject of place and norms, most of the papers on the subject of resources and engagement, as well as half of the papers on commitment and psychology were published. The topics of behaviours and intentions were mostly analyzed in the second and third decades of the 21st century, customer in the first three decades of the 21st century, and turnover in the third decade of the 21st century, while work was mostly analyzed in the second decade of the 21st century.

6. Conclusion

Results from bibliometric analysis conducted in this paper showed that the "International Journal of Hospitality Management" (*ScienceDirect*) published the most papers (48.65%) on burnout syndrome among hotel employees. Taking into account the number of papers by country and top countries regarding the number of authors that dealt with this topic, it can be concluded that the countries that made the greatest contribution to the analyzed topic are the USA (40.54% of the papers; 27.71% of the authors) and China (29.73% of the papers; 25.30% of the authors). Hyun Jeong Kim, School of Hospitality Business Management, Washington State University, USA, is the most well-known author if two criteria are taken into account – the number of published papers dealing with burnout among hotel employees (according to this criterion, Osman M. Karatepe, Eastern Mediterranean University, Cyprus, has the same importance) and the number of citations. Using the number of citations on *Google Scholar* on November 21, 2023, the results showed that the most influential papers (papers that have the highest total number of citations or have the highest average annual citations) are: Kim (2008), Lu and Gursoy (2016), Yang (2010), Kim et al. (2007), Lee and Ok (2012), Gill et al. (2006), and Cheng and O-Yang (2018). Furthermore, conducted content analysis revealed that exposure to burnout among hotel employees is largely dependent on their personality characteristics. Besides personal characteristics, there are organizational factors that may cause burnout among hotel employees.

The contribution of this paper is in conducting bibliometric analysis on the topic of burnout syndrome in the field of hotel management. In this way, data were obtained on: the temporal dynamics of the publication of papers (trend of growing interest in this field); representation in magazines; authors from the aspect of contributions of individuals, countries and achieved cooperation, as well as the most significant authors from the aspect of citations. The above data can represent a good basis for interested authors for further analysis of this topic. In addition, by conducting a content analysis, key topics, i.e. factors of burnout syndrome, were singled out.

The presented research is valuable not only in the academic sphere, but also in practice, for managers and leaders of hotels. The results can be used to establish clear organizational procedures and practices that will help in the process of eliminating or at least reducing burnout syndrome, as well as to create working conditions and an atmosphere free from stress and heavy workloads for hotel employees. Furthermore, managers and leaders may find out the strategies and methods for overcoming the problems and negative effects that may appear in hotels due to employee exposure to burnout.

The limitations of this paper arise from the search period (September 2023), the defined sample of journals, the method of selection of papers, content analysis based to a significant extent on keyword analysis, etc. Future directions of research should be aimed at eliminating the mentioned shortcomings and further expanding the analysis to the field of tourism and hospitality, and not only the hotel industry. Given the fact that business environment is constantly changing, it is almost inevitable that there will be many new papers on the topic of burnout syndrome in the hotel industry. As a result, the proposal is to perform an ongoing bibliometric analysis study in order to examine the most recent concerns regarding burnout and its negative effects, as well as to find suitable approach to overcome its antecedents and consequences.

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[1*], Name Surname[2], Name Surname[3]

[1] Institution
[2] Institution
[3] 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)

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)

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**, however, the Editor-in-Chief of the journal has an exclusive right to approve a larger number of authors per paper in exceptional situations.

* e-mail address of the correspondent author

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.

For numbered first-level subtitles use a bold font of 12pt whereas a bold font of 10pt is used for second-level subtitles. The text and the references list should be written using the font size 10pt.

3. Materials and methods

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.

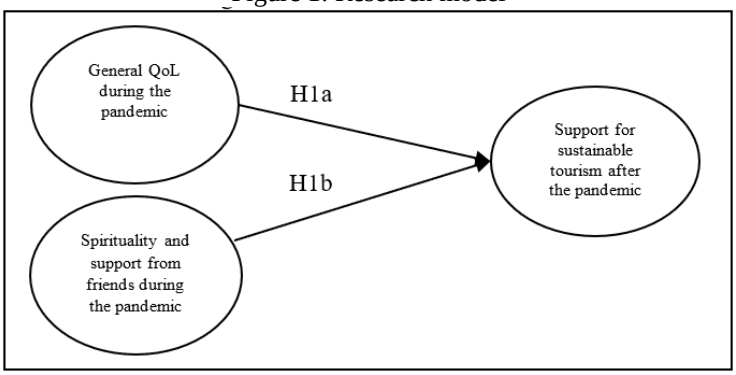
4. Results and discussion

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: Research model



Source: Authors' research

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

$$\mathrm{PVo} = \frac{\mathrm{FVn}}{(1+\mathrm{i})^{\mathrm{n}}} \tag{1}$$

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

Table 1: Results of multiple regression analysis

Variable	ß	T	Sig.	VIF
Textual comments	0.609	14.071	0.000*	1.000
Photos	0.484	11.172	0.000*	1.000
Rating	0.152	3.513	0.001*	1.000

* The value is significant at the level equaling 0.05
Source: Authors' research

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** (single-authored paper) or **Authors' research** (co-authored paper).

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. If submitted paper, or some part of the paper, represents an excerpt from the author's PhD thesis, the author must clearly specify it within this section.

Conflict of interest

The author(s) declare no conflict of interest.

References

The reference list should not contain sources which were not used in the paper. **All the sources mentioned in the paper should be hyperlinked to the corresponding sources in the bibliography** (e.g.: Harish, 2008; Luque-Martinez et al., 2007; Tew & Barbieri, 2012). **Use the initials of the first author of the submitted paper together with the first author's surname and the year of publication of the cited paper as a bookmark** (e.g.: ML_Harish_2008; ML_Luque_Martinez_et_al_2007; ML_Tew_Barbieri_2012) **(video instructions)**.

When giving references, APA system of referencing should be used. For more information see *Publication Manual of the American Psychological Association* (6th ed.).

When citing an author in the text, if the author and the original words are mentioned, the year of publication of the cited text should be given in parentheses after the author's name,

whereas the number of the cited page should follow the last sentence of the citation, e.g. according to Đurković (2007), "the cited text" (p. 10) **(use of curved quotation marks (" ") is mandatory)**. When the author is not mentioned in the sentence, his surname, the publishing year and the cited page number should be given in parentheses at the end of a sentence. When paraphrasing or summarizing, the page number is not necessary (Đurković, 2007). Citations of two or more references of the same author published in the same year should be stated in the following way: (Harish, 2008a; Harish, 2008b). If there are two authors of the cited text, surnames of both authors should be given in the following way (Tew & Barbieri, 2012). Citations of references in the text to papers of three or more authors should be stated as follows: (Luque-Martinez et al., 2007). When citing the resource without pagination (e.g. electronic resources), the author's surname and the publishing year should be given. The author being a corporation or an organization, name of the organization/corporation and the publishing year should be provided (Ministry of Finance and Economy of the Republic of Serbia, 2013). If you refer to multiple sources in the same sentence, **list them alphabetically** (Harish, 2008; Luque-Martinez et al., 2007; Tew & Barbieri, 2012).

All **references** should be given at the end of the text in an alphabetical order. Authors should note that all references must be provided in the original language, while the title of the references that have not been published in the English language should be translated and provided after the original title, in square brackets. **Indicate the titles of publications in lowercase style**. There follow the examples of APA style for citing different types of text (a book, a paper published in a journal, a paper published in proceedings, electronic resources, etc.).

One-author book
E.g.: Hrabovski Tomić, E. (2009). *Destinacije zdravstvenog turizma [Medical tourism destinations]*. Novi Sad, Srbija: Prometej.

A multiple-author book
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 '…'.
E.g.: Barrows, C. W., & Powers, T. (2009). *Introduction to the hospitality industry* (7th ed.). Hoboken, New Jersey: John Wiley&Sons, Inc.

A book, translation
E.g.: Spic, E. H. (2011). *Umetnost i psiha: Studija o psihoanalizi i estetici [Art and psyche: A study of psychoanalysis and aesthetics]*. (A. Nikšić, Transl.). Beograd, Srbija: Clio.

A book with an editor, anthology
If a book is an anthology, editor is considered to be the author of the book. In such a case, his or her name is followed by (Ed.). If there is more than one editor, then use (Eds.).
E.g.: Đurković, M. (Ed.) (2007). *Srbija 2000-2006: Država, društvo, privreda [Serbia 2000-2006: State, society, economy]*. Beograd, Srbija: Institut za evropske studije.

A paper published in proceedings
E.g.: Feret, K. (2011). Serbia and Poland on map of the global air cargo shipment. In V. Babić (Ed.), *Contemporary Issues in Economics, Business and Management - EBM 2010* (pp. 3-16). Kragujevac, Serbia: Faculty of Economics University of Kragujevac.

One-author paper published in a journal
E.g.: Harish, R. (2008). Brand architecture and its application in strategic marketing. *The Icfai University Journal of Brand Management*, *7*(2), 39–51.

Two-author paper published in a journal
If the cited paper is given a **DOI number**, it **should also be included as a link**.
E.g.: Tew, C., & Barbieri, C. (2012). The perceived benefits of agritourism: The provider's perspective. *Tourism Management*, *33*(6), 215–224. https://doi.org/10.1016/j.tourman.2011.02.005

A paper with more than two authors published in a journal
E.g.: Luque-Martinez, T., Castaneda-Garcia, J. A., Frias-Jamilena, D. M., Munoz-Leiva, F., & Rodriguez-Molina, M. A. (2007). Determinants of the use of the Internet as a tourist information source. *The Service Industries Journal*, *27*(7), 881–891. https://doi.org/10.1080/02642060701570586

An article with a known author
E.g.: Mišić, M. (2012, February 1). Ju-es stil smanjio gubitke [US steel has cut losses]. *Politika*, p. 11.

An article with no author given
E.g.: Straževica gotova za dva meseca [Straževica finished in two months]. (2012, February 1). *Politika*, p. 10.

A thesis
E.g.: Dewstow, R. A. (2006). *Using the Internet to enhance teaching at the University of Waikato* (Unpublished master's thesis). University of Waikato, Hamilton, New Zealand.

Documents or data bases taken from the Internet, a private or official Internet page with a known author
E.g.: Kraizer, S. (2012). *Safe child*. Retrieved October 29, 2012 from http://www.safechild.org/

Documents or data bases taken from the Internet, a private or official Internet page with an unknown author
E.g.: *Penn State Myths*. (2006). Retrieved December 6, 2011 from http://www.psu.edu/ur/about/myths.html

Documents or data bases taken from the Internet, a private or official Internet page with an organization or corporation as an author
E.g.: Ministarstvo finansija i privrede Republike Srbije [Ministry of Finance and Economy of the Republic of Serbia]. (2013). *Informacije o turističkom prometu u Srbiji [Information on tourist traffic in Serbia]*. Retrieved February 6, 2013 from http://www.turizam.mfp.gov.rs/index.php/sr/2010-02-11-17-24-30

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