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Határokon Túl: Az AI Által Támogatott Szabadidős Turisztikai Megújulás
Futurisztikus Perspektívában

Beyond Borders: A Futuristic Glimpse into AI-Backed Transformations Across
Leisure Tourism

Gaál Dóra

Konzulens: Dóra Horváth, PhD.

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TABLE OF CONTENTS

I	INTRODUCTION.....	1
II	LITERATURE REVIEW	3
II.1	TOURISM INDUSTRY.....	3
II. 1. 1	THE DEFINITION OF TOURISM.....	3
II. 1. 2	ECONOMIC SIGNIFICANCE OF TOURISM.....	5
II. 1. 3	SOCIAL SIGNIFICANCE OF TOURISM	8
II. 1. 4	MARKET OF TRAVEL AGENCIES.....	10
II.2	ARTIFICIAL INTELLIGENCE	12
II. 2. 1	THE DEFINITION OF ARTIFICIAL INTELLIGENCE	13
II. 2. 2	DIFFERENT TYPES OF ARTIFICIAL INTELLIGENCE	14
II. 2. 3	APPLICATIONS OF ARTIFICIAL (NARROW) INTELLIGENCE IN EVERYDAY LIFE....	16
II. 2. 4	APPLICATIONS OF ARTIFICIAL (NARROW) INTELLIGENCE IN VARIOUS INDUSTRIES.....	17
II.3	AI IN THE TOURISM INDUSTRY AND IN TRAVEL PLANNING.....	19
II. 3. 1	OVERVIEW OF AI'S ROLE IN TOURISM	19
II. 3. 2	TOURISM INDUSTRY APPLICATIONS OF AI AND USE CASES	20
III	RESEARCH QUESTIONS AND METHODOLOGY.....	25
III.1	RESEARCH QUESTIONS	25
III.2	METHODOLOGY	26
III. 2. 1	QUALITATIVE RESEARCH.....	27
III. 2. 2	QUANTITATIVE RESEARCH.....	29
IV	RESULTS.....	32
IV.1	FINDINGS FROM QUALITATIVE RESEARCH ANALYSIS.....	32
IV. 1. 1	TOURISM INDUSTRY OVERVIEW	32
IV. 1. 2	ARTIFICIAL INTELLIGENCE IN TOURISM.....	37
IV. 1. 3	ARTIFICIAL INTELLIGENCE IN TRAVEL PLANNING AND BOOKING	40
IV.2	RESULTS FROM QUANTITATIVE RESEARCH	42
IV. 2. 1	DEMOGRAPHICS	42
IV. 2. 2	GENERAL FINDINGS FROM THE QUESTIONNAIRE RESULTS.....	44
IV. 2. 3	COMPLEX FINDINGS.....	49
V	CONCLUSION.....	53
V.1	SUMMARY AND DISCUSSION	53
V.2	RECOMMENDATIONS.....	53
V.3	LIMITATIONS AND FUTURE RESEARCH DIRECTIONS.....	54
	BIBLIOGRAPHY.....	56

APPENDIX	67
A) SURVEY QUESTIONS	67
B) INTERVIEW QUESTIONS.....	70

TABLE OF FIGURES AND TABLES

FIGURES

1. FIGURE: THE TOURISM SYSTEM	4
2. FIGURE: MARKET SIZE OF THE TOURISM SECTOR WORLDWIDE FROM 2011 TO 2023, WITH A FORECAST FOR 2024 (IN TRILLION U.S. DOLLARS).....	6
3. FIGURE: THE EFFECTS OF TOURISM EXPENDITURE.....	8
4. FIGURE: DECENTRALIZATION IN THE TRAVEL INDUSTRY.....	12
5. FIGURE: NUMBER OF STUDIES IN THE FIELD OF AI DEFINITION BETWEEN 1961-2023	14
6. FIGURE: VENN DIAGRAM FOR DEFINITIONS OF ARTIFICIAL INTELLIGENCE (AI)	16
7. FIGURE: TOP WAYS BUSINESS OWNERS USE ARTIFICIAL INTELLIGENCE.....	18
8. FIGURE: SHARE OF TRAVEL COMPANIES THAT IMPLEMENTED ARTIFICIAL INTELLIGENCE (AI) STRATEGIES WORLDWIDE AS OF SEPTEMBER 2021, BY MATURITY OF AI STRATEGIES.....	21
9. FIGURE: FIVE MAJOR TYPES OF AI APPLICATIONS IN THE HOSPITALITY AND TOURISM INDUSTRY	21
10. FIGURE: MIXED METHOD RESEARCH DESIGN APPROACH.....	27
11. FIGURE: SUMMARY OF THREATS, OPPORTUNITIES AND CAPABILITIES	36
12. FIGURE: RESPONDENTS FAMILIARITY WITH THE CONCEPT OF AI	45
13. FIGURE: BREAKDOWN OF THE NUMBER OF RESPONDENTS BASED ON THEIR PRIOR USAGE OF AN AI-DRIVEN SERVICE.....	45
14. FIGURE: LEVEL OF TRUST TOWARDS AI AMONG RESPONDENTS	46
15. FIGURE: BREAKDOWN OF TRAVEL PLANNING PREFERENCES SHOWN IN A VENN-DIAGRAM ..	47
16. FIGURE: SCATTERPLOT ON THE LEVEL OF TRUST TOWARDS AI AND WILLINGNESS TO PAY FOR AI SERVICES FOR TRAVEL PLANNING	49
17. FIGURE: PROPORTION OF PEOPLE USING AI IN TRAVEL PLANNING BY SEGMENTS	50
18. FIGURE: INVESTIGATING THE RELATIONSHIP BETWEEN WILLINGNESS TO PAY AND THE FREQUENCY OF INTERNATIONAL TRAVEL	51

TABLES

1. TABLE: APPROACHES TOWARDS DEFINING TOURISM.....	4
2. TABLE: EXPLANATIONS OF DIRECT, INDIRECT AND INDUCED EFFECTS	7
3. TABLE: LEVELS OF AI BASED ON EVOLUTIONARY STAGES	15
4. TABLE: DATA OF INTERVIEWEES	28
5. TABLE: NVIVO CODE STRUCTURE USED FOR DATA-ANALYSIS	29
6. TABLE: SUMMARY OF POTENTIAL BENEFITS OF AI IN THE TOURISM SECTOR	40
7. TABLE: DEMOGRAPHIC DATA OF RESPONDENTS.....	44
8. TABLE: COMPARISON OF SUMMARY STATISTICS BETWEEN THE TWO VARIABLES	46
9. TABLE: TESTING AND EVALUATING MY HYPOTHESES	52

ABSTRACT

The rapid advancement of technology underscores the significant impact that artificial intelligence (AI) can have on the tourism sector, necessitating a thorough analysis of its implications for the global travel industry. Despite the importance and relevance of the topic, there has been a paucity of published research addressing this issue thus far. The primary objective of my study is to examine the impact of artificial intelligence on the travel and tourism industry, specifically in the domain of travel planning. The study aims to offer a comprehensive analysis of the perspectives held by travellers and travel agencies in Hungary regarding this topic, while also examining the corresponding prospects and obstacles. Based on a thorough examination of existing literature, my study utilizes a combination of qualitative and quantitative research methods. Qualitative research involved conducting interviews with industry professionals, while quantitative research involved creating a survey to gather individuals' perspectives on the topic. According to my research, AI has not been fully utilized by domestic tourism service providers, while on the Hungarian customer side artificial intelligence is surprisingly commonly used especially in case of younger generations. The findings also suggest a growing role for AI in the tourism sector, signalling significant opportunities and challenges ahead.

Keywords: artificial intelligence, tourism industry, travel planning, mixed methodology

I INTRODUCTION

„The rise of powerful AI will be either the best, or the worst thing, ever to happen to humanity. We do not yet know which.” (Hawking, 2016)

The influence of artificial intelligence (AI) on our everyday existence is significant, as it pervades several aspects of our lives, in both overt and covert manners (Perc et al., 2019; Ramírez, 2024). Nevertheless, the impact of this phenomenon surpasses personal habits and permeates many sectors, such as the ever-evolving domain of travel and tourism (Marinova, 2023). This research endeavours to delve into the intricate and multifaceted relationship between artificial intelligence and the travel sector, shedding light on the substantial prospects for innovation present at this intersection. The primary objective of this thesis is to investigate the adoption of artificial intelligence within the Hungarian tourism industry, assessing its effects on consumer trust in travel planning procedures, the extent of AI integration within domestic travel agency practices, and the underlying determinants shaping these shifts. Despite the significance and relevance of the topic, there has been a notable scarcity of research in this area. Therefore, I endeavour to address this gap through my research.

To undertake this investigation, a thorough mixed-method approach was utilized which aims to leverage the benefits and address the constraints of quantitative and qualitative approaches in a unified research inquiry (Johnson & Onwuegbuzie, 2007). This methodology was employed to systematically analyse the viewpoints of both consumers and service providers within the tourism sector. In order to accomplish this objective, qualitative research methodology was utilized, involving industry professionals in perceptive conversations and examinations. In addition to conducting a qualitative investigation, a quantitative research approach was used, including the use of an online questionnaire, to provide quantitative data on consumer behaviour and preferences. The utilization of this integrated technique not only enabled a comprehensive analysis of the dynamic environment influenced by artificial intelligence, but also shed light on new opportunities for innovation and adaptation within the travel sector.

The research commences with an extensive analysis of the existing literature, initially focusing on the tourism sector, subsequently delving into the realm of artificial intelligence, and ultimately exploring the present-day interconnection between these two domains. Subsequently, I proceed to delineate my research inquiries and hypotheses, subsequently elucidating the

selected research approach. Following this, I will proceed to provide the outcomes of both the qualitative and quantitative components of my study, culminating in a concise overview of the principal observations.

II LITERATURE REVIEW

II.1 TOURISM INDUSTRY

Throughout history, people have travelled for various compelling reasons including trade, religious commitment, economic gain, war, migration, and pleasure. Travel has been essential to the rise of civilizations; in the Roman era, affluent nobles and senior government officials would take leisure trips to the beach resorts of Pompeii and Herculaneum to get away from the summer heat in Rome (Theobald, 2005). Enriching our experiences, forming cultures, and creating cross-border connections, tourism is nowadays a fundamental tapestry woven into the fabric of our lives. Yet, amidst its omnipresence, do we truly grasp its essence?

Burkart & Medlik (1974) and Netto (2009) emphasized the crucial role of formulating a more comprehensive and accurate definition of tourism. They argued that a well-defined concept of tourism is essential for various purposes, including academic research, legislative and administrative frameworks, industry development, and statistical analysis. By providing a clear and precise definition, stakeholders across different sectors can establish a common understanding of tourism, facilitating effective communication, collaboration, and decision-making processes. Moreover, a robust definition serves as a foundation for developing appropriate policies, strategies, and measurement tools that accurately reflect the complex nature of the tourism phenomenon (Burkart & Medlik, 1974).

II. 1. 1 THE DEFINITION OF TOURISM

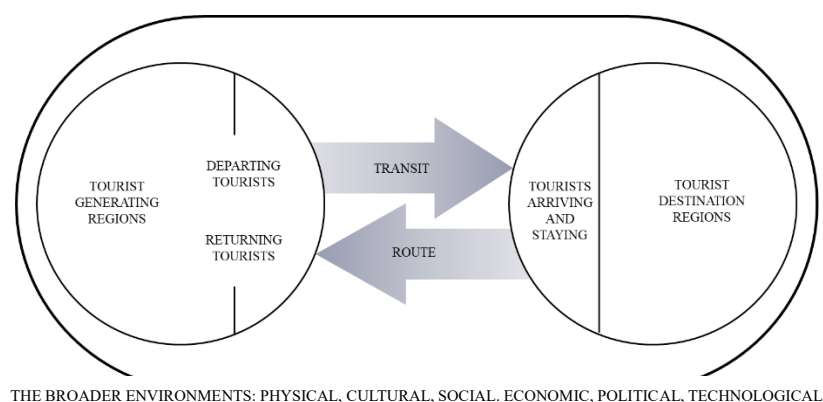
The first officially accepted definition of tourism was produced by The League of Nations Statistics Committee in 1937, but it was largely motivated by practical considerations and ignored domestic travel in favour of foreign travel (Tsutomu, 2019). A phase of intense inquiry and scholarly effort ensued as several scholars and researchers attempted to define tourism precisely, however, many of these definitions have faced criticism for their narrow focus on singular fields or perspectives, such as biology. This underscores the complexity and intricacy inherent in the phenomenon of tourism (Netto, 2009). Neil Leiper distinguished himself among these scholars as one of the most important figures in the area, making a fundamental contribution to the development of our knowledge of tourism. Leiper (1979) delineated three discernible approaches in the pursuit of defining a clear concept. These approaches were categorized as "economic," "technical," and "holistic" paradigms (Table 1.):

Economic	Certain definitions of tourism have primarily emphasized its economic or commercial aspects, neglecting other essential dimensions. The economic perspectives on defining tourism have faced criticism for their failure to address the central figure of the tourist, the human component, as well as their disregard for spatial and temporal considerations, which are also crucial facets of the phenomenon.
Technical	The concept of tourism offers a theoretical framework that delineates its fundamental attributes, distinguishing it from other related phenomena. Technical definitions serve practical purposes, facilitating statistical, legislative, and industrial endeavours and could provide a comprehensive understanding applicable both globally and locally, contributing to a unified conceptual framework for tourism.
Holistic	The goal of holistic definitions of tourism is to capture all of its fundamental elements. This wide scope allows for interdisciplinary methods in the study of tourism, acknowledging the multidimensional nature of the industry that revolves around travellers. However, its ambiguity and lack of systematic applications give rise to complaints.

1. Table: Approaches towards defining tourism

Source: own editing based on Leiper (1979)

Leiper's framework (which can be seen in Figure 1) developed in 1979, defines tourism as discretionary travel and temporary stays away from one's usual residence, excluding trips primarily for earning income. It outlines five main components: tourists, generating regions, transit routes, destination regions, and the tourism industry. These components are interconnected within broader environmental contexts, including technological, cultural, social, political, economic, and physical aspects. Leiper illustrates tourists leaving their home regions, traveling, and eventually returning, emphasizing the tourism sector's importance across these geographical areas. Additionally, the framework highlights partial industrialization within the tourism process (Leiper, 1979).



1. Figure: The tourism system

Source: own editing based on Leiper (1979)

This historical context emphasizes how tourism definitions are dynamic and how effective classification requires taking into account both official and personal interpretations. There are still many differences in how tourism researchers are defining tourism, but the term "tourism" spans a broad empirical range reflecting the social circumstances of many times. The dearth of agreement over a single definition might be attributed to the complexity of tourism, which encompasses a wide range of varied aspects and disciplines (Netto, 2009).

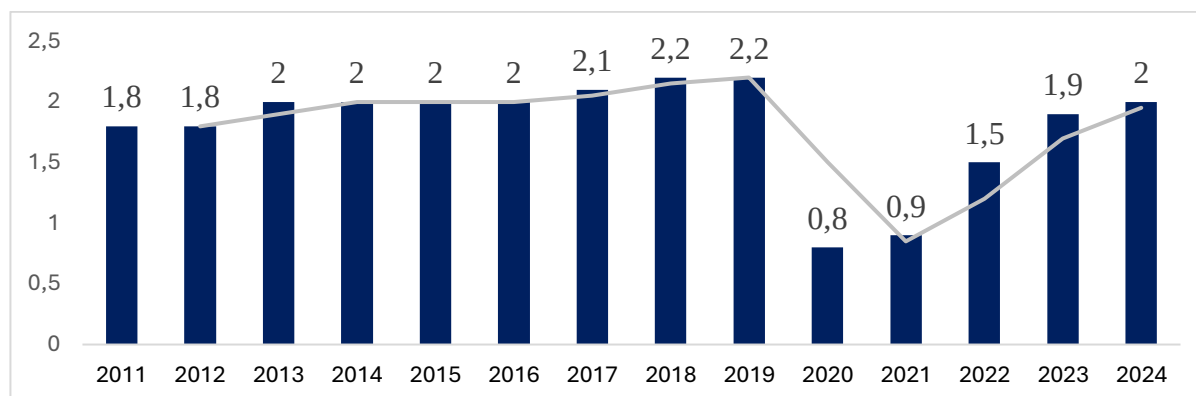
As for nowadays, the most commonly accepted definition of tourism was created by the World Tourism Organization (UNWTO), which states the following: "Tourism is a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business / professional purposes" (World Tourism Organization (WTO), 2008). Each perspective offers unique insights and considerations, contributing to a comprehensive understanding of the subject matter.

II. 1. 2 ECONOMIC SIGNIFICANCE OF TOURISM

Since the creation of the commercial airline industry and the introduction of the jet airplane in the 1950's, tourism has experienced a significant surge in growth. By 1992, it had evolved into the world's largest industry and employer, becoming a major contributor to the global economy (Theobald, 2005). From its beginnings as an activity primarily available to a wealthy few in the early 1900s, tourism has developed into a popular pastime accessible to a wider range of people (Sharpley, 2014). A notable cultural shift has resulted from the democratization of tourism, which has led to a decreasing emphasis on status distinctions linked with travel locations and modes (Urry & Larsen, 2011). Since then, tourism has emerged as a significant social and economic phenomenon in modern society.

A plethora of scholarly work has been driven by the recognition of how crucial the growth of international tourism is to economic growth. A greater understanding of the complex interactions between tourism and economic dynamics is reflected in the expanding body of scholarly work, which has led scholars to investigate an ever-widening variety of aspects in this field (Du et al., 2016; C. C. Lee & Chang, 2008; Romero & Molina, 2013). The inquiry into whether a country's investments in international tourism can drive economic growth is of paramount importance, resonating not just with researchers, but also with policymakers and decision-makers alike (Du et al., 2016). In 2023, the global market size of the tourism industry stood at 1.9 trillion dollars, with projections indicating growth to reach 2 trillion dollars.

However, it is noteworthy that these figures remain below pre-pandemic levels, as illustrated in Figure 2 (Statista Research Department, 2024b).



2. Figure: Market size of the tourism sector worldwide from 2011 to 2023, with a forecast for 2024 (in trillion U.S. dollars)

Source: own editing based on statistics conducted by Statista Research Department (2024)

The impact of tourism on the global economy is widely recognized by scholars and industry experts as being substantial and diverse. The principal motivation behind the investment made by numerous nations in promoting the expansion of the tourism industry is its economic advantages (Ennew, 2003; Ivanov & Webster, 2007; Sharpley, 2014). There is no denying tourism's significant impact on the global and regional economy and its ability to stimulate economic growth (Brida et al., 2020). According to the World Travel & Tourism Council (WTTC), the travel & tourism sector contributed 7,6% to the global GDP in 2022, which is a 22% growth compared to 2021 (WTTC, 2022). Such a drastic surge could plausibly be ascribed to the deceleration of the COVID-19 pandemic. It is hardly unexpected that tourism is frequently viewed in both practical and academic circles as an efficient means of attaining development given its quick and continuous growth and related potential economic contribution (Sharpley, 2014). According to Schubert et al. (2011) international tourism is recognised to have a positive effect on the increase of long-run economic growth through different channels. This implies that there are several economic effects of tourism. In order to comprehend the relationship between tourism and economic activity, Sinclair (1998) offered a dual perspective, highlighting the need to take into account both the advantages and disadvantages of tourism development. Like other forces promoting economic growth, tourism can have both beneficial and detrimental effects. One of the key economic benefits of international tourism and one of the most important factors, why governments invest in tourism (Oppermann & Chon, 1977) is its role as an important source of foreign exchange, helping to improve countries' balance of

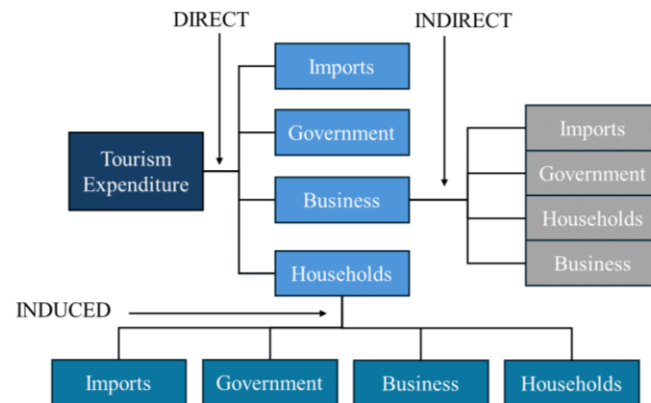
payments and reduce their dependence on primary commodities. Additionally, tourism directly and indirectly supports local communities by generating cash and jobs; in fact, in certain nations, tourism makes up a sizable component of the labour force (Sharpley, 2014). In 2022, there were 22 million new jobs created in the tourism sector, which shows a 7.9% increase compared to 2021 (WTTC, 2022). Furthermore, tourism promotes investment and competitiveness inside the region, supporting the growth of other economic sectors, infrastructure, and human capital. Tourism also has the power to transfer money and resources from more developed, wealthy places to less developed, poorer regions both domestically and globally, which helps to lessen disparities between various sections of a nation (Sharpley, 2014). Economic growth is greatly aided by tourism, especially in nations with finite natural resources. Additionally, it might encourage the expansion of peripheral regions, which can lessen gaps within a nation and boost regional development. Entrepreneurship and the growth of new small businesses are also encouraged by tourism (Ennew, 2003). The money spent by tourists directly affects local sales, earnings, employment, tax receipts, and income. Economic growth is further supported by the expansion of tourism, which frequently results in upgrades to the social and industrial infrastructure of tourist destinations (Nutfilloyevna, 2022; Stynes, 2016). Regional economics make a formal distinction between direct, indirect (also known as secondary effects), and induced economic effects, shown in Table 2 (Ennew, 2003; Stynes, 2016). The total economic impact generated by tourism in a region is determined by the combined effects of these three categories. Measurements of economic impact may encompass gross output or sales, income, employment, or value added (Stynes, 2016).

Direct effects	The direct impacts of tourism result from the spending by tourists, which promptly stimulates income for businesses and households, as well as generating employment and tax revenue. The main tourism industries—lodging, dining, travel, entertainment, and retail—are where these direct effects are most noticeable.
Indirect (secondary) effects	Changes in output arising from the repurchasing of hotel industry earnings in other businesses that are backwardly linked are known as indirect effects.
Induced effects	Induced effects refer to alterations in economic activity stemming from household expenditure of income earned either directly or indirectly due to tourism spending.

2. Table: Explanations of direct, indirect and induced effects

Source: own editing based on Ennew (2003) and Stynes (2016)

A typical economic impact analysis (Figure 3) tracks the financial flows from tourism expenditures to the companies and governments where visitors make their purchases, as well as to other companies, households, and the government (Stynes, 2016).



3. Figure: The effects of tourism expenditure

Source: own editing based on Ennew (2003)

Scholars, researchers, and business experts all agree that tourism has a significant economic impact, however, the exact extent to which tourism affects the global economy has been the subject of discussions (Romero & Molina, 2013). A fair and accurate evaluation of tourism's impact is hampered by the facts that many nations lack the necessary data and knowledge, as well as the fact, that no national accounting system recognizes tourism as a separate industry (Ennew, 2003). To calculate the effect of tourism on GDP, two widely recognized approaches can be used: the Tourism Satellite Account (TSA, 2001) and the Computable General Equilibrium (CGE) model (Ivanov & Webster, 2007). Overall, the majority of research indicates a long-term, positive correlation between economic expansion and tourism development (Du et al., 2016).

II. 1. 3 SOCIAL SIGNIFICANCE OF TOURISM

In addition to its evident economic advantages, tourism plays a pivotal role in shaping and enriching societal and cultural landscapes (Higgins-Desbiolles, 2006). The term "sociocultural impacts" describes how tourism affects both the destination and the visitor in terms of values, behaviour, community structure, lifestyle, and general quality of life (Brunt & Courtney, 1999; Murphy, 1985). While developing an approach to tourism as a distinct yet universally relevant phenomenon, economists and sociologists have approached the analysis of the socio-cultural

impact of tourism in various ways (Pavlić et al., 2015). The shared interest between sociologists and economists can potentially give rise to certain challenges, as the same phenomenon may occasionally elicit conflicting analyses. This discrepancy arises from the fundamentally divergent systems of reference employed by the two disciplines (UNESCO, 1975), which leads to dualistic terms: from one point of view, tourism has been praised by economists for being a financial lifesaver, bringing in money, jobs, and taxes while also acting as a spur for local economic growth (Grey et al., 1991), on the other hand, it has been depicted as a detrimental force that undermines host societies and cultures, leaving behind environmental devastation (O'Grady, 1981; Rosenow & Pulsipher, 1981).

This disparity stems from varying attitudes and perspectives: sociologists frequently adopt a Rousseauist perspective when examining societal issues, considering contemporary society to be an unfavourable divergence from a romanticized past. On the other hand, economists take a more upbeat stance, believing that the golden age is still to come, and that economic growth is the means to get there. Given that tourism activities by their very nature allude to this bright future, they frequently view tourism as a tool for moving nations along this road. While economists view social distortions as little flaws typical of early development, sociologists consider them as warning signs of more serious challenges to come (UNESCO, 1975). Naturally, both viewpoints hold merit, as tourism possesses the capacity to yield both advantageous and disadvantageous effects on both the economic and socio-cultural environments (McKercher, 1993).

For a comprehensive understanding, it is essential to examine the issue from two angles: the viewpoint of the residents in the host country and that of the tourists. The interaction between tourists and hosts unfolds within a multifaceted socio-economic context, characterized by underlying tensions that extend beyond the individuals involved, whose attitudes are partially predetermined. These individuals, representing opposing factions, contribute to heightened relational intensity and increased friction between them (UNESCO, 1975).

As tourism transforms a community into a destination, the livelihoods of its residents are inevitably impacted, underscoring the crucial role of resident support in fostering the development, planning, and sustainability of tourism endeavours (K. Kim, 2002). Consequently, prioritizing the residents' quality of life emerges as a primary focus for community leaders (Aref, 2011). Tourism can facilitate cultural exchange and promote cross-cultural understanding among residents and visitors, fostering appreciation for diverse traditions and customs (Higgins-Desbiolles, 2006). Interaction with tourists can also empower

local communities by providing opportunities for cultural preservation and revitalization, as residents share their heritage and traditions with visitors, contributing to cultural enrichment (Jafari, 1973; UNESCO, 1975). Tourism plays a vital role in enhancing the quality of life for destination residents, as emphasized by tourism scholars (Moscardo, 2009). It is suggested that tourism contributes to improved quality of life (Constanta, 2009) through various means such as leisure, knowledge acquisition, and appreciation for aesthetic beauty, among others (Aref, 2011). However, according to certain academics, "social problems" including prostitution, crime, traffic, littering, etc., and "acculturation" are common effects of tourism on the host country (Harrison, 1992). Perdue et al. (1990) examined the relationship between locals' perceptions of tourism outcomes and their support for the growth of the industry using a conceptual model. The results showed that citizens supported the current tourism development policy as long as they personally benefited from tourism growth (Pavlić et al., 2015).

From the perspective of a tourist, traveling has several advantages, such as fostering personal development by exposure to diverse cultures and surroundings and providing a break from routine that reduces stress and revitalizes the body and mind. Additionally, it's thought that traveling to new places improves wellbeing by offering recuperative vacations that meet a range of human needs, encouraging adventure, producing lifelong memories, and promoting relationships with a varied range of individuals (Higgins-Desbiolles, 2006; World Tourism Organization (WTO), 1999). In conclusion, it seems that tourism transcends being merely an economic phenomenon, encompassing sociological and cultural impacts, thus becoming a hallmark of civilization (UNESCO, 1975).

II. 1. 4 MARKET OF TRAVEL AGENCIES

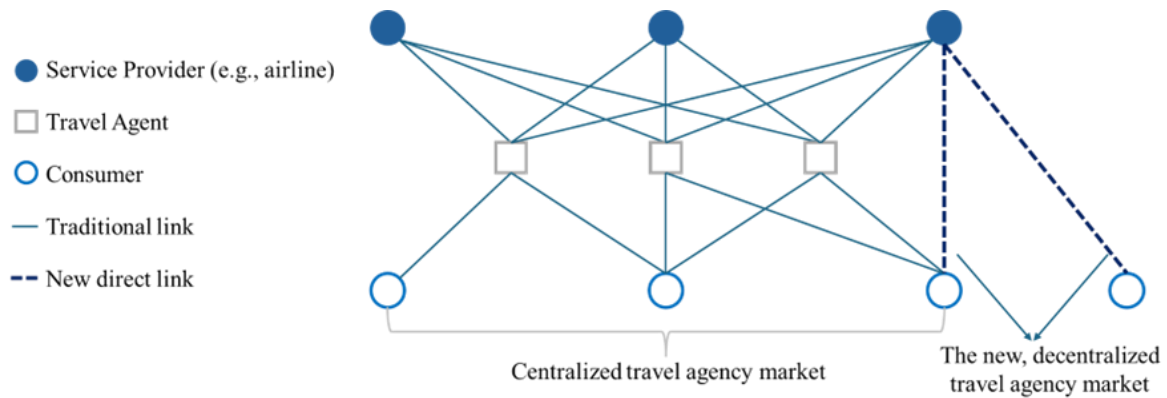
The idea of modern travel agencies was born around 1841, when a British individual organized transportation for more than 500 rail passengers to a religious convention. However, travel arrangements were considerably simpler during that era. As various modes of transportation evolved, there emerged a demand for integrated services that went beyond mere ticket purchases for rail travel (Bhatia, 2012).

Travel agencies nowadays act as intermediaries connecting customers with travel service providers like airlines and hotels, facilitating transactions and providing information (Lewis et al., 1998). They have historically prospered by serving as a liaison between different travel industry suppliers and customers in need of travel-related services (Barnett & Standing, 2000;

Cheung & Lam, 2009; Galloway, 2004). The decision of consumers to either seek trip planning information from a travel agency or make travel arrangements independently depends on the perceived advantages compared to the costs associated with each alternative (Galloway, 2004). The primary reason people utilize the services of travel agencies is to reduce their own transaction / personal costs (Mak & Moncur, 1980) connected to travel planning. When arranging a trip independently, individuals face numerous tasks, including selecting destinations, arranging transportation and accommodation, planning activities, and managing practicalities like travel documents and finances (Mak & Moncur, 1980). This process requires thorough research, decision-making, and organization to ensure a smooth and enjoyable travel experience (Galloway, 2004). This could be an expensive process for the individual, in addition to being time-consuming.

It can be generally stated that if the costs of individual trip planning exceed those of using a travel agency's services, individuals are more likely to choose the latter. However, the perception of these transaction costs can also vary depending on the individual (Mak & Moncur, 1980). Galloway (2004) and Mak & Moncur (1980) state that an individual's educational background (e.g.: knowledge of foreign languages), the complexity or difficulty of planning the trip, the number of locations, the worth of the time, and the frequency of trips are among the elements impacting this perception of individuals.

With the Internet's revolutionary impact on information access, transaction costs for a range of travel-related activities have dropped dramatically, including searching for information, hotel reservations, ticket purchases, and vacation planning (Abrate et al., 2020). A phenomenon known as "disintermediation" or "decentralization" (Lewis et al., 1998), where suppliers offering travel-related products and services establish direct or alternative connections with customers in place of intermediaries like travel agencies (Cheyne et al., 2006), has emerged as a result of this revolutionary change in the travel industry (Abrate et al., 2020; Bennett & Lai, 2005). Consequently, several suppliers - from airlines and hotel chains to car rental companies - have chosen to offer their services directly online, disrupting the market for traditional centralized travel agencies (Bennett & Lai, 2005). This process is illustrated in Figure 4, showcasing the shift towards direct supplier-customer relationships and the diminishing role of intermediaries in the travel market.



4. Figure: Decentralization in the travel industry

Source: own editing based on Lewis et al. (1998)

The travel industry has both opportunities and challenges as customers embrace internet-enabled, personalized trip plans at an increasing rate (Barnett & Standing, 2000). The transition towards digital platforms has necessitated adaptation within the travel industry, with stakeholders needing to leverage technology to enhance customer experiences and remain competitive (Abrate et al., 2020). Large online agencies are becoming more and more prevalent (Lawton & Weaver, 2009), which highlights the changing nature of the travel industry and the necessity for established travel companies to adapt and rethink their functions in the digital era. The industry's constant progress underscores how crucial it is for travel agencies to embrace new technologies and adjust to the changing needs and preferences of modern travellers, which is changing the travel industry's terrain and posing challenges to established business models. The future of traditional travel agencies appears increasingly uncertain and even in danger in light of changing consumer habits (increase in individually planned trips) (Yoon et al., 2006) and emerging disruptive technologies (Cheung & Lam, 2009), including artificial intelligence.

II.2 ARTIFICIAL INTELLIGENCE

Artificial intelligence has ingrained itself deeply into our daily lives, frequently without our awareness. Artificial Intelligence is quietly improving our lives, from the moment we get up and check our phones until the time we go to bed after watching a movie suggested by our preferred streaming service. AI-driven virtual assistants are our go-to source for reminders, question answers, and remote control of our smart home appliances. To locate the fastest routes to our destinations and avoid traffic jams, we use AI-driven navigation apps. AI algorithms that

are trained on human behaviour and preferences modify our social media feeds and online shopping experiences (Perc et al., 2019)

II. 2. 1 THE DEFINITION OF ARTIFICIAL INTELLIGENCE

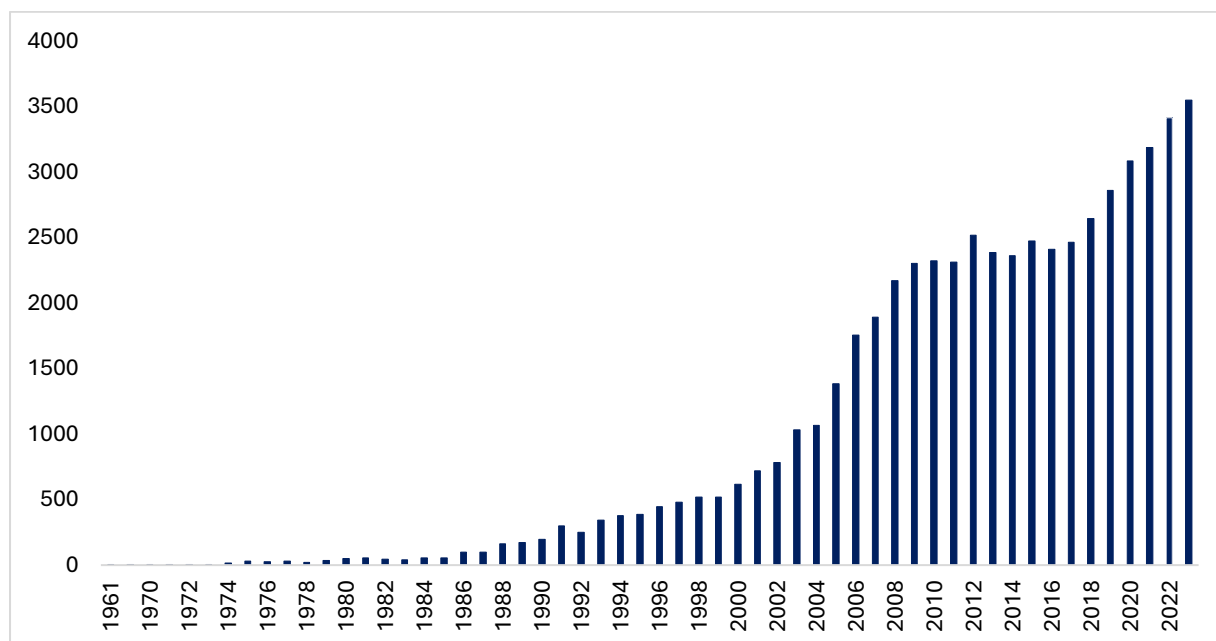
Though AI affects every aspect of our daily lives, many of us may find it difficult to explain precisely. There is no widely agreed definition of artificial intelligence, hence it is not an easy task to define. There are several distinct ones in use, which can easily cause confusion (Sheikh et al., 2023; P. Wang, 2019).

The founding figures in the field of artificial intelligence study include Simon, Newell, McCarthy, and Minsky. The term “Artificial Intelligence” was first used by John McCarthy in his speech in 1956, who was the first to coin and define artificial intelligence as “the science and engineering of making intelligent machines” (McCarthy, 1956). For this reason, McCarthy is considered as the “Father of Artificial Intelligence” and his speech is referred to as the birth of artificial intelligence (Collins et al., 2021; Russel & Norvig, 2020). This is a fairly general concept, which covers a wide range of tasks, such as generalizing and reasoning abstractly about the world, solving puzzles, making plans for how to accomplish goals, moving around, identifying objects and sounds, speaking, translating, carrying out social or professional transactions, engaging in creative work and operating robots (Kersting, 2018).

More recently, Arun Rai defined Artificial Intelligence as “the ability of a machine to perform cognitive functions that we associate with human minds, such as perceiving, reasoning, learning, interacting with the environment, problem solving, decision-making, and even demonstrating creativity (Rai & Sarker, 2019).

As artificial intelligence has become more and more prevalent, attempts to definitively capture its core have also multiplied. There has been a significant increase in AI-related research in previous years, indicating a higher level of interest in the topic (Collins et al., 2021). I conducted a comprehensive search in the Scopus database covering the time span from 1961 to 2023 yielded a total of 57,269 results for the search terms "artificial intelligence" and "definition." This initial dataset was further refined by narrowing the focus to the subject area of computer science. The earliest publication on this topic dates back to 1961, indicating a longstanding interest in the intersection of artificial intelligence and definition. Over the past two decades, there has been a notable exponential growth in publications, reflecting the increasing importance and relevance of this subject area. Notably, in 2023 alone, a substantial volume of

3550 documents was published, underscoring the ongoing scholarly activity and research output in this field (Figure 5).



5. Figure: Number of studies in the field of AI definition between 1961-2023

Source: own editing based on Scopus database research for keywords “artificial intelligence” and “definition”, further narrowed to Computer Science

The need for a widely recognized and thorough standard definition of artificial intelligence will grow as the technology's significance and importance continue to permeate various facets of society, from healthcare to transportation, finance to entertainment. This definition will act as a cornerstone for efficient communication, regulation, and advancement in the field (P. Wang, 2019).

II. 2. 2 DIFFERENT TYPES OF ARTIFICIAL INTELLIGENCE

Numerous continuing discoveries and advancements in AI exist, the most of which are categorized into distinct kinds. These divisions provide a narrative rather than a classification system, one that can explain the historical evolution of AI and its future prospects. All artificial intelligence can be classified into three capability types shown in Table 3 and Figure 6, based on how they learn and how far they can apply their knowledge (Saghiri et al., 2022):

Level of AI	Definition
Artificial Narrow Intelligence (ANI)	This category of intelligence includes intelligent systems that perform particular functions. Take an agent that can recognize faces and play games, for instance. Because these agents are trained to perform specific activities, they are unable to recognize and create new tasks on their own. We do not anticipate these agents to be self-aware.
Artificial General Intelligence (AGI)	The notion of this kind of intelligence is not exclusive to the thoughts of the most accomplished researchers in artificial intelligence. AGI is the term most researchers use to describe agents whose intellect is comparable to that of human agents.
Artificial Super Intelligence (ASI)	Bostrom distinguished between three categories of superintelligence: quality, collective, and speed. An agent with a speed ASI outperforms a human, a collective ASI may make decisions akin to those of a human group, and a quality ASI can perform tasks that a person cannot.

3. Table: Levels of AI based on evolutionary stages

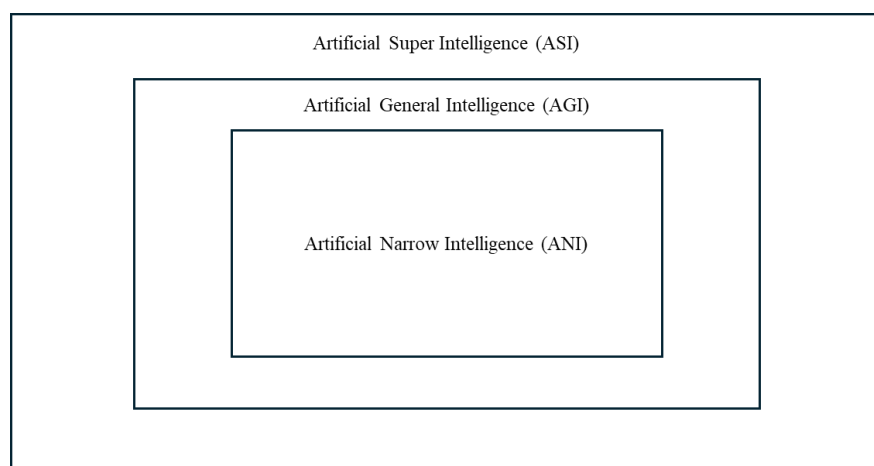
Source: own editing based on Bostrom (2014) and Saghiri et al. (2022)

Today's world is characterized by the widespread use of first-generation artificial intelligence applications, which primarily use artificial narrow intelligence (ANI) to handle particular tasks in a variety of industries (Kaplan & Haenlein, 2019). This demonstrates the almost universal existence of ANI in a wide range of industries, including but not limited to agriculture, manufacturing, transportation, information technology, automation, tourism, finance, law, healthcare, and energy utilities (Marinova, 2023). Artificial narrow intelligence is also the foundation of our everyday interactions with systems like ChatGPT, Siri, and Alexa. The next generation of artificial intelligence (AGI) is expected to surpass not only its antecedent, ANI, but also the human mind and intelligence itself (Delipetrev et al., 2020).

Artificial general intelligence is intended to function in a variety of situations and be able to pursue complicated goals in complex circumstances, in contrast to artificial limited intelligence, which is specialized to do certain tasks and is meant to support human behaviours. It would be a huge step towards genuinely autonomous and flexible AI systems since it would represent autonomy as an agent and have the ability to learn without supervision (Bostrom, 2014; McLean et al., 2023; Torres, 2019). Currently, the field of AGI research is characterized by diverse perspectives on the timing of its emergence, with some anticipating it may not manifest for several decades. However, in the event that AGI advances, it could cause a revolutionary shift that outpaces even the Industrial Revolutions in history (Torres, 2019).

The discourse surrounding Artificial Super Intelligence (ASI) stands as one of the most contentious among researchers, particularly concerning its evolutionary implications. While

some experts warn of ASI posing the gravest threat humanity has ever encountered, others contend it could serve as humanity's ultimate saviour. Nonetheless, two indisputable facts emerge: ASI remains in an evolving phase unlikely to emerge imminently, and the imperative of responsible management, as the risks associated with ASI could vastly outweigh its potential benefits, necessitating the implementation of regulatory frameworks (Narain et al., 2019).



6. Figure: Venn diagram for definitions of artificial intelligence

Source: own editing based on Saghiri et al. (2022)

II. 2. 3 APPLICATIONS OF ARTIFICIAL (NARROW) INTELLIGENCE IN EVERYDAY LIFE

Artificial Intelligence serves as a cornerstone in the transformative evolution of numerous fields, heralding a paradigm shift and unveiling previously uncharted horizons. Its unparalleled ability to ingest vast datasets, discern intricate patterns, and execute informed decisions has propelled significant advancements across various sectors. Consequently, AI has not only shattered the constraints of traditional limitations but also materialized a future once deemed confined to the realms of science fiction, promising boundless opportunities for innovation and progress (Chaurasia, 2023). Artificial intelligence is fundamentally transforming our daily lives, presenting advancements in critical areas like road safety and education, and drawing significant investments from industry giants such as Apple, Facebook, Google, IBM, and Microsoft (Ramírez, 2024). Artificial Intelligence is demonstrating its integration into various facets of our interactions and activities. This includes personalized recommendations on streaming platforms, financial services, healthcare, maintaining work-life balance, education, and the omnipresence of virtual assistants on our smartphones (Kennedy et al., 2023). In a study conducted by The Pew Research Center in 2023, findings revealed that 27% of Americans reported frequent engagement with artificial intelligence on a daily basis, with an additional

28% indicating occasional interaction occurring either daily or several times weekly (Kennedy et al., 2023).

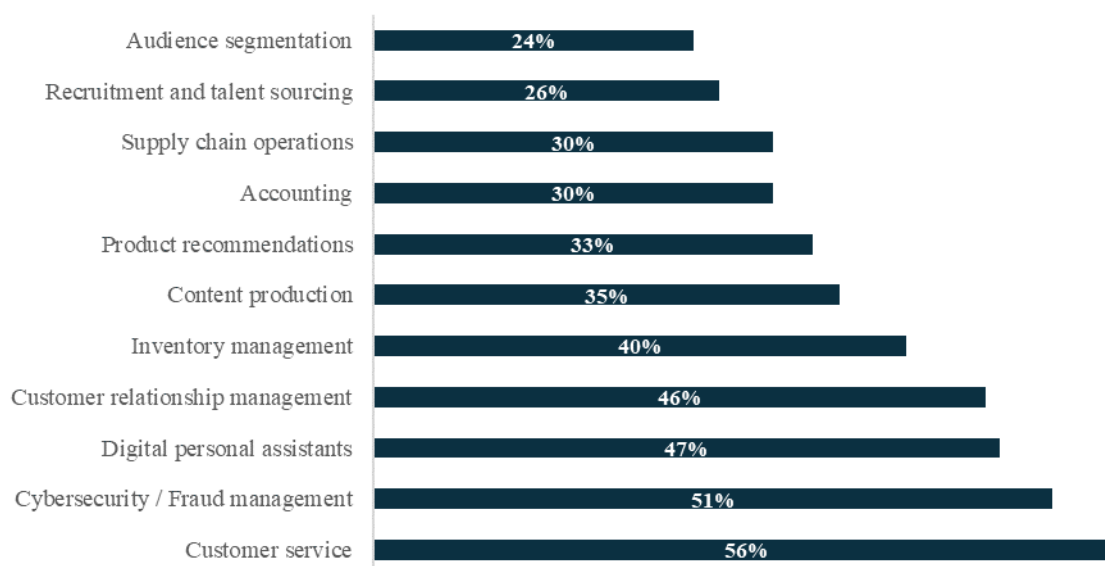
One of artificial narrow intelligence's conspicuous manifestations is the proliferation of powered virtual assistants like Siri, Alexa and Google Assistant and chatbots, like ChatGPT or Claude.AI (Mintz & Brodie, 2019). These sophisticated AI-driven mechanisms are meticulously engineered to comprehend human language intricacies and adeptly aid individuals in diverse tasks, thereby enhancing convenience and efficiency in everyday affairs. In the realm of social media, AI algorithms curate personalized content and recommendations while raising concerns regarding privacy, algorithmic bias, and the formation of echo chambers. Moreover, AI's impact extends to transportation and urban development, where it optimizes networks, manages traffic, and enhances energy management in smart cities, albeit facing hurdles like safety concerns and regulatory frameworks (Chaurasia, 2023).

II. 2. 4 APPLICATIONS OF ARTIFICIAL (NARROW) INTELLIGENCE IN VARIOUS INDUSTRIES

In organizational settings, artificial intelligence first made its appearance in the middle of the 1960s (Buchanan & O'Connell, 2006), helping decision-making processes solve mathematical puzzles (McCarthy & Hayes, 1969; Siklóssy, 1970). Businesses began to invest in AI technologies around the 1980s, realizing that AI might be a strategic instrument for organizational differentiation and a source for competitive advantage (Porter & Millar, 1985). These technologies included computer vision systems and expert systems. Beginning in the early 2000s, attention was diverted to solving the problems presented by massive datasets, which aided in the creation of novel AI methods made possible by advancements in hardware (Russel & Norvig, 2020; Zhuang et al., 2017). Artificial Intelligence is now commonly recognized as a technology that can improve organizational performance in a number of areas, such as automation, data-driven decision-making, consumer engagement, and innovation in products and services (Borges et al., 2021).

Artificial intelligence systems are being applied in many areas of human endeavour, including medicine, mathematics, software engineering, biology, architecture, automotive engineering, logistics, warfare, and other fields where new and groundbreaking discoveries are made on a regular basis. Even though artificial intelligence solutions are evolving on an upward trajectory, the technology is still limited and does not yet match human capabilities (Marinova, 2023).

AI-driven systems within organizations are swiftly proliferating, revolutionizing business and manufacturing while encroaching into traditionally human-centric domains (Daugherty & Wilson, 2018; Dwivedi et al., 2021; Miller, 2018). Advancements in digital technology provide businesses with the means to optimize their operations, furthermore, these developments will enable businesses to experience profound changes in how they engage with suppliers and consumers, thanks to improved material monitoring and customer analytics (Borges et al., 2021; Caputo et al., 2019). According to a survey of 600 businesses conducted by Forbes Advisory, a significant portion of business owners (64%) believe AI will boost efficiency and enhance customer interactions, and 60% believe AI will spur sales development, by utilising AI across a wide range of areas, but especially in the field of customer service and cybersecurity (Haan & Watts, 2023), illustrated in Figure 7.



7. Figure: Top ways business owners use artificial intelligence

Source: own editing based on Haan & Watts (2023)

As AI, robotics, and other cutting-edge technologies continue to advance, more people are realizing the potential disruption they could bring to a number of industries, including manufacturing, healthcare, banking and investments, and retail. For this reason, it is crucial to thoroughly assess their effects (Vasiljeva et al., 2021). The rise of artificial intelligence, according to management experts, requires a thorough re-examination of traditional strategic frameworks and operational paradigms because it radically alters the factors that give organizations a competitive advantage (Daugherty & Wilson, 2018). As a result, in order to effectively adjust to the changing environment, industry stakeholders are finding it more and

more important to carry out in-depth analyses of the revolutionary effects of AI advancements on industry dynamics and organizational strategies.

II.3 AI IN THE TOURISM INDUSTRY AND IN TRAVEL PLANNING

Over the last two decades, the hospitality and tourism (H&T) industry has experienced a significant evolution, largely influenced by information and communication technologies (ICTs) (Law et al., 2014), which have revolutionized its structures, processes, and practices (Gretzel et al., 2015; Samara et al., 2020). While the use of ICT in tourism has a history predating 2000 (Law et al., 2014), it's only since then that we've witnessed its transformative impact on core operations, such as e-ticketing and online hotel bookings, due to increased automation (Chuang et al., 2017). Concurrently, the rise of the internet and social media has fueled digitization, fundamentally altering market dynamics for tourism organizations (Nannelli et al., 2023; Samara et al., 2020).

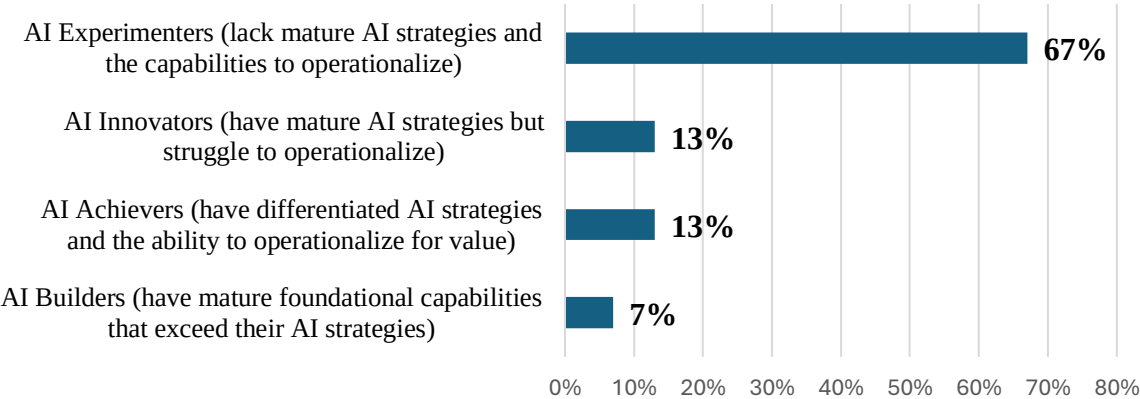
II. 3. 1 OVERVIEW OF AI'S ROLE IN TOURISM

The COVID-19 pandemic has caused serious disruptions to the hospitality and tourism sectors, forcing a reevaluation of long-standing, traditional procedures and underscoring the need for a digital transformation (Nannelli et al., 2023), in which artificial intelligence plays a crucial role. The benefits of AI became more noticeable as travel restrictions reduced demand for tourism. By providing solutions like touch-free services, facial recognition, automated disinfection, and expedited check-in procedures, AI was positioned as a vital tool for overcoming the obstacles presented by the pandemic (Saydam et al., 2022). Consequently, artificial intelligence gives the tourism and hospitality sectors a new opportunity to reimagine the future by changing how consumers receive and interact with services. To improve service quality, effectiveness, and customization of tourism services, artificial intelligence technologies like chatbots, recommendation engines, and robotic process automation (RPA) are being used more frequently (Pillai & Sivathanu, 2020a; Tussyadiah, 2020). Large volumes of data are analyzed by these intelligent systems to produce customized recommendations, optimize processes, and facilitate smooth communication between service providers and passengers (Buhalis & Amaranggana, 2013; Dorcic et al., 2019; Jabeen et al., 2022). In addition to automating procedures, AI integration in the tourism sector is enabling direct customer engagement through a range of frontline services (Kong et al., 2023), including service robots, virtual avatars or interactive voice response systems (Van Doorn et al., 2017). With predictions of highly

automated and intelligent services becoming the standard, AI is anticipated to play an even more significant role in determining the future of tourism as it continues to advance (Kong et al., 2023; Xi, 2020). A more responsive and customer-centric approach is being fostered by the shift towards AI-driven hospitality and tourism, which enables companies to use technology to provide distinctive and customized experiences for their visitors (Huang et al., 2024). However, the successful implementation of AI in the tourism industry requires a strategic and well-planned approach, ensuring that the technology is introduced effectively to customers and aligned with their evolving expectations and perceptions of value creation.

II. 3. 2 TOURISM INDUSTRY APPLICATIONS OF AI AND USE CASES

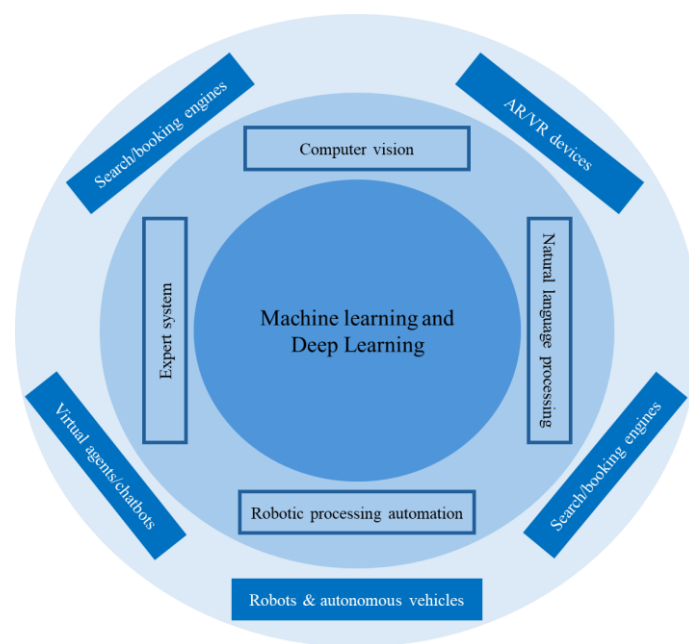
Artificial intelligence has been partially integrated into various sectors of the tourism industry, supported by several instances of successful implementation (Huang et al., 2022; Zlatanov & Popescu, 2019). By 2016, approximately 20% of transportation companies and 12% of other travel-related businesses were implementing AI technologies at scale, with corresponding growth rates of 8% and 6.5% (Bughin et al., 2017), however, this growth has been further accelerated by the pandemic (Huang et al., 2024). A global survey conducted on travel industry companies with revenue exceeding one billion U.S. dollars assessed the maturity of AI adoption (Figure 8). Firms were categorized based on their implementation of various AI-related capabilities, including cloud and platform tools, and overall, AI strategies. As of September 2021, the majority, comprising two-thirds, were identified as "AI Experimenters," lacking mature AI strategies and operational capabilities. In contrast, "AI Achievers," representing 13% of the sample, demonstrated differentiated AI strategies and the capacity to derive operational value from AI implementations (Statista Research Department, 2024).



8. Figure: Share of travel companies that implemented artificial intelligence strategies worldwide as of September 2021, by maturity of AI strategies

Source: own editing based on Statista Research Department (2024)

AI technologies present a range of benefits for both suppliers, such as enhanced productivity, efficiency, and profitability, and consumers, including convenient and personalized tourist experiences (Samara et al., 2020) through various types of applications. Huang et al. (2022) and Kim et al. (2024) identified five major types of AI applications in the tourism and hospitality industry, these are search/booking engines, virtual agents or chatbots, robots and autonomous vehicles, kiosks/self-service screens and AR/VR devices (Figure 9).



9. Figure: Five major types of AI applications in the hospitality and tourism industry

Source: own editing based on Huang et al. (2022)

- Search/booking engines: The influence of search and booking engines on travellers' trip planning and reservation processes has been profound, with machine learning, computer vision, and natural language processing (NLP) emerging as pivotal technologies in enhancing these platforms. For instance, Airbnb's home search/booking engine harnesses computer vision algorithms for proficient image classification and object detection, enabling users to efficiently search for specific amenities based on uploaded photos, thus expediting the search process (Yao et al., 2019). The incorporation of AI technologies within these searches and booking engines has markedly enhanced the user experience, rendering it more intuitive, efficient, and tailored to individual preferences. Consequently, these AI-powered tools are exerting a transformative influence on the

travel industry landscape, furnishing travellers with unprecedented levels of convenience and personalization in their journey planning endeavours (Huang et al., 2022; Kim et al., 2024).

- Virtual agents / chatbots: In the travel and hospitality sector, virtual agents and chatbots have become indispensable tools, signaling a revolution in the way businesses interact with customers for customer service, recommendations, and itinerary planning (Lalicic & Weismayer, 2021). With a valuation of more than US\$190 million, the global chatbot market is expected to grow significantly, supported by an increasing rate of adoption among airports and airlines (Sweezey, 2018). With chatbots responding to customer inquiries 50% faster than human operators, they are becoming more and more prevalent across the industry to improve guest services (Pillai & Sivathanu, 2020b). Distinguished examples include Google Assistant, Amazon's Alexa for Hospitality, and sector-specific chatbots such as Edward at Radisson Blu Edwardian Hotels and Macy's On Call, which provide customized support, answer queries, and make recommendations to customers (Huang et al., 2022). The utilization of artificial intelligence-driven chatbots and virtual agents has significantly improved the effectiveness and standard of customer service in the travel and hospitality industries, enabling the provision of timely, customized, and engaging experiences for customers (Kim et al., 2024).
- Robots and autonomous vehicles: Robots powered by AI make it possible to interact with customers in establishments like restaurants, hotels, and airports (Kim et al., 2024). Among the most notable examples of this technology implemented are the Knightscope robots, which can monitor both indoor and outdoor spaces, and the Travelmate Autonomous Suitcases, which use Bluetooth to follow their owners around autonomously. To help guests find their way, Hilton's concierge robot "Connie" uses natural language processing and machine learning. Additionally, robotic butlers and other service providers have been adopted by hotel chains such as Crowne Plaza and Aloft Hotels, which has redefined guest interactions. These AI-driven robots simplify operations in the hospitality industry and may result in long-term cost savings (Huang et al., 2022).
- Kiosk/self-service screens: Facial recognition software-equipped kiosks and self-service screens have expedited service procedures in the hospitality and tourism sectors. In order to reduce check-in times to just one minute, Marriott International, for example, installed facial recognition check-in kiosks in China (J. Wang, 2018). These kiosks instantly verify personal and reservation information. Similar to this, KFC locations in

Hangzhou have installed a smile-to-pay facial recognition system that allows patrons to finish transactions by just grinning at the self-service screen (Gilchrist, 2017), which have been used in more than 300 stores by 2018 (Burt, 2018). These innovations have greatly improved customer satisfaction and efficiency (Huang et al., 2022).

- AR/VR devices: The term "augmented reality" (AR) refers to a group of technological instruments that use mobile devices to bring digital components into the physical world (Rampolla & Kipper, 2012) while virtual reality is defined as “experience of presence in an environment by means of a communication medium” (Steuer, 1992). AR and VR technologies are responsible for making tourists experiences more immersive and enjoyable overall (Kim et al., 2024). As an example, by using a mobile device to scan their surroundings, users of the ETIPS AR travel app can access local history and travel advice. Additionally, clients can explore destinations and cars before making a decision with Navitaire's VR travel booking service, which provides an immersive booking experience. Marriott offers newlyweds a VR honeymoon headset and teleporter that allows them to experience their chosen destination in four dimensions, adding to the excitement and anticipation of their honeymoon (Huang et al., 2022). Travelers' preferences for destinations are influenced and their overall travel experiences are improved by these AR/VR technologies, which provide unmatched engagement and immersion (H. Kim et al., 2024).

The influence exerted by artificial intelligence on the tourism sector extends beyond mere technological integration, significantly reshaping travel planning behaviours and the operational frameworks of travel agencies (Shi et al., 2021). Travel agencies were the main source of travel advice in the past, but with the quick development of information technologies, things have changed (Ai et al., 2019). Travel-related smart recommendation systems have emerged as a result of this evolution, utilizing web-based personalization technologies (Murthi & Sarkar, 2003). Notably, the popularity of AI-based recommendation systems, like Google Trips and IO Travel Planning, has increased due to the integration of big data technologies, improved computing capabilities, and machine learning techniques, which enable time-saving and personalized travel decision-making processes (Liao & Zheng, 2018). Regardless of these developments, there is still a paucity of research examining the impacts of AI on travel planning and the future of travel agencies, necessitating more investigation into the intersection of artificial intelligence and the travel industry's evolution. In undertaking a comprehensive review of the scholarly works, my objective was to elucidate the interrelations between artificial

intelligence and tourism, especially trip planning. Within the ensuing chapter of my dissertation, I intend to expound upon both the formulation of my research inquiries and the delineation of my chosen methodologies. In the next chapter of my thesis, I will illustrate my research questions and methodology.

III RESEARCH QUESTIONS AND METHODOLOGY

In my thesis, I endeavour to delve into the multifaceted impacts of artificial intelligence adoption within the dynamic landscape of the tourism industry. Specifically, I aim to explore how the integration of AI technologies is poised to reshape the roles of travel agencies and influence the evolving behaviours and preferences of travellers. Through a comprehensive examination of these interconnected factors, I seek to provide a nuanced understanding of the profound transformations and emerging challenges facing the tourism sector. By contributing to the current body of research on this topic, the objective of my study is to enrich conversations regarding the potential effects of artificial intelligence on the broader travel and tourism sector, thus emphasizing its importance.

III.1 RESEARCH QUESTIONS

My research question aims to understand the complex effects of AI adoption on the future direction of the Hungarian tourism industry. This includes studying how consumer trust in travel planning processes changes and how much AI is integrated into the operations of domestic travel agencies.

The research inquiry at hand is as follows: How does the adoption of artificial intelligence in the Hungarian tourism sector impact consumer trust in travel planning processes and the level of AI integration into domestic travel agency operations, and what are the underlying factors influencing these changes? Despite the significance of the subject matter, there has been a notable dearth of empirical investigations carried out in this particular domain. Hence, my objective is to fill this void in the existing body of knowledge.

To effectively investigate the research issue, the subject was addressed from a dual perspective. On one hand, qualitative research methods were utilized in the form of interviews, where I mainly focused on examining the existing utilization of artificial intelligence within the Hungarian tourism-service provider sector. Secondly, quantitative research was carried out, where I established four hypotheses to guide my investigation. These hypotheses were designed to facilitate a thorough examination of the underlying components and potential results within the study's scope:

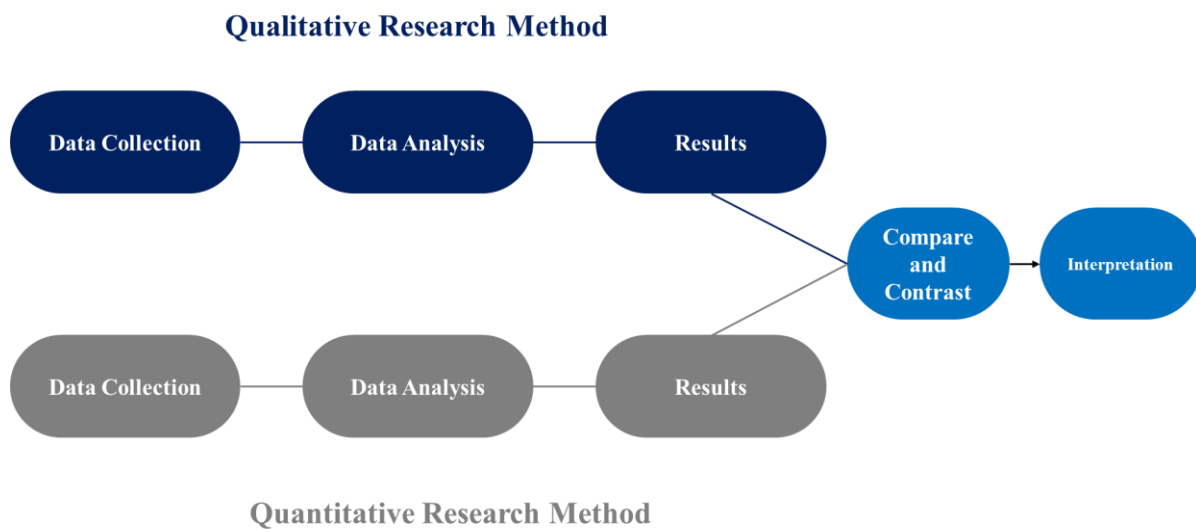
- *Hypothesis 1: The following hypotheses pertain to the application of AI in travel planning*
 - *Hypothesis 1/a:* Presently, there is a limited rate of acceptance between Hungarian individuals of artificial intelligence in the context of arranging travel plans.
 - *Hypothesis 1/b:* Inside the youth demographic, there exists a greater percentage of persons who either presently utilize or have a propensity to utilize artificial intelligence for travel-planning in the forthcoming period.
- *Hypothesis 2: the following hypotheses examine connections of travel patterns and other variables*
 - *Hypothesis 2/a:* There exists a positive correlation between an individual's frequency of international travel and their willingness to pay for AI-driven trip planning services.
 - *Hypothesis 2/b:* Those who engage in more frequent international travel are more inclined to utilize travel agencies.

In order to enhance comprehension of my research subject, I intend to explore connections beyond the scope of my thesis. This study aims to explore the fundamental motivations that underlie the adoption of artificial intelligence in the context of trip planning and the functioning of travel agencies. By examining the novel applications of AI, this research seeks to provide a deeper understanding of its significance. Furthermore, my objective is to delineate the unique characteristics of artificial intelligence integration inside modern travel agency methodologies. This study aims to evaluate the current attitudes towards artificial intelligence in the context of trip planning by conducting a comprehensive analysis of industry professionals and customers. Additionally, it seeks to identify the obstacles that are impeding the broad implementation of AI in this domain. In the forthcoming chapter, I will outline the methodology I employed to tackle my research inquiries.

III.2 METHODOLOGY

For a thorough comprehension of the subject matter, it was imperative to examine the issue from both the consumer and tourism service provider standpoints. Consequently, qualitative research was undertaken in the form of interviews with industry experts, tourism consultants, AI travel service providers, and representatives from travel agencies. These interviews were complemented by the formulation of a questionnaire to facilitate quantitative analysis and to

map consumer attitudes towards the topic. This approach created mixed method research, presented in Figure 10. Johnson & Onwuegbuzie (2007) defined mixed methods research as the following: “Mixed methods research is the class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, concepts or language into a single study or set of related studies”. Mixed methods research aims to leverage the benefits and address the constraints of quantitative and qualitative approaches in a unified research inquiry (Johnson & Onwuegbuzie, 2007).



10. Figure: Mixed method research design approach

Source: own editing based on Creswell (2012)

III. 2. 1 QUALITATIVE RESEARCH

To achieve a thorough comprehension of viewpoints from the service provider's perspective, I decided to conduct semi-structured interviews. Longhurst (2012) defined semi-structured interviews as “a verbal interchange where one person, the interviewer, attempts to elicit information from another person by asking questions” (Longhurst, 2012). I chose semi-structured interviews as the preferred research method due to their capacity to offer a balanced approach, combining the flexibility to delve deeply into participants' responses while also maintaining a level of structure to ensure consistency and comparability across interviews (Kakilla, 2021). In total, seven interviews were performed with a varied range of participants, encompassing tourism specialists, tourism consultants, AI service providers in the tourist sector, and representatives from travel agencies and intermediates (see Table 4). The online interviews

were conducted using platforms such as Teams or Google Meet, with each session typically lasting between 35 and 55 minutes.

Interviewee	Firm Type	Position	Working experience in the tourism sector
A	International Consulting Firm	Tourism Consultant	22 years
B	International Consulting Firm	Tourism Consultant	8 years
C	Hungarian Hospitality Management and Tech Company, offering AI solutions and services	Founder & CEO	9 years
D	Hungarian Tourism Innovation Hub	Tourism Expert, Innovation Program Director	14 years
E	Leading Global Travel and Leisure Experience Company	Sales Manager Hungary	21 years
F	Leading Hungarian Business University	Tourism Expert, Assistant Professor	10 years
G	Hungarian Travel Agency	Employee	1 year

4. Table: Data of interviewees

Source: own editing

During the preliminary stage of the interviews, I made an effort to obtain comprehensive insights by asking common questions about the current state of the tourism business. The participants were prompted to provide their insights into the prevailing difficulties, developing patterns (with particular emphasis on the consequences of the COVID19 pandemic), and any noticeable changes in customer conduct within the travel industry. Following this, the conversation switched its attention towards a detailed examination of the implementation of artificial intelligence in the tourist sector, particularly in the context of travel agents.

In this stage, the participants were queried about the degree to which artificial intelligence technologies are presently incorporated into operational frameworks, both at a national and international level. In addition, conversations explored the various effects of implementing AI on the daily operations of travel agencies, including optimizing processes, improving customer service, and making strategic decisions. Moreover, investigations were conducted to assess the ongoing significance and market demand for conventional travel agency services in response to the growing presence of AI-powered solutions in the industry. The interview questions are listed in Appendix B.

The main focus of the investigation was to predict the path of AI expansion in the travel agency industry and its possible impact on the competitive position and long-term sustainability of

these organizations. The interviews were subjected to a rigorous data analysis process using NVivo, which enabled the systematic coding and cataloguing of the valuable insights obtained. The aforementioned procedure resulted in a total of 8 codes in 3 main categories (see Table 5), which provided the fundamental structure for the subsequent examination of 161 NVivo references.

Code structure used for data-analysis
1. Tourism Industry Overview
Challenges
Opportunities
Market Trends and Shifting Customer Preferences
2. AI in Tourism
Current Adoption Levels
Potential Benefits and Value-Add
3. AI in Travel Planning and Booking
Travel Planning Trends
Competitiveness of Travel Agencies

5. Table: NVivo code structure used for data-analysis (own edit)

I intend to elaborate on the nuanced findings obtained from these interviews in the 4.1 Chapter of my thesis, providing insight into the complex relationship between the adoption of artificial intelligence, the operational dynamics of travel agencies, and the wider context of the tourism industry.

III. 2. 2 QUANTITATIVE RESEARCH

To explore customer's and travel planners' opinions and habits, I deliberately chose to use online survey as a quantitative method due to its numerous benefits in collecting and analysing complete data. The choice to utilize this approach originated from its inherent adaptability, ease of use for participants, flexibility, wide reach and convenience (Evans & Mathur, 2005). Using the intuitive interface and powerful features of Google Forms, I carefully designed the questionnaire to cover a broad range of questions, including demographic details and detailed inquiries about attitudes and perceptions towards artificial intelligence in the context of travel planning.

The utilization of this particular methodological approach facilitated a methodical and organized investigation into the viewpoints of the participants, so yielding significant insights into their underlying motives, preferences, and worries (Braun et al., 2021). Through the implementation of a carefully crafted dissemination plan across many social media platforms and online communities, my objective was to optimize the extent of outreach and cultivate wider community engagement. This approach aimed to enhance the dataset by incorporating a wide range of perspectives and experiences. The decision to prolong the survey timeframe from March 19 to April 14 was made intentionally in order to provide for sufficient time to collect data. This approach resulted in a strong and comprehensive dataset that includes 256 responses.

In the preliminary phase of the survey, respondents were requested to provide their approval for the confidential handling of their answers throughout the study. A single participant opted not to grant consent, so terminating their involvement in the survey. After obtaining consent, the questionnaire proceeded to the socio-demographic section, where participants were asked about their age, gender, highest level of education, marital status, and current employment status. To accommodate sensitive inquiries, participants were given the option to select "other" or "prefer not to answer." Following that, the focus turned to inquiries about artificial intelligence, delving into participants' previous utilization of AI, their encounters with AI-driven solutions or services, their degree of confidence in AI, and their perspectives on the benefits and hazards linked to the subject. In the following section, the investigations centered on subjects pertaining to travel, encompassing the frequency of travel, chosen destinations, preferred modes of travel, and the strategies employed by participants for trip preparation. In conclusion, the participants were queried regarding their perspectives on the utilization of artificial intelligence in the realm of travel. This encompassed inquiries regarding their prior experiences with AI in travel planning, their inclination to employ AI in the future and the specific objectives for which, the potential financial commitment they would allocate towards AI-driven travel planning, their perceptions of the influence of AI on the tourism industry, and their viewpoints on the future sustainability of travel agencies. Deliberate steps were undertaken during the questionnaire design phase to integrate transitions between sections, open-ended inquiries, Likert scales, multiple choice questions and additional survey methodologies. The comprehensive survey is located in Appendix A.

The survey was consciously constructed with a focus on inclusion, intentionally avoiding demographic limitations in order to guarantee its relevance and application to a wide range of demographic groups, encompassing age, gender, and socio-economic statuses. This

methodology enabled a comprehensive analysis of consumer viewpoints, surpassing traditional demographic limitations and enabling a nuanced comprehension of the wider social views towards the implementation of artificial intelligence in travel planning.

Following a thorough data collection process, a complete analysis was conducted utilizing standard methods of statistical analysis. I predominantly employed descriptive statistical approaches due to the large amount of qualitative data in my database. Regarding quantitative datasets, my primary focus was on analysing correlations to validate or disprove relationships through the creation of correlation matrices. Due to the early stage of the research subject, it's currently uncertain which outcome variables may be utilized to construct statistical models, and the exploration of broad linkages is still under investigation. Hence, my primary objective was to understand the underlying correlations and connections, rather than engaging in statistical testing and comprehensively validated statistical analysis. This enabled a comprehension of consumer viewpoints and emotions surrounding the integration of artificial intelligence in travel planning procedures. The results obtained from this rigorous examination are thoroughly recorded and expounded upon in Section 4.2 of my thesis, providing deep insights and contributing to the academic conversation on the implementation of artificial intelligence in the travel sector.

IV RESULTS

IV.1 FINDINGS FROM QUALITATIVE RESEARCH ANALYSIS

To provide transparency in the presentation of the findings derived from my qualitative research, which encompasses the outcomes of seven interviews, I will utilize the categories (depicted in Table 5) employed for coding as a structural framework.

IV. 1. 1 TOURISM INDUSTRY OVERVIEW

Challenges

In recent years, the tourism industry has experienced significant changes, resulting in a range of complex difficulties that require thoughtful examination. The challenges faced by players in the tourism sector, such as shifting consumer tastes and the disruptive effects of technological advancements, have forced them to reevaluate existing models and implement creative strategies in order to stay competitive in a quickly evolving environment. The need for industry participants to develop adaptation and foresight is highlighted by this dynamic evolution. They must navigate the complexity of a constantly changing environment while also identifying possibilities for sustainable growth and development.

The tourism sector is highly sensitive to various changes, including economic fluctuations, environmental shifts, and other factors as well. This heightened sensitivity underscores the industry's vulnerability to external influences. During the conducted interviews, a significant majority of participants identified the COVID-19 pandemic as a prominent obstacle, with economic downturns and international conflicts following closely behind.

“Tourism is often defined as a “peace industry.” This disruption to peace does not necessarily just relate to physical dangers, but in recent years, such threats have included health crises such as the mass outbreak of the coronavirus, as well as geopolitical tensions such as the war between Russia and Ukraine and the conflicts involving Israel. Not only the physical aspects, but also the economic and financial dimensions, have been impacted as a result.”

(Interviewee F)

Another major obstacle in the domestic market is the severe scarcity of competent and proficient workforce. The industry has been significantly affected by the COVID-19 epidemic, resulting in a large number of experienced professionals leaving the field and pursuing more

secure job prospects in alternative areas, such as computer technology. The departure of these individuals has resulted in a substantial shortage in the tourism labour force, posing challenges for enterprises to uphold the elevated levels of care that customers have grown accustomed to. Furthermore, there is a noticeable decrease in the enthusiasm of the younger cohort, particularly Generation Z, to pursue professions in the tourism and hospitality industries. The hesitancy observed can be ascribed to the arduous nature of the task, which frequently necessitates staff to work during periods of high holiday activity, weekends, and unconventional time slots. Many young professionals who prioritize flexibility and personal time are being deterred by the unusual work schedule and the apparent lack of work-life balance.

Furthermore, the tourism sector is facing substantial problems due to climate change and environmental concerns. The vanishing of clearly defined seasons and the alteration of the most popular travel periods have significant consequences on the industry, such as the vanishing of renowned places, including the Maldives or Venice, which face the imminent danger of increasing sea levels. The industry is confronted with the need of addressing the actuality of a shifting climate and adjusting its tactics accordingly in order to guarantee enduring sustainability.

Technological developments are considered as a challenge or disruption in the tourism industry. The emergence of online travel services and alternative accommodation providers such as Airbnb has resulted in heightened competition, hence causing disruptions to conventional business models and exerting financial strain on profit margins. Traditional travel service providers are required to adjust to these transformations and devise strategies to distinguish themselves within a progressively saturated and cutthroat industry. This could entail providing distinctive value offerings, such as tailored travel experiences, specialized guidance, and outstanding client support. In the digital era, travel agencies who are able to utilize technology in order to increase their products and optimize operational efficiency will be more likely to achieve success.

Opportunities

Despite the current challenges encountered by the tourism business, there exist a multitude of prospects that it can pursue. The post-pandemic landscape exhibits evident signs of recuperation and growth, notwithstanding the ongoing challenges posed by the multifaceted repercussions of the pandemic. Furthermore, the rise of what is generally known as "revenge tourism" underscores a unique opportunity. Given that this phenomenon encapsulates the profound

inclination of individuals to offset the travel restrictions enforced during lockdown periods, it offers a significant prospect for tourism stakeholders to capitalize on this surge in enthusiasm for travel encounters.

In the realm of domestic tourism, which has emerged as a potent catalyst for economic revitalization in numerous countries, including Hungary, there exists a conspicuous pathway towards rejuvenation that is readily apparent. This resurgence is indicative of a broader pattern in which travellers are more drawn to destinations that they perceive as safer and more familiar, often situated in closer proximity to their residences.

The tourism industry is also significantly influenced by the increasing pace of digitalization, a movement that has been driven by the needs of the consumer.

“Although digital procedures, such as contactless check-in, were already in use before the pandemic, their widespread implementation has been driven by the need for health and safety measures.”

(Interviewee A)

The digital transformation signifies a fundamental change in how consumers interact and how businesses operate. It emphasizes the importance for industry participants to adopt innovative digital solutions to be competitive in a rapidly changing market. Other travel aspects require improvement as well. The travel sector can reach unprecedented efficiency and customization using artificial intelligence. This includes optimizing reservation and operating processes and providing personalized travel ideas. AI-powered chatbots can efficiently manage client queries. These technologies can provide fast, customized responses, improving client satisfaction. They also let humans focus on more complex issues. Artificial intelligence is predicted to shape tourism's future as digitization continues. This will enable tremendous innovation and growth.

There is also a need to modernize other facets of the travel experience. The travel industry has the capacity to achieve unparalleled levels of efficiency and customisation through the utilization of artificial intelligence. This encompasses the capacity to provide customized travel suggestions that are specifically designed to suit individual preferences, together with the optimization of reservation procedures and operational activities. Chatbots powered by artificial intelligence possess the capability to efficiently handle customer requests. These systems have the potential to offer prompt and tailored responses, so enhancing the entire customer experience. Additionally, they enable human agents to allocate their attention towards more

intricate matters. With the ongoing adoption of digitalization in the tourism industry, artificial intelligence is expected to have a significant impact on shaping the future direction of tourism. This will present unprecedented opportunities for innovation and expansion.

To effectively leverage these opportunities, it is imperative for tourists to possess knowledge regarding the dynamic nature of the tourist environment. Organizations have the potential to assist visitors in making informed judgments around emerging trends and technology by enhancing their knowledge and understanding.

“People usually do not travel smartly, and I think this is actually a significant challenge for the industry, to educate people and try to guide them on how to travel consciously.”

(Interviewee G)

Education might potentially stimulate domestic tourism, elucidate the concept of "revenge tourism" to foster a spirit of adventure, and elucidate the ways in which digitalization and AI integration enhance the travel experience. Through targeted educational programs and outreach, travellers can acquire the necessary knowledge and skills to effectively traverse the contemporary tourist scene. This fosters a mutually beneficial relationship between industry innovation and consumer participation.

Market Trends and Shifting Customer Preferences

The current state of tourism is characterized by a significant increase in the desire for a wide range of travel experiences, which may be attributed to changing consumer preferences and the emergence of new market trends. There is a growing demand for short city breaks lasting 2-3 days and longer excursions lasting 7-10 days, especially those that prioritize health, wellness, and recreational activities. The increasing demand for revitalizing vacations has led to the rise in popularity of holistic wellness resorts, which include a variety of medical treatments, luxurious amenities, and immersive experiences.

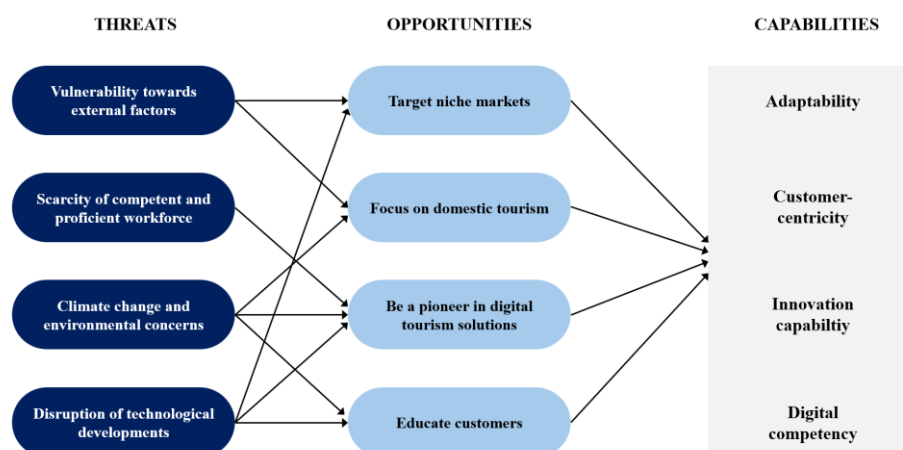
There is an observable change in consumer behaviour evident in booking patterns, wherein there is an increasing inclination towards making last-minute reservations. The observed phenomenon can be ascribed to persistent uncertainty pertaining to travel limitations, which have led travellers to actively pursue increased adaptability in their trip arrangements. Simultaneously, there is a consistent upward trend in online reservations, suggesting an increasing dependence on digital platforms for making travel arrangements. In the context of ongoing technical advancements, it is important to acknowledge the continued importance of

human interaction and personalized service. This is especially evident in the luxury and premium sectors, where customized experiences are held in high regard.

Modern travellers are increasingly prioritizing sustainability and eco-friendliness, which is leading to a higher demand for locations and service providers that are dedicated to environmental responsibility and sustainable practices. Opting for eco-conscious travel demonstrates a larger cultural trend towards environmental responsibility and ethical consumption.

Moreover, the demographic makeup of travellers is experiencing a significant shift, as a growing proportion of the elderly are doing trips. The observed demographic transition, which is particularly evident in Europe and Asia, highlights the increasing need for travel choices that cater to the needs of senior citizens. These include a wide range of options, such as health and wellness tourism, spiritual retreats, specialized medical treatments, and accessible travel options, to meet the specific needs and tastes of this growing customer group.

To summarize, I have analysed the insights from the interviews, and found significant obstacles in the tourism industry and compared them to the underlying prospects that await. Ultimately, I have deliberated over the fundamental competencies, including but not limited to the importance of adaptability and innovation capability that will be necessary to properly respond to these difficulties and capitalize on the opportunities at hand (Figure 11).



11. Figure: Summary of threats, opportunities and capabilities

Source: own editing based on interviews

IV. 1. 2 ARTIFICIAL INTELLIGENCE IN TOURISM

Current Adoption Levels of AI in the Tourism Sector

The findings from the interviews indicate that the use of artificial intelligence within the tourism business in Hungary is presently constrained, despite a noticeable surge in interest and consciousness among professionals in the field. Certain prominent multinational travel corporations have already initiated trials with artificial intelligence implementations. However, smaller Hungarian enterprises have not yet fully adopted this technological advancement. Interviewees noted that AI is being employed for particular purposes such as image editing and content development, yet there is still a lack of mainstream adoption of comprehensive AI-driven solutions.

Nevertheless, the global use of artificial intelligence appears to be increasingly prevalent, notably inside prominent online travel firms and aggregators such as Booking.com and Expedia. Both of these platforms are employing artificial intelligence algorithms to provide tailored suggestions, implement dynamic pricing strategies, and estimate demand. Airlines are utilizing artificial intelligence to manage revenue and optimize pricing. The interviews suggest that although the use of AI is still in its first phases, it is swiftly gaining momentum in the worldwide tourism sector.

“Tourism is an industry built on well-established habits, and there is generally a reluctance to experiment with new things. Therefore, I believe that its usage is not widespread domestically, although it is much more prevalent globally. Spain, for instance, is a pioneer in this field.”

(Interviewee D)

Potential Benefits and Value-Add of AI in Tourism

Artificial intelligence has the potential to bring about a transformative impact on the tourist sector, presenting substantial advantages for both service providers and consumers. As technological advancements progress and gain broader acceptance, they are poised to revolutionize multiple facets of the travel experience.

Data processing and analysis is a critical domain in which artificial intelligence can offer significant benefits. The tourism sector produces substantial quantities of data from diverse origins, encompassing user preferences, booking records, and online activities. AI algorithms demonstrate exceptional proficiency in rapidly and effectively analysing this data, empowering

service providers to make well-informed choices, provide tailored suggestions, and enhance their operations. AI also has the ability to enhance operational efficiency and streamline operations for service providers. By incorporating artificial intelligence into their operations, organizations could streamline repetitive processes, such as data input and customer questions, hence enabling the allocation of human resources towards more intricate and value-enhancing endeavours. AI also has a significant value-add in revenue management and pricing optimization by leveraging historical data, industry trends, and competitor prices to ascertain the most efficient pricing strategies. Through the utilization of dynamic pricing models, artificial intelligence empowers organizations to promptly modify prices in response to changing demand, thereby maximizing revenue and optimizing inventory management.

“In my opinion, the most significant added value of AI from the tourism service provider perspective will be in revenue management, efficient pricing and revenue optimisation.”

(Interviewee F)

From the standpoint of consumers, artificial intelligence possesses the capacity to significantly augment the travel experience through the provision of tailored recommendations and streamlined booking procedures. AI algorithms can offer personalized recommendations for trips, lodgings, activities, and services by examining user preferences, previous reservations, and online behavior.

“The accommodation selection process and the guest-journey will be fully shaped and managed by artificial intelligence. Powerful AI will be behind the guest experience and professional decision-making. AI will excel at organising personalised journeys and providing hosts with personalised advice to improve the guest experience.”

(Interviewee C)

Several interviewees highlighted AI's potential role in content creation and marketing. The tourism industry relies on engaging and informative content to attract and retain customers. AI can help create interesting travel content including blog posts, social media updates, and targeted marketing messaging. AI algorithms can give specialized content that strongly resonates with target groups by analysing user preferences and behaviour, improving marketing effectiveness and consumer engagement. AI can optimize content generation, saving marketers time and resources. This lets them focus on critical goals.

In the future, artificial intelligence will increasingly impact tourism. AI will transform how visitors interact with service providers, including personalized suggestions, simplified booking, improved in-stay services, and more post-trip interaction. Businesses may tailor and enhance visitor experiences with AI, increasing customer satisfaction and loyalty.

Tourism innovation and competitiveness will also benefit from AI according to my interviewees. Businesses will prioritize data-driven decisions and development as they implement AI technologies. Strategically leveraging artificial intelligence (AI) can help organizations identify new opportunities, improve operational efficiency, and stay ahead in a changing and competitive market. However, organizations must take a strategic approach to AI to ensure that it complements and enhances human expertise rather than replacing it.

Nevertheless, it is crucial to acknowledge that the implementation of AI in the tourism sector varies among different categories. AI will play a more prominent role in domains with abundant data, and the application of this data can result in enhanced decision-making, superior services, and tailored products. Industries such as aviation and hospitality, which possess the capacity to gather and analyse extensive datasets, are highly suitable for the integration of artificial intelligence technologies. Conversely, smaller-scale enterprises, such as bed and breakfast establishments managed by families or high-end boutique hotels, may not possess a same degree of data accessibility or necessitate intricate artificial intelligence systems. In such instances, the emphasis may persist on the personal touch and distinctive experiences provided by human personnel.

“Artificial intelligence has the ability to acquire valuable insights and make superior decisions compared to humans in data-intensive industries such as air travel. AI technology is expected to be rapidly embraced by hotel operations and other service organizations that heavily rely on data. This is particularly pertinent in situations when human work can be substituted, however achieving complete substitution may be unattainable due to individual experiences. In contrast, high-end clientele will prioritize the luxurious hotel experience over technology, resulting in a lower propensity to utilize AI. Given their inclination towards conventional hospitality practices, it is improbable that elderly-operated rural guesthouses will readily embrace artificial intelligence in the foreseeable future.”

(Interviewee B)

In summary, all of my interviewees depicted AI in tourism as a complementary instrument rather than a prospective menace with future ramifications, underscoring sanguine viewpoints

on its use. Their combined perspectives emphasized the capacity of AI to augment rather than supplant human participation in the enterprise (see Table 6).

Summary of Potential Benefits and Value-Add of AI in Tourism	Interviewee mentions
Utilizing historical data, market trends, and rivals' prices to enhance pricing efficiency and optimize revenue.	A, B, C, E,
Shaping and managing the accommodation booking process and guest experience, organizing personalized trips, and providing tailored advice to hosts.	B, C, F
Producing captivating travel content, such as blog articles, social media postings, and focused marketing communications.	D, E, F
Offering tailored suggestions for travel, lodging, activities, and services by analyzing user preferences, previous reservations, and internet behavior.	C, D, H
Enhancing human expertise by leveraging data-driven decision-making and development techniques.	A, B, C, D
Acquiring valuable insights and enhancing decision-making processes within data-intensive sectors, such as aviation.	A, B, F

6. Table: Summary of potential benefits of AI in the tourism sector (own edit)

IV. 1. 3 ARTIFICIAL INTELLIGENCE IN TRAVEL PLANNING AND BOOKING

Emerging Travel Planning Trends

The conducted interviews have provided valuable insights into several emerging trends within the realm of travel planning. Regarding trip planning, younger generations are increasingly open to use artificial intelligence, exemplified by their demand for AI chatbots like ChatGPT to analyse data and create travel plans. In contrast, older generations and travel businesses in Hungary have exhibited a comparatively slower pace of acceptance.

"I think it's more of a generational issue now, identifying who still prefers to have someone else plan their travel and who can do it themselves. My parents aren't digitally literate, but they may struggle to organize their extensive excursions on their own. I prefer planning my travels myself and know how, therefore I'll never hire a travel agency."

(Interviewee B)

The reason why older generations prefer travel agency services over organizing trips themselves could stem from various factors:

"The older generation prefers turning to travel agencies for several reasons. Firstly, some may not speak foreign languages and rely on the safety provided by the agency, with a tour guide available who speaks the language of the country being visited. Secondly, it's also for the sake of convenience, especially for those who may have mobility issues."

(Interviewee D)

Another observed tendency is the alteration in client preferences and actions. The likelihood of younger visitors opting for conventional travel packages is lower, while their inclination towards unique and personalized experiences is higher. Furthermore, individuals are more proficient at autonomously coordinating outings through the utilization of these internet resources. In contrast, elder generations and persons seeking a more convenient and elegant experience frequently depend on travel agents. According to the interviewees, there is a generational disparity in the utilization of travel agents, which is declining but still holds importance for some client segments.

Competitiveness of Travel Agencies and a Future Outlook

Despite the ongoing evolution of travel agencies, almost every interviewee agreed, that travel agencies will remain crucial, especially in serving certain consumer segments and unique travel needs, such as the elderly or highly complex travel arrangements.

“In my opinion, there is little doubt that travel agencies will continue to be significant and indispensable in the future. However, those that do not adjust to current trends may face potential danger.”

(Interviewee E)

Nevertheless, there have been assertions that challenge the viability of travel companies:

“AI will take over the role of travel agencies. Although human interaction may provide reassurance to more cautious tourists, it does not contribute to the overall functionality.”

(Interviewee C)

One probable result is that travel agencies will become more specialized and niche, focusing primarily on offering travellers unique, personalized experiences that they cannot easily arrange alone. Artificial intelligence will play a significant role in enabling tourism companies to offer highly customized services and itineraries that highlight unique destinations and provide insider access.

Furthermore, it will be necessary for agencies to strategically realign themselves and modify their marketing approaches to emphasize the unique value and convenience they provide, in addition to their appointment completion services. One potential approach to achieve this objective would involve emphasizing the individual's proficiency in the specific location, their aptitude for offering assistance during the journey and mitigating any risks, their capability to

curate distinctive experiences, and any additional services that mitigate the difficulties connected with autonomous travel arrangement.

There exists the potential for large, technologically sophisticated agencies to leverage artificial intelligence to provide comparable levels of personalization and diversity as numerous smaller, more specialized agencies could together offer. Hence, notwithstanding the anticipated division of the future agency landscape into prominent and niche entities, it is imperative for all these entities to undertake a comprehensive reassessment of their value proposition and operational framework, which will be driven by artificial intelligence.

Successful adaptation to technology and commercial advances necessitates a substantial capital investment, a willingness to embrace change and innovation, and a proactive approach towards acquiring new skills and expertise. It is plausible that organizations that fail to adapt at an adequate pace would experience a decline in their performance. In the end, the agencies who can effectively utilize technology to provide unparalleled knowledge, customized experiences, and significant value to consumers on a large scale will be the most successful. In summary, it may be concluded that in order to maintain competitiveness and remain relevant, agencies must adopt artificial intelligence and other technological advancements to enhance their products and operational efficiency.

IV.2 RESULTS FROM QUANTITATIVE RESEARCH

IV. 2. 1 DEMOGRAPHICS

A total of 256 replies were obtained for the questionnaire, with 255 of them being deemed legitimate, signifying that a significant number of participants successfully completed the survey. However, it is worth noting that one participant declined to provide authorization for the utilization of their data, hence terminating their involvement in the study.

The survey and subsequent evaluation were initiated by examining demographic data (see Table 6). Regarding the distribution of gender, it is noteworthy that among the participants, 114 persons (56.5%) self-identified as female, whereas 111 individuals (43.5%) self-identified as male. No participants provided responses suggesting "Other" or "Prefer not to say" alternatives. The 2023 survey conducted by the Hungarian Central Statistical Office (Központi Statisztikai Hivatal, KSH) reveals that the Hungarian population as a whole consists of 48.18% males and 51.82% females (KSH, 2023), suggesting a notable gender imbalance among the respondents.

Therefore, it can be inferred that the survey conducted does not possess a representative nature. Nevertheless, a number of plausible factors have been found to account for this phenomenon: (1) women demonstrate a larger inclination to participate in online surveys (Becker, 2022), women indicate a stronger preference for travel (Goldstein, 2024), and (3) they are more prone to plan trips beforehand (Y. Lee, 2012).

The data reveals that two age groups emerged as the most prevalent: the 18-27 age group, which accounted for 107 responses (42%), and the 45+ age group, which represented 102 responses (40%). Additionally, there was one response from individuals under 18 (0.4%), 20 responses from those aged 27-35 (7.8%), 24 responses from those aged 36-45 (9.4%), and one response indicating a lack of willingness to answer. The high representation of two age groups is primarily due to personal factors. The majority of my contacts are within the 18-27 age range, and I have distributed the questionnaire to groups where this age group holds the greatest importance. The prevalence of individuals in the 45+ age bracket is mostly attributed to the substantial involvement of my family, who are part of this demographic. Their active participation greatly helped to the success of the questionnaire, as numerous individuals within their social circle shared it with their friends and acquaintances for completion.

Subsequently, I sought information regarding their highest level of educational achievement in order to determine any possible correlations with other characteristics. Based on the collected data, it was found that out of the total respondents, 2 individuals (0.8%) possessed primary school education, 45 respondents (17.6%) had vocational school education, 101 individuals (39.6%) had secondary school or equivalent credentials, 65 individuals (25.5%) held bachelor's degrees, 37 individuals (14.5%) held master's degrees, and 5 individuals (2%) held PhD degrees. In addition to the demographic inquiries, I additionally sought information regarding the participants' marital status and present professions, thereafter analysing this data. Nevertheless, these factors did not demonstrate statistical significance in any given situation.

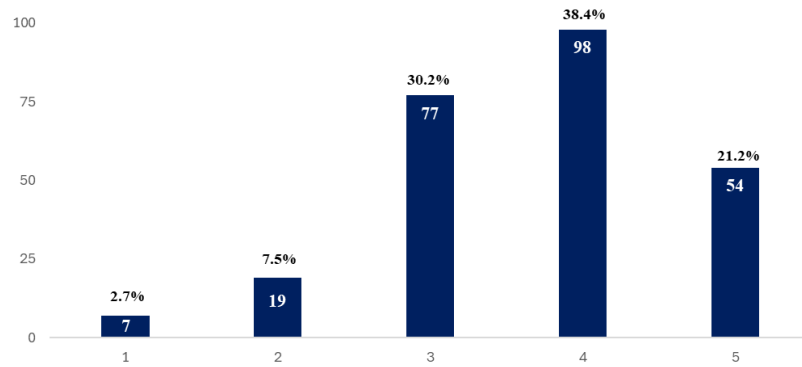
Variables	Category	Frequency	%
Gender	Male	111	43,5%
	Female	144	56,5%
Age	>18	1	0,4%
	18-26	107	42%
	27-35	20	7,8%
	36-45	24	9,4%
	45<	102	40%
	Prefer not to say	1	0,4%
Education (highest level)	Primary school	2	0,8%
	Vocational school	45	17,6%
	Secondary school	101	39,6%
	Bachelor's degree	65	25,5%
	Master's degree	37	14,5%
	PhD degree	5	2%

7. Table: Demographic data of respondents (own edit)

IV. 2. 2 GENERAL FINDINGS FROM THE QUESTIONNAIRE RESULTS

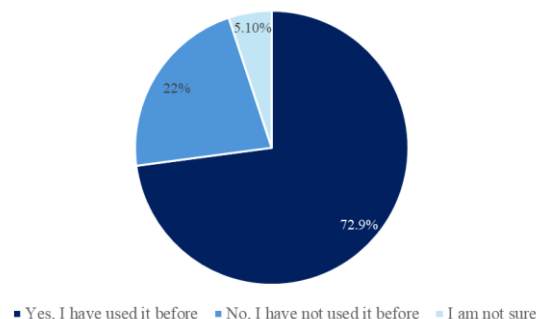
In the subsequent section of my questionnaire, my objective was to evaluate the degree of persons' involvement with artificial intelligence, its particular uses, any reasons for not using it if relevant, and the level of trust demonstrated towards artificial intelligence from the user's standpoint.

I began the investigation of the subject matter by examining the participants' level of acquaintance with the notion of artificial intelligence. The evaluation I utilized was a Likert scale, with a range of 1 denoting a lack of familiarity and 5 indicating a significant degree of familiarity. Figure 10 illustrates that the respondents generally possess a certain degree of acquaintance with the concept of artificial intelligence. Only 7 participants (2.7%) reported a lack of knowledge, whereas 19 respondents (7.5%) chose the choice denoting a level of familiarity below the average on the Likert scale. 77 respondents (30.2%) expressed a moderate level of acquaintance. The sample's mode (38.4%) was the choice that corresponded to a rating of 4, meaning an above-average familiarity with the concept of AI (98 respondents). In addition, a total of 54 participants (21.2%) demonstrated a significant degree of acquaintance with the notion of artificial intelligence.



12. Figure: Respondents familiarity with the concept of AI (own edit)

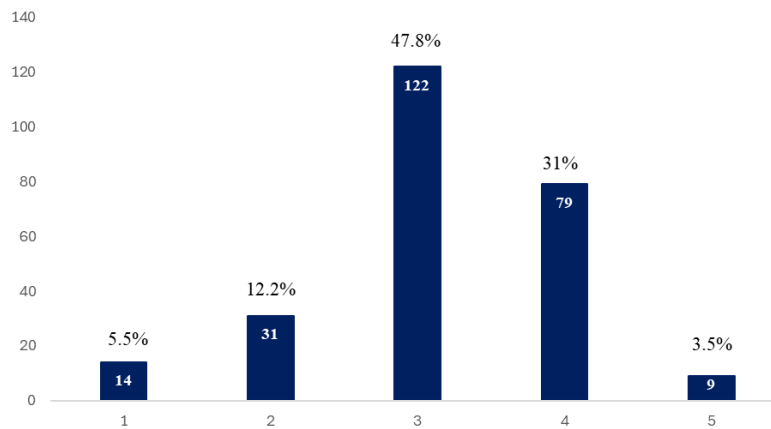
The total sample consisted of 72.9% of participants (186) who have employed artificial intelligence-based solutions in their everyday activities, a proportion that was considered significant (see Figure 11). Out of the sample size of these 186 participants, additional inquiries were made regarding the particular artificial intelligence solutions that they had utilized. The main selections among the array of AI-based functions were recommendation systems, which were utilized by 158 respondents. Chatbots were employed by 143 individuals, while virtual assistants were accessed by 110 participants, furthermore, participants also indicated that they had employed facial recognition technology and autonomous vehicles as AI-driven solutions.



13. Figure: Breakdown of the number of respondents based on their prior usage of an AI-driven service (own edit)

The assessment of participants' beliefs in AI-based solutions was conducted using a Likert scale, which allowed for an exploration of their perspectives and convictions regarding these technological advancements. On the Likert scale, a rating of 1 signified a total absence of trust, whilst a rating of 5 denoted the highest level of trust. Among the participants, it was found that 14 individuals (5.5%) expressed a complete lack of trust in artificial intelligence. Additionally, 31 respondents (12.2%) chose the option of 2, while 122 participants (47.8%) indicated a moderate level of trust, as indicated by a rating of 3. Furthermore, 79 individuals (31%) expressed a level of trust that exceeded the moderate threshold, and 9 respondents (3.5%)

attributed the highest level of trust to AI, as illustrated in Figure 11. The research reveals a notable disparity between the level of trust in artificial intelligence and the degree of familiarity. Specifically, the mode experiences a shift to 3, indicating a higher frequency of responses at this specific level.



14. Figure: Level of trust towards AI among respondents (own edit)

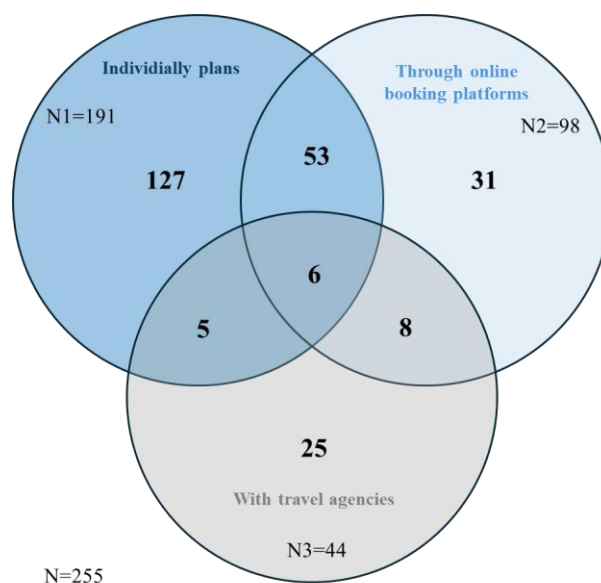
The aforementioned observation has stimulated additional inquiry into the probable association between the degree of acquaintance with artificial intelligence and the level of confidence bestowed upon it. As a result, a comprehensive investigation of this association was undertaken employing suitable correlation analysis techniques. Initially, the mean value, mode, and median of the two variables were compared individually (see Table 7), revealing that individuals possess a higher average comprehension of the idea of artificial intelligence (3.68) compared to their level of faith in it (3.15). This is supported by the observation that the former variable had a higher frequency of responses, as indicated by a mode of 4, in comparison to the latter variable, which had a mode of only 3. Following this, I utilized a correlation function to analyse the association between the two variables. The resulting correlation coefficient of 0.499 suggests a moderately strong, positive link, showing that a higher level of familiarity result in increased trust on the customer side.

	Familiarity with the concept of AI	Trust towards AI
Mean Value	3.68	3.15
Mode	4	3
Median	4	3

8. Table: Comparison of summary statistics between the two variables (own edit)

During the latter portion of my survey, I examined the participants' travel patterns, with a specific emphasis on their travel arrangements. To address this question, I surveyed participants

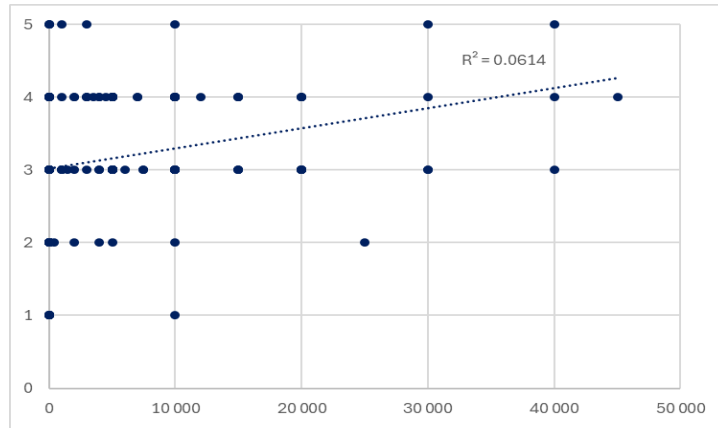
regarding their present overall approach for trip organization. The inquiry was formulated as a multiple-choice question in order to account for potential overlap, as individuals may employ different approaches based on criteria such as the characteristics, length, distance, and purpose of the journey, among other considerations. The available alternatives included: (1) utilizing travel companies, (2) utilizing online booking platforms, and (3) arranging the travel arrangements individually. Along these lines, it was found that 44 participants (17.3%) reported utilizing travel agencies for trip planning, while 98 persons (38.4%) indicated utilizing internet booking platforms like Booking or Airbnb. Additionally, 191 respondents (74.9%) stated a preference for independently organizing their travels. According to the data presented in Figure 12, it is clear that those who prefer to plan their own travels significantly outnumber those who use travel agency services.



15. Figure: Breakdown of travel planning preferences shown in a Venn-diagram (own edit)

I have also included a question in my survey inquiring about their prior experience with utilizing artificial intelligence for trip planning. My research indicates that 25.1% of participants reported having previously utilized such methods, while an additional 12.9% chose the "maybe" alternative. 48.6% of respondents chose the "no" option, showing that the majority had not yet used such technology for this purpose. 13.3% of respondents selected the "I don't know" option. Additionally, I collected information regarding the AI-based services that participants had utilized or intended to utilize for the purpose of arranging their travel arrangements. The three most frequently selected responses among participants were travel planning and route recommendation applications, which were chosen by 142 individuals. Accommodation or activity recommendation systems were also favoured by 118 individuals. Additionally, an

additional 84 individuals expressed a preference for the option of sightseeing or location recognition based on images. Despite the majority of respondents (48.6%) in my research not having used such solutions, I found a high level of openness among participants towards these services. To assess this openness, I also employed a Likert scale, where 1 indicated complete reluctance and 5 signified full openness. Nineteen participants (7.5%) exhibited total hesitancy, whilst 22 respondents (8.6%) displayed a lesser degree of receptiveness. A total of 73 participants, accounting for 28.6% of the sample, exhibited a moderate level of openness. The majority, consisting of 95 individuals (37.3%), had a higher level of openness than the average. Ultimately, a total of forty-six individuals, accounting for 18% of the sample, demonstrated the highest level of openness. Furthermore, I analysed individuals' inclination to remunerate for such services. A total of 27 participants (10.6%) expressed their willingness to pay for the aforementioned service, whilst 122 respondents (47.8%) indicated their potential consideration of it. Conversely, 85 persons (33.3%) showed hesitancy to allocate funds towards this matter, while 21 responses (8.2%) indicated a lack of certainty. For respondents who responded affirmatively, hesitantly, or uncertainly, I inquired about their willingness to pay for vacation planning with AI aid. I received a total of 118 responses to this inquiry, which were subsequently examined. The replies revealed a range of willingness to pay for artificial intelligence to plan exactly one trip, with the lowest price mentioned being 400 Hungarian forints and the largest number claimed being 100,000 Hungarian forints. I conducted an analysis on the variables that may be associated with the willingness to pay for such services, to identify fundamental patterns and connections within the dataset. The variables under investigation encompassed: 1) the level of familiarity with the notion of artificial intelligence, 2) the extent of trust individuals place in AI-based solutions, and 3) the maximum educational attainment achieved by the participants. After cleansing the data from the outlier values (under the assumption that respondents misunderstood the question, as their provided amounts were unrealistically high compared to those of other participants), it was discerned that only the level of trust emerged as significant. The present research revealed a correlation coefficient (r) of 0.25, suggesting a positive, weak to moderate link between the variables. However, a distinct correlation is apparent (see Figure 13). This result aligns with the rationale that emphasizes the impact of trust, precisely; an individual who has trust in this service is more likely to use it more frequently, hence enhancing the likelihood of paying for the service.



16. Figure: Scatterplot on the level of trust towards AI and willingness to pay for AI services for travel planning (own edit)

IV. 2. 3 COMPLEX FINDINGS

I carried out additional statistical studies based on my dataset in order to investigate more profound connections and put my hypotheses to the test.

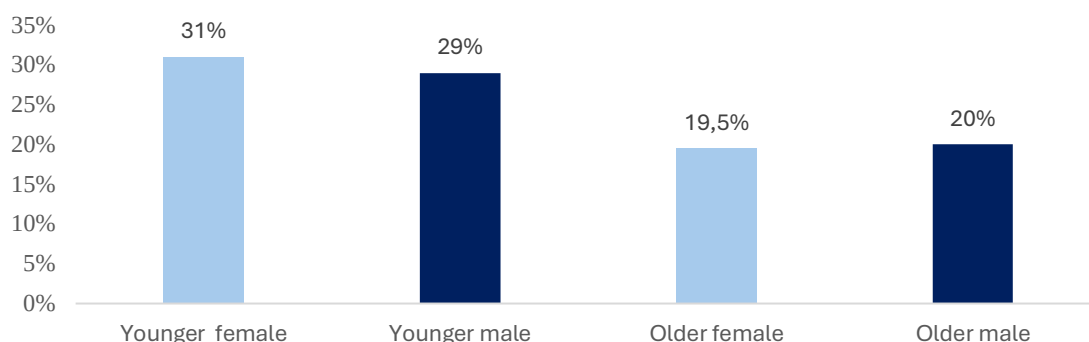
Hypothesis 1: The following hypotheses pertain to the application of AI in travel planning

Due to the questionnaire's focus on qualitative data regarding AI usage in travel planning, I refrained from undertaking standard statistical tests, because for instance, interpreting the concept of standard error would be challenging, particularly when dealing with solely qualitative data. Hence, when examining the qualitative data from the questionnaire, I am limited to employing point estimates derived solely from my, non-representative, sample.

Hypothesis 1/a: Presently, there is a limited rate of acceptance between Hungarian individuals of artificial intelligence in the context of arranging travel plans.

Due to the lack of clarity regarding the precise definition of AI usage in travel planning, I initially filtered those individuals who are aware and actively employ AI technologies for the purpose of journey planning. For example, by asking if they had utilized AI-based technology during the process of travel planning, only the replies that answered "Yes" were taken into account for analysis, while not considering as users those that were uncertain due to their lack of knowledge on the subject. Based only on the affirmative responses, 25.1% of the participants admitted to utilizing AI for vacation planning. To determine the overall prevalence of AI usage in travel planning, further investigation was conducted to determine if there are variations in the proportion of aware AI users in travel planning based on gender and age groups. Based on these characteristics, I categorized the participants into four distinctive groups: younger

women, younger men, older women, and older men. It was found that these ratios were 31%, 29%, 19.5%, and 20% respectively. Therefore, it may be deduced that there is variability in the utilization of AI among different age cohorts, although it is lower than anticipated. Approximately 25% of the participants cannot be classified as having minimal usage, given that the technology is still in its early stages of development. As a result, my 1/a hypothesis, which stated, that presently, there is a limited rate of acceptance between Hungarian individuals of artificial intelligence in the context of arranging travel plans was rejected (see Figure 17).



17. Figure: proportion of people using AI in travel planning by segments (own edit)

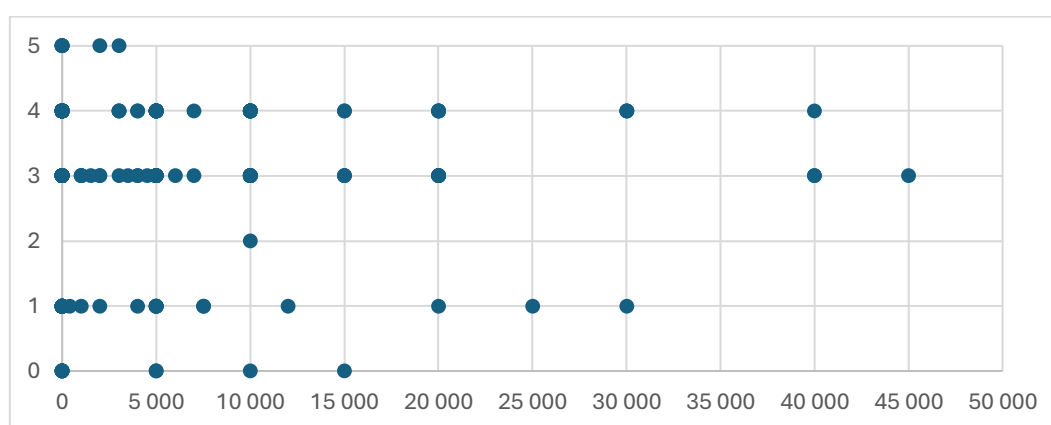
Hypothesis 1/b: Inside the youth demographic, there exists a greater percentage of persons who either presently utilize or have a propensity to utilize artificial intelligence for travel-planning in the forthcoming period.

When examining solely participants who choose the "Yes" option for the prior question, we notice a greater percentage of AI utilization among young individuals (see Figure 17), but still, the difference is considerably less substantial than expected. Nevertheless, by loosening the limitations of doubt and incorporating persons who are likely to have utilized AI for travel planning, the data reveals that 48.8% of young adults are likely to have used AI, whereas this percentage drops to only 30.2% among older generations. Considering this, it is evident that young individuals utilize AI for travel planning to a higher degree compared to older people, so I accept my hypothesis. (The sample size for young individuals was 128, whereas for the elderly it was 216.)

Hypothesis 2: the following hypotheses examine connections of travel patterns and other variables.

Hypothesis 2/a: There exists a positive correlation between an individual's frequency of international travel and their willingness to pay for AI-driven trip planning services.

In my survey, I examined six distinct groups of travel habits pertaining to the frequency of international travel. These categories were ranked in ascending order on a scale of 0-5, based on their frequency. The categories varied from never traveling (0) to traveling numerous times a year (5). I analysed the association between this, and the monetary value individuals would pay to AI for trip planning. In addition, I removed outliers using the same method as previously. The correlation matrix exhibited a correlation coefficient of 0.05, suggesting a practically non-existing association, therefore I reject my hypothesis. The data provided illustrates that reservation prices consistently remained at a low level, indicating that the sensitivity to price in relation to AI appears to be a more influential element than the convenience it provides. This can be attributed to the widespread availability of free AI software.



18. Figure: Investigating the relationship between willingness to pay and the frequency of international travel (own edit)

Hypothesis 2/b: Those who engage in more frequent international travel are more inclined to utilize travel agencies.

During the investigation of this hypothesis, in the initial stage, I classified individuals into three groups based on their frequency of international travel: 1) individuals who have infrequent or no international travel, 2) individuals who travel internationally up to twice per year, and 3) individuals who travel internationally more than twice per year. Here, I utilized a scale of 3 because unlike with AI, there are established travel habits regarding the use of travel agencies. This results in three distinct groups in terms of travel frequency and habits, allowing for a larger sample size within each category when transitioning to the 3-point scale. While maintaining homogeneity from the perspective of the examined question, this approach improves the reliability of the results *ceteris paribus*. During the second phase, I assessed the probability of an individual utilizing a travel agency, irrespective of their frequency of international travel. According to the Venn diagram depicted at point XY, individuals who do not utilize a travel

agency were assigned a numerical value of 0. Conversely, those who employ all the forms of travel organization were assigned a numerical value of 1. Those who employ an additional travel organization method in conjunction with a travel agency were assigned a numerical value of 2. Lastly, individuals who exclusively rely on a travel agency were assigned a numerical value of 3. Subsequently, the interaction between the frequency of international travel and the relative probability of utilizing a travel agency was computed and subsequently standardized. This analysis yielded the likelihood of an individual utilizing a travel agency, taking into account their patterns of international travel. The findings indicate a negative correlation between the frequency of international travel and the likelihood of utilizing a travel agency, hence rejecting hypothesis 2/b. One possible explanation for this phenomenon is that individuals who engage in frequent travel to foreign nations tend to accumulate greater experience, hence reducing their need on travel companies for assistance. I refrained from using a Chi-square test due to the subjective nature of determining relative probability. In instances where weights are distributed in a discrete manner but are established subjectively, the Chi-square test value is contingent purely upon the subjective weights selected. Consequently, it becomes feasible to establish relative weights that support one's hypothesis without relying on objective data. Hence, I believe that the statistical credibility and reliability of doing a Chi-square test would be questionable.

In conclusion, I was able to provide evidence for only one hypothesis while having to reject three possibilities (Table 8).

Hypotheses	Acceptance or rejection	Reasoning
<i>Hypothesis 1: The following hypotheses pertain to the application of AI in travel planning</i>		
<i>Hypothesis 1/a: Presently, there is a limited rate of acceptance between Hungarian individuals of artificial intelligence in the context of arranging travel plans.</i>	Rejected	Approximately 25% of the participants cannot be classified as having minimal usage, given that the technology is still in its early stages of development.
<i>Hypothesis 1/b: Inside the youth demographic, there exists a greater percentage of persons who either presently utilize or have a propensity to utilize artificial intelligence for travel-planning in the forthcoming period.</i>	Accepted	Data reveals that 48.8% of young adults are likely to have used AI, whereas this percentage drops to only 30.2% among older generations. Considering this, it is evident that young individuals utilize AI for travel planning to a higher degree compared to older people
<i>Hypothesis 2: the following hypotheses examine connections of travel patterns and other variables.</i>		
<i>Hypothesis 2/a: There exists a positive correlation between an individual's frequency of international travel and their willingness to pay for AI-driven trip planning services.</i>	Rejected	The correlation matrix exhibited a correlation coefficient of 0.05, suggesting a practically non-existing association.
<i>Hypothesis 2/b: Those who engage in more frequent international travel are more inclined to utilize travel agencies.</i>	Rejected	The findings indicate a negative correlation between the frequency of international travel and the likelihood of utilizing a travel agency,

9. Table: Testing and evaluating my hypotheses (own edit)

V CONCLUSION

V.1 SUMMARY AND DISCUSSION

The primary objective of my thesis was to explore the potential applications and impacts of artificial intelligence in the travel sector. After an extensive literature review, I conducted my research, where I employed both qualitative and quantitative methods to gain a comprehensive understanding of the subject matter. During the qualitative phase of my research, a total of seven semi-structured interviews were conducted with various industry experts, including but not limited to tourism specialists, tourism consultants, AI service providers in the tourism sector, as well as representatives from travel agencies and intermediaries. The professionals who were interviewed during the qualitative phase reached a clear consensus regarding the substantial potential of artificial intelligence (AI) in the tourism sector. They highlighted the potential of AI to assist in generating tailored suggestions, optimizing pricing and revenue governance, and improving the overall satisfaction of guests. These findings are consistent with the current body of research, which emphasizes the growing prevalence and advantages of artificial intelligence in the travel industry. Following qualitative research phase, a quantitative study was undertaken to test my hypotheses about the application of AI in travel planning and to examine connections of travel patterns and other variables among the Hungarian travel community, by using an online questionnaire. This methodology yielded a total of 255 valid responses, which were utilized as the foundation for the examination of my hypotheses. Only one hypothesis was confirmed by the results, namely that among the younger population, a greater number of individuals utilize or intend to utilize artificial intelligence for travel planning, whereas the remaining three hypotheses were disproven (see Table 9). The results of the questionnaire survey revealed that the respondents shown a willingness to adopt artificial intelligence in the context of travel planning. However, the findings of my research have substantiated that the use of artificial intelligence (AI) continues to be limited, affecting both customers and service providers.

My research is distinctive in the current body of literature since I have not come across any extensive studies that have examined the potential benefits and constraints of using AI in the travel industry, taking into account both consumer preferences and service provider viewpoints.

V.2 RECOMMENDATIONS

Based on the evidence derived from the conducted interviews and questionnaire survey, recommendations have been formulated for travel service providers and agencies to accord

priority to the integration of artificial intelligence technology as a means to attain a competitive edge. By prioritizing the utilization of artificial intelligence to enhance operational efficiency, improve the accuracy of forecasting, and provide exceptional customer service, these firms may effectively optimize their processes and elevate consumer satisfaction levels. By remaining up-to-date with the most recent breakthroughs in artificial intelligence and actively investigating novel applications, organizations can motivate their staff to proactively pursue innovative methods of incorporating AI into their day-to-day activities and interactions with customers. In order to facilitate this shift, firms should allocate resources towards training and development initiatives to provide their employees with the essential expertise and understanding to proficiently employ AI technologies. Nevertheless, it is crucial to uphold a customer-focused strategy and achieve a harmonious equilibrium between automation and human engagement, guaranteeing that AI enhances and supplements the proficiency of their staff rather than completely supplanting it. Travel service providers and agencies can enhance their prospects for success in the dynamic travel business by adhering to these suggestions and embracing the revolutionary capabilities of artificial intelligence. This approach enables them to seize emerging prospects, stimulate expansion, and provide exceptional value to their clientele.

V.3 LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

One of the main limitations I encountered in my research pertained to the size and representativeness of the sample. The sample size of the questionnaire survey was relatively small, and its scope was restricted to the Hungarian market, thus limiting the extent to which the findings can be generalized. Further constraint I faced was the dependence on qualitative data, which is widely regarded as a statistically less robust approach. Subsequent investigations should endeavour to strive to utilize larger and more inclusive samples as well as obtain more robust quantitative data in order to supplement the qualitative conclusions. Further investigations could also incorporate a larger cohort of industry specialists to acquire a more exhaustive comprehension of the subject matter. Another limiting element was the absence of substantial study on this topic, which prevented me from comparing my findings with other similar studies. Although this emphasizes the distinctiveness of my findings, it also prompts inquiries over their dependability. My prospective research endeavours encompass the development of a model incorporating a distinct outcome variable, necessitating the establishment of a comprehensive quantitative and qualitative database. Furthermore, it would be advantageous to expand the scope of the study to encompass additional nations in order to

acquire a more holistic comprehension of the prospects and obstacles linked to the integration of artificial intelligence in the travel industry.

BIBLIOGRAPHY

- Abrate, G., Bruno, C., Erbetta, F., & Fraquelli, G. (2020). Which Future for Traditional Travel Agencies? A Dynamic Capabilities Approach. *Journal of Travel Research*, 59(5), 777–791. <https://doi.org/10.1177/0047287519870250>
- Ai, J., Chi, O. H., & Ouyang, Z. (2019). Categorizing peer-to-peer review site features and examining their impacts on room sales. *Journal of Hospitality Marketing & Management*, 28(7).
- Aref, F. (2011). The Effects of Tourism on Quality of Life: A Case Study of Shiraz, Iran. *Life Science Journal*, 8(2), 26–29. <http://www.lifesciencesite.com><http://www.sciencepub.net/life><http://www.lifesciencesite.com>
- Barnett, M., & Standing, C. (2000). Repositioning travel agencies on the Internet. *Journal of Vacation Marketing*, 7(2), 101–187.
- Becker, R. (2022). Gender and Survey Participation. An Event History Analysis of the Gender Effects of Survey Participation in a Probability-based Multi-wave Panel Study with a Sequential Mixed-mode Design. *Methods, Data, Analyses*, 16(1), 3–32. <https://doi.org/10.12758/mda.2021.08>
- Bennett, M., & Lai, C.-W. K. (2005). The Impact of the Internet on Travel Agencies in Taiwan. *Tourism and Hospitality Research*, 6(1), 8–22.
- Bhatia, A. K. (2012). *The Bussiness of Travel Agency and Tour Operations Management*. Sterling Publishers Pvt. Ltd.
- Borges, A. F. S., Laurindo, F. J. B., Spínola, M. M., Gonçalves, R. F., & Mattos, C. A. (2021). The strategic use of artificial intelligence in the digital era: Systematic literature review and future research directions. *International Journal of Information Management*, 57. <https://doi.org/10.1016/j.ijinfomgt.2020.102225>
- Bostrom, N. (2014). *Superintelligence*.
- Braun, V., Clarke, V., Boulton, E., Davey, L., & McEvoy, C. (2021). The online survey as a qualitative research tool. *International Journal of Social Research Methodology*, 24(6), 641–654. <https://doi.org/10.1080/13645579.2020.1805550>

- Brida, J. G., Matesanz Gómez, D., & Segarra, V. (2020). On the empirical relationship between tourism and economic growth. *Tourism Management*, 81. <https://doi.org/10.1016/j.tourman.2020.104131>
- Brunt, P., & Courtney, P. (1999). Host perceptions of sociocultural impacts. In *Annals of Tourism Research* (pp. 493–515). www.elsevier.com/locate/atoures
- Buchanan, L., & O’Connell, A. (2006). A brief history of decision making. *Harvard Business Review*, 1(1), 2–11.
- Bughin, J., Brussels, |, Hazan, E., Paris, |, Ramaswamy, S., Washington, |, Chui, M., Francisco, S., Allas, T., & London, |. (2017). *Artificial Intelligence the next digital frontier?* www.mckinsey.com/mgi.
- Buhalis, D., & Amaranggana, A. (2013). Smart Tourism Destinations. In *Information and Communication Technologies in Tourism 2014* (pp. 553–564). Springer International Publishing. https://doi.org/10.1007/978-3-319-03973-2_40
- Burkart, A. J., & Medlik, S. (1974). *Tourism: Past, Present and Future*. Heinemann.
- Burt, C. (2018, November 16). “Smile-to-Pay” facial recognition system now at 300 locations in China. Biometric.
- Caputo, F., Cillo, V., Candelo, E., & Liu, Y. (2019). Innovating through digital revolution: The role of soft skills and Big Data in increasing firm performance. *Management Decision*, 57(8), 2032–2051. <https://doi.org/10.1108/MD-07-2018-0833>
- Chaurasia, R. (2023). *AI for Everyone: Fundamentals*.
- Cheung, R., & Lam, P. (2009). How Travel Agency Survive in e-Business World? *Communications of the IBIMA*, 10, 85–92. <https://www.researchgate.net/publication/50434442>
- Cheyne, J., Downes, M., & Legg, S. (2006). Travel agent vs internet: What influences travel consumer choices? *Journal of Vacation Marketing*, 12(1), 41–57. <https://doi.org/10.1177/1356766706059307>
- Chuang, T. C., Liu, J. S., Lu, L. Y. Y., Tseng, F. M., Lee, Y., & Chang, C. T. (2017). The main paths of eTourism: trends of managing tourism through Internet. *Asia Pacific Journal of Tourism Research*, 22(2), 213–231. <https://doi.org/10.1080/10941665.2016.1220963>

- Collins, C., Dennehy, D., Conboy, K., & Mikalef, P. (2021). Artificial intelligence in information systems research: A systematic literature review and research agenda. *International Journal of Information Management*, 60, 1–17. <https://doi.org/10.1016/j.ijinfomgt.2021.102383>
- Constanta, E. (2009). The Impact of Tourism in Enhancing the Quality of Life. In *Review of International Comparative Management* (Vol. 10, pp. 347–351).
- Creswell, J. W. (2012). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research* (Fourth). Pearson.
- Daugherty, P. R., & Wilson, H. J. (2018). *Human + Machine: Reimagining Work in the Age of AI*.
- Delipetrev, Blagoj., Tsinaraki, Chrisa., Kostić, U., & European Commission. Joint Research Centre. (2020). *Historical Evolution of Artificial Intelligence*.
- Dorcic, J., Komsic, J., & Markovic, S. (2019). Mobile technologies and applications towards smart tourism – state of the art. In *Tourism Review* (Vol. 74, Issue 1, pp. 82–103). Emerald Group Holdings Ltd. <https://doi.org/10.1108/TR-07-2017-0121>
- Du, D., Lew, A. A., & Ng, P. T. (2016). Tourism and Economic Growth. *Journal of Travel Research*, 55(4), 454–464. <https://doi.org/10.1177/0047287514563167>
- Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., Duan, Y., Dwivedi, R., Edwards, J., Eirug, A., Galanos, V., Ilavarasan, P. V., Janssen, M., Jones, P., Kar, A. K., Kizgin, H., Kronemann, B., Lal, B., Lucini, B., ... Williams, M. D. (2021). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, 57. <https://doi.org/10.1016/j.ijinfomgt.2019.08.002>
- Ennew, C. (2003). *Understanding the Economic Impact of Tourism*.
- Evans, J. R., & Mathur, A. (2005). The value of online surveys. *Internet Research*, 15(2), 195–219. <https://doi.org/10.1108/10662240510590360>
- Galloway, J. (2004). Why some people use travel agents. In *Tourism and the Economy* (pp. 41–51). University of Hawaii Press.

- Gilchrist, K. (2017). *Alibaba launches 'smile to pay' facial recognition system at KFC in China*. CNBC.
- Goldstein, M. (2024, February 22). *Why Women Travel More Than Men, According To Experts*. Forbes.
- Gretzel, U., Sigala, M., Xiang, Z., & Koo, C. (2015). Smart tourism: foundations and developments. *Electronic Markets*, 25(3), 179–188. <https://doi.org/10.1007/s12525-015-0196-8>
- Grey, P., Edelmann, K., & Dwyer, L. (1991). *Tourism in Australia: challenges and opportunities*.
- Haan, K., & Watts, R. (2023, April 24). *How Businesses Are Using Artificial Intelligence In 2024*. Forbes Advisor.
- Harrison, D. (1992). *Tourism and the Less Developed Countries*. Belhaven Press.
- Hawking, S. (2016, October 19). *Exploring The Impact of Artificial Intelligence*.
- Higgins-Desbiolles, F. (2006). More than an “industry”: The forgotten power of tourism as a social force. *Tourism Management*, 27(6), 1192–1208. <https://doi.org/10.1016/j.tourman.2005.05.020>
- Huang, A., Chao, Y., de la Mora Velasco, E., Bilgihan, A., & Wei, W. (2022). When artificial intelligence meets the hospitality and tourism industry: an assessment framework to inform theory and management. *Journal of Hospitality and Tourism Insights*, 5(5), 1080–1100. <https://doi.org/10.1108/JHTI-01-2021-0021>
- Huang, A., Ozturk, A. B., Zhang, T., de la Mora Velasco, E., & Haney, A. (2024). Unpacking AI for hospitality and tourism services: Exploring the role of perceived enjoyment on future use intentions. *International Journal of Hospitality Management*, 119. <https://doi.org/10.1016/j.ijhm.2024.103693>
- Ivanov, S., & Webster, C. (2007). Measuring the impact of tourism on economic growth. In *Tourism Economics* (Vol. 13, Issue 3).
- Jabeen, F., Al Zaidi, S., & Al Dhaheri, M. H. (2022). Automation and artificial intelligence in hospitality and tourism. *Tourism Review*, 77(4), 1043–1061. <https://doi.org/10.1108/TR-09-2019-0360>

Jafari, J. (1973). *Role of Tourism on Socio-Economic Transformation of Developing Countries*.

Johnson, R. B., & Onwuegbuzie, A. J. (2007). Toward a Definition of Mixed Methods Research. *Journal of Mixed Methods Research*, 1(2), 112–133. <https://doi.org/10.1177/1558689806298224>

Kakilla, C. (2021). *Strengths and Weaknesses of Semi-Structured Interviews in Qualitative Research: A Critical Essay*. <https://doi.org/10.20944/preprints202106.0491.v1>

Kaplan, A., & Haenlein, M. (2019). Siri, Siri, in my hand: Who's the fairest in the land? On the interpretations, illustrations, and implications of artificial intelligence. *Business Horizons*, 62(1), 15–25. <https://doi.org/10.1016/j.bushor.2018.08.004>

Kennedy, B., Tyson, A., Saks, E., Funk, C., Research, S., & Nolan, H. (2023). *Public Awareness of Artificial Intelligence in Everyday Activities* (Vol. 15). www.pewresearch.org

Kersting, K. (2018). Machine Learning and Artificial Intelligence: Two Fellow Travelers on the Quest for Intelligent Behavior in Machines. *Frontiers in Big Data*, 1, 1–4. <https://doi.org/10.3389/fdata.2018.00006>

Kim, H., So, K. K. F., Shin, S., & Li, J. (2024). Artificial Intelligence in Hospitality and Tourism: Insights From Industry Practices, Research Literature, and Expert Opinions. *Journal of Hospitality and Tourism Research*, 1–16. <https://doi.org/10.1177/10963480241229235>

Kim, K. (2002). *The effects of tourism impacts upon quality of life of residents in the community*. Virginia Polytechnic Institute and State University.

Kong, H., Wang, K., Qiu, X., Cheung, C., & Bu, N. (2023). 30 years of artificial intelligence (AI) research relating to the hospitality and tourism industry. In *International Journal of Contemporary Hospitality Management* (Vol. 35, Issue 6, pp. 2157–2177). Emerald Publishing. <https://doi.org/10.1108/IJCHM-03-2022-0354>

KSH. (2023). *Number and average age of the population by sex*.

Lalicic, L., & Weismayer, C. (2021). Consumers' reasons and perceived value co-creation of using artificial intelligence-enabled travel service agents. *Journal of Business Research*, 129, 891–901. <https://doi.org/10.1016/j.jbusres.2020.11.005>

- Law, R., Buhalis, D., & Cobanoglu, C. (2014). Progress on information and communication technologies in hospitality and tourism. *International Journal of Contemporary Hospitality Management*, 26(5), 727–750. <https://doi.org/10.1108/IJCHM-08-2013-0367>
- Lawton, L. J., & Weaver, D. B. (2009). Travel agency threats and opportunities: The perspective of successful owners. *International Journal of Hospitality and Tourism Administration*, 10(1), 68–92. <https://doi.org/10.1080/15256480802557283>
- Lee, C. C., & Chang, C. P. (2008). Tourism development and economic growth: A closer look at panels. *Tourism Management*, 29(1), 180–192. <https://doi.org/10.1016/j.tourman.2007.02.013>
- Lee, Y. (2012, February 10). *The Travel Paradox And Why Women Know Best*. Huffpost.
- Leiper, N. (1979). The Framework of Tourism: Towards a Definition of Tourism, Tourist, and the Tourist Industry. *The Annals of Tourism*, 390–407.
- Lewis, I., Semeijn, J., & Talalayevsky, A. (1998). The Impact of Information Technology on Travel Agents. In *Source: Transportation Journal*, SUMMER (Vol. 37, Issue 4). <https://www.jstor.org/stable/20713361?seq=1&cid=pdf->
- Liao, Z., & Zheng, W. (2018). Using a heuristic algorithm to design a personalized day tour route in a time-dependent stochastic environment. *Tourism Management*, 68, 284–300. <https://doi.org/10.1016/j.tourman.2018.03.012>
- Longhurst, R. (2012). Semi-structured Interviews and Focus Groups. In N. Clifford, M. Cope, T. Gillespie, & S. French (Eds.), *Key Methods in Geography* (pp. 103–115). Sage.
- Mak, J., & Moncur, J. E. T. (1980). The Demand for Travel Agents. In *Source: Journal of Transport Economics and Policy* (Vol. 14, Issue 2).
- Marinova, N. (2023). Artificial general intelligence systems challenges. In *Knowledge and business* (pp. 6–108).
- McCarthy, J. (1956). *Dartmouth Conference*.
- Mccarthy, J., & Hayes, P. J. (1969). *Some philosophical problems from the standpoint of artificial intelligence*.
- McKercher, B. (1993). Understanding Tourism's Social and Environmental Impacts. *Some Fundamental Truths About Tourism*, 6–16.

- McLean, S., Read, G. J. M., Thompson, J., Baber, C., Stanton, N. A., & Salmon, P. M. (2023). The risks associated with Artificial General Intelligence: A systematic review. *Journal of Experimental and Theoretical Artificial Intelligence*, 35(5), 649–663. <https://doi.org/10.1080/0952813X.2021.1964003>
- Miller, S. M. (2018). *AI: Augmentation, more so than automation*. 5, 1–20. <https://ink.library.smu.edu.sg/ami>
- Mintz, Y., & Brodie, R. (2019). Introduction to artificial intelligence in medicine. *Minimally Invasive Therapy & Allied Technologies*, 28(2).
- Moscardo, G. (2009). Tourism and Quality of Life: Towards a More Critical Approach. *Tourism and Hospitality Research*, 9(2), 159–170. <https://doi.org/10.1057/thr.2009.6>
- Murphy, P. (1985). *Tourism. A Community Approach* (1st edition).
- Murthi, B. P. S., & Sarkar, S. (2003). The Role of the Management Sciences in Research on Personalization. *Management Science*, 49(10), 1275–1444. <https://www.jstor.org/stable/4134010>
- Nannelli, M., Capone, F., & Lazzeretti, L. (2023). Artificial intelligence in hospitality and tourism. State of the art and future research avenues. *European Planning Studies*, 31(7), 1325–1344. <https://doi.org/10.1080/09654313.2023.2180321>
- Narain, K., Swami, A., Srivastava, A., & Swami, S. (2019). Evolution and control of artificial superintelligence (ASI): a management perspective. *Journal of Advances in Management Research*, 16(5), 698–714. <https://doi.org/10.1108/JAMR-01-2019-0006>
- Netto, A. P. (2009). *What is Tourism? Definitions, Theoretical Phases and Principles*. www.unwto.org
- Nutfilloyevna, A. H. (2022). The Main Factors of Economic Development of the Tourism Industry. *European Multidisciplinary Journal of Modern Science*, 4, 627–631. <https://emjms.academicjournal.io/index.php/>
- O’Grady, R. (1981). *Third world stopover: The tourism debate*. World Council of Churches.
- Oppermann, M., & Chon, K.-S. (1977). *Tourism in Developing Countries*. International Thomson Business Press.

- Pavlić, I., Portolan, A., & Puh, B. (2015). *The social impacts of tourism on local community's quality of life* (Vol. 3). <http://ssrn.com/abstract=2637355>
- Perc, M., Ozer, M., & Hojnik, J. (2019). Social and juristic challenges of artificial intelligence. *Palgrave Communications*, 5(1). <https://doi.org/10.1057/s41599-019-0278-x>
- Perdue, R. R., Long, P. T., & Allen, L. (1990). Resident support for tourism development. In *Annals of Tourism Research* (Vol. 17).
- Pillai, R., & Sivathanu, B. (2020a). Adoption of AI-based chatbots for hospitality and tourism. *International Journal of Contemporary Hospitality Management*, 32(10), 3199–3226. <https://doi.org/10.1108/IJCHM-04-2020-0259>
- Pillai, R., & Sivathanu, B. (2020b). Adoption of AI-based chatbots for hospitality and tourism. *International Journal of Contemporary Hospitality Management*, 32(10), 3199–3226. <https://doi.org/10.1108/IJCHM-04-2020-0259>
- Porter, M., & Millar, V. (1985). How information gives you competitive advantage. *Harvard Business Review*, 1(1), 149–174.
- Rai, A., & Sarker, S. (2019). Next-Generation Digital Platforms: Toward Human-AI Hybrids. *MIS Quarterly*, 43(1). <https://android-developers.googleblog.com/2018/01/how-we-fought-bad-apps-and-malicious.html>;
- Ramírez, C. J. G. (2024). View of Utilizing Artificial Intelligence in Real-World Applications. *Journal of Artificial General Intelligence*, 2(1), 14–19.
- Rampolla, J., & Kipper, G. (2012). An Emerging Technologies Guide to AR. In *Augmented Reality* (pp. 4–22).
- Romero, M. del P. P., & Molina, J. A. (2013). Tourism and economic growth: A review of empirical literature. *Tourism Management Perspectives*, 8, 28–41. <https://doi.org/10.1016/j.tmp.2013.05.006>
- Rosenow, J., & Pulsipher, G. (1981). Tourism, the Good, the Bad, and the Ugly. In *Century Three Press, Lincoln*.
- Russel, S. J., & Norvig, P. (2020). *Artificial Intelligence A Modern Approach Third Edition* (Russel Stuart and Norvig Peter, Ed.; Third Edition).

- Saghiri, A. M., Vahidipour, S. M., Jabbarpour, M. R., Sookhak, M., & Forestiero, A. (2022). A Survey of Artificial Intelligence Challenges: Analyzing the Definitions, Relationships, and Evolutions. *Applied Sciences (Switzerland)*, 12(8), 1–21. <https://doi.org/10.3390/app12084054>
- Samara, D., Magnisalis, I., & Peristeras, V. (2020). Artificial intelligence and big data in tourism: a systematic literature review. *Journal of Hospitality and Tourism Technology*, 11(2), 343–367. <https://doi.org/10.1108/JHTT-12-2018-0118>
- Saydam, M. B., Arici, H. E., & Koseoglu, M. A. (2022). How does the tourism and hospitality industry use artificial intelligence? A review of empirical studies and future research agenda. *Journal of Hospitality Marketing and Management*, 31(8), 908–936. <https://doi.org/10.1080/19368623.2022.2118923>
- Schubert, F. S., Brida, J. G., & Risso, A. W. (2011). The impacts of international tourism demand on economic growth of small economies dependent on tourism. In *Tourism Management* (Vol. 32, pp. 377–385).
- Sharpley, R. (2014). Tourism: A Vehicle for Development? In *Tourism and Development* (Second, pp. 3–31). Channel View Publications Ltd.
- Sheikh, H., Prins, C., & Schrijvers, E. (2023). *Mission AI Research for Policy*.
- Shi, S., Gong, Y., & Gursoy, D. (2021). Antecedents of Trust and Adoption Intention toward Artificially Intelligent Recommendation Systems in Travel Planning: A Heuristic–Systematic Model. *Journal of Travel Research*, 60(8), 1714–1734. <https://doi.org/10.1177/0047287520966395>
- Siklóssy, L. (1970). On the Evolution of Artificial Intelligence. *Information Sciences*, 2, 369–377.
- Sinclair, M. T. (1998). Tourism and economic development: a survey. *Journal of Development Studies*, 34(5), 1–51. <https://doi.org/10.1080/00220389808422535>
- Statista Research Department. (2024a). *Share of travel companies that implemented Artificial Intelligence (AI) strategies worldwide as of September 2021, by maturity of AI strategies*. Statista.Com.

- Statista Research Department, A. 2, 2024. (2024b, April 2). *Market size of the tourism sector worldwide from 2011 to 2023, with a forecast for 2024*. Statista.Com. <https://www.statista.com/statistics/1220218/tourism-industry-market-size-global/>
- Steuer, J. (1992). Defining Virtual Reality: Dimensions Determining Telepresence. *Journal of Communication*, 42(4).
- Stynes, D. J. (2016). *Economic impacts of Tourism*.
- Sweezey, M. (2018). *The Value Of Chatbots For Today's Consumers*. Forbes.
- Theobald, W. F. (2005). *Global tourism*. Elsevier Butterworth-Heinemann.
- Torres, P. (2019). The possibility and risks of artificial general intelligence. *Bulletin of the Atomic Scientists*, 75(3), 105–108. <https://doi.org/10.1080/00963402.2019.1604873>
- Tsutomu, I. (2019). *A Study on Evolution of the Definition of Tourism-A Discussion Over the Formation of Tourist Enclaves*.
- Tussyadiah, I. (2020). A review of research into automation in tourism: Launching the Annals of Tourism Research Curated Collection on Artificial Intelligence and Robotics in Tourism. *Annals of Tourism Research*, 81. <https://doi.org/10.1016/j.annals.2020.102883>
- UNESCO. (1975). *The effects of tourism on socio-cultural values*.
- Urry, J., & Larsen, J. (2011). *The Tourist Gaze 3.0* (Third). SAGE Publications Inc.
- van Doorn, J., Mende, M., Noble, S. M., Hulland, J., Ostrom, A. L., Grewal, D., & Petersen, J. A. (2017). Domo Arigato Mr. Roboto: Emergence of Automated Social Presence in Organizational Frontlines and Customers' Service Experiences. *Journal of Service Research*, 20(1), 43–58. <https://doi.org/10.1177/1094670516679272>
- Vasiljeva, T., Kreituss, I., & Lulle, I. (2021). Artificial Intelligence: The Attitude of the Public and Representatives of Various Industries. *Journal of Risk and Financial Management*, 14(8). <https://doi.org/10.3390/jrfm14080339>
- Wang, J. (2018). *You Can Now Check In With A Facial Scan At Marriott In China*. Forbes.
- Wang, P. (2019). On Defining Artificial Intelligence. *Journal of Artificial General Intelligence*, 10(2), 1–37. <https://doi.org/10.2478/jagi-2019-0002>
- World Tourism Organization (WTO). (1999). *Global Code of Ethics for Tourism*.

World Tourism Organization (WTO). (2008). *Glossary of tourism terms*. <https://www.unwto.org/glossary-tourism-terms#T>

WTTC. (2022). *Economic Impact Research*.

Xi, Y. L. (2020). Technology-enabled service evolution in tourism: a perspective article. *Tourism Review*, 75(1), 279–282. <https://doi.org/10.1108/TR-06-2019-0229>

Yao, B., Qiu, R. T. R., Fan, D. X. F., Liu, A., & Buhalis, D. (2019). Standing out from the crowd – an exploration of signal attributes of Airbnb listings. *International Journal of Contemporary Hospitality Management*, 31(12), 4520–4542. <https://doi.org/10.1108/IJCHM-02-2019-0106>

Yoon, M. G., Yoon, D. Y., & Yang, T. W. (2006). Impact of e-business on air travel markets: Distribution of airline tickets in Korea. *Journal of Air Transport Management*, 12(5), 253–260.

Zhuang, Y. ting, Wu, F., Chen, C., & Pan, Y. he. (2017). Challenges and opportunities: from big data to knowledge in AI 2.0. *Frontiers of Information Technology and Electronic Engineering*, 18(1), 3–14. <https://doi.org/10.1631/FITEE.1601883>

Zlatanov, S., & Popesku, J. (2019). Current Applications of Artificial Intelligence in Tourism and Hospitality. *International Conference Sinteza 2019*, 84–90. <https://doi.org/10.15308/sinteza-2019-84-90>

APPENDIX

A) SURVEY QUESTIONS

1. Do you consent to the anonymous use of the data and responses provided during the survey evaluation? Options: Yes, I consent; I do not wish to consent
2. How old are you? Options: Under 18 years old; Between 18 and 26 years old; Between 27 and 35 years old; Between 36 and 45 years old; Over 45 years old; I prefer not to answer
3. What is your gender? Options: Female; Male; Other; I prefer not to answer
4. What is your highest level of education? Options: Elementary school; Vocational school, technical school; Secondary school; Bachelor's degree (BA/BSc); Master's degree (MA/MSc); Doctoral degree; I prefer not to answer
5. What is your marital status? Options: Married; Cohabiting; Widowed; In a relationship; Single; Divorced; Other; I prefer not to answer
6. What is your current employment status? (multiple choice) Options: Full-time; Part-time; Student; Unemployed; Self-employed; Other; I prefer not to answer
7. How familiar are you with the concept of artificial intelligence (AI)? Options: 1,2,3,4,5 (1=not familiar at all; 5=very familiar)
8. Have you ever used AI-based solutions? (Siri and Alexa are AI-based, but if you've used Spotify or Netflix recommendations, those count too) Options: Yes, I have used; No, I have not used; I am not sure
9. What types of AI-based tools or services have you used? (multiple choice) Options: Virtual assistants; Recommendation systems; Facial recognition technology; Chatbots; Self-driving vehicles; Other
10. What is the reason you have not used AI-based solutions before? (multiple choice) Options: Privacy and security concerns; Lack of trust in its accuracy; Consider it dangerous; Insufficient knowledge of the technology; Scepticism; Lack of human interaction; Unfamiliarity; Other
11. How much do you trust AI-based technologies? Options: 1,2,3,4,5 (1=no trust at all; 5=complete trust)

12. What potential advantages do you see in using AI in everyday life? (multiple choice)
Options: Increased efficiency and productivity; Time savings and convenience; Personalized experiences and services; Better decision-making and problem-solving; Reduction of human errors; I do not see any advantages; Other
13. What potential risks or disadvantages do you see in using AI? (multiple choice) Options:
Privacy and security issues; Job loss due to automation; Bias or discrimination in decision-making; Overreliance on technology; Decrease in human interaction and creativity; I do not see any potential risks; Other
14. Do you currently pay for or would you consider paying for AI-based technologies in the future? Options: Yes, I currently subscribe; I do not currently subscribe, but would consider it in the future; No, and would not consider it in the future; I am not sure; Other
15. Do you prefer domestic or international travel? Options: International; Domestic; Both; Neither, I do not like/prefer to travel; I am not sure
16. What is the purpose of your travels typically? (multiple choice) Options: Relaxation, leisure; Sightseeing; Sports; Exploring different cultures, cuisines; Business; Other
17. How often do you travel abroad on average? Options: Monthly or more frequently; Several times a year; 1-2 times a year; Every few years; I do not usually travel abroad; Other
18. What are the most important factors for you when choosing a travel destination? (multiple choice) Options: Attractions, activities; Prices, costs; Accommodation options; Local culture, cuisine; Other
19. How do you usually plan your trips? (multiple choice) Options: Through travel agencies; Via online booking platforms; Personally, on my own; Other
20. How important is personalized travel experience to you? Options: 1,2,3,4,5 (1=not important at all; 5=very important)
21. Have you ever used any AI-based tools or services during your travels? Options: Yes; No; Maybe; I am not sure
22. What types of AI-based tourism services have you used or would you consider using? (multiple choice) Options: Travel planning, route recommendation applications; Accommodation or activity recommendation systems; Chatbots, virtual travel

assistants; Recognition of attractions, locations based on images; I have not used/would not use such services; Other

23. If you answered no to the previous question, please briefly explain the reason for not using or considering these services! Open-ended response
24. In your opinion, how can AI improve the tourism experience? (multiple choice) Options: Personalized recommendations, tips; Real-time information, updates; Faster, more efficient transactions, bookings; Interactive travel companions, guides; I do not know; None of the above; Other
25. How open are you to using personalized AI-based travel services in the future? Options: 1,2,3,4,5 (1=not open at all; 5=completely open)
26. Would you be willing to pay for AI-based services in travel planning? Options: Yes; No; Maybe; I am not sure
27. How much would you be willing to pay for AI-based services? (please provide a specific amount you would allocate for organizing a trip!)
28. How do you think AI will affect the future of tourism in the next 10 years? Options: Significantly reshape the industry; Bring about minor changes; Will not have a significant impact; I cannot judge
29. In which direction do you think this change will go? Options: More positive; More negative; Neutral; I cannot judge
30. What potential risks or disadvantages do you see in using AI for travel planning? (multiple choice) Options: Data privacy and security issues; Job loss; Dependency on technology; Lack of human factor; Algorithm biases; I do not see potential risks; I am not sure; Other
31. How do you think the role of travel agencies will change in the future? Options: 1,2,3,4,5 (1=will not change at all; 5=will completely change)
32. Do you think there will be travel agencies in the future? Options: Yes; No; Maybe
33. If there is anything you would like to elaborate on, you can do it here, and I would be very grateful for it! Open-ended question

B) INTERVIEW QUESTIONS

1. In your opinion, what are currently the biggest challenges facing the tourism industry globally and domestically?
2. What opportunities do you see for revitalizing tourism in the near future?
3. How have travel habits and trends changed in recent years, especially considering the impact of the pandemic?
4. What do you think travel will look like 5-10 years from now? What will be the main trends?
5. How prevalent is the use of artificial intelligence in the tourism sector globally and in Hungary (both from the consumer and provider sides)?
6. How do you think artificial intelligence will reshape tourism in the coming years?
7. In which areas do you see the greatest added value of AI in tourism?
8. Do you see any risks in the proliferation of AI in this area? If so, what are they?
9. Generally, how has the travel planning market changed recently, how much do people still turn to travel agencies, and what types of trips do they typically use them for?
10. How can AI assist travel agencies in creating personalized offers, packages?
11. What advantages can the use of AI bring to travel agencies in terms of efficiency and costs?
12. In your opinion, how will AI change customers' travel habits and expectations in the future?
13. How do you envision the role and competitiveness of travel agencies 5-10 years from now, considering the expected development and impact of AI?
14. In your opinion, what impact will the spread of AI have on the popularity of travel agencies? Will they expect fewer or more consumers?
15. If you have insight, how much do people currently use AI for organizing their travels?