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UMJETNA INTELIGENCIJA, ESG INOVACIJE U TURIZMU I UPRAVLJANJE OSOBNIM PODACIMA: Kako digitalna ekonomija, adaptabilnost i održivost oblikuju budućnost

ARTIFICIAL INTELLIGENCE, ESG INNOVATIONS IN TOURISM, AND PERSONAL DATA MANAGEMENT: How the Digital Economy, Adaptability and Sustainability Shape the Future

SAŽETAK: Digitalna ekonomija i evolucija turističkog sektora u *artificial intelligence* (AI) i *environmental*, *social and governance* konceptu (ESG) predstavljaju ključne čimbenike koji oblikuju njegovu sadašnjost i budućnost, s osobitim naglaskom na *online* rezervacijske platforme. Ovaj rad istražuje kako napredak u digitalnim tehnologijama – umjetna inteligencija te integracija ESG principa u ponudu turističkih proizvoda – mogu utjecati na cjelokupni turistički sektor. Rad pruža deskriptivnu analizu primjera mogućeg korištenja AI tehnologija za unaprjeđenje održivosti, personalizaciju korisničkog iskustva (CX – *customer experience*) i optimizaciju operativnih procesa, kao i osvrt na ulogu ESG čimbenika u oblikovanju održivijih i odgovornijih turističkih praksi te deskriptivnu analizu trendova iz relevantnih svjetskih istraživanja vezanih za stavove o korištenju AI-ja u kreiranju, ponudi i promociji proizvoda.

U kontekstu umjetne inteligencije, tehnologije poput strojnog učenja i analize velikih podataka omogućuju *online* rezervacijskim platformama da

ABSTRACT: Digital economy and the evolution of tourism within the concepts of artificial intelligence (AI) and the environmental, social and governance (ESG) principles represent key factors shaping the present and the future of tourism, with special emphasis on online booking platforms. This paper studies the potential effect of digital technology advancements – artificial intelligence and the integration of the ESG principles in the supply of tourism products – on the entire tourism sector. The paper provides a descriptive analysis of examples of possible uses of AI technologies in the enhancement of sustainability, CX (Customer Experience) personalisation and optimisation of operational processes. It also reviews the role of ESG factors in shaping more sustainable and more responsible tourism practices, as well as a descriptive analysis of trends in the relevant research studies worldwide related to attitudes toward using AI in creating, supplying and promoting products.

Within the AI context, technologies such as machine learning and big data analytics enable

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razvijaju sofisticirane algoritme za personalizirane pretrage i preporuke. To ne samo da poboljšava korisničko iskustvo nego i pridonosi većoj učinkovitosti u upravljanju resursima i operacijama. S druge strane, ESG principi usmjeravaju industriju prema održivijim praksama, potičući organizacije da minimiziraju svoj ekološki otisak, promiču društvenu odgovornost i osiguravaju visoke standarde upravljanja. Integracija AI tehnologija može dodatno potaknuti napredak u tim područjima, omogućavajući precizniju analizu utjecaja na okoliš, poboljšanje angažmana vezanog za društvenu odgovornost i unaprjeđenje upravljačkih praksi.

Osim toga, AI nudi nove mogućnosti rješavanja specifičnih ESG izazova unutar turističkog sektora. Primjerice, algoritmi umjetne inteligencije mogu pomoći u identifikaciji i promociji održivih turističkih destinacija te u razvoju personaliziranih iskustava koja podržavaju lokalne zajednice, a koja nemaju negativan utjecaj na okoliš ili je taj utjecaj minimalan. U kontekstu društvene odgovornosti, AI može olakšati kreiranje inkluzivnih turističkih proizvoda koji odgovaraju potrebama različitih skupina putnika, odnosno turista, uključujući osobe s posebnim potrebama.

Integracija ESG čimbenika i primjena AI tehnologija u turizmu ne samo da pridonosi ekološkoj i društvenoj održivosti nego i omogućava pružateljima turističkih usluga da se istaknu na tom vrlo konkurentnom tržištu, povećavajući privlačnost svoje ponude među sve svjesnijim potrošačima. No takav pristup donosi i određene izazove, uključujući potrebu razvoja novih vještina, osiguravanja privatnosti i sigurnosti podataka te postupanja s obzirom na etičke dvojbe.

Zaključno, kombinacija dostupnih AI tehnologija i ESG principa ima potencijal radikalno transformirati turistički sektor, omogućavajući razvoj personaliziranih, učinkovitih i održivih turističkih iskustava. Ovi čimbenici ne samo da predstavljaju ključni element napretka u digitalnoj ekonomiji nego i pružaju platformu

online booking platforms to develop sophisticated algorithms for personalised searches and recommendations. Not only does this enhance user experience, but it also contributes to higher efficiency in resource and operation management. On the other hand, the ESG principles have been directing the industry toward more sustainable practices, encouraging organisations to minimise their ecological footprint, promote social responsibility and ensure high management standards. The integration of AI technologies can add to the advancement in these areas, enabling more precise analysis of environmental impact, improving the engagement related to social responsibility and enhancing management practices.

Besides, AI offers new possibilities of resolving specific ESG challenges within the tourism sector. For example, artificial intelligence algorithms may help to identify and promote sustainable tourism destinations and to develop personalised experiences that support local communities, with minimal or no impact on the environment. Within the scope of social responsibility, AI can facilitate the creation of inclusive tourism products that correspond to the needs of varies groups of travellers, i.e., tourists, including people with special needs.

Not only does the integration of ESG factors and implementation of AI technologies in tourism contribute to the ecological and social sustainability, but they also enable tourism service provides to stand out in the highly competitive market by increasing the appeal of their supply among the increasingly conscious consumers. However, this approach is also followed by certain challenges, including the necessity of new skills, ensuring data privacy and security and acting in accordance with ethical dilemmas.

Finally, the combination of available AI technologies and ESC principles has the potential to radically transform the tourism sector, enabling the development of personalised, effective and sustainable experiences. Besides representing a key element of advancement in digital economy,

za inovacije i postavljanje novih standarda u turističkom sektoru, istodobno promičući održivost i društvenu odgovornost.

KLJUČNE RIJEČI: digitalna ekonomija, AI, ESG, digitalna transformacija, turizam, održivost, društvena odgovornost

these factors provide a platform for innovations and setting new standards in the tourism sector, promoting sustainability and social responsibility at the same time.

KEY WORDS: digital economy, AI, ESG, digital transformation, tourism, sustainability, social responsibility

UVOD

U doba digitalne transformacije turistički sektor svjedoči revolucionarnim promjenama vođenima napredovanjem umjetne inteligencije (*artificial intelligence* – AI) i povećanom sviješću o važnosti okolišnih, socijalnih i upravljačkih (*environmental, social and governance* – ESG) čimbenika. Ovaj rad istražuje način na koji navedeni čimbenici ne samo da oblikuju trenutne trendove unutar turističke industrije nego i postavljaju temelje za njezinu budućnost. Kroz integraciju AI-ja u pristupu ESG principima i oblikovanju turističke ponude turističke organizacije mogu potpuno redefinirati iskustvo putovanja, pružajući personalizirane usluge koje istodobno promiču održivost i društvenu odgovornost.

Digitalna ekonomija, koja je temeljena na inovacijama poput blockchaina, umjetne inteligencije i interneta stvari (IoT), znatno utječe na brzinu transformiranja načina na koji se turističke usluge razvijaju, promoviraju i, u konačnici, pružaju krajnjim korisnicima. Umjetna inteligencija, s osobitim naglaskom na strojno učenje i analizu velikih podataka, omogućava stvaranje složenih algoritama, koji personaliziraju korisničko iskustvo, optimiziraju poslovne procese i poboljšavaju učinkovitost trošenja ili planiranja resursa. Primjena tih tehnologija nudi potencijal za dubinsko razumijevanje potreba i preferencija putnika, odnosno turista, omogućavajući kreiranje prilagođenih putovanja koja premašuju njihova

INTRODUCTION

At the age of digital transformation, the tourism sector is witnessing revolutionary changes led by the advancement of artificial intelligence (AI) and increased awareness of the importance of environmental, social and governance (ESG) factors. This paper studies the way in which the mentioned factors not only shape the current trends in the tourism industry, but also set foundations for its future development. Through the integration of AI in the ESG principle approach and shaping their tourism supply, tourism organisations can completely redefine travelling experiences, by providing personalised services that promote sustainability and social responsibility.

Digital economy, based on innovations such as blockchain, artificial intelligence and the Internet of Things (IoT), has significantly impacted the speed at which tourism service development, promotion and, finally provision to consumers is being transformed. Artificial intelligence, with a special emphasis on machine learning and big data analytics, enables creating complex algorithms that personalise user experience, optimise business processes and enhance the efficiency in using and planning resources. The implementation of these technologies offers a potential for deep understanding of travellers' needs and preferences, enabling the creation of tailored holidays that exceed their expectations, thereby optimising

očekivanja, optimizirajući pritom cjelokupni proces uključen u ostvarenje tih očekivanja za dobrobit sviju – i ponuđača i putnika, odnosno turista, ali i samih destinacija i potreba lokalne zajednice.

Paralelno s tehnološkim inovacijama, porast svijesti putnika, odnosno turista, o važnosti održivog razvoja potiče ubrzanu integraciju ESG principa u turističkom sektoru, ne samo zbog regulatorne uvjetovanosti nego i na temelju osnovnih ekonomskih postulata elastičnosti ponude i potražnje s obzirom na ponudu konkurentskih turističkih proizvoda ili razinu „tehnološke naprednosti“, odnosno „generacijski uvjetovane tehnološke prikladnosti s obzirom na tu ciljnu skupinu“.

Ti principi, koji obuhvaćaju ekološku i društvenu odgovornost, kao i transparentno upravljanje, postaju ključni čimbenici u strategijama poslovanja ponuđača turističkih proizvoda ili usluga. ESG čimbenici potiču ponuđače da preispitaju svoje poslovne prakse, promiču održive turističke destinacije te razvijaju proizvode ili usluge koji podržavaju lokalne zajednice, a koji i minimiziraju negativan utjecaj na okoliš, pri čemu integracija ESG principa ne samo da pridonosi očuvanju prirodnih i kulturnih resursa nego i omogućava organizacijama da izgrade snažniji brend, poboljšaju reputaciju i održe konkurentsku prednost na tržištu.

Sinergija između AI tehnologija i ESG principa otvara nove mogućnosti rješavanja specifičnih izazova unutar turističkog sektora. Primjerice, algoritmi umjetne inteligencije mogu identificirati održive turističke destinacije koje minimiziraju ekološki otisak, osiguravajući istodobno personalizirano iskustvo koje odgovara individualnim preferencijama putnika, odnosno turista. Osim toga, AI može olakšati implementaciju društveno odgovornih praksi, kao što je razvoj inkluzivnih turističkih proizvoda, čime se promiču socijalna inkluzija i ravnopravnost.

the entire process involved in meeting these expectations for the benefit of everyone – providers and travellers, i.e., tourists, but also the destinations themselves and the needs of the local community.

Parallel to technological innovations, the rise in travellers' awareness, i.e., tourists, on the importance of sustainable development has been driving a fast integration of the ESG principles in the tourism sector, not only due to regulatory prerequisites, but also on the basis on competitors' tourism product or the level of "technological advancement", i.e., "generational prerequisites for technological convenience with regard to the target market."

These principles, which encompass ecological and social responsibility, as well as transparent management, are becoming key factors in business strategies of tourism product or service suppliers. The ESG factors encourage suppliers to examine their business practices, promote sustainable tourism destinations and develop products or services that support local communities and minimise the negative impact on the environment, whereby the integrations of the ESG principles contributes not only to the preservation of natural and cultural resources, but also enables organisations to build a stronger brand, enhance their reputation and maintain their competitive advantage.

The synergy between artificial intelligence technologies and the ESG principles is opening new possibilities of resolving specific challenges within the tourism sector. For example, AI algorithms can identify sustainable tourism destinations with minimal ecological footprint, at the same time ensuring personalised experience that corresponds with individual travellers' preferences. Besides, AI can facilitate the implementation of social responsibility practices, such as the development of inclusive tourism products, which promoted social inclusion and equality.

TRENUTNI TRENDOVI U INDUSTRIJI TURIZMA S OBZIROM NA ESG I DIGITALNU TRANSFORMACIJU

ESG se odnosi na tri ključna područja održivosti i društvene odgovornosti: ekološko (*environmental*), socijalno (*social*) i upravljačko (*governance*). U turizmu, ESG principi usmjeravaju organizacije prema održivijim i „više" etičkim praksama, koje minimiziraju negativan utjecaj na okoliš, promiču dobrobit lokalnih zajednica i osiguravaju etičko upravljanje, koje u znatnom opsegu podrazumijeva transparentnost.

Suvremeno poslovno okruženje, karakterizirano povećanom dinamikom i kompleksnošću, stavlja poduzeća, uključujući i ona u turističkom sektoru, pred izazove upravljanja poslovnim procesima uslijed sve veće neizvjesnosti koja obuhvaća svaki aspekt poslovanja. Takva situacija nalaže da menadžment svoje strategije sve više usmjerava prema učinkovitom upravljanju poslovnim rizicima da bi osigurao rast vrijednosti poduzeća i njegov opstanak na tržištu (Andrijanić et al., 2016). U kontekstu međunarodnog poslovanja, ta dinamika postaje još izraženija zbog različitosti ekonomskih i neekonomskih rizika koje pojedine zemlje donose (Andrijanić i Pavlović, 2016), osobito u turizmu, gdje specifični lokalni i globalni rizici mogu imati izravan utjecaj na turističku potražnju i ponudu. Istodobno ekonomske mogućnosti vezane za „sve raširenije internetsko poslovanje ukazuju na sve opipljivije brisanje granica u međunarodnom poslovanju" (Kolaković, 2006: 157), a uzrokovale su i „viši stupanj internacionalizacije poduzeća, kao i povećanja broja međunarodnih aktivnosti", koji prema Mikić et al. (2016: 1205) neminovno vodi i „boljem postizanju poslovnih rezultata". Prema Parlov et al. (2016), među važnijim su karakteristikama digitalnog marketinga prilagodljivost, korisnička kontrola, smanjenje troškova te interaktivnost.

Tema trenutačnih trendova u industriji turizma i kreiranju turističke ponude s obzirom na ESG čimbenike sve je prisutnija i relevantnija u

CURRENT TOURISM INDUSTRY TRENDS WITH REGARD TO ESG AND DIGITAL TRANSFORMATION

ESG relates to three key areas of sustainability and social responsibility: environmental, social and governance. In tourism, the ESG principles direct organisations toward more sustainable and "higher" ethical practices, minimising adverse impact on the environment, promoting the well-being of local communities and ensuring ethical management, which in its significant scope means transparency.

Modern business environment, characterised by increased dynamics and complexity has been pushing companies, including those in the tourism sector, to face challenges in managing business processes upon the rising unpredictability that has been permeating every business aspect. Such a situation requires the management to direct their strategies more toward effective business risk management to insure an increase in the company's value and its survival on the market (Andrijanić et al., 2016). Within the context of international business, the dynamics has become more pronounced due to the different economic and non-economic risks brought by specific countries (Andrijanić and Pavlović, 2016), especially in tourism, where specific local and global risks may directly impact tourism supply and demand. At the same time, economic opportunities related to the expanding internet business are indicating the increasingly tangible border removal in international business (Kolaković, 2006: 157), having also caused a higher level of company internationalisation, as well as an increased number of international activities. According to Parlov et al. (2016), some of the most important characteristics of digital marketing are adaptability, user control, cost reduction and interactivity.

The topic of current trends in the tourism industry and creating tourism supply with regard to the ESG factors has become more present and relevant in modern tourism business. The global tourism

suvremenom turističkom poslovanju. Globalna turistička industrija svakako predstavlja jedan od sektora s najbržim rastom, no suočava se s izazovom kako odgovoriti na sve veću svijest putnika, odnosno turista, o održivosti, društvenoj odgovornosti i zahtjevima za transparentnim upravljačkim praksama.

U kontekstu ESG čimbenika, turistička industrija stavlja naglasak na održivi razvoj, društvenu odgovornost prema zajednicama u kojima djeluje te transparentnost i etičnost u upravljanju. Sve veća ekološka svijest putnika, odnosno turista, zahtjevi za višim standardima vezanima za socijalnu ravnopravnost i pravdu te etičko vođenje poslovanja postavljaju nove izazove pred turističke operatere, hotele, agencije i u konačnici – destinacije u cjelini.

Karakteristično za digitalnu eru, primjećuje se temeljita promjena u načinu na koji su informacije o proizvodima dostupne turistima, odnosno putnicima. Brzina i jednostavnost pristupa željenim informacijama o proizvodima nikada nisu bili veće. Ta dostupnost, u kombinaciji s mogućnošću kontinuiranog praćenja i analize potrošačkog ponašanja, omogućava ponuđačima turističkih proizvoda i usluga predviđanje buduće potražnje, što posljedično utječe na kreiranje trendova i prilagodbu ponude. Digitalna ekonomija, kao što navode Romanelli (2019) i Strømmen-Bakhtiar (2019), obuhvaća mnogo više od pukog korištenja informacijsko-komunikacijske tehnologije (IKT) u komercijalne svrhe. Ona predstavlja složen sklop ekonomskih aktivnosti, transakcija i komunikacija koje se temelje na sveprisutnoj uporabi informacijske tehnologije u svim segmentima ekonomije.

U skladu s time, digitalna ekonomija omogućava i potiče brisanje geografskih i operativnih granica, što Kolaković (2006) smatra ključnim za međunarodno poslovanje. Taj proces ne samo da olakšava internacionalizaciju poduzeća i povećava brojnost međunarodnih aktivnosti, kao što ističu Mikić et al. (2016), nego također pridonosi postizanju boljih poslovnih rezultata kroz učinkovitije iskorištavanje globalnih tržišnih prilika. Kao rezultat, osim što

industry certainly represents one of the fastest growing sectors, but it is also facing the challenge of responding to the increasing awareness of travellers, i.e., tourists on sustainability, social responsibility and transparent management practice demands.

Within the context of ESG factors, the tourism industry places focus on sustainable development, social responsibility toward the communities in which it is developing and managing transparency and ethics. The increasing awareness of travellers, i.e., tourists, the higher standard demands related to social equality and fairness, as well as ethical management are challenging tour operators, hotels, agencies, and finally, destinations themselves.

A fundamental change is noticeable in the way product information is available to tourists, i.e., travellers, which is the characteristic of the digital age. The sped and simplicity of accessing desired product information have never been better. The availability, combined with the possibility of continuous monitoring and analysis of consumer behaviour, enables tourism product and service suppliers to predict future demand, which consequently affects creating trends and adjusting supply. The digital economy, as noted by Romanelli (2019) and Strømmen-Bakhtiar (2019), entails much more than the mere usage of information and communication technology (ICT) for commercial purposes. It represents a complex composition of economic activities, transactions and communications based on the all-present use of information technology in all economy segments.

Accordingly, the digital economy enables and encourages the removal of geographic and operational borders, considered by Kolaković (2006) as key to international business. Not only does the process facilitate internationalisation of companies and increase the number of international activities, as pointed out by Mikić et al. (2016), but it also contributes to achieving better business performance through more effective use of global market opportunities. As a result, besides redefining the economic postulates by Adam Smith and the

redefinira ekonomske postulate Adama Smitha i pojam tržišne učinkovitosti u kontekstu digitalnog doba, digitalna ekonomija ujedno stvara nove mogućnosti za rast, inovacije i konkurentnost na globalnoj razini.

Znatne promjene dostupnosti informacija o proizvodima i ponašanju potrošača u digitalno su doba utjecale na brojne sektore, uključujući i turizam. Brz i jednostavan pristup informacijama, uz neprestano ažuriranje i lako praćenje potrošačkog ponašanja kroz analizu potražnje, omogućio je predviđanje budućih trendova i prilagodbu ponude. Ta dinamika omogućava ne samo stvaranje novih trendova nego i optimizaciju marketinških strategija u turizmu, gdje je razumijevanje i anticipiranje gostiju postalo ključno za uspjeh.

S obzirom na široku primjenu informacijsko-komunikacijske tehnologije (IKT) u svim aspektima ekonomije, digitalna ekonomija obuhvaća i turizam, kroz ekonomske aktivnosti, komercijalne transakcije i komunikacije. Integracija IKT-a u turizam omogućava poboljšanje unutarnjeg poslovanja, kao i transakcija između organizacija i pojedinaca, koji djeluju kao potrošači i građani. Petersen (2003) je novu ekonomiju identificirao s pojmom „virtualna ekonomija“ uslijed „jačanja uloge nematerijalnih resursa i ostale neopipljive imovine te nestanka klasično organiziranih poduzeća i nepostojanja fizičke nazočnosti tijekom poslovnih odnosa“. U tom kontekstu, pojam „virtualna ekonomija“ osobito odjekuje u turizmu, gdje digitalne inovacije omogućavaju stvaranje novih vrijednosnih lanaca i modela poslovanja, od virtualnih tura do *online* rezervacija i personaliziranih putnih iskustava, naglašavajući važnost nematerijalnih resursa i neopipljive imovine.

Goldfarb i Tucker (2017), kao i Floridi (2018), ističu da digitalna era i raširena upotreba digitalne tehnologije ne zahtijevaju novu ekonomsku teoriju, nego prilagodbu s naglaskom na informacije kao novu definiciju kapitala. U kontekstu turizma, to znači da su informacije o ponašanju potrošača, preferencijama i trendovima putovanja sada ključni

concept of market efficiency within the context of digital age, the digital economy also creates new opportunities for growth, innovation and competitiveness on a global level.

Significant changes in the availability of information on products and consumer behaviour in the digital age have affected numerous sectors, including tourism. Fast and easy access to information, along with constant updates and easy monitoring of consumer behaviour through demand analysis, has enabled future trend predictions and supply adjustments. The dynamic does not only facilitate the creation of new trends, but also the optimisation of marketing strategies in tourism, where the understanding and anticipating guests has become key for success.

Considering the wide application of ICT in all aspects of economy, the digital economy also includes tourism, through economic activities, commercial transactions and communication. The integration of ICT in tourism enables the enhancement of internal operations, as well as the transaction between organisations and individuals, who act as consumers and citizens. Petersen (2003) identifies the new economy with the concept of “virtual economy”, following the enhancement of the role of non-material resources and other intangible assets, as well as the disappearance of the traditional business organisations and the lack of physical presence during business relations. Within that context, the concept of “virtual economy” is especially reflected in tourism, where digital innovations have been enabling the creation of new value chains and business models, from virtual tours to online booking and personalisation of traveller experiences, emphasising the importance of non-material resources and intangible assets.

Goldfarb and Tucker (2017), together with Floridi (2018), point out that the digital age and the wide use of digital technologies do not demand a new economic theory, but adjustment, with emphasis on information as the new definition of capital. Within the tourism context, this means that information

resursi za razvoj i prilagodbu ponude. Etičke norme i razumijevanje informacija kao nematerijalnog resursa postaju ključni u osmišljavanju turističkih proizvoda i usluga koji poštuju privatnost i promiču održivi razvoj.

Velike kompanije, poput Googlea, Applea, Amazona te u turizmu Booking.com i Airbnb, svojim disruptivnim inovacijama diktiraju ne samo karakter suvremene ekonomije nego i način na koji se turizam razvija i prilagođava novim tehnologijama. Digitalna ekonomija, temeljena na IKT tehnologijama, utječe na turizam tako što omogućava novi način komunikacije, kreiranja i distribucije vrijednosti, promovirajući pritom nove modele poslovanja koji omogućavaju internacionalizaciju poduzeća i povećanje međunarodnih aktivnosti u turizmu. Slično tome, prema Botunac et al. (2024), istraživanja pokazuju da napredne AI tehnologije mogu znatno unaprijediti tradicionalne procese u financijskom sektoru, što ilustrira univerzalnu vrijednost i primjenjivost AI-ja u različitim industrijama.

IKT tehnologije u turizmu su prisutne u svojstvu sredstva komunikacije i stvaranja vrijednosti (Guerra Guerra et al., 2019), dok integracija digitalne ekonomije u turizam donosi brojne mogućnosti inovacija, poboljšanja poslovnih rezultata i pružanja boljeg iskustva turistima. Usto, ona od turističkog sektora zahtijeva prilagodbu strategija, usvajanje novih tehnologija i etičkih normi te razumijevanje informacija, kao ključnog resursa za održiv i uspješan razvoj.

S obzirom na razvoj tehnologija i mogućnost preciznog predviđanja potražnje, organizacije se sve više usmjeravaju prema poslovnim modelima temeljenima na bioničkoj transformaciji. Taj pristup, koji se odmiče od tradicionalnog upravljanja ponudom proizvoda i usluga, usredotočen je na zadovoljavanje specifičnih potreba krajnjih korisnika, gledajući ih kao jedinstvene pojedince. Bionička transformacija (Kasahara, 2018) uključuje tri ključna oblika kapitala: bihevioralni, kognitivni i mrežni.

on consumer behaviour, preferences and travel trends are now key resources for growth and supply adjustment. Ethical norms and understanding information as non-material resource have become key to creating tourism products and services that comply with privacy and promote sustainable development.

Large companies like Google, Apple, Amazon, and those in tourism like Booking.com and Airbnb do not only dictate the character of modern economy with their disruptive innovations, but also the way in which tourism develops and adapts to new technologies. The digital economy based on ICT technologies has been affecting tourism by facilitating a new mode of communication, creation and distribution of values, at the same time promoting new business models that enable company internationalisation and an increase in international tourism activities. Similarly, according to Botunac et al. (2024), research shows that advanced AI technologies can significantly enhance traditional processes in the financial sector, which illustrates the universal value and applicability of AI in various industries.

ICT technologies in tourism are present as means of communication and value creation (Guerra Guerra et al., 2019), whereas the integration of digital economy in tourism has brought about numerous opportunities for innovation, enhancement of business results and provision of better traveller experiences. Besides, it demands that the tourism sector adapts strategies, adopt new technologies and ethical norms and understand information, as key resource for sustainable and successful development.

With regard to technology development and possibility of precise demand predictions, organisations have been focusing on business models based on bionic transformation. The approach, which represents a step away from traditional product and service supply management, is focused on meeting specific consumer needs, and views them as unique individuals. Bionic transformation (Kasahara,

U turizmu takav pristup turističkim organizacijama i destinacijama omogućava prilagođavanje ponude specifičnim potrebama i očekivanjima svakog putnika, odnosno turista, predviđajući njegove želje i ponašanje, u cilju pružanja personaliziranog iskustva. Primjerice, bihevioralni kapital može omogućiti bolje razumijevanje preferencija putnika, odnosno turista, u realnom vremenu, dok kognitivni kapital pomaže u kreiranju personaliziranih ponuda kroz automatizaciju; istodobno mrežni kapital olakšava stvaranje zajednica oko destinacija ili brendova, potičući lojalnost i promovirajući održive prakse.

Budući da svaka digitalna transformacija u kontekstu detaljnijih obrada podataka, a osobito podataka o fizičkim osobama (*natural persons*) i njihovim demografskim, sociografskim i psihografskim karakteristikama, sa sobom nosi i znatan rizik od regulatorne neusklađenosti, to je važno na samom početku definirati kao kariku koja može biti od presudne važnosti za planiranje funkcionalnosti.

Primjerice, istraživanje provedeno tijekom 2018. godine u Republici Hrvatskoj (Parlov et al., 2018), vezano za korištenje digitalnog i direktnog marketinga, pokazalo je da organizacije tada nisu bile senzibilizirane za načine prikupljanja, obrade i arhiviranja osobnih podataka, odnosno potreba za zaštitom obrađivanih osobnih podatka bila je manje važan čimbenik nego korist od njihove uporabne vrijednosti pa je istaknuto da će se s obzirom na zahtjeve nove regulative smanjiti vjerojatnost učestalo korištenih metoda digitalnog i direktnog marketinga. Istodobno, u drugom istraživanju provedenom tijekom 2018. godine u Republici Hrvatskoj (Nikolić et al., 2018), vezanom za poznavanje obveza koje proizlaze iz tadašnje nove regulative EU-a – GDPR-a, ukazano je na nedovoljnu informiranost malih i srednjih poduzeća (uključujući turistički sektor) o novim regulatornim obvezama, kaznenim odredbama i nadležnosti institucija.

2018) includes three key forms of capital: behaviour, cognitive and network.

In tourism, such an approach to tourism organisations and destinations enables tailoring the supply to specific needs and expectations of each traveller, i.e., tourist, predicting their wants and behaviour, aimed at providing personalised experience. For example, the behaviour capital can enable a better understanding of traveller (tourist) preferences in real time, while the cognitive capital helps to create personalised offers through automatization; at the same time, the network capital facilitates the creation of communities around destinations or brands, encouraging loyalty and promoting sustainable practices.

Since every digital transformation within the context of detailed data processing, and especially natural persons data and their demographic, sociographic and psychographic characteristics, also brings about a significant risk from regulatory non-compliance, it is important to define it at the very beginning as link of essential importance to planning functionality.

For example, research conducted during 2018 in the Republic of Croatia (Parlov et al., 2018), regarding the use of digital and direct marketing showed that the organisations were not more sensitive to methods of collecting, processing and archiving personal data at that time, i.e., the need for protection of processed personal data was a less important factor than the benefit of its usable value. Thus, it was pointed out that considering the new regulation demands the probability of frequently used methods of digital and direct marketing would decrease. At the same time, another research conducted during 2018 in the Republic of Croatia (Nikolić et al., 2018), related to understanding the obligations pursuant to the new EU regulation GDPR indicated insufficient knowledge of small and medium enterprises (including the tourism sector) on the new regulatory obligations, punitive provisions and competent institutions.

ESG, ODRŽIVI TURIZAM I DIGITALNA TRANSFORMACIJA

Koncept održivog turizma temelji se na ideji minimiziranja negativnih utjecaja turizma na okoliš i maksimiziranja koristi za lokalne zajednice. Taj pristup uključuje razvoj i implementaciju turističkih praksi koje promiču zaštitu prirodnih resursa, očuvanje bioraznolikosti te smanjenje ugljičnog otiska. Taj je trend vidljiv i u poslovanju sve više hotela i *resorta*, s obzirom na način na koji implementiraju sustave za uštedu vode i energije, koriste obnovljive izvore energije te među gostima i osobljem promiču recikliranje (odvajanje otpada, davanje uputa za postupanje s ručnicima ili hranom i slično). Također, turističke destinacije sve češće razvijaju ekoturističke proizvode, koji uključuju edukaciju turista o lokalnoj flori i fauni te o kulturi.

Društvena dimenzija ESG čimbenika u turizmu odnosi se na pravednu raspodjelu ekonomskih koristi od samog turizma – poboljšanje kvalitete života lokalnih zajednica te promociju inkluzivnosti i diverziteta. Primjeri društveno odgovornog turizma uključuju podupiranje lokalnog gospodarstva kupovanjem lokalnih proizvoda i usluga, zapošljavanjem lokalnog stanovništva te ulaganjem u lokalnu infrastrukturu i obrazovanje, unatoč svim izazovima vezanima za nedostatak radne snage i sve veću potrebu za stranim radnicima, koji nemaju prilike podrobnije se upoznati s kulturološkim čimbenicima destinacije u kojoj rade. Usto, turistički programi koji uključuju interakciju sa samom lokalnom zajednicom, poput posjeta lokalnim obrtima, kulturnim i povijesnim lokacijama, te aktivno uključivanje turista u lokalne običaje i festivale sve su popularniji među turistima koji traže autentična iskustva. Ključni aspekt u razumijevanju potreba turista svakako je razumijevanje njihovih preferencija i osobnih karakteristika pri kreiranju same turističke ponude vezane za autentična iskustva.

Kada je riječ o upravljačkoj dimenziji ESG čimbenika, tu je naglasak na transparentnosti

ESG, SUSTAINABLE TOURISM AND DIGITAL TRANSFORMATION

The concept of sustainable tourism is based on the idea of minimising the negative impact of tourism on the environment and maximising the benefits for the local communities. The approach entails development and implementation of tourism practices that promote the protection of natural resources, preservation of biodiversity and the reduction of carbon footprint. The trend is also increasingly visible in hotel and resort operations, considering the methods of implementing water and energy saving systems, using renewable energy sources and promoting recycling among gusts and staff (waste separation, instructions on towel or food handling and the like). Likewise, tourism destinations are developing eco-tourism products more frequently, including tourist education on the local flora and fauna as well as culture.

The social dimension of ESG factors in tourism relates to the equal distribution of economic benefits from tourism – enhancement of the quality of life of the local community and promotion of inclusion and diversity. Examples of socially responsible tourism include supporting the local economy by purchasing local products and services, employing local staff and investing in the local infrastructure and education, despite all challenges related to lack of labour and the increasing need for foreign workers, who do not have the opportunity to familiarise themselves with the culturological factors of the destination in which they work. Furthermore, tourism programmes that include interactions with the local community, such as visiting local crafts, cultural and historic locations, and actively including tourists in local customs and festivals are gaining popularity among tourists who seek authentic experiences. The key aspect in understanding tourist needs is definitely understanding their preferences and personal characteristics upon creating the tourism supply related to authentic experiences.

poslovanja, etičkom vođenju te uključivanju svih dionika u donošenje odluka, pri čemu često sva tri čimbenika predstavljaju znatan izazov u smislu raskoraka između očekivanja dionika i percepcije tih očekivanja s obzirom na samu politiku poslovanja različitih subjekata kada je riječ o multinacionalnim grupacijama i njihovim podružnicama ili jednostavno razilaženja stavova rukovodstva i stvarnih očekivanja dionika (primjerice zaposlenika, zakonodavaca, turista i dr.). Velik utjecaj na smanjenje razilaženja u toj vrsti politike imaju i postojanje i komuniciranje jasnih politika i praksi koje se tiču zaštite okoliša, društvene odgovornosti te korporativnog upravljanja, ali i redovito izvještavanje o postignućima i izazovima u navedenim područjima.

Digitalna transformacija igra ključnu ulogu u implementaciji ESG principa u turizmu. Tehnologije poput umjetne inteligencije, interneta stvari (*internet of things* – IoT) i *blockchaina* omogućavaju razvoj inovativnih rješenja za održivo upravljanje resursima, poboljšanje energetske učinkovitosti, praćenje utjecaja na okoliš i optimizaciju procesa u organizacijama. Primjerice, pametni sustavi za upravljanje energijom u hotelskim objektima mogu znatno smanjiti potrošnju energije i emisiju stakleničkih plinova, dok platforme zasnovane na *blockchain* tehnologiji mogu osigurati transparentnost i praćenje socijalnih i ekoloških učinaka samih turističkih aktivnosti, pridonoseći pritom jačanju povjerenja među turistima i potičući ih na izbor „održivih" putovanja, odnosno turističkih proizvoda.

Integracijom ESG principa u bioničku transformaciju turistički sektor može razviti inovativne i održive poslovne modele koji zadovoljavaju i ekonomske i ekološke ciljeve. Osobito je važno razumjeti potencijal s obzirom na svaku od komponenti: (1) ekološka komponenta može se odraziti u promociji *eco-friendly* smještaja ili aktivnosti koje minimiziraju utjecaj na okoliš, koristeći bihevioralne uvide za prilagodbu ponude ekološki svjesnim putnicima, (2) socijalna komponenta može uključivati

When it comes to the governance dimension of the ESG factors, the emphasis is on operational transparency, ethical leadership and inclusion of all stakeholders in decision making processes, whereby frequently all three factors represent a significant challenge in the sense of the gap between stakeholders' expectations and perception of these expectations with consideration to the business policies of various subjects when it comes to multinational groups and their branches or simply different attitudes toward management and real stakeholder expectations (e.g. employees, legislators, tourists and others). The existence and communication of clear policies and practices concerning environment protection, social responsibility and corporate management have a high impact on reducing the gap in this type of policy, as well as regular reporting on achievements and challenges in the mentioned areas.

Digital transformation plays a key role in the implementation of the ESG principles in tourism. Technologies such as artificial intelligence, the Internet of Things (IoT) and blockchain enable the development of innovative solutions for sustainable resource management, enhancement of energy efficiency, monitoring environmental impact and optimisation of organisational processes. To illustrate, smart energy management systems in hotel facilities can significantly increase power saving and reduce greenhouse gas emissions, while blockchain-based platforms can ensure transparency and monitoring of social and ecological effects of the tourism activities, contributing to the increase of trust among tourists and encouraging them to choose "sustainable" travel, i.e., tourism products.

By integrating the ESG principles into the bionic transformation, the tourism sector can develop innovative and sustainable business models that meet both economic and ecological objectives. It is especially significant to understand the potential with regard to each of the components: (1) the ecological component can be reflected in promoting eco-friendly accommodation or activities minimising environmental impact,

poticanje lokalne kulture i gospodarstva, koristeći mrežni kapital za povezivanje turista i putnika s lokalnim zajednicama na autentične i odgovorne načine, dok se (3) upravljački aspekt odnosi na transparentnost, etičnost i odgovornost u upravljanju turističkim organizacijama, što se može poboljšati kroz kognitivni kapital, koji omogućava bolje odlučivanje i pridržavanje etičkih normi.

Suvremeni turisti sve više traže autentična i personalizirana iskustva koja odražavaju njihove vrijednosti i interes za održiva i ekološki osviještena putovanja. Kreiranje turističke ponude koja uključuje ESG principe destinacijama omogućava da te potrebe turista zadovolje kroz razvoj iskustvenog turizma koji promiče kulturnu raznolikost, očuvanje okoliša i socijalnu inkluziju.

Neki od primjera putovanja koja turistička industrija, s obzirom na nove preferencije putnika, odnosno turista, može promovirati u kontekstu ESG ponude uključuju: a) ekoturizam i avanturistička putovanja u zaštićenim područjima, čime se promovira istraživanje prirodnih ljepota uz minimiziranje ekološkog otiska aktivnostima poput pješačenja, biciklizma, kajakaštva i drugih; b) kulturni turizam s fokusom na društvenu inkluziju, pri čemu se ističu bogatstva i raznolikosti u lokalnoj kulturi, uz promicanje interakcije s lokalnim zajednicama na način koji poštuje njihove običaje i način života; c) održivi smještaj, pri čemu hoteli i drugi smještajni objekti implementiraju „zelene prakse“ poput recikliranja, zbrinjavanja i smanjenja otpada ili upotrebe zamjenjivih resursa, upotrebe ekološki prihvatljivih materijala i korištenja obnovljivih izvora energije. U porastu je i „volonterski“ turizam, koji je najveći zamah dobio pružanjem pomoći prilikom prirodnih nepogoda i drugih vrsta nesreća te uslijed posljedica pandemije, pri čemu je porasla svijest o potrebi pomaganja drugima i djelovanju za dobrobit (drugih lokalnih zahvaćenih) zajednica.

Primjenom takvog integriranog pristupa turistički sektor može izgraditi održivije i inkluzivnije poslovne modele, koji ne samo da privlače putnike

by using behavioural insights to adapt supply to ecologically aware travellers, (2) the social component can include local culture and economy incentives, by using the network capital to connect tourist and travellers with the local communities in authentic and responsible ways, while (3) the governance aspect relates to transparency, ethics and responsibility in managing tourism organisations, which can be enhanced through the cognitive capital that enables better decision making and compliance with ethical norms.

Modern-day tourists are increasingly seeking authentic and personalised experiences that reflect their values and interest in sustainable and ecologically appreciative travel. Creating tourism supply that includes the ESG principles enables destinations to meet those tourist needs through the development of experiential tourism that promotes cultural diversity, environment preservation and social inclusion.

Some of the travelling examples that the tourism industry can promote in the context of ESG, as regards new traveller preferences, include: a) eco-tourism and adventure travel in protected area, promoting exploration of natural beauties with minimising ecological footprint through activities such as hiking, cycling, kayaking and others; b) cultural tourism focused on social inclusion, whereby wealth and diversity of local culture are emphasised, along with the promotion of local community interaction by respecting their customs and way of life; c) sustainable accommodation, whereby hotels and other accommodation facilities implement “green practices” such as recycling, waste reduction and management or use of renewable resources, use of ecologically acceptable materials and use of renewable energy resources. Volunteer tourism is also on the rise, which gained impetus by providing aid to areas affected by natural catastrophe and other types of incidents and those affected by the pandemic, whereby the awareness rose on the need of aiding others and acting for the wellbeing of (other affected local) communities.

koji traže jedinstvena i personalizirana iskustva nego i aktivno pridonose očuvanju okoliša, poticanju društvene odgovornosti i osiguravanju dobrog upravljanja.

UMJETNA INTELIGENCIJA I PERSONALIZACIJA TURISTIČKIH PROIZVODA

Budući da se industrija turizma neprestano razvija, prilagođavajući se promjenjivim potrebama i željama putnika, odnosno turista, kao i globalnim ekonomskim, socijalnim i ekološkim trendovima, važno je razumjeti trendove koji trenutačno oblikuju turistički sektor. To uključuje digitalizaciju, digitalnu transformaciju, održivost, personalizaciju i – usko povezano s time – iskustveni turizam te integraciju umjetne inteligencije i tehnologija temeljenih na podacima. Ti trendovi ne samo da neprestano mijenjaju ili prilagođavaju načine na koji putnici, odnosno turisti, istražuju, rezerviraju i doživljavaju sama putovanja nego također pred pružatelje turističkih usluga postavljaju brojne nove zahtjeve, tražeći od njih inovacije u turističkim proizvodima, ali i u izboru kanala, brzini komunikacije, načinu rezervacije i uključenim digitalnim načinima konzumiranja nekog turističkog proizvoda (primjerice, virtualna stvarnost ili proširena stvarnost na pojedinim lokacijama vezanima za povijesne ili druge interese, korištenje pametnih satova za praćenje puta i brzine dolaska do lokacije ili tijekom „natjecanja“ u sklopu avanturističkog turizma i slično).

Razvoj tehnologija turističkim kompanijama omogućava prikupljanje i analiziranje velikih količina podataka o njihovim klijentima, zbog čega im mogu ponuditi vrlo personalizirane usluge i turističke doživljaje, odnosno iskustva. Takva personalizacija može uključivati prilagođene putne preporuke, prilagodljiv plan putovanja i personaliziranu komunikaciju, u cilju poboljšanja korisničkog iskustva i povećanja zadovoljstva putnika, odnosno turista.

By implementing such an integrated approach, the tourism sector can build more sustainable and more inclusive business models that not only attract travellers who seek unique and personalised experiences, but also to actively contribute to environment preservation, motivate social responsibility and ensure good governance.

ARTIFICIAL INTELLIGENCE AND PERSONALISATION OF TOURISM PRODUCTS

As the tourism industry keeps developing , adapting to changeable wants and needs of travellers, i.e., tourists, as well as to global economic, social and ecological trends, it is important to understand the trends that are currently shaping the tourism sector. This includes digitalisation, digital transformation, sustainability, personalisation and – closely related to it – experiential tourism, as well as the integration of artificial intelligence and data-based technologies. These trends are not only continuously changing or adapting to ways in which travellers, i.e., tourists research, book and experience their travels, but they are also placing new demands from tourism service providers, asking for innovations in tourism products and also in the choice of communication channels and speed, booking methods and the included digital methods of consuming a tourism product (e.g., virtual reality or augmented reality at specific locations related to historic or other interests, use of smart watches to monitor routes and time of arrival to a site or during “competitions” within adventure tourism and the like).

Technology development enables tourism companies to collect and analyse large amounts of data on their clients, due to which they can offer highly personalised services and tourism experiences. Such personalisation can include tailored travel recommendations, tailored itinerary and personalised communication, aimed at enhancing customer experience and increasing traveller (tourist) satisfaction.

U kontekstu turizma AI tehnologije uključuju strojno učenje, obradu prirodnog jezika, prediktivnu analitiku i automatizaciju, a najčešće se koriste za poboljšanje korisničkog iskustva (*customer experience* – CX), optimizaciju procesa u poslovanju i personalizaciju usluga. AI tehnologije ujedno igraju ključnu ulogu u upravljanju cijenama i optimizaciji kapaciteta, kao i u personalizaciji marketinških kampanja.

Uključivanje umjetne inteligencije u strategije razvoja turizma, s naglaskom na ciljeve vezane za ESG principe, može znatno pridonijeti optimizaciji i inovaciji u svakoj od komponenti, na sljedeći način:

1) Ekološka komponenta: AI može dati vrijedan doprinos analizi velike količine podataka o ponašanju potrošača, identificirajući trendove i želje *eco-friendly* potrošača, na temelju kojih može personalizirati marketinške kampanje i ponude za ekološki svjesne putnike te predložiti prilagodbe smještaja i aktivnosti da bi se minimizirao utjecaj na okoliš. Osim toga, u segmentu optimizacije resursa može pomoći u smanjenju otpada i potrošnje energije u turističkim objektima korištenjem automatiziranih sustava za upravljanje energijom i otpadom, što pridonosi smanjenju ekološkog otiska.

2) Socijalna komponenta: umjetna inteligencija može pridonijeti poticanju lokalne kulture i gospodarstva, analizirajući podatke o lokalnim zajednicama i kulturama te identificirajući jedinstvene sadržaje koji bi mogli privući turiste, odnosno putnike. Korištenjem mrežnog kapitala može kreirati platforme koje povezuju turiste, odnosno putnike, s lokalnim stanovništvom, promičući kulturnu razmjenu i potičući lokalno gospodarstvo. U segmentu upravljanja potražnjom AI može predviđati trendove u turizmu i potražnji za lokalnim iskustvima, omogućavajući ponuđačima turističkih proizvoda i usluga te lokalnim zajednicama da se bolje pripreme za dolazak putnika, odnosno turista, minimizirajući pritom negativne socijalne utjecaje.

Within the context of tourism, AI technologies include machine learning, natural language processing, predictive analytics and automatization, and they are most frequently used to enhance customer experience (CX), business process optimization and personalisation of services. At the same time, AI technologies play a crucial role in managing prices and capacity optimization, as well as personalisation of marketing campaigns.

Including artificial intelligence in tourism development strategies, with emphasis on goals related to ESG principles can significantly contribute to the optimization and innovation in each component in the following way:

1) Ecological component: AI can provide a valuable contribution to analysing large amounts of data on consumer behaviour, identifying trends and wishes of eco-friendly consumers based on which it can personalise marketing campaigns and offers for ecologically conscious travellers and suggest accommodation adaptations and activities to minimise environmental impact. Besides, in the segment of resource optimisation it can help to reduce waste and energy consumption in tourism facilities by using automatised systems for energy and waste management, which contributes to the reduction of ecological footprint.

2) Social component: Artificial intelligence can contribute to promoting local culture and economy, by analysing data on local communities and cultures and identifying unique amenities that may attract tourists, i.e., travellers. By using the network capital, it can create platforms that connect tourists (travellers) with the local residents, promoting cultural exchange and driving the local economy. In the supply management segment, AI can predict trends in tourism and demand for local experiences, enabling tourism product and service suppliers and local communities to better prepare for traveller (tourist) arrivals, at the same time minimising negative social effects.

3) Governance aspect: in the sense of transparency and sustainability, AI can be used in automatization

3) Upravljački aspekt: u smislu transparentnosti i održivosti, AI se može koristiti u automatizaciji prikupljanja i analize podataka o uspješnosti turističkih ponuda u pogledu ESG kriterija, pružajući transparentna izvješća dionicima, ali i samim putnicima, odnosno turistima. Važan doprinos može dati i identifikaciji i praćenju etičkih dvojbi, kao i osiguravanju informiranosti o lokalnim i međunarodnim propisima te usklađenosti s njima tijekom putovanja.

ISTRAŽIVANJE

Istraživanje se temelji na analizi sekundarnih podataka, što uključuje pregled postojećih istraživačkih nalaza i analiza koje su prethodno provele istraživačke agencije. Ovaj pristup omogućava kompilaciju i sintetizaciju podataka i analize bez izravnog sudjelovanja u primarnom prikupljanju podataka, čime se pruža sveobuhvatan pregled teme na temelju dobivenih nalaza.

Da bi se osigurali integritet i relevantnost istraživanja, primijenjeni su strogi kriteriji odabira sekundarnih izvora, koji su obuhvaćali vjerodostojnost izvora, relevantnost za istraživačku temu, aktualnost informacija (da bi se osigurala suvremena relevantnost) te geografsku i demografsku relevantnost u odnosu na fokus studije.

Studije

1. *Ipsos – Global Views on A.I. in 2023*[1]

Uzorak: uzorak Australije, Brazila, Kanade, Francuske, Njemačke, Velike Britanije, Italije, Japana, Novog Zelanda, Španjolske i SAD-a sastojao se od oko 1000 ispitanika, a uzorak Argentine, Belgije, Čilea, Kolumbije, Mađarske, Indonezije, Irske, Malezije, Meksika, Nizozemske, Perua, Poljske, Rumunjske, Singapura, Južne Afrike, Južne Koreje, Švedske, Tajlanda i Turske od oko 500 ispitanika. Uzorak u Indiji obuhvaćao je približno 2200 ispitanika, od kojih je 1800 intervjuirano uživo, a 400 ih je intervjuirano putem interneta.

of collecting and analysing data on tourism supply performance in the view of ESG criteria, by providing transparent reports to stakeholders, but also to travellers (tourists) themselves. It can also significantly contribute to the identification and monitoring of ethical dilemmas, as well as ensuring knowledge on local and international regulations and compliance with them during travel.

RESEARCH

The research is based on secondary data analysis, including the overview of existing research findings and analysis previously conducted by research agencies. This approach enables the compilation and synthetisation of data and analyses without direct participation in primary data collection, which provides a comprehensive overview of the topic based on obtained results.

To ensure integrity and relevance of research, we implemented strict criteria for the selection of secondary sources, which related to source credibility, research topic relevance, current information (to ensure modern relevance) and geographic and demographic relevance in relation to the focus of the study.

Studies

1. *Ipsos – Global Views on A.I. in 2023*[1]

Sample: the sample from Australia, Brazil, Canada, France, Germany, Great Britain, Italy, Japan, New Zealand, Spain and the USA consisted of around 1,000 respondents, and the sample from Argentina, Belgium, Chile, Colombia, Hungary, Indonesia, Ireland, Malesia, Mexico, The Netherlands, Peru, Poland, Romania, Singapore, South Africa, South Korea, Sweden, Thailand and Turkey of around 500 respondents. The sample in India included approximately 2,200 respondents, 1,800 of which were interviewed face-to-face, and 400 of which via the internet.

Ciljni ispitanici: 18 i više godina u Indiji, 18-74 u Kanadi, Republici Irskoj, Maleziji, Novom Zelandu, Južnoj Africi, Turskoj i Sjedinjenim Državama, 20-74 u Tajlandu, 21-74 u Indoneziji i Singapuru te 16- 74 u 20 ostalih država.

Metoda prikupljanja podataka: *online* metodologija, osim u Indiji, gdje je anketiranje provedeno kombinirano (*online* i intervjui „licem u lice").

Podaci su ponderirani na način da sastav uzorka svakog tržišta najbolje odražava demografski profil odrasle populacije prema podacima posljednjeg popisa stanovništva.

Preciznost Ipsosovih *online* anketa izračunava se korištenjem intervala pouzdanosti do +/- 3,5 postotnih bodova za 1000 ispitanika i do +/- 5,0 postotnih bodova za 500 ispitanika.

2. *Ipsos Hrvatska, Omnibus – Umjetna inteligencija: Stavovi i mišljenja, kvantitativno istraživanje na općoj populaciji (2023.)*[2]

Uzorak: 1000 ispitanika.

Ciljni ispitanici: građani Republike Hrvatske u dobi od 16 i više godina.

Metoda prikupljanja podataka: hibridna metoda prikupljanja podataka – intervjui „licem u lice" i *online* intervjui.

Podaci su ponderirani prema podacima posljednjeg popisa stanovništva (iz 2021. godine) da bi najbolje odražavali profil populacije u dobi od 16 i više godina u Republici Hrvatskoj. Podaci su ponderirani prema regijama, veličini naselja, dobi, spolu i obrazovanju.

3. *Booking.com – Sustainable Travel Report 2023*[3]

Istraživanje je za Booking.com provela vanjska agencija za istraživanje tržišta (nije navedeno koja) u veljači 2023. godine.

Uzorak: 33 228 ispitanika iz 35 država sa svih kontinenata (oko 1000 ispitanika po državi). U istraživanju je sudjelovalo i 1016 ispitanika iz Hrvatske.

Targeted respondents: aged 18 and over in India, 18-74 in Canada, The Republic of Ireland, Malesia, New Zealand, South Africa, Turkey and the USA, 20-74 in Thailand, 21-74 in Indonesia and Singapore and 16-74 in other countries.

Data collection method: online methodology, besides India, where data were collected as a combined method (online and face-to-face interviews).

Data were weighted so that the sample composition of each market best reflects the demographic profile of the adult population according to data from the last census.

The precision of Ipsos online questionnaires is calculated by using reliability intervals up to +/- 3.5 percentage points for 1,000 respondents and up to +/- 5.0 percentage points for 500 respondents.

2. *Ipsos Croatia, Omnibus – Artificial intelligence: Attitudes and opinions, quantitative research among general population (2023)*[2]

Sample: 1,000 respondents.

Targeted respondents: citizens of the Republic of Croatia aged 16 and higher.

Data collection method: hybrid data collection method – face-to-face interviews and online questionnaires

Data were weighted according to data from the last census (2021) in order to best reflect the population profile aged 16 and higher in the Republic of Croatia. Data were weighted according to religion, town size, age, gender and education.

3. *Booking.com – Sustainable Travel Report 2023*[3]

The research for Booking.com was conducted by an external market research agency (not mentioned) in February 2023.

Sample: 33,228 respondents from 35 countries and all continents (around 1,000 respondents per country). The research also included 1,016 respondents from Croatia.

Ciljni ispitanici: osobe u dobi od 18 ili više godina koje su u prethodnih 12 mjeseci barem jedanput putovale i planirale su putovati u 2023. godini te su sudjelovale u odluci o putovanju.

Metoda prikupljanja podataka: *online* metodologija.

4. ***Accenture – The Art of AI Maturity 2023***[4]

Uzorak: 1600 rukovoditelja u organizacijama u svijetu (od kojih je 76 organizacija bilo u sektoru putovanja).

Metoda prikupljanja podataka: *online* metodologija.

ANALIZA I KOMENTARI REZULTATA

Digitalizacija je promijenila način na koji turisti pristupaju informacijama, planiraju putovanja, rezerviraju turističke usluge i dijele svoja iskustva. Pružatelji turističkih usluga i digitalne platforme prikupljaju podatke vezane za želje, demografiju i iskustva te ih koriste za razvoj učinkovitih strategija i održivog turizma.

Uz automatizirane načine prikupljanja korisničkih podataka i dalje se koristi „klasični" pristup anketiranja populacije i korisnika. U kontekstu ovog članka, koji koristi isključivo sekundarne izvore podataka, analizirana su istraživanja iz različitih područja koja se odnose na percepciju umjetne inteligencije općenito, stavove prema održivom turizmu i putovanjima te upotrebu umjetne inteligencije u sektoru turizma.

Istraživanja koja provodi agencija Ipsos, kako na globalnoj razini tako i na razini Republike Hrvatske, utvrđuju opće stavove populacije prema umjetnoj inteligenciji.

Prema istraživanju Ipsosa na globalnoj razini (*Ipsos Global – Global Views on A.I. in 2023*), u prosjeku je dvije trećine ispitanika (67 %) upoznato s pojmom AI, ali samo ih polovina zna za koje se vrste proizvoda i usluga koristi. U usporedbi s podacima iz istraživanja iz 2022. godine[5] tri je posto više ispitanika upoznato s

Targeted respondents: persons aged 18 and higher who travelled or planned to travel at least once in the previous 12 months in 2023 and participated in ravelling decisions.

Data collection method: online methodology.

4. ***Accenture – The Art of AI Maturity 2023***[4]

Sample: 1,600 managers in organisations worldwide (76 of which in the travelling sector)

Data collection method: online methodology.

RESULTS ANALYSIS AND COMMENTS

Digitalisation has changed the way in which tourists access information, plan travel, book tourism services and share their experiences. Tourism service providers and digital platforms collect data related to wishes, demographics and experiences and use them for the development of effective strategies and sustainable tourism.

Besides the automatised methods of user data collection, the traditional approach of surveying population and customers is still being used. Within the context of this paper, which uses only secondary data sources, research from various areas were analysed relating to the perception of artificial intelligence in general, attitudes toward sustainable tourism and travel, as well as the implementation of artificial intelligence in the tourism sector.

The research conducted by the Ipsos agency, both on a global level and on the level of the Republic of Croatia, determine general attitudes toward artificial intelligence.

According to the Ipsos research on a global level (*Ipsos Global – Global Views on A.I. in 2023*), an average of two thirds of respondents (67 %) is familiar with the concept of AI, but only half know for what products and services it is used. Compared to research data from 2022,[5] there was an increase by 3% of respondents who are familiar with the

pojmom, dok je postotak onih koji znaju gdje se koristi umjetna inteligencija ostao gotovo jednak.

Kada je riječ o poznavanju pojma „umjetna inteligencija" i njezine primjene, javljaju se određeni obrasci vezani za demografska obilježja ispitanika, posebice za dobne skupine. Poznavanje pojma AI varira od 72 % u generaciji Z do 59 % u *baby boom* generaciji.

S poznavanjem pojma i upotrebe rješenja umjetne inteligencije povezan je obrazovni, radni i financijski status ispitanika. Najveći postotak poznavanja pojma pokazuju osobe s višim primanjima (74 %), visokoobrazovane (72 %) i zaposlene (69 %). Te su skupine ispitanika najbolje upoznate i s proizvodima i uslugama koje koriste umjetnu inteligenciju: 58 % osoba s višim primanjima, 56 % visokoobrazovanih i 54 % zaposlenih osoba. Nasuprot njima, znatno manje osoba s nižim i srednjim primanjima potvrdno odgovara na pitanja o poznavanju (60 % i 65 %) i korištenju umjetne inteligencije (44 % i 49 %).

Spolne razlike nisu prominentne kao dobne, ali su primjetne: 71 % muškaraca i 67 % žena upoznato je s pojmom, a 55 % muškaraca i 51 % žena zna gdje se umjetna inteligencija koristi.

Nešto više od polovine ispitanika (54 %) slaže se da proizvodi i usluge koji koriste umjetnu inteligenciju imaju više prednosti nego nedostataka, a 52 % jednako vjeruje tvrtkama koje koriste umjetnu inteligenciju i onima koje to ne čine. U oba slučaja prisutan je porast od tri posto u odnosu na 2022. godinu. Sukladno odgovorima na pitanja o poznavanju pojma umjetne inteligencije i njezinog korištenja, mišljenja različitih demografskih skupina o njezinim prednostima kreću se u istom smjeru. Razlika u slaganju oko prednosti proizvoda i usluga koje koriste umjetnu inteligenciju između generacije Z i *boomera* iznosi 19 % (62 % – generacija Z i 43 % – *boomeri*). Također, jednako povjerenje u tvrtke koje koriste umjetnu inteligenciju i one koje to ne čine pokazuje više pripadnika generacija Z i Y (*milenijalaca*) (58 % i 57 %) nego pripadnika generacija X i *baby boom* (47 % i 42 %). Muškarci u usporedbi sa ženama iskazuju veće povjerenje u

concept, but the number of those who know what it is used for remained the same.

In relation to being familiar with the concept of artificial intelligence and its implementation, specific patterns appear related to demographic characteristics of respondents, especially age groups. The familiarisation with the concept of AI varies from 72 % by Generation Z to 59% by the Baby Boomers generation.

The familiarisation with the concept of AI and its solution applications is connected with the educational, employment and financial status of respondents. The largest percentage of respondents familiar with the concept are those of higher income (74 %), higher education (72 %) and employed (69 %). These groups are also the most familiar with the products and services that use AI: 58% of respondents with higher incomes, 56 % with higher education and 54 % of employed respondents. In contrast, significantly fewer respondents with low or medium income confirms being familiar with the concept (60 and 65 %) and the implementation of AI (44 % and 49 %).

Gender differences are not as prominent as age ones but are noticeable: 71 % of men and 67 % of women are familiar with the concept, and 55 % of men and 51 % of women know where artificial intelligence is used.

Just above a half of respondents (54 %) agrees that products and services using artificial intelligence have more advantages than disadvantages, and 52 % equally trusts companies who use it and those who do not. In both cases there is an increase by three per cent in relation to 2022. According to responses to questions about familiarisation with the concept of artificial intelligence and its implementation, opinions by different demographic groups on its advantages move in the same direction. The difference in agreement on advantages of products and services between Generation Z and Baby Boomers is 19 % (62 % - Generations Z and 43 % - Boomers). Likewise, an equal trust in companies using artificial intelligence and those who do not

proizvode i tvrtke koje koriste umjetnu inteligenciju (muškarci – 58 % i 55 %, žene – 51 % i 49 %).

Ako usporedimo odgovore ispitanika s obzirom na njihovo obrazovanje, radni status i primanja, odobravanje korištenja AI tehnologije veće je kod osoba s višim primanjima, više razine obrazovanja i kod zaposlenih osoba. Pojedinosti su prikazane u Tablici 1.

Proizvodi i usluge koji koriste umjetnu inteligenciju izazivaju nelagodu 52 % ispitanika, što je 12 % više nego 2022. godine. Nelagoda se podjednako javlja u svim demografskim skupinama i kreće se od 51 % do 54 %.

Gotovo polovina ispitanika slaže se da su rješenja koja koriste umjetnu inteligenciju promijenila njihov život u proteklih tri do pet godina. Pripadnici generacija Z i Y bili su pod većim utjecajem od pripadnika generacija X i *baby boom* (generacija Z – 58 % i Y – 54 %; generacija X – 38 % i *baby boom* – 34 %).

is shown in a higher percentage by members of Generations Z and Y (Millennials) (58 % and 57 %) than members of Generation X and Baby Boom (47 % and 42 %). Compared to women, men show more trust in products and companies using artificial intelligence (men – 58 % and 55 % women – 51 % and 49 %)

If we compare responses of respondents with regard to their education, work status and income, people with higher income, higher education level and employed show higher rate of approval for using AI technologies. The details are shown in Table 1.

Products and services that use artificial intelligence cause discomfort to 52 % of respondents, which is 12 % higher than in 2022. Discomfort is equally present in all demographic groups and ranges from 51 % to 54 %.

Almost half of the respondents agree that solutions using artificial intelligence have changed their lives in the last three to five years. Members of

TABLICA 1. / TABLE 1.

	DEMOGRAFSKE SKUPINE DEMOGRAPHIC GROUPS	PROIZVODI I USLUGE KOJI KORISTE UMJETNU INTELIGENCIJU IMAJU VIŠE PREDNOSTI NEGO NEDOSTATAKA PRODUCTS AND SERVICES USING ARTIFICIAL INTELLIGENCE HAVE MORE ADVANTAGES THAN DISADVANTAGES	TVRTKAMA KOJE KORISTE UMJETNU INTELIGENCIJU VJERUJEM JEDNAKO KAO I DRUGIM TVRTKAMA I TRUST COMPANIES THAT USE ARTIFICIAL INTELLIGENCE AS MUCH AS COMPANIES THAT DO NOT
PRIHODI INCOME	Niži / Lower	51 %	48 %
	Srednji / Middle	53 %	51 %
	Viši / Higher	60 %	57 %
OBRAZOVANJE EDUCATION	Niže / Primary	50 %	47 %
	Srednje / Secondary	53 %	51 %
	Više / Higher	58 %	55 %
RADNI STATUS EMPLOYMENT STATUS	Zaposleni / Employed	57 %	55 %
	Nezaposleni / Unemployed	48 %	47 %

Izvor: Ipsos, 2023. / Source: Ipsos, 2023

U sljedećih tri do pet godina 66 % ispitanika očekuje daljnji utjecaj umjetne inteligencije na njihov život. Kao i ranije, pripadnici generacije Z i *milenijalci* u većem postotku očekuju da će AI u potpunosti promijeniti njihovu svakodnevicu nego stariji ispitanici, ali su generacijske razlike manje. Točnije, promjene svakodnevice izazvane umjetnom inteligencijom u budućnosti očekuje 69 % pripadnika generacije Z, 67 % *milenijalaca*, 66 % pripadnika generacije X i 59 % *boomera*.

Konkretne promjene očekuju se na radnom mjestu. 57 % ispitanika očekuje da će mijenjati način rada na sadašnjem radnom mjestu zbog umjetne inteligencije, 36 % smatra da će ih umjetna inteligencija potpuno zamijeniti, dok pozitivan utjecaj na posao predviđa 37 % ispitanika. Starije generacije manje očekuju da će AI promijeniti način na koji obavljaju posao, 53 % pripadnika generacije X i 46 % *baby boomera*, ili da će ih zamijeniti na sadašnjem radnom mjestu, 31 % pripadnika generacije X i 27 % *baby boomera*. Za razliku od njih, 66 % pripadnika generacije Z i 61 % pripadnika generacije Y očekuje da će AI promijeniti način na koji obavljaju posao, a 45 % odnosno 40 % da će ih zamijeniti. Međutim, među pripadnicima generacija Z i Y više je onih koji očekuju pozitivan utjecaj umjetne inteligencije na posao (46 % i 41 %) u odnosu na pripadnike generacija X i *baby boom* (31 % i 26 %).

U Hrvatskoj je provedeno istraživanje o percepciji AI tehnologije među hrvatskim građanima. Kao i u ostatku svijeta, mišljenje je ambivalentno. Umjetnu inteligenciju smatra pozitivnom 23 % građana, a negativnom 34 %. Pozitivna očekivanja vezuju se za lakšu komunikaciju i sporazumijevanje, kao i za poboljšanje medicinskih usluga. Bojazni su vezane za mogućnost smanjenja privatnosti i lakšeg širenja lažnih vijesti te za gubitak zaposlenja za mnoge (Ipsos, Omnibus Hrvatska, 2023).

Stavljajući navedene rezultate percipiranih prednosti umjetne inteligencije za više od

Generations Z and Y were impacted more than Generations X and Baby Boom (generation Z – 58 % and Y – 54 %; generation X – 38 % and baby boom – 34 %).

In the next three to five years, 66 % of respondents expect further influence of artificial intelligence on their lives. As earlier, the members of Generation Z and the Millennials expect that AI will totally change their everyday life in a higher percentage than older respondents, but the generational differences are smaller. More precisely, future changes in everyday life caused by artificial intelligence are expected by 69 % of Generation Z, 67 % of Millennials, 66 % of Generation X and 59 % of Baby Boomers.

Concrete changes are expected in the workplace. 57 % respondents expect that work methods in current work positions will change due to artificial intelligence, 36 % consider that artificial intelligence will replace them, while 37 % predicts a positive effect on work. Older generations expect that AI will change the way they work, 56 % of Generation X members and 46 % of Baby Boomers, or that they will be replaced on current work positions, 31 % of Generation X members and 27 % of Baby Boomers. In contrast, 66 % of Generation Z members and 61 % of Generation Y members expect that AI will affect the way they work, and 45 %, i.e., 40 % that they will be replaced. However, there are more members of Generations Z and Y who expect a positive impact of AI on their work (46 % and 41 %), in relation to members of Generation X and Baby Boomers (31 % and 26 %).

In Croatia, research was conducted on the perception of AI technology among Croatian citizens. As is the case with the rest of the world, opinions are ambivalent. 23 % of citizens perceives artificial intelligence positively, and 34 % negatively. Positive expectations are related to easier communication and mutual understanding, as well as improvement of medicals services. Fears are related to the possibility of decrease of privacy and easier spreading of false news, as well as loss of jobs for many (Ipsos, Omnibus Hrvatska, 2023).

polovine ispitanika u kontekst Rogersovog modela difuzije inovacije, možemo zaključiti da je umjetna inteligencija ušla u fazu prihvaćanja od strane rane većine, koja prema modelu obuhvaća 50 % populacije. Možemo stoga očekivati da suvremeni turisti u potrazi za personaliziranim iskustvima u skladu sa svojim preferencijama i vrijednostima prihvate asistenciju digitalnih alata u svim fazama korisničkog iskustva kao putnika, odnosno turista. Jednako vrijedi i za upravljačke strukture u sektorima prijevoza i smještaja, koje osiguravaju korisnička iskustva.

U radu je naglasak stavljen na ulogu umjetne inteligencije u razvoju održivog turizma i personalizaciji turističke ponude. U istraživanju koje je proveo Booking.com uočljiv je određeni prazan prostor između ponuđenih sadržaja i onoga što suvremeni turist očekuje. Održivi način putovanja važan je za 8 od 10 osoba, ali istodobno 51 % ispitanika smatra da na tržištu nema dovoljno odgovarajućih ponuda. Osim toga, 44 % zainteresiranih ne zna gdje ih potražiti. Budući da gotovo tri četvrtine ispitanika (74 %) u istom istraživanju izjavljuju da od putničkih agencija žele dobiti više ponuda za održiva putovanja, odgovor na pitanje što napraviti nameće se sam od sebe.

Na sve veći porast interesa za ponudu održivih putovanja ukazuje i podatak da putovati na održivi način 2023. godine smatra važnim 76 % putnika, što je 5 % više nego godinu ranije. Na postojanje trenda koji ne posustaje ukazuje i istraživanje iste agencije iz 2022. godine,[6] u kojem je zabilježeno 71 % turista koji žele uložiti dodatan trud da bi putovali na održivi način, a taj je rezultat 10 % veći u odnosu na rezulat iz 2021. godine (Booking.com).

Turisti se nastoje ponašati ekološki osviješteno i u samoj destinaciji. 43 % planira posjet izvan vrhunca sezone, a jednako toliko želi ih obići znamenitosti pješice, biciklom ili javnim prijevozom (Booking.com). 43% turista preferira kupovati u malim trgovinama s ponudom lokalnih proizvoda.

By placing these results on perceived advantages of artificial intelligence for more than half of the respondents into the context of the Rogers' diffusion of innovation model, we can conclude that artificial intelligence entered an acceptance stage by early adopters, which according to the model includes 50 % of the population. We can therefore expect that modern tourist in search of personalised experiences according to their preferences and values accept the assistance of digital tools in all stages of customer experience as travellers, i.e., tourists. This is equally true for management structures in transport and accommodation sectors, which ensure customer experiences.

The paper focuses on the role of artificial intelligence in the sustainable tourism development and personalisation of tourism supply. The research conducted by Booking.com shows a certain empty space between amenities offered and what modern tourists expect. Sustainable travel is important for 8 of 10 people, but at the same time 51 % of respondents consider that there are not enough appropriate offers on the market. Besides, 44 % of those interested does not know where to find them. Since almost three quarters of respondents (74 %) in the same research state that they want to receive more offers from travel agencies for sustainable travel, the question what to do imposes itself.

The increasing interest for sustainable travel offers is also indicated by the data that 76 % of travellers consider important to travel sustainably in 2023, which is 5 % higher than the previous year. The presence of this unwavering trend is also emphasised by the 2022 research[6] by the same agency, which showed that 71 % of tourists want to put more effort into sustainable travel, marking a 10 % higher interest in relation to 2021 results (Booking.com).

Tourists tend to behave in an ecologically conscious way and in their chosen destinations. 43 % are planning their visits in off-season, and an equal percentage want to tour the attractions on foot, by bicycle or public transport (Booking.com). 43 % prefer to buy in small stores that offer local products.

STRATEGIJE KORIŠTENJA UMJETNE INTELIGENCIJE U SEKTORU TURIZMA

U svijetu koji se brzo mijenja, sektor turizma suočava se s brojnim izazovima i prilikama, pri čemu je jedan od ključnih čimbenika koji oblikuju suvremeni turizam tehnološki napredak, osobito u području umjetne inteligencije. Samim time smjer kreiranja strategija korištenja umjetne inteligencije u turizmu stoga postaje imperativ za one koji žele ostati relevantni i konkurentni. Slijedom rezultata istraživanja i trendova u industriji, navedene su strategije koje obuhvaćaju širok spektar primjena AI-ja – od sustava preporuka (*recommendation*) pa sve do analitike i automatizacije, s naglaskom na održivost i društvenu odgovornost:

1) Da bi se sektor turizma uspješno prilagodio očekivanjima suvremenih putnika, ključan postaje razvoj sustava preporuka vođenih umjetnom inteligencijom (*AI-driven*), koji uzimaju u obzir ESG kriterije. Ovi sustavi ne samo da promiču održive turističke opcije nego i omogućavaju bolje razumijevanje preferencija putnika, odnosno turista, analizirajući korisničke recenzije, čime se otvara put prema stvaranju preciznijih i personaliziranih turističkih doživljaja.

2) Prediktivna analitika još je jedan alat u skupu dostupnih strategija, a ona omogućava identifikaciju tržišnih trendova usmjerenih na održivost i društvenu odgovornost. Pomoću analize iskustava i korisničkih recenzija moguće je detektirati porast zanimanja za teme vezane za ESG, koje tada postaje temelj za razvoj novih turističkih proizvoda i usluga.

3) NLP (*natural language processing*) tehnologije nude mogućnost kreiranja interaktivnih i informativnih sadržaja o ESG praksama. Koristeći NLP za obradu korisničkih recenzija i sadržaja na društvenim mrežama moguće je proizvesti sadržaje koji personalizirano i angažirano šalju poruku o važnosti ESG principa.

4) Automatizacija izvještavanja i praćenje ESG performansi putem AI alata ne samo da

ARTIFICIAL INTELLIGENCE IMPLEMENTATION STRATEGIES IN THE TOURISM SECTOR

In a fast-changing world, the tourism sector is facing numerous challenges and opportunities, whereby one of the key factors shaping modern tourism is the technological advancement, especially in the area of artificial intelligence. For this reason, the direction of artificial intelligence implementation strategy creation in tourism is becoming and imperative for those wishing to remain relevant and competitive. Following the research results and trends in the industry, we list strategies that entail a wide spectrum of AI applications – from recommendation systems all through to analytics and automatization, with emphasis on sustainability and social responsibility:

1) To successfully adapt to the expectation of modern-day tourists, the key for the tourism sector is the development of AI-driven recommendation systems, which take ESG criteria into consideration. These systems do not only promote sustainable tourism options, but also enable better understanding of traveller (tourist) preferences, analysing customer reviews, thereby opening the path toward creating more precise and personalised tourist experiences.

2) Predictive analytics is another tool in the box of available strategies, facilitating the identification of market trends oriented toward sustainability and social responsibility. By analysing experiences and customer reviews, it is possible to detect a rise in interest for topics related to the ESG, which are becoming bases for new tourism product development.

3) NLP (natural language processing) technologies offer the possibility of creating interactive and informative content on ESG practices. By using NLP to process customer reviews and social media content, it is possible to produce personalised and updated messages on the importance of the ESG principles.

4) The automatization in reporting and monitoring ESG performances via AI tools does not only

unaprjeđuje transparentnost i komunikaciju s turistima nego i potiče etičko postupanje i održivost u turističkom sektoru.

Navedene strategije predstavljaju temelj budućnosti turizma, gdje tehnologija služi kao alat za ostvarivanje održivijeg, inkluzivnijeg i „etičkijeg" sektora, istodobno pružajući nezaboravna iskustva turistima diljem svijeta.

Iznimno je važan aspekt strategija identifikacija obvezujućeg regulatornog okvira, osobito u kontekstu tržišta EU-a (ponajprije DSA[7], GDPR[8], Data Act[9] i nadolazeći AI Act[10], kao i ostali zakoni vezani za poslovanje u okolnostima digitalne ekonomije), pri čemu su od kritične važnosti prikupljanje, obrada, dijeljenje i zaštita osobnih podataka, kao i omogućavanje ostvarivanja prava koja su turistima kao fizičkim osobama na raspolaganju u skladu s pravnim osnovama odluka o obradi podataka te identifikacija dopuštenog opsega i metoda, uključujući transparentnost korištenja umjetne inteligencije.

ZAKLJUČAK

Digitalna ekonomija i evolucija turističkog sektora u kontekstu primjene umjetne inteligencije i ESG principa predstavljaju nezaobilazne čimbenike u oblikovanju budućnosti turizma. Integracija tih inovacija – i regulatornih zahtjeva – omogućava razvoj održivih, učinkovitih i personaliziranih turističkih iskustava, čime se postavlja nova paradigma u industriji putovanja, čije ćemo implikacije moći mjeriti tek u vremenima koja dolaze. Da bi se maksimizirale prednosti i adresirali izazovi, potrebna je kontinuirana suradnja svih dionika, uključujući vladine institucije, privatni sektor, akademske zajednice, ali i putnike, odnosno turiste, jer se u tom kontekstu primarno upravlja njihovim osobnim podacima (demografskim, psihografskim i sociografskim), što kasnije uvjetuje sekundarno upravljanje ESG aspektima – jer sve kreće od identifikacije trendova u potražnji pojedinaca u svrhu kreiranja ponude

enhance the transparency and communication with tourists, but it also encourages ethical behaviour and sustainability in the tourism sector.

The mentioned strategies represent the basis for the future of tourism, where technology serves as a tool to achieve a more sustainable, inclusive and "ethical" sector, simultaneously providing unforgettable experiences to tourists worldwide.

A highly significant aspect is the strategy of identifying the binding regulatory framework, especially in the context of the EU market (primarily DSA[7], GDPR[8], Data Act[9] and the upcoming AI Act[10], as well as other legal acts related to businesses in the digital economy circumstances), whereby the collection, processing, sharing and protection of personal data is of crucial importance, as well as enabling the exercise of rights available to tourists as natural persons in accordance with the legal bases of decisions on data processing and identification of the allowed scope and methods, including transparency in using artificial intelligence.

CONCLUSION

The digital economy and the evolution of the tourism sector in the context of implementing artificial intelligence and the ESG principles represent unavoidable factors in shaping the future of tourism. The integration of these innovations – and regulation demands – enables the development of sustainable, effective and personalised tourist experiences, thereby representing a new paradigm in the industry of travel, the implications of which we are yet to measure. In order to maximise advantages and address challenges, a continued cooperation among all stakeholders is needed, including government institutions, the private sector, academic communities, but also travellers, i.e., tourists because within this context their personal data (demographic, psychographic and sociographic) are being used. This subsequently conditions the secondary management of ESG aspects – because everything starts from identifying

i uspješnog upravljanja njome. Kroz zajedničko djelovanje moguće je ostvariti viziju turizma kao istodobno inovativnog, odgovornog i inkluzivnog, što pridonosi održivom razvoju i blagostanju društva u cjelini.

Integracija umjetne inteligencije i ESG principa u turizam, iako obećavajuća, dolazi s vlastitim skupom izazova. Pitanja privatnosti i sigurnosti podataka te etička razmatranja u vezi s korištenjem AI algoritama sve su prisutnija u raspravama unutar svakog, a ne samo turističkog sektora. Ovisno o primijenjenim strategijama, ključno postaje osiguravanje usklađenosti s regulativama koje štite osobne podatke i privatnost.

S obzirom na utvrđene strateške mogućnosti, ključno je naglasiti važnost suradnje između različitih dionika – od vlada i regulatornih tijela, preko privatnog sektora i akademskih institucija, pa sve do samih putnika, odnosno turista. Njihova suradnja omogućava razmjenu znanja, iskustava i najboljih praksi, što je temelj za izgradnju, odnosno adaptaciju suvremenog turističkog sektora u još suvremeniji, koji je istodobno inovativan, etičan i održiv. U tom kontekstu ključna je uloga putnika, odnosno turista, čije preferencije i ponašanje imaju znatan utjecaj na oblikovanje turističke ponude.

Identifikacija i primjena obvezujućeg regulatornog okvira, osobito na tržištu EU-a, zahtijeva od ponuđača turističkih proizvoda i usluga ne samo pridržavanje pravnih normi nego i proaktivni pristup u zaštiti i promociji privatnosti i sigurnosti podataka. Razumijevanje i primjena relevantnih zakonskih okvira pravna su obveza, ali i etički imperativ koji pridonosi izgradnji povjerenja među turistima.

trends in individual demand aimed at creating supply and its successful management. Through common activity, it is possible to realise the vision of tourism as simultaneously innovative, responsible and inclusive, which contributes to sustainable development and overall social wellbeing.

The integration of artificial intelligence and the ESG principles in tourism, although promising, comes with a set of challenges. Issues of data privacy and safety and ethical considerations related to using AI algorithms are increasingly present in discussions within every, and not only the tourism sector. Depending on implemented strategies, ensuring compliance with personal and private data protection regulations has become crucial.

Considering the determined strategic possibilities, it is key to emphasise the importance of cooperation among different stakeholders – from the government and legislative bodies, the private sector and academic institutions, to the travellers, i.e., tourists themselves. Their cooperation facilitates sharing of knowledge, experiences and best practices, which is the basis for developing, i.e., adapting a modern tourism sector into a more modern one that is innovative, ethical and sustainable at the same time. Within that context, the key role is played by travellers, i.e., tourists whose preferences and behaviour significantly impact the shaping of the tourism supply.

Identification and implementation of the binding regulatory framework, especially in the EU market, requires that tourism product and service suppliers not only comply with the legal norms, but also assume a proactive approach to protecting and promoting data privacy and protection. Understanding and implementing relevant legal frameworks are both a legal obligation and an ethical imperative that contributes to building trust among tourists.

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