

The dark side of artificial intelligence: threats to tourism workers

Dark side of AI

Handan Hamarat, Haydar Sahin and Ayşe Koç Apuhan
Bingöl Üniversitesi, Bingöl, Türkiye, and
Ramazan İnan
İstanbul Gelisim University, İstanbul, Türkiye

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Received 19 March 2024
Revised 20 March 2024
Accepted 21 March 2024

Abstract

Purpose – This study aims to conduct research by making use of studies investigating the negative effects of artificial intelligence on the future careers and work motivation of tourism employees.

Design/methodology/approach – In this research, a literature review, which is one of the qualitative research methods, was used. The study was completed by using a total of 13 articles and two book chapters investigating the negative aspects of artificial intelligence in the research data Science Direct and Web of Science databases as the main references.

Findings – In the articles examined as a result of the research, it was predicted that the entry of artificial intelligence into the tourism sector poses a threat to the future careers of many tourism employees, and this will cause tourism employees to lose their focus and motivation at work. Another conclusion reached as a result of the research is that many tourism workers will be unemployed in the future due to artificial intelligence-supported information systems and robots.

Originality/value – When the literature was reviewed, there was no research that directly examined the negative effects of artificial intelligence on tourism sector employees. Therefore, this research is unique and important in this respect.

Keywords Tourism, Artificial intelligence, Disadvantages of artificial intelligence, Dark side of artificial intelligence, Digitalization

Paper type Literature review

Introduction

Most definitions of artificial intelligence (AI) treat it as a subfield of computer science or in terms of how machines can mimic human intelligence (Tussyadiah *et al.*, 2019). Another way of defining AI depends not on its underlying technology but on its marketing and commercial applications (Davenport and Ronanki, 2018). Intelligence can be defined as the ability to solve seemingly complex goals, understand information with emotional content and adapt this information to logic (Tegmark, 2017). AI can be defined as a new trend that can perform many complex mathematical problems and algorithms and uses comprehensive and detailed computer-aided systems to perform them. This new trend can solve problems effectively and quickly and make decisions just as quickly (Akerkar, 2019). Human intelligence is inherently complex, broad and analytical in order to overcome challenges, solve difficult tasks and categorize them. When AI is examined, it can be categorized in three ways: narrow AI, which is designed to solve only certain tasks, general AI, which is close to human intelligence in terms of level and super AI, which has a capacity that can exceed human intelligence in every respect (Kurzweil, 2005; Wang and Goertzel, 2007; Bostrom, 2014; Tegmark, 2017). Different predictions are constantly being put forward as to the rate of progress of artificial intelligence, and it is predicted that if artificial intelligence progresses at this rate, a technological explosion that can replace human intelligence in the not too distant future will be encountered (Yeoman, 2012; Tegmark, 2017). Especially when the general situation and development of AI after 2020



are examined, it is evident that it has already taken its place and been adopted, including in business, tourism and the daily lives of individuals (Tussyadiah and Miller, 2019). Thanks to significant advances in robotics and AI, service robots and service-oriented automation have become a reality of human life (Ritzer, 2015; Talwar, 2015; Agah *et al.*, 2016; Li *et al.*, 2019). Built with technologies that have the potential to outperform humans in many manual and conceptual tasks (Brougham and Haar, 2018). In addition, there have been many additional AI applications that, have had a strong and wide impact on the daily lives of individuals and, especially, on the tourism industry. In the tourism industry, AI technology has been widely used in various hotel departments such as food and beverage, guest rooms and marketing. Developments in AI applications are growing day by day and provide significant benefits. As a matter of fact, it is claimed that thanks to the developments in AI, technologies that have the potential to outperform humans in many manual and conceptual tasks will be used as a more attractive option (Brougham and Haar, 2018). To illustrate this claim of the authors with the example of robot receptionists used in the hotel industry, considering that robot assistants can work 24/7 instead of receptionists working in hotels and that the employer does not have to pay taxes, it is clear which option is more economical for the employer when payments such as monthly working wage, pension, health benefits and other benefits are taken into account. The same can be attributed to driverless cars. This is because driverless cars will also be able to travel through the night while people sleep, putting pressure on the hospitality and airline industries. However, these developments are also associated with numerous negative impacts. People need to be mindful of the serious consequences of AI technology, such as criminalization and unemployment. There is also concern that AI could change human work modes. In addition to these negativities, it also includes the problems of employment uncertainty, which is an extremely negative business outcome and career uncertainty, which is a consequence of it. Employment uncertainty causes employees to experience a feeling of extreme insecurity in the workplace and becomes a problem that hinders their future professional development. The period we are living in is characterized by futurists as a new industrial revolution and predicts that one-third of the professions that are active today could be taken over by smart technology and artificial intelligence in the near future (Brougham and Haar, 2018). Fereidouni and Kawa (2019), in their study, *The Dark Side of Digital Transformation*, aimed to conceptualize digital colonialism, arguing that research on digital transformation in tourism has mostly focused on the benefits and application of AI technology, but structural dependency and data control have been neglected. He also argued that, due to gaps in regulations, large-scale entrepreneurs or companies that are the first movers in digitalization in the field of tourism dominate travel services and destination infrastructure. Although artificial intelligence technologies make human life easier, they will reduce the need for human beings as they can perform many jobs that humans do. Considering the current situation, it was deemed necessary to conduct an academic study on this subject.

The purpose of this paper is to contribute to the relevant literature by providing an overview of the disadvantages of AI applications used in the tourism sector for sector employees. For this purpose, in this paper, the effects of AI technologies on the unemployment concerns of tourism professionals who have moved away from their profession as a result of technological developments were investigated using the literature review method, one of the qualitative research methods. When starting the study, the keywords “artificial intelligence” and “disadvantages” or “employment” or “dark side” and “tourism” or “hotel” or “hospitality” or “entertainment” were written in the subject section of science direct and web of science. During the research, 13 articles and two book chapters addressing the disadvantages of AI were found. When these studies are examined, a significant number of studies (Zhang *et al.*, 2014; Grundner and Neuhofer, 2021; Li *et al.*, 2021;

Huang *et al.*, 2024) show that the disadvantages of artificial intelligence used in tourism and hotel businesses for consumers are certain. It has been determined that a number of studies (Gim *et al.*, 2015; Fereidouni and Kawa, 2019; Li *et al.*, 2019; Yanan, 2023) address the disadvantages of artificial intelligence for tourism employees. In the light of existing studies, first of all, a general framework was drawn about the AI applications used in the tourism sector and then the subject was tried to be explained under subheadings such as the negative effects of AI on the careers of tourism employees, its destructive power on organizational commitment and it is taking away of employees' jobs.

Uses of artificial intelligence in the tourism industry

Today, intelligent customer service, accurate information transfer, robot detection services and other methods have a great impact on consumer needs, preferences, decision-making and experiences (Ivanov and Webster, 2017). AI systems offer various services in tourism businesses increase the competition among businesses and serve as an important factor in attracting the attention of customers and being preferred. AI systems provide various services in tourism businesses, increase competition among businesses and play an important role in attracting customers' attention and choosing the business. AI is shaping the way we live by revolutionizing information technology. The working algorithm of AI technology has attracted the attention of researchers and has become a method applied to solve many problems in human life, especially engineering problems. For this reason, AI technology has started to be used in the field of tourism. Robotic systems and AI-supported applications mainly cover applications aimed at increasing the satisfaction level of guests in the tourism sector (Zhang *et al.*, 2014; Zlatanov and Popesku, 2019). The main AI-supported applications widely used in tourism hotel businesses are listed below:

(1) Reception/Online customer service

Tourism companies use AI-supported chatbot systems to make reservations quickly and interactively to ensure customer satisfaction and to respond to customers in a short time (Tussyadiah and Park, 2018; Ayşe, 2020).

(2) Personalized services

AI can detect what tourists want/object with the help of questionnaires or short answers and provide personalized services and recommendations in line with their preferences (Kwak *et al.*, 2015).

(3) Smart room systems

AI-supported tools are used to increase the comfort of hotel rooms. The relevant tools are smart room systems that can be controlled by voice command systems and can respond the needs and direct to the relevant units (Bahadır, 2021).

(4) Travel planning and security analysis

The AI-powered travel route planner is able to identify the best routes based on tourists' interests. In addition, potential security threats are identified by analyzing the data of the relevant travel route that the tourist wants to choose (Ribeiro *et al.*, 2019; Ammous *et al.*, 2020).

(5) Pricing strategy

AI-supported software tools can make vacation planning in line with the wishes of guests who plan to prefer the relevant tourism business and can also develop automatic pricing strategies based on demand forecasts and competitive analysis (Güneş, 2019; Singh and Kaswan, 2020). AI-supported services affect the service quality of tourism businesses with

applications that increase the satisfaction level of customers. For this reason, tourism businesses closely follow artificial intelligence applications and integrate AI-supported systems into their relevant departments. While artificial intelligence offers many advantages to the tourism sector, it also brings effects such as ethical issues, security problems and unemployment. In this context, some of the negative subdimensions identified from the studies examined are categorized and presented below.

Negative effects of artificial intelligence on the careers of tourism employees

Since the invention of the computer, one of the most anticipated and somewhat worrying issues is the possibility of machines achieving human intelligence (Bostrom, 2014). About 75 years ago, Alan Turing (1950) pointed to the possibilities we might face today with the question, "can machines think?" With his question, he pointed to the possibilities we may face today. AI is expected to solve some challenges in 2025, especially in tourism scenarios, and produce solutions to problems by solving complex structures that are difficult to solve by individuals. Especially when the three-dimensional intelligence stage of artificial intelligence (Bostrom, 2014; Tegmark, 2017) is examined, it will enable different developments and futures in the tourism sector as well as in many other sectors (Doorn *et al.*, 2017). With the development of AI, it is emphasized that people are worried that artificial intelligence will be adopted too much in the future and even exceed human intelligence, especially with the destruction of some values. Although it is obvious that artificial intelligence is created by human hands, it is still unclear how intelligent AI will be and how much it will be able to improve itself and learn information. The relationship of artificial intelligence with tourism depends entirely on tourists (Grundner and Neuhofer, 2021). AI aims to give manmade machines human characteristics such as thinking, arguing and learning over time. This means that in the future, machines managed by AI will be able to do the current job of an actively working human being and replace him or her, which is harmful for many sector workers and leads them into uncertainty (Brougham and Haar, 2018). If the general level of AI completes its development correctly and has the ability to imitate a human's capacity, it will produce more value and take more place in human life (Wang and Goertzel, 2007). Lee (2016), in a study on Singapore, predicts that computerization will destroy a quarter of employment, especially in tourism. Frey and Osborne (2017) estimate that AI will put 47% of US workers out of a job in the not too distant future. He emphasized that many hotels, restaurants and tourism-related companies have adopted AI to reduce costs and provide faster, more efficient and more beneficial services (Ivanov and Webster, 2017). Even if AI does not have the characteristics of being human due to its biological structure, it can perform many actions that a human can do. In connection with this, it is predicted that artificial intelligence will be able to learn on its own and improve what it learns in the future (Koski and Backlund, 2017). Brougham and Haar (2018) concluded that many tourism and other sector workers are aware of this fast and efficient learning situation and that this situation worries them about their future jobs and career positions. Regarding career uncertainty, Hirschi (2018) made the following prediction, while unskilled jobs are more vulnerable to AI, skilled jobs are stronger because they anticipate what will happen and follow the system.

The disruptive power of artificial intelligence on organizational commitment

Organizational commitment can be defined as the degree of support and respect that employees receive from the institutions or businesses they work for and the well-being and interests of employees in their workplaces (Rhoades and Eisenberger, 2002). The appropriate and hedonic use of AI is rapidly adopting AI and the conveniences it brings with it, revealing different typologies of AI while providing services to customers in the fields of hospitality

and tourism (Davenport and Ronanki, 2018; Huang and Ruš, 2021). On average, AI is divided into three types: those that can perform simple pre-programmed tasks, those that are well-designed and progress systematically, those that can perform even complex tasks and those that interact with humans and sense and respond quickly to many social, emotional, communicative and cognitive tasks. Customers, on the other hand, are not selective in their categorization of AI but generally see it as a holistic-utilitarian concept that is useful to them and produces quick solutions (Li *et al.*, 2021). Many hotel operators and tourism stakeholders who want to increase the popularity and recognition of their brand value have started to use AI-powered intelligent robot concierges to serve customers in areas that a human can do, such as lobby, baggage handling and storage, front desk, room service, indoor and outdoor pools and food and beverage service in hotel restaurants (Huang *et al.*, 2024). Intelligent robots powered by AI can check in, check out and communicate with customers thanks to their communication skills and some robots can even record their previous interactions and respond accordingly in order to produce more useful solutions to some customers' problems and questions. These are virtual assistants and chatbots in hospitality and tourism (Huang *et al.*, 2024). While these developments produce very useful and practical solutions for humanity and technology, they also signal that tourist guides, lobby, front desk and restaurant workers may be in jeopardy in the future, if not now. While many applications in today's conditions and before were done by assistants and customer representatives providing online services in the form of direct messaging or communication, today, AI-supported chatbots both communicate with customers and respond to their requests and complaints. They can also perform complex tasks such as ordering services, making reservations or recommending new destinations through online applications. This has led to increasing adoption and interest in hospitality and tourism by consumers and tourists as well as relevant authorities (Saydam *et al.*, 2022). These examples show that AI reduces the need for human labor and poses a threat to many business lines in the future. Li *et al.* (2021), especially in the context of the COVID-19 pandemic, discuss four different characteristics of AI-enabled experiences: AI-enabled services, AI-generated services, AI-mediated services and AI-facilitated services. These features of AI that facilitate human life and experiences have become more widespread during and after the COVID-19 pandemic, when people were locked at home and it became difficult to receive services from individuals and replaced humans in business lines. Floridi *et al.* (2018), while highlighting the positive aspects of AI, mentioned a promising future but emphasized that this is not enough and that both the bright and dark sides of AI need to be addressed in detail. Tussiyadiah and Miller (2019) argued that the negative progress of technology can lead to cyber wars, many technological barriers and the destruction of values. When these studies are taken into consideration, it is seen that it will negatively affect the sincere loyalty of tourism employees and other sector employees to the organizations they work for and will completely destroy them after a while. Camilleri and Neuhofer (2017) argue that it is therefore imperative to draw attention to all the positive and negative consequences of AI, especially to recognize that it can add value to tourist destinations as well as devalue them. Again, this study warns about the weakening of the commitment of tourism employees and other sector employees to the organization.

Artificial intelligence taking over human jobs

AI technology, especially in the recent period, creates a high degree of anxiety and turnover intention in employees because it perceives people's working areas and professional knowledge in a wide range and can produce solutions (Yanan, 2023). Yeh *et al.* (2020), in their study to answer the question "Will AI take over human jobs?", found that there will be bad consequences such as unemployment, technology having control over people and increasing social polarization. The authors also optimistically state that AI is still developing at the

moment and that they trust human intelligence to guide it in the right direction, as its future development is in human hands. Based on the hypothesis that when artificial intelligence technologies erode the professional knowledge of employees, employees will feel highly anxious and develop turnover intentions, surveyed 628 employees and managers of 28 luxury hotels in China. At the end of the study, a positive relationship between perceived organizational support and turnover intention was discovered. The study also found that when hotel managers, faced with the threats of AI to employees, provide organizational support to their employees, especially in the areas of finance, career and compliance, employees perceive AI as a threat and develop turnover intentions.

Especially in the last decade, there has been a significant increase in research and studies on AI applications, and the impact of AI technology on both individuals and businesses has begun to be investigated (Budhwar *et al.*, 2022). AI technologies have been widely used in various departments of hotels, including catering, marketing systems, guest rooms, lobby, front desk and reception. For example, The Wynn Las Vegas and Aloft hotels have installed virtual assistants in the rooms to respond to the needs of guests more quickly and guests can quickly tell their needs thanks to these virtual assistants (Ouchchy *et al.*, 2020). Although the benefits of new technologies to society are only considered in terms of benefits, they are also a source of concern. People are concerned that AI may create a moral vacuum, damage ethical values and create unemployment today and in the future. These concerns bring with them a negative report among employees in workplaces; they cause employees to feel extremely insecure and in danger in terms of employment in the face of the rapid advancement of AI in workplaces where they previously felt safe and belonged and negatively affect or even prevent their future career plans (Brougham and Haar, 2018). Especially today, when working environments are under some sources of stress and pressure, employees who have to struggle with the power of this technological advancement feel psychologically under great threat due to the fact that the information they have previously mastered and acquired through hard work is eroded by technology and their professional knowledge is uploaded to a robot with a button, which causes anxiety, sadness, psychological problems and even inextricable depression over time (Mantello *et al.*, 2023). Many studies have shown that the use of advancing technologies and the rapid employment of these technologies in every field create employment uncertainty for real working individuals, which leads to high turnover intentions (Khaliq *et al.*, 2022). People's turnover intentions are high because it is another human who decides this again because people prefer AI technology to human beings and some of the reasons for this are that AI is thought to be faster, more stable and fairer (Bankins *et al.*, 2022). According to the technology threat avoidance theory, as long as many companies continue to incorporate AI technology into their companies and work environments at this rate, it is predicted that potentially many employees will transfer their line of work to AI and the assistant robots that work with it (Liang and Xue, 2009). While the negative effects of AI on employees continue, it is related to the level of support of the hotel or business of the relevant organization that the employees stay in the company and continue with the same motivation and their organizational commitment to the organization remains at the same level as before.

Conclusion

This paper contributes to revealing the disadvantages of artificial intelligence applications used in the tourism sector in terms of employees. There are many studies in the literature on AI in terms of both practitioners and users. When the studies on the disadvantages of AI in terms of employees were examined to form the basis for this study, it was determined that the relationship between AI eroding the professional knowledge of tourism employees and turnover intention (Yanan, 2023), the relationship between organizational support and

turnover intention (Li *et al.*, 2019), the potential effects of AI for tourism sector employees and managers (Kong *et al.*, 2021) and the relationship between the use of tourism destination data resources and digital colonialism (Fereidouni and Kawa, 2019) were examined. In light of the existing studies, it tries to explain the negative effects of AI on the careers of tourism employees, its destructive power on organizational commitment and the employees' loss of jobs.

AI applications can now be a good investment option for many businesses to reduce labor costs and increase their competitiveness in the sector. Considering that AI applications, which will continue to become more advanced and autonomous in parallel with the developments in technology, will be accessible at more affordable prices in the future, it seems inevitable that it will be the biggest investment area. In addition, the fact that it is faster and more reliable than employees is an important reason for the employer to choose it. However, the use of AI technology in this competitive working environment inevitably causes employees to compete with each other for recognition, bonuses and promotions (Li *et al.*, 2019). As a matter of fact, today's employees face a great deal of pressure due to constantly evolving technology, despite its numerous benefits. AI plays a key role in a number of innovations and applications in the tourism sector, profoundly changing the tourism and service experience (Xiang, 2020). In other words, AI technology, which provides multifaceted benefits to the tourism industry, is becoming a looming threat to them (employees). While employees have to endure the usual pressures of their daily work in a routine work environment, they are also struggling to learn how to use new technological devices. As emerging technologies erode employees' original professional knowledge, they feel psychologically threatened, leading to anxiety, sadness and even depression (Brougham and Haar, 2018; Li *et al.*, 2019). The higher the organizational support, the higher the retention and loyalty of hotel employees and other company employees alike (Wang and Wang, 2020; Chung *et al.*, 2021).

AI can have a negative impact on employees, but it can also have a negative impact on guests. Guests going on vacation may want to know more about many topics, such as the lifestyles and cultures of local people. At the same time, they may want to benefit from the experiences of local people and may even want to take part in these experiences. When AI cannot replicate these experiences, it can negatively impact guest satisfaction. As a result, it can negatively affect guests' next destination choices and revisits.

As a result, the increasing trend in the use of AI in the tourism sector is manifested in employment uncertainty and higher turnover intentions among employees (Yanan, 2023; Khaliq *et al.*, 2022). Another paper examined the potential effects of AI on tourism sector employees and managers (Kong *et al.*, 2021). Another study examined digital transformation in terms of digital colonialism using data sources from tourism destinations (Fereidouni and Kawa, 2019). In another paper by Li *et al.* (2019), it was found that when organizational support to employees decreases, turnover intention also strengthens, so employers in the tourism sector should provide support to their employees to encourage them to work more efficiently. In this case, employees will feel more appreciated and valued, which will increase the motivation of tourism employees to cope with AI. When these studies were examined, it was determined that a significant number of studies (Zhang *et al.*, 2014; Grundner and Neuhofer, 2021; Li *et al.*, 2021; Huang *et al.*, 2024) addressed the disadvantages of AI used in tourism and hotel businesses in terms of consumers and a certain number of studies (Gim *et al.*, 2015; Fereidouni and Kawa, 2019; Li *et al.*, 2019; Yanan, 2023) addressed the disadvantages of AI for tourism employees. It is an inevitable fact that AI technology poses a danger to tourism workers such as tourist guides, lobby staff, front desk and restaurant workers. In addition, employees who do not receive adequate feedback on organizational support after the paper conducted in many hotel businesses show intention to leave their jobs, which is an example of the destructive power of AI on organizational commitment. New skills

can be acquired by creating training programs to ensure that employees in the tourism sector are compatible with technological developments supported by AI. By creating a new business model by combining AI technologies with human skills, speed and quality can be combined in the service to be provided. In addition, instead of using AI technologies that cannot fulfill the tasks requiring emotional intelligence as desired, employees in the tourism sector should be encouraged and brought to the forefront of these tasks.

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Corresponding author

Handan Hamarat can be contacted at: hhamarat@bingol.edu.tr