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DISSERTATION THESIS

**ARTIFICIAL INTELLIGENCE AND THE INDUSTRY OF HOSPITALITY
AND TOURISM:THREATS AND OPPORTUNITIES**

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I hereby declare that the work submitted is mine and that where I have made use of another's work, I have attributed the source(s) according to the Regulations set in the Student's Handbook.

Abstract

Technologies are part of everyday life in a variety of ways. Every innovative idea or achievement directly affects all branches related to man. They could not miss the hospitality and tourism industry, which is directly linked to the achievements of technology and beyond. The technologies that are in line with the hospitality models are varied, their offer in the tourism industry is increasing, of course increasing the demands of the consumers for more. Their application has already started and will be analyzed through examples and research is being done for the next stages. But there is a general concern, both from the brains of the ideas and from the consumers themselves, about whether these technologies are compatible with the whole. The conclusions come to answer the questions and resolve the doubts that have arisen.

Key words

Artificial Intelligence, machine, tourism, hospitality, e- tourism, digital age

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Table of Contents

Abstract.....	1
Acknowledgements.....	1
Introduction.....	4
Chapter 1 st : Artificial Intelligence- Machine Learning and Tourism Industry.....	6
1.1. Artificial Intelligence.....	6
1.1.1. Forms of AI.....	7
1.2. Machine Learning.....	7
1.3. AI Systems and their use in Tourism Industry.....	8
1.3.1. E- tourism.....	9
1.3.2. Personalized- Recommender AI Systems.....	11
1.3.3. Conversational Systems.....	12
1.3.4. Forecasting.....	12
1.3.5. Language Translation Applications.....	13
1.4. “Smart” Hotels.....	13
1.4.1. Disadvantages.....	14
Chapter 2 nd : Artificial Intelligence: Opportunities and Risks.....	16
2.1. Artificial Intelligence SWOT analysis.....	16
2.1.1. Advantages and Disadvantages of AI technology in Tourism industry.....	18
2.2. Impacts of AI Technology on Hospitality.....	20
2.3. Challenges in Travel industry and Tourism.....	21
2.3.1. The replacement of employees.....	21
2.3.2. Ethics and Biases in AI.....	24
Chapter 3 rd Methodology.....	24
Purpose and research questions.....	25
Research approach.....	25
The research tool.....	26
The research sample.....	27
Chapter 4 th Data Analysis	28
Demographics.....	28
<i>Diagram 1 The gender of the participants.....</i>	28
<i>Diagram 2 The age of the participants.....</i>	29

<i>Diagram 3 Position in the company</i>	29
<i>Diagram 4 Years of service in tourism sector</i>	30
<i>Diagram 5 Years of company's operation</i>	31
<i>Diagram 6 Company's staff</i>	31
Use of technology and artificial intelligence.....	32
<i>Diagram 7 Use of technology</i>	32
<i>Diagram 8 Benefit or the company from the use of technology</i>	33
<i>Diagram 9 Use of Artificial Intelligence</i>	34
<i>Diagram 10 Customers and smart hotels</i>	36
Chapter 5th: Discussion.....	41
5.1. Future Research.....	41
5.2. Future development.....	41
5.3. Conclusions.....	42
References.....	46

Introduction

Experiencing the rise of the digital age, in which the Internet is the dominant medium, all sectors of the production process and services are trying to integrate new technologies in the producer-consumer relationship and to adapt to the new order of things, where digital tools are necessary. Innovation is increasingly playing its role in services (Miles, 2001) and is certainly very significant for the Tourism Industry (Hjalager, 2002). Tourism is a convoluted activity, as it includes all activities related to meeting the needs of tourists and these vary varying on the profile of each tourist. Products aimed at tourists are complicated and diverse, while they are a combination of elements, separated in time and space (Boiano et al., 2019).

According to the initial literature review, Artificial Intelligence in a newly-established innovation that applies in many sectors of Businesses, in forms of chatbots, machine learning, recommendation platforms, personalization of the UX (user experience) etc. AI made its debut in 1956 by John McCarthy. It can be described as *“development of computer systems that can perform tasks and activities which require human intelligence”* (Russell and Norvig 2016). As an innovative model, AI not only has entered various sectors of the economy and production but has also shifted the way these Industries function. According to statista.com, it has optimized the performance and service delivery. With regard to the sector of Tourism, AI was welcomed from the very beginning and made processes more automate rather than manual and time- consuming. According to Beerli and Martin (2004) sectors that are affected are the Human Resources, Tourist Infrastructure, Destination Tourism and the Hospitality services in general. The applications of AI in Tourism can take a wide range of forms, such as Facial recognition in check- ins that can save much time and make procedures less disturbing (Patel, 2018). Another application is Virtual Reality (insofar VR) that according to Guttentag (2010) stimulates environment digitally through a headset. In this way, customers can feel welcome in the hotel long before their arrival in a virtual tour and feel the ambience of the Hotel and facilities. Chatbots accordingly to the way they function can be divided into text-based or voice-based. According to Boiano (2019) are easily accessible 24/7 and assist tourists in the overall procedures,

from the time they book a reservation to their check-out or even at time they have inquiries. There are also AI applications such as voice translators or even robots that can serve as employees.

The aim of the following work is to research, identify and discuss the role of AI and Robotics in the Hospitality and Tourism Industry On one hand, the use of numerous technologies is integrated to improve the overall experience. However, on the other hand, all these innovations are introducing various fundamental changes in the core and structure of the industry.

Chapter 1st : Artificial Intelligence- Machine Learning and Tourism Industry

1.1. Artificial Intelligence

Artificial intelligence (AI) is based on big data processing, the ability to process and manage algorithms. All three of these features of artificial intelligence have evolved considerably in recent years. Initially, the evolution of algorithms has shown great progress. Secondly, significant developments are those that have taken place in the field of big data processing. Finally, in the case of big data, new and more potent sources of information and structures have been developed, which facilitate the storage and processing of large volumes of data. These developments, consequently, have given rise to remarkable advances in artificial intelligence systems (Li et al., 2019).

Artificial intelligence systems and applications are proving to be extremely important to the tourism industry for plenty of reasons. Tourists, before coming up with a tourism product, will have to make several decisions for future travel, as the place of destination, transport means, lodging and events. These choices will have a substantial effect on the pleasure of tourists during their journey. Demanding with a product is an exceptionally complicated procedure that seems to fit well with the skills of AI. Once tourists arrive at their destination, they must tour the sphere of the unknown, which is distinguished by various customs, languages, cultural forms, and cuisine, among many other features that may be unusual to them. Artificial intelligence can also be helpful with organizations, in order to customize their experiences to fit well with their touristic needs. Artificial intelligence is commonly defined as *“a set of technologies that can mimic human intelligence in the problem-solving process”* (Lai & Hung, 2018, pp. 18).

1.1.1. Forms of AI

The field of artificial intelligence has undergone significant development in recent years (Buhalis et al., 2019). According to Buhalis et al. (2019), although at the beginning of its development, artificial intelligence was defined as a form of intelligence, it is now considered to have the ability, with the appropriate data, to be able to function independently (Sterne, 2017). We are in an age when artificial intelligence systems could surpass human intelligence, which is characterized as a "technological peculiarity" (Kurzweil, 2005).

According to Hintze (2016), there are four types of AI. The first type is mechanical AI. "Deep Blue" AI system is the best case of mechanical AI. The second type is controlled memory AI, which has selective memory. An example for this type is the way a self-driving car considers the items around it. The third type is the theory of mind. These are machines of AI that can signify other kinds of things and their feelings, which would allow the machines to interact socially. The fourth type is AI with self-awareness or perception (Buhalis et al., 2019).

Both Buhalis et al. (2019) and Hintze (2016) agree that the present risks with AI are in the fields of developing artificial intelligence's recall, improving the ability to use previous memories and experiences to make better decisions, and developing the capability to sort out sentiments and instincts (Gretzel, 2011). Surpassing these four types of AI is the notion of "superintelligence" (Bostrom, 2016). Superintelligence is described as "machine intelligence" that transcends common human intelligence.

1.2. Machine Learning

Machine learning is defined as a vital part of artificial intelligence systems. Machine learning consists of a number of algorithms. Through these algorithms, machines are trained, through the repetition of certain processes and by receiving feedback on their effectiveness in these processes. This feedback comes either from humans or mechanically, through the observation of the results of past processes.

Mechanical training is carried out mainly with the help of a large volume of data, thus allowing the algorithms to become more efficient at a faster rate. For

instance, a machine can learn the way to choose the finest image from a collection of comparable images of a travel memory. After spotting if the client is dealing with this chosen image or album, the machine can enhance the selection process for future use. There are many uses for machine learning in tourism, which are usually combined with other sets of algorithms or functions: forecasting, translation, weather forecasting, emotion analysis, fraud prevention, and image and video recognition (Ma et al., 2018; LeCun et al., 2015).

Machine learning faction is based on “Neural networks”: *“Neural Networks are a group of techniques that can be used for machine and deep learning. Thus, neural networks are a form of deep and machine learning”* (Claveria et al. 2015, pp. 32). Artificial neural networks are systems of normal modeled neurons, each of which imitate a human neuron. The principle of neural networks is as the scope of connected neurons similar to these of humans (approximately 10¹¹), artificial and natural systems can perform similarly (Claveria et al. 2015).

1.3. AI Systems and their use in Tourism Industry

Artificial intelligence systems have numerous purposes in tourism industry. From the customer`s point of view, AI supports users to discover more efficient and more appropriate information, gives them superior flexibility, improves their decision-making, and, eventually, gives a better tourism experience (Gretzel, 2011; Tussyadiah & Miller, 2019). AI can be used in almost every aspect of administration (Buhalis et al., 2019), particularly in marketing, advertising and efficiency (Tussyadiah & Miller, 2019). Artificial intelligence is also supposed to promote more sustainable travel (Tussyadiah & Miller, 2019), by motivating customers to have a more social and environmental viewpoint.

In general, AI systems in the tourism industry can be separate systems or rooted in current applications and systems. These systems contain recommender systems, personalization systems and techniques, casual systems (chatbots and voice assistants), estimating tools, independent agents, language translation apps, and smart tourism destinations.

1.3.1. E- tourism

E-tourism is the digitization of all processes and value chains in the tourism, travel, hospitality and catering industries, which allow organizations to maximize their efficiency and effectiveness (Buhalis & Licata, 2002). E-tourism includes all business functions, such as e-commerce and marketing, e-commerce, e-accounting, etc. The new e-services have affected all sectors, some less and some more. The tourism industry is one of the industries most affected by the Internet and the digitization of services, due to the complexity that characterizes it.

Until recently, there was no volume of information available today, nor the ease of access to information using smart phones and tablets. Today, many new online services are flooding the market and meeting a wide range of consumer needs. The most popular of these are:

- e-shops.
- e-magazines.
- Online platforms (Expedia, Booking, TripAdvisor, etc.).
- Specialized search engines.
- Mobile Applications.
- Electronic trading portals (Pay Pal, etc.).

1.3.1.1. *Mobile tourism (M- tourism)*

The term "mobile tourism" or mobile tourism, is the new big trend in the tourism industry. It is an evolution of "e-tourism" that we mentioned in the preceding section. In the current digital age, tourists can make a digital trip before visiting the destination that interests them. Eventually, this is possible through the mobile platforms and applications of the Internet.

Mobile services (m-services) are the new arena of research and development in tourism marketing. The use of mobile devices, mostly mobile phones and tablets by large population groups, is the most prevalent trend of the last five years and has underlined the need to stimulate marketing strategies concentrated on wireless

mobile devices. The growing reliance of consumers on mobile devices confirms that the future lies in small, easy-to-use, and wireless mobile devices. Research related to mobile services confirms that consumers consider mobile to be a better medium compared to conventional wired devices for navigating social networking services, and services related to e-mail or news (Kourouthanassis et al., 2010).

M- tourist services have certain features. A key feature is that there is no limit to time and space (Balasubramanian et al., 2002, Kalakota & Robinson, 2002). Also, the user of mobile services originates greater utility, due to the personalized - personalized service, which takes into consideration the needs of each customer and its geographical location (Siebel, 2001). Other characteristics of m-services are the freedom of development due to comfort, the ease of development and access of these devices, the security of online transactions and the availability of advanced digital services. In addition, the sharing of information in user contacts becomes easier, mainly due to social networks but also the exchange of data is achieved just as easily, not only through text but also through photos and videos which is very popular in the tourism industry.

Mobile services have acquired a key role in the operation of businesses. That is why all business departments, especially marketing and management, have adapted to the new data, integrating mobile services, and adapting their business strategies to the use of "smart" devices. In addition, the digitally mature generations that will be the buying public of the future are particularly familiar with these devices.

The use of wireless platform technologies for tourism services is an example of personalized service and a very critical factor for the provision of quality services. Such services and applications, we observe mainly in the promotion and management of alternative forms of tourism, in applications used during the city tour in the form of a mobile guide, in branding destinations and in general in the whole range of digital mobile marketing (m-commerce).

State-of-the-art mobile devices are leading society to new consumer patterns, with the Internet as the dominant medium. Businesses and consumers think and act

in a different way than in the past and this is mainly due to this factor. The use of these devices is expanding rapidly. By 2019, "smart" devices and connections through mobile applications had represent 97% of global data traffic through mobile networks and users will reach 5.2 billion worldwide, which corresponds to 69% of the global population (Cisco, 2014 - 2019, Visual Networking Index).

Regarding mobile commerce, which is defined as any deal involving economic value and carried out through a mobile telecommunications network, lies in the use, application and integration of wireless telecommunications technologies and wireless devices within in business systems. The differences between e-commerce and mobile commerce vary and relate mainly to the ease of use of mobile devices, as opposed to desktop and wired devices. In mobile commerce in particular, businesses focus on services, as opposed to e-commerce that focuses on products. Access is achieved wirelessly and, on the go, while the data is dynamic depending on the user's location. In e-commerce, there are static data and stable access (Kannan & Bernoff, 2019).

In conclusion, regarding "mobile" tourism, the main issues that have been researched so far are the design of interactions from the use of mobile devices and the inherent concerns such as usability, accessibility, and the search for the perfect ubiquitous system (Bortenschlager et al., 2010; Canadi, Höpken, & Fuchs, 2010; Beca & Raposo, 2013).

1.3.2. Personalized- Recommender AI Systems

Recommender systems are devices and systems customized toward giving travelers choices that best fit their interests (Ricci et al., 2015). Typically, recommender systems go with the qualities of available options with user profiles in order to make suggestions about the most appropriate options (Gavalas et al., 2014).

"Personalization techniques try to provide users with customized information based on their preferences and restrictions" (Gao et al., 2010, pp. 8). Therefore, personalization procedures suggest companies switch from marketing to many, to

marketing to one. Personalization procedures need big amounts of data about user behavior, so that a precise profile can be identified.

1.3.3. Conversational Systems

Conversational systems permit customers to contribute in a discussion which is normally related to data search. These conversations can reach over a long period of time and contain numerous processes (Gretzel, 2011). Conversational systems are occasionally described as “chatbots” or “virtual agents” (Buhalis et al., 2019). They use technology systems such as “speech recognition” and are presently prevalent (Melián-González et al., 2019).

1.3.4. Forecasting

Forecasting is a method in which historical and circumstantial data is used to make assessments about the future, based on existing trends. In the tourism sector, forecasting can be used to appreciate tourist order (Buhalis & Leung, 2018), to improve marketing strategies, for financial and human resource management issues (Claveria et al., 2015; Huang, 2014), to recognize scams in restaurants, and to support the management of facilities and maintenance needs (Buhalis & Leung, 2018).

Though, the use of AI must be treated wisely, since the results of AI methods have been mixed. On the one hand, Yu and Schwartz (2006) found that convoluted models are not more accurate than simple, typical models. Claveria et al. (2015) had more promising results, although the quality of the forecasting results with neural networks was severely lessened by the degree of preprocessing. On the other hand, several studies have found that AI methods had better forecast precision. For example, Sun et al. (2019) used machine learning to forecast tourist arrivals, neural networks for a related purpose, and Huang (2014) also used neural networks to forecast alternative order.

1.3.5. Language Translation Applications

Tourism industry normally includes communication with various languages. Though, language has been found to be one of the major barriers that tourists face when travelling, as irritation and anxiety. In many instances, language barriers also stop tourists from discovering the local culture, as they stick known brands while in a foreign country. As personalization can assist tourists discover new places, automatic translation can help the tourists' routing of the destination, allowing them to discover and engage in all sorts of activities. Artificial intelligence that is enabled by machine learning and it improves the progress of automatic translation apps and harmonized translation systems (Benckendorff et al. 2019).

1.4. "Smart" Hotels

A new category of hotels that is taking up more and more space in the tourism and hotel industry are the so-called Smart Hotels. A specially designed room that is for the visitor a smart assistant who will recognize needs - many times before the visitor. The specially designed concept room of the smart room stands out for the feeling of the union of the exterior and the interior, thus giving the opportunity to the suite to be in perfect harmony with the environment. All new technologies and the latest automation are used in combination in the innovative suite - room, aiming at the best experience of hosting guests. HI-TECH Mini bar and TVs, welcome scenario, departure scenario, sleep, etc. to properly adjust the lighting, temperature, curtains and roller blinds to any occasion, voice control of the room, but also the facilitation of operation and accommodation management for entrepreneurs (energy saving systems and integrated solutions to reduce the initial investment capital and operating costs of the hotel facility) have created a hospitality experience from the future (Pavel & Bures, 2009; Buhalis et al., 2019).

The new full digital hotel is automated. The guest can manage all the comforts of the room through a special application that he will download on his mobile phone or through the tablet that is available in each room. In fact, for his stay in the new smart hotel, no real key is required since the check-in process is done electronically, without waiting at the reception. The guest then receives an electronic key as well as

instructions for access to the hotel and his room. During their stay in their high-tech and modern design room, guests can adjust the heating, intensity and color of the lighting, the alarm clock, the TV and even the opening of the curtain through their mobile phone. In addition, they can enjoy their favorite series on their LCD TV lying on their square and no longer rectangular bed (Laurent et al., 2015).

1.4.1. Disadvantages

Thus, there is a “dark side” to a room so smart that it knows what you are going to do. The types of sensors that are installed are incredibly invasive in terms of privacy. More specifically, regarding the bed that has sensors that know in real time when you got up, it is an original and a real project that has been made in a laboratory. The company can even collect sleep data using these sensors, allowing the customer to know when he was completely rested, when he was restless in his sleep, etc. Also, each bed with this sensor will know how often the customer is in it and what does.

With the daily erosion of privacy by social networks, navigation applications, smart TVs it is normal to have something that makes anyone feel weird and compare it to a kind of "watching". At some point, we all start navigating these "unknown waters", where we initially say we are not going to stir and what changes is when the comfort factor outweighs the strange sensation. It may not seem like it, but sensors that can show how many people are in the room are critical to the energy-saving goal of new technology. It is possible to obtain these components with new electrical switches and sockets that cost just a few dollars more than standard switches and can be connected to all wireless standards, from Bluetooth to Zigbee to plain radio frequency. There is now technology, which can use radio frequency to see through walls, and create a network of motion detection "eyes" in a hotel room that can tell exactly how many people are in it, and where, at any given time (Laurent et al., 2015; Buhalis et al., 2019).

There are all kinds of privacy issues and things that need to be considered before we move on to anything innovative but explore it as a technology. The consequences could be described as frightening and impressive. For example, it could provide hotels with an anti-trafficking tool (merchants would rent a room and then seat up

to twelve people in it) or help the hotel balance climate control in a more balanced way.

Chapter 2nd : Artificial Intelligence: Opportunities and Risks

2.1. Artificial Intelligence SWOT analysis

Because of the freshness and trendiness of AI attempts in the age of technology, it seems important to advocate a practical strategy to embrace it in tourism and hospitality industry.

Strengths are internal features and qualities that are the advantages of implementing AI technology in hotels. Weaknesses illustrate the disadvantages that might occur when using AI technology. Opportunities are outer qualities that AI technology could provide for the growth of the hotel. Threats are also outer qualities that the hotels should be concerned about and/or deal with in case of instinctive cases (Parsons, 2018.)

There are positives and negatives of implementing AI in hospitality and tourism sector. The advantages are the reduction of employment, increase of service speed, increase handling, minimize waiting lines and improve access. In the meantime, the disadvantages could be absence of human interaction, technology inexperience and complications in managing errors when arise (Bagdan, 2013).

Similarly, implementing AI in hospitality and tourism industry provides remarkable opportunities but also threats for both tourists and businesses. Threats worth stating are absence of job opportunities for people (Davenport, 2018), AI might take over the world (Pegasystems, 2019), customer data safety (Woolley, 2019) and environmental affects. Based on a survey performed by Intel and Concentrix, *“Artificial Intelligence is agreed by almost three quarters of company-decision makers (74%) to be a powerful tool in dealing with environmental challenges. Scientists have discovered the real potential of AI in land, air and water environment.”* (Vox Creative, 2018).

Although the immense implement of AI with no viable approach could lead to making too much energy into the immediate environment (Lu, 2019; Ekin, 2019). Moreover, according to Bill Gates, *“Artificial Intelligence is similar to nuclear energy that is both promising and dangerous.”* (Clifford, 2019). Despite all the threats though, the way people use AI technology is more valuable than how risky or promising it is.

Some of the opportunities of it could be fostering automated machines as human helpers in the sector as well as offer a great solution for mass tourism places. Other opportunities would be to promote sustainability, increase safety and security. Furthermore, the progress of technology and Artificial Intelligence might have positive impact on every introvert customer who does not feel relaxed intermingling with other people.

In general, every new strategy or application in organizations will contain strengths, weaknesses, opportunities, and threats. It is very difficult to escape from challenges and risks, particularly when at the same time they offer great revenues. Realizing these aspects in a business sector would help to build a suitable approach for upcoming development.



Figure 1. SWOT Analysis AI.

2.1.1. Advantages and Disadvantages of AI technology in Tourism industry

As in any phenomenon, so in the phenomenon of tourism when it is combined with technology, there are both positive and negative aspects. So far, more emphasis has been placed on the positive impact of tourism technology. Through statistics, applications and analyzes, the technological steps that affect the tourism industry show auspicious. However, the opposite approach also needs to be considered. Can technology be harmful to the tourism product? Below are some of the advantages and disadvantages of tourism technology in a nutshell.

Advantages of technology in tourism for consumers

- Global, complete and direct information about each destination and everything it entails
- Ability to end a travel experience at the last minute
- Ability to exchange feedback with a company or other user - consumer
- Overview of accommodation, attractions or other tourism businesses
- Ability to book at any time in most destinations
- Personalization and planning of the ideal trip with a variety of tools for the best possible travel experience
- Save time
- Save money
- Virtual tour of each destination
- Avoid destinations or businesses that have been shown to be uninteresting by other users
- Ability to easily and immediately cancel or reschedule the trip or part of it

Advantages of technology in Tourism for the companies involved

- Acquisition and expansion of reputation and customer base either through direct promotion or collection of positive reviews and reviews
- Expanding the position of a tourism company in national and international markets as it can easily and quickly reach more and appropriate business partners.
- Direct travel providers can now sell products and services directly to the customer via the Internet, without the use of any intermediaries.
- Possibility of promotion even in small companies
- Adoption of promotion and advertising strategies in modern, direct and more personalized means
- Saving time for the implementation of any marketing strategy
- Collection of data from the Ability to continuously monitor direct competitors in terms of customer strategy they follow
- Controlled supply and demand based on seasonality, supply and socio-political conditions at a particular time

Advantages of technology in tourism for the state and local communities

- View destinations that were not always known for their tourism interest
- Economic development of smaller societies
- Creation of new jobs (directly and indirectly related) In tourism)
- Increasing local consumption - financial

support of cooperatives and local associations • Creating new tourist attractions such as museums, galleries • Creating new businesses (directly and indirectly related to the city) • local products through internet promotion and trade development • Financing and upgrading of areas in order to become desirable tourist destinations • Increase of local means of public transport • Increase of the the wealth of each destination • Development of medical infrastructure (Buhalis et al., 2019).

Disadvantages of technology in tourism are: • Misinformation - deception by virtual reviews and reviews • Increased cost of holiday booking due to online travel fees agents. • Many consumers prefer face to face transactions. There is a lack of human contact and feeling on the Internet. Some customers prefer to arrange their trip with the travel agent, maintaining eye contact with him. Eye contact inspires more security and confidence. • Fear of technology. For many consumers, technology and automation are an unknown object, especially in countries such as Greece, which does not directly and universally adopt technological innovations. • Greater risk of money laundering when using credit cards online or in local communities with high crime rates 80 • Exclusion or restriction of businesses or individuals who do not have direct or continuous access to media such as the internet • Exclusion or restriction of companies that can not allocate the necessary funds in order to invest in technology as well as to hire the specialized staff needed to ensure the longevity of their investment. • Violation of personal data through the constant collection of data from online applications, insufficient guarantee of personal confidentiality and questioning of personal boundaries through biometric tests. • Creation of seasonal jobs • Development of informal economy and opportunistic ways of earning money • Pollution of the environment due to the development of industrial units • Pollution of the environment due to the increase of the means of mass transport • Homogenization of areas, populations and traditions based on the statistical preferences of consumers • Disorientation of visitors from the substance and heritage of the place in the ways of its projection It is obvious from the above that technology as dynamic and diverse as tourism (Buhalis et al., 2019).

The extent it can take is a result of the rapid technological development and the personal choices of the tourists. In general, and given that it is still in its infancy, technology has benefited the tourism industry.

2.2. Impacts of AI Technology on Hospitality

While hospitality is one of the most important industries in tourism sector, it seems necessary to assess the impact of AI on hospitality in a more comprehensive approach, by analyzing the technologies and uses mentioned above. In order to evaluate the AI technology implications that are presently being used, hospitality industry has been separated into two primary fields: operations and marketing.

In the area of operations, AI technology distributes rooms and other properties rendering to guest value, helps in the management of the safety of the facilities, bases the simulation provide on the previous performances and forecasts of tourist arrivals, adjusts the cuisine accessible to the preferences of the current customers, permits room cleaning robots, assistances to choose the suitable employee according to the services and the products provided, enables intelligent systems by empowering ordinary conversations with customers, for example during check-in or in-service demands, permits the combination of active data and corporate procedures, enables the use of robots in the front desk services, as helpers, or for transfer, advances stock supervision, recovers energy running of the accommodations and customers feasting, empowers the formation of an environment in which the guest can feel at home, provides guests with admission to their own digital services, and helps finance management by taking into consideration predictable incomes and influxes.

In the area of marketing and promotion, AI technology progresses prediction, regulates costs and provides offers to current and possible customers, improves customer relationship management (CRM) approaches, supports modified services and personalized practices over mass customization, simplifies the placement of “smart” marketing methods, supports the advance of modified estimations, supports managers and “smart” sales assistants, forms offers in real time that are sent to the

customer/ potential customer over a “context-based” and “content-based” method, and allows for marketing methods to be used as management means.

An extremely serious challenge facing the hospitality industry is that big data is at the core of the evolution of artificial intelligence. Nevertheless, it seems extremely complicated to describe the datasets managed in the hosting industry as big data. Although the amount of data managed by hotels on a daily basis is quite high and in fact the data is provided in a wide range, this data, most of the time, is managed simply for the visitor's interaction with the hotel website before travel and his / her behavior in the hotel. Hotels have little data on their guest profile, interests and preferences, desired destinations and other data, as well as their behavior outside the hotel. This means that hotels can only have big data for their guests by combining with other organizations that can load their data.

At last, with the full implementation of artificial intelligence technology systems in the hospitality and tourism industry, many of the services currently offered by humans will be performed by robots. This, of course, does not mean that the human factor will be eliminated. Humans, in this reality, will continue to offer two basic functions: First, humans will practice a small set of tasks, which proves difficult to automate, even with the development of the capabilities of robotics and artificial intelligence. Second, the existence of the human factor will now be a prominent service and luxury. In other words, if people are financially unproductive, their existence will be acceptable in terms of variation or through increased quality, as is the case today at service stations (Bowen & Morosan, 2018; Gursoy, 2018).

2.3. Challenges in Travel industry and Tourism

Nowadays, the technology of artificial intelligence has several advantages in the tourism industry. Nevertheless, there are several challenges that need to be addressed. But let's put them in order. The first challenge may be the skepticism, hesitant thoughts and beliefs of customers about this type of technology. According to Rogers (2010), as with any other innovative technological breakthrough, customers, in this case tourists, can be distinguished as follows: those who have an

innovative spirit, those who immediately adopt change, those who are slow to adopt the change. Considering the risks and benefits of artificial intelligence technology, Tussyadiah & Miller (2019) reported 3 cases of users: those who are slow to accept change (who see new artificial intelligence technology as a carrier). high levels of risk and low levels of benefits), enthusiasts (who understand high levels of benefits and lower levels of risk for artificial intelligence), and realists (who know that there might be the possibility of risks, but also there will be benefits. According to them, also, it was reported that people with negative feelings about artificial intelligence are those who have not used similar technologies in the past (Tussyadiah & Miller 2019). Also, to make robots use attractively, the motivation is their usefulness and efficiency, as with any other technology (Bowen & Morosan 2018). However, according to Gretzel (2011), it is emphasized that there is a great need to make the transition from use case research to actual use research, usage patterns and non-use.

Artificial intelligence seems to have numerous profits but also risks for users. For tourists, one important benefit of AI is that it can help them travel through unknown places, consequently minimizing the anxiety and negativity that tourists often feel during the exploration of a new destination (Buhalis et al. 2019). It could also help them create new and notable experiences (Li et al. 2019). The risks that tourists may face are related to the dread of investigation, an AI boundary and of a society completely driven by technology. Many authors (Gretzel 2011; Tussyadiah & Miller 2019) have referred to the risk to confidentiality that AI systems can cause, because they collect huge amounts of data, and, most significantly, have the capability to arise forms and knowledge from the data.

2.3.1. The replacement of employees

The replacement of the employees by machines has already happened, in first place, during the 1st Industrial Revolution. Although, the rise of artificial intelligence has brought to the fore a new set of machines, such as robots that provide services, and are now able to compete satisfactorily with an employee in almost any type of work (Brynjolfsson & McAfee 2011). Although the tourism industry was not affected by this treaty, change is now just around the corner.

According to Bowen & Morosan (2018), it is estimated that 25% of the workforce in the hospitality industry would be possible by robots within the next 10 years.

Some typical services of the tourism industry, such as hotel reception, could be eliminated and given way to robotics (Bowen & Morosan 2018). The technology of artificial intelligence has been characterized as the most significant threat to humanity. Indeed, labor replacement was one of the fundamental concerns regarding the impact that artificial intelligence can have on tourism (Tussyadiah & Miller 2019), not only because of job constraints, but also because of a lack of sense of "belonging" by the employee (Li et al., 2019). According to Sigala (2018), machines prove to be quite satisfactory in complex logic and in the synthesis of algorithms and the completion of repetitive tasks. However, human resources are paramount in generalizing, understanding, creativity and interacting with customers. According to her, even today the machines and technology of artificial intelligence could take over the tasks of humans. However, this is not done because it is still an extremely expensive project.

Consequently, even if the primary agreement was that low qualified jobs were more in risk, the recent data and research show a little distinct position (Brynjolfsson & McAfee 2011). The trend of job divergence seems to attend to a situation in which low qualified and high qualified jobs seem to be the safest from AI technology replacement, even if the causes are not the same for each case. High qualified jobs seem to be safe because of the complication of duties and the continuation of unrepeatable responsibilities and projects. On the other hand, low qualified jobs seem to be safe because of the low costs of positions, the assortment of tasks, and the presence of unrepeatable tasks (Melián-González et al., 2019).

Numerous studies suggest that in service environments, AI technologies will not totally replace jobs but they are going to be used as a substitute to improve employees and release them from routine responsibilities, so employees will be allowed to have more time for more qualitative service (Brynjolfsson & McAfee, 2011). In this regard, one of the main challenges of the tourism industry is that the tourism business could miss the idea of hospitality (Bowen & Morosan, 2018), which is one of the most important features of the tourism sector.

2.3.2. Ethics and Biases in AI

The anticipated influence of AI technology on all phases of everyday life and culture is huge. The "explosion" that occurred with the flourishing of artificial intelligence, can only be compared to the corresponding one that occurred with machines and computers, when they entered everyday life. This influence, however, apart from being positive, also leaves some gaps in the ethics of the issue. Two of these, mentioned above, are the concern for the invasion of privacy and the concern for the development of a society that will be "governed" exclusively by technological means.

Now, to the above are added some more ethical issues. From the massive spread of artificial intelligence, many times, some biased perceptions are formed. Prejudice is inherent in people and the cause of phenomena such as gender-based violence, racism, socio-economic status. The problem with artificial intelligence technology, however, is that it is superior to the human mind, at the risk of giving more ground to prejudice through the algorithm it uses (Smith, 2019). The possible meaning behind this is that as AI understands, it realizes to apply biased forms that are then reproduced. Additionally, it has been suggested that AI technology systems should be translucent, strong enough to resist persuasion and inevitable (Bostrom & Yudkowsky, 2014). Trade-offs will regularly be needed for the Artificial intelligence technology to make, and they should have the ability to make reasonable assessments that increase the benefits for all contributors (Bostrom, 2016).

Chapter 3rd Methodology

Purpose and research questions

The purpose of this paper is to examine the use of technology and specifically Artificial Intelligence in the tourism and hospitality sector.

According to the above purpose, the following research questions were posed

RQ1. To what degree hotels use artificial intelligence?

RQ2. Which are the reasons which may lead a hotel to transform into a smart hotel?

RQ3. Which are the reasons which may not lead a hotel to transform into a smart hotel?

Research approach

The quantitative approach was chosen for the research carried out in the context of this paper. Such research focuses on gathering information that may come from data that may be either quantitative or qualitative, and then analyzing it by using specific statistical techniques. The primary research tool used in the current quantitative research is the structured questionnaire (Creswell, 2011), which will be described in detail below. The quantitative approach was considered the most appropriate as the purpose of the specific research is to investigate and describe the views of people employed in hotel sector. Finally, in order for existing theories to confirmed a quantitative research is primarily used (Creswell, 2011; Cohen, Manion & Morrison, 2008), while on the other hand focuses on researcher's initial research questions, and also is considered to be more objective, as participants are asked to answer to pre-designed questions. Also, in a quantitative survey the variables examined are usually conceptually predetermined, while at the same time the

results are quite predictable because of the theoretical framework, while it is more appropriate in surveys with larger samples. For this reason, the questionnaire was distributed electronically to 111 persons employed in hotels.

The research tool

As mentioned above the researcher choice, regarding the research tool of the specific survey, was the structured questionnaire, which construction was based on questionnaires of similar surveys, so as to increase the validity and reliability of the collected data. In addition, the use of the questionnaire provides the ability to gather a lot of information from a large sample and in a very short period of time. Also, the specific method of gathering primary data is able to ensure the anonymity of the participants, which contributes to the greater reliability of the answers. In the first section of the questionnaire demographic questions were included, such as gender, age and professional position of the participants. The second part includes questions related to the company they are employed in and the third section was related to the use of technology and artificial intelligence by the hotels.

All questions but one were closed-ended, 5-point Likert scale, with answers ranging from "Not at all" to "A very large degree". This choice was made by the researcher because this type of questions may help in the easy comparison of the answers, as they can be easily coded. A significant disadvantage reported in relevant literature is that closed-ended questions reduce the levels of the participant's freedom to answer (Creswell, 2011). In order to achieve higher levels of accuracy of collected data, but also in order to increase the levels of participation, the researcher used questions that were easy and fast to complete by the participants. Additionally, the researcher focused on the clear content of the questions and their small size while on the other hand there was an effort in arousing the interest of the participants and encourage them to answer honestly (Creswell, 2011). Finally, the statistical analysis of the data was done with the statistical program SPSS v22., using appropriate tools of Descriptive Statistics.

The research sample

In this research, no specific sampling method was used. The sample used was a “convenience sample” (Creswell, 2011). It is worth to refer that even a sample of this type has the ability to provide significant information regarding the population of a survey. In the current survey, all participants were asked to complete the questionnaire electronically, from December 1 to December 3, 2021. The questionnaire was accompanied by a letter stating the purpose of the survey, and encouraging them to participate in the survey by referring to the ensure of their anonymity, and by pointing out the short time required. The sample may not be considered that fully represents the population, which is a significant limitation of this research (Creswell, 2011).

Chapter 4th Data Analysis

Demographics

The first question of the questionnaire concerned the gender of the participants. As seen below the majority of the 111 participants were males. Specifically, 69.37% (77 persons) of the participants were males, while 30.63% (34 persons) of them were females.

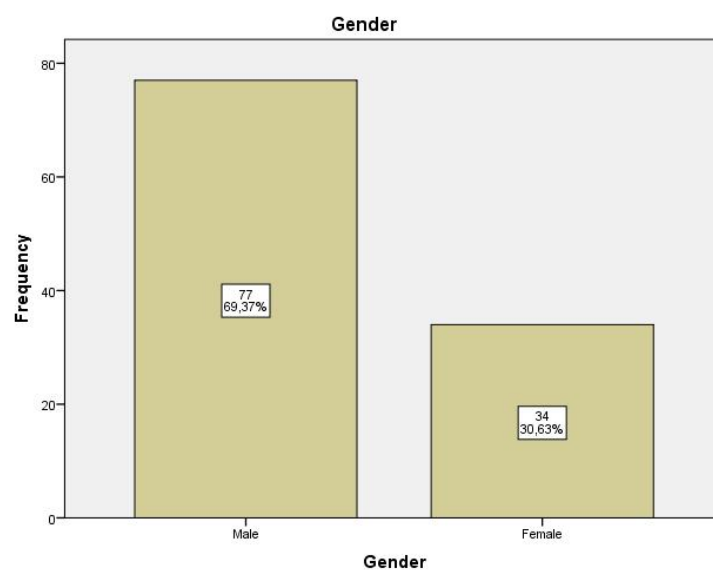


Diagram 1 The gender of the participants

Regarding the age of the participants, the large majority of them belonged to the age group 18 to 30 years old. Specifically, 79.28% (88 persons) of the participants stated that they were over 18 years and below 30 years old, while 17.12% (19 persons) stated that they were between 31 and 40 years old. Finally, 1.80% (2 persons) belonged to the age group 41-50 years old, while the same occurred with the age group 51-60 years old.

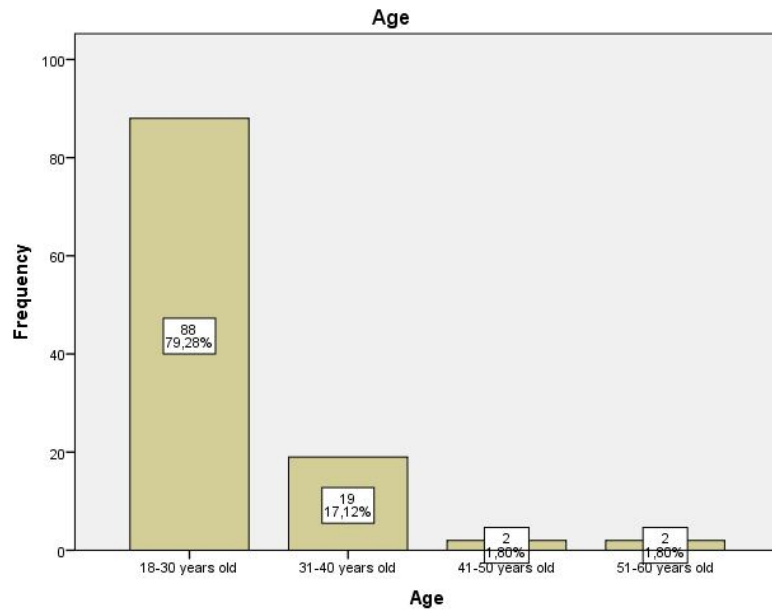


Diagram 2 The age of the participants

Regarding their position in the company, the majority of the participants are employees. Specifically, 50.45% (56 persons) are employees, 9.11% (9 persons) are accountants, 36.04% (40 persons) are managers and finally 5.41% (5 persons) are CEO or owner of the company.

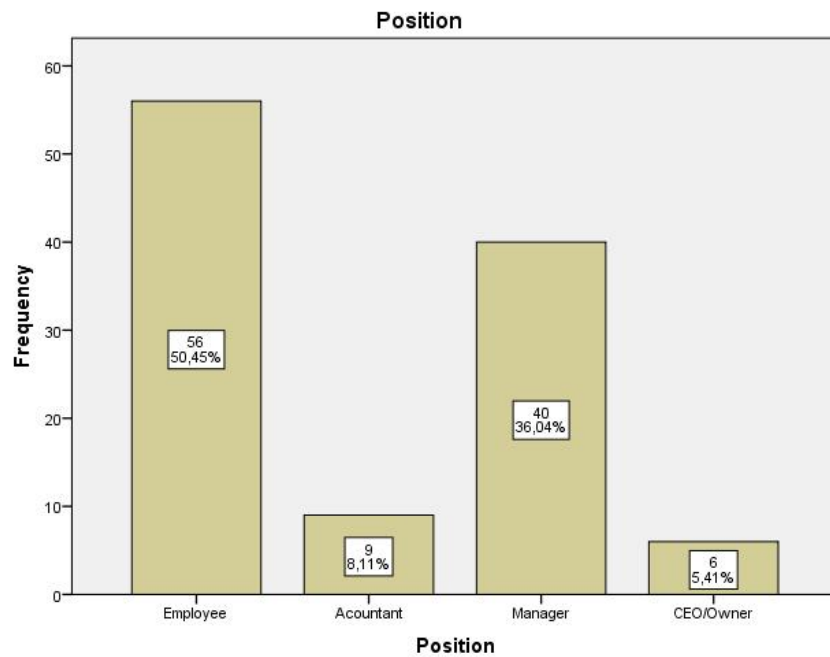


Diagram 3 Position in the company

Regarding their years of service in the tourism sector, the majority of the participants stated that they have up to 5 years of service (78.38%, 87 persons). Also, 13.51% of them (15 persons) have 6 to 10 years of service, 4.5% (5 persons) have 11 to 15 years of service and finally, 3.60% (4 persons) have more than 15 years of service in tourism sector.

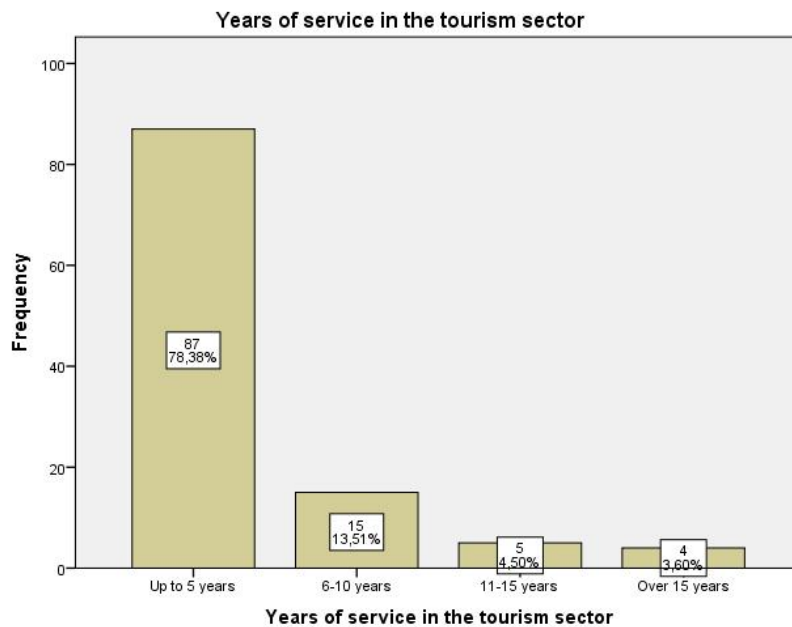


Diagram 4 Years of service in tourism sector

Facts about the company

The first question regarding the company participants are currently employed was about its years of operation. As seen in the below diagram, the majority of the companies are in operation few years. Specifically, 59 of the companies (53.15%) are in operation up to 5 years, 21 of them (18.92%) 6 to 10 years, 6 companies (5.41%) 11 to 15 years, while 25 of them (22.52%) are in operation more than 15 years.

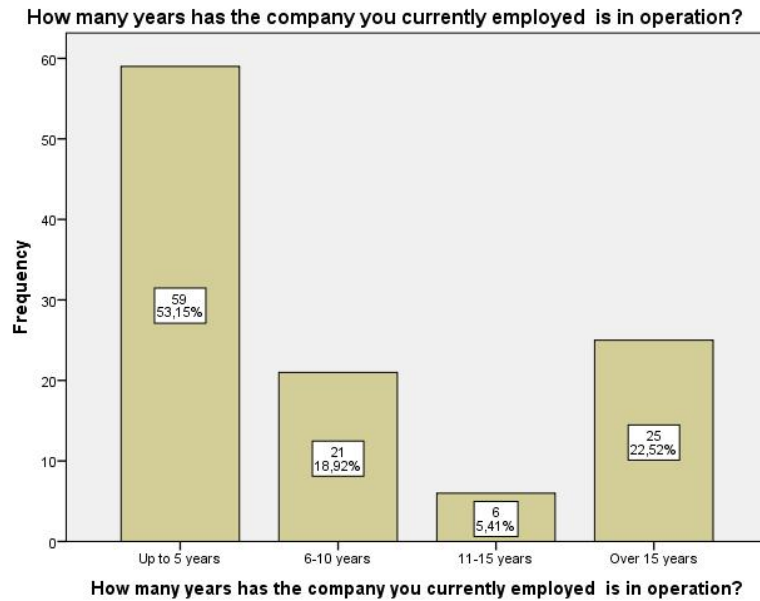


Diagram 5 Years of company's operation

Regarding the staff which is currently employed in the participants' company, 29 of them (26.13%) employ up to 10 persons, 20 of them (27.03%) employ 11-20 persons, 31 of them (27.93%) employ 21-40 persons and finally 21 of them (18.92%) employ more than 40 persons.

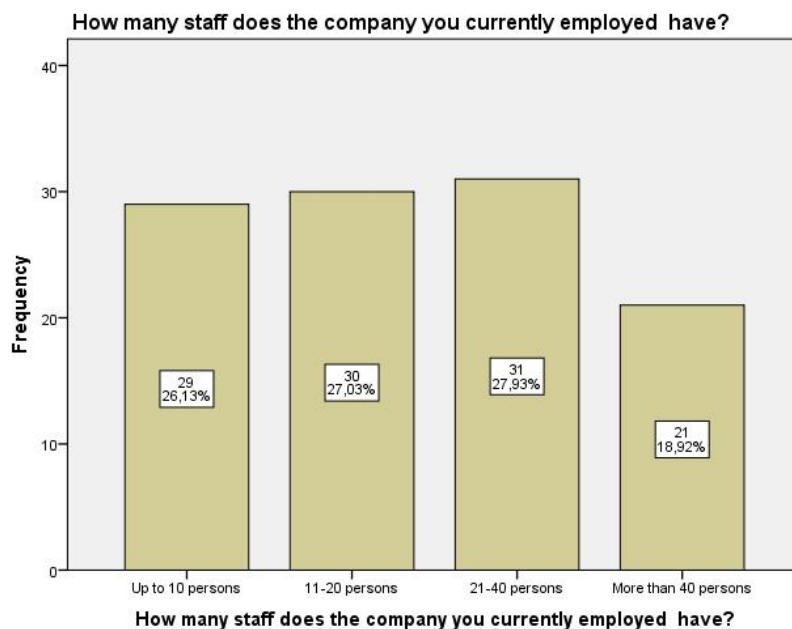


Diagram 6 Company's staff

Use of technology and artificial intelligence

In the first questions of this section, participants were asked to state the degree of the use of technology in the company currently employed. As seen in the below diagram, this occurs to a moderate degree (40.54%, 45 persons). On the other hand the use of technology is to a large or very large degree in 47 cases (42.34%). Finally, in 19 of the cases (17.12%) the participants stated that the use of technology is to a small degree, or not at all.

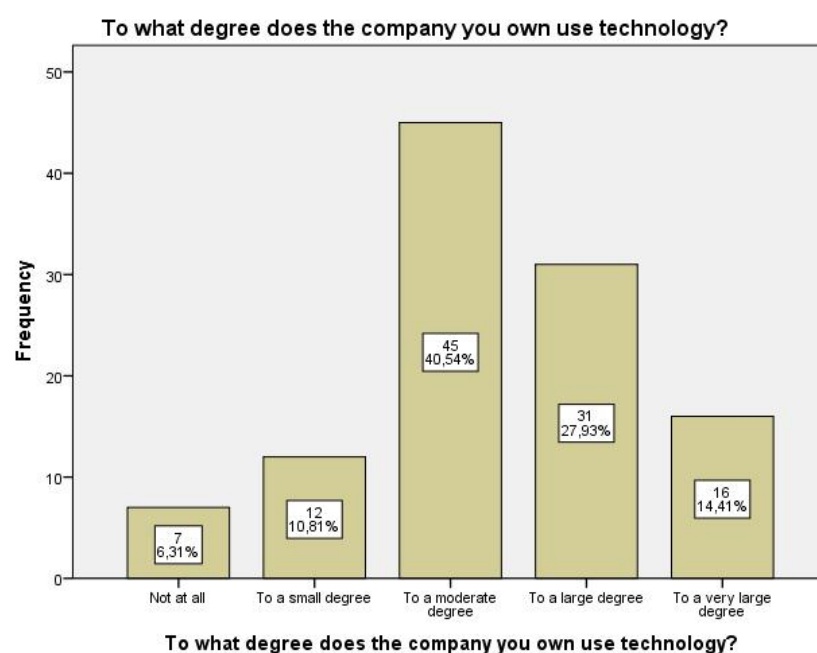


Diagram 7 Use of technology

In the second questions, participants were asked to state in what degree they consider a business benefits by the use of technology. As seen in the below diagram, the large majority of the participants believe that a business has a lot to benefit by the use of technology. Specifically, 76 of them (68.46%) believe that to a large or very large degree, while 22 of them (19.82%) believe that to a moderate degree. Finally, only 13 (11.71%) of the participants believes that to a small degree or not at all.

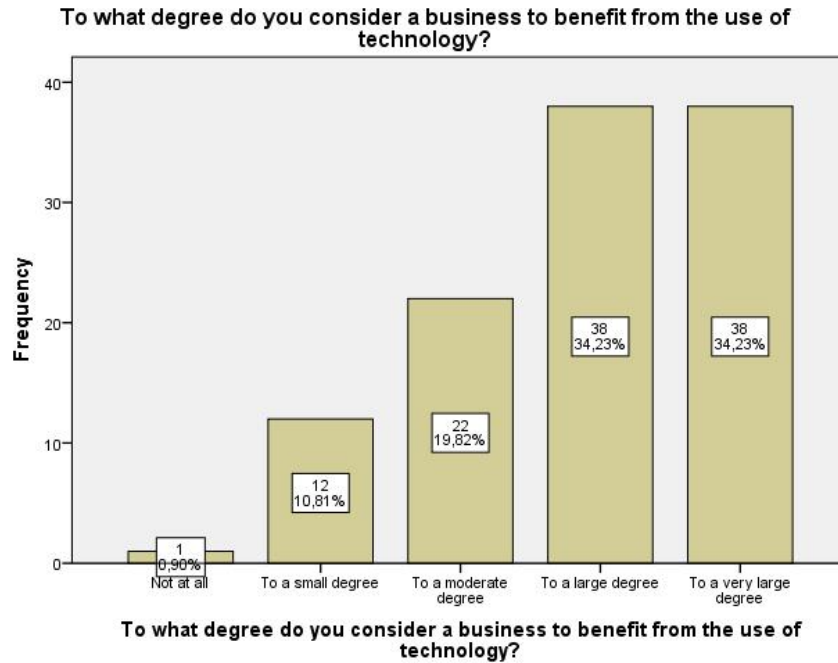


Diagram 8 Benefit or the company from the use of technology

Then participants were asked to state in what degree they consider the company they work in use Artificial Technology. As observed in the diagram below, most of the participants believe that the use of Artificial Technology is currently low. Specifically, 51 of them (45.45%) believe the use of AI is to small degree or not at all, while 37 of them (19.82%) believe that to a moderate degree. Finally, 23 of the participants (20.73%) believe that the use of AI is to a large or very large degree.

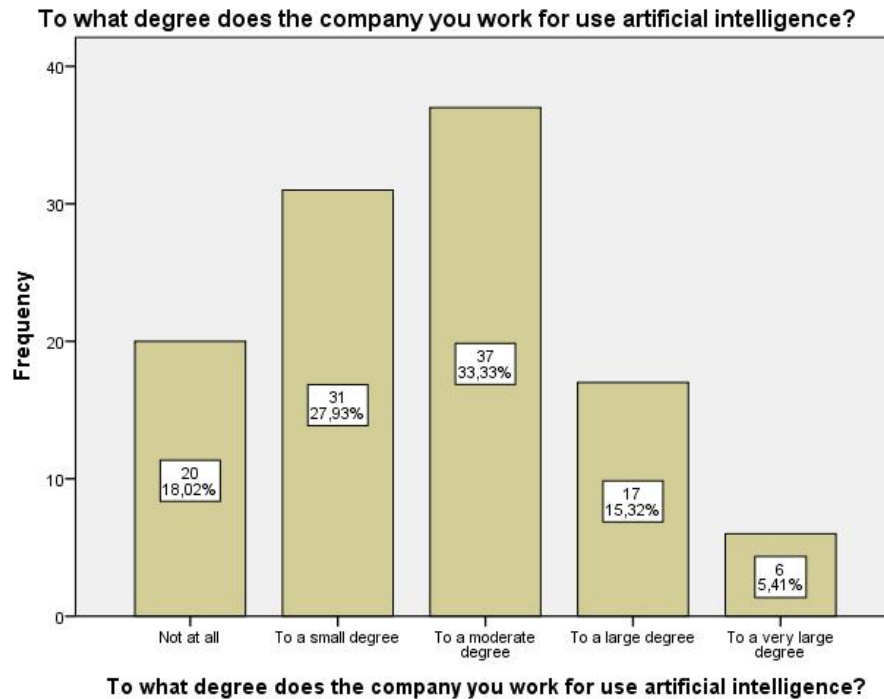


Diagram 9 Use of Artificial Intelligence

In the next question the participants were asked to state the degree of artificial intelligence technologies use by the company they currently work in the below cases. In the table below we can see the mean value (MV) and standard deviation (SD) of each case.

	Minimum	Maximum	Mean	Std. Deviation
Reservation system	1	5	2.73	1.152
Business supplies	1	5	2.75	1.164
Advertising and promotion	1	5	3.05	1.246
Accounting department	1	5	2.59	1.040
Mobile applications	1	5	2.86	1.172
Providing personalized customer service	1	5	2.72	1.230
Attracting new customers	1	5	2.89	1.260
Translation services	1	5	2.80	1.227

Room services (automatic curtains, lighting, heating etc)	1	5	2.72	1.350
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As seen in the above table, in most of the cases, except one, the mean value is less than 3=to a moderate degree. Specifically, the case in which the company uses AI most is advertising and promotion is slightly above 3 (MV=3.05, SD=1.246). Follows attracting new customers (MV=2.89, SD=1.260), the use of mobile applications (MV=2.86, SD=1.172) and translation services (MV=2.80, SD=1.227). Most of the other cases have a mean value around 2.7, while the lowest mean value occurs in the case of use in the accounting department of the company (MV=2.59, SD=1.040).

In the next questions the participants were asked to state to what degree they think customers want the services provided by a smart hotel. As seen in the below diagram the majority of the participants believe that customers want these kind of services. Specifically, the participants believe that this occurs to a large or a very large degree (57 persons, 51.35%) while 33 persons (29.73%) believe that this occurs to a moderate degree. Finally, 21 persons (18.92%) believe that this occurs to a small degree or not at all.

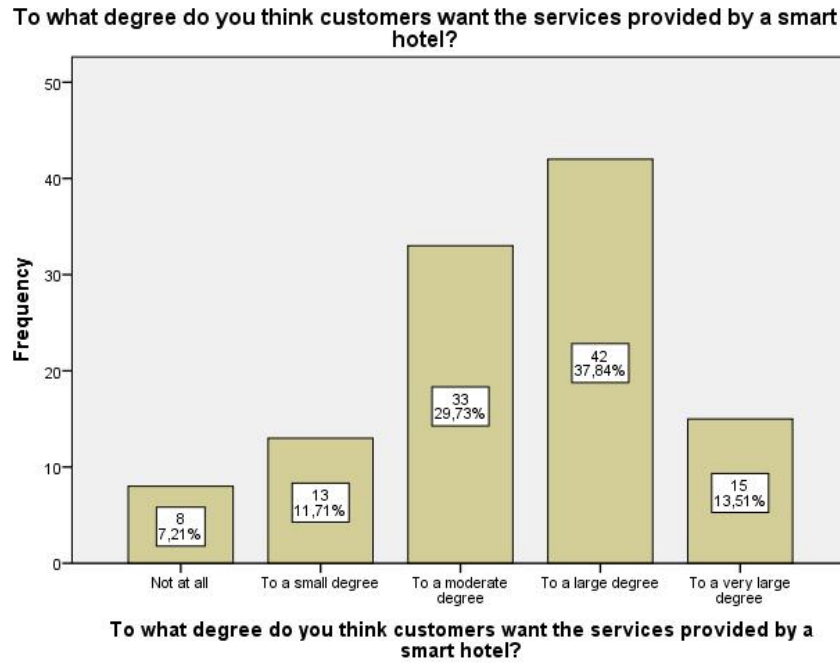


Diagram 10 Customers and smart hotels

The next question was about the reasons which might lead a hotel to transform into a smart hotel. In the table below we can see the mean value (MV) and standard deviation (SD) of each reason.

	Minimum	Maximum	Mean	Std. Deviation
Competition	1	5	3,41	1,164
Organizational reasons	1	5	3,36	1,143
Customer satisfaction	1	5	3,32	1,153
Reduction of operating costs	1	5	3,35	1,181
Reduction of human resources needs	1	5	3,25	1,116
Harmonization with technological developments	1	5	3,17	1,103
Collection of data on accommodation and customer service	1	5	3,07	1,158

Saving human resources	1	5	3,20	1,159
Saving time	1	5	3,60	1,223
Speed of service	1	5	3,59	1,155

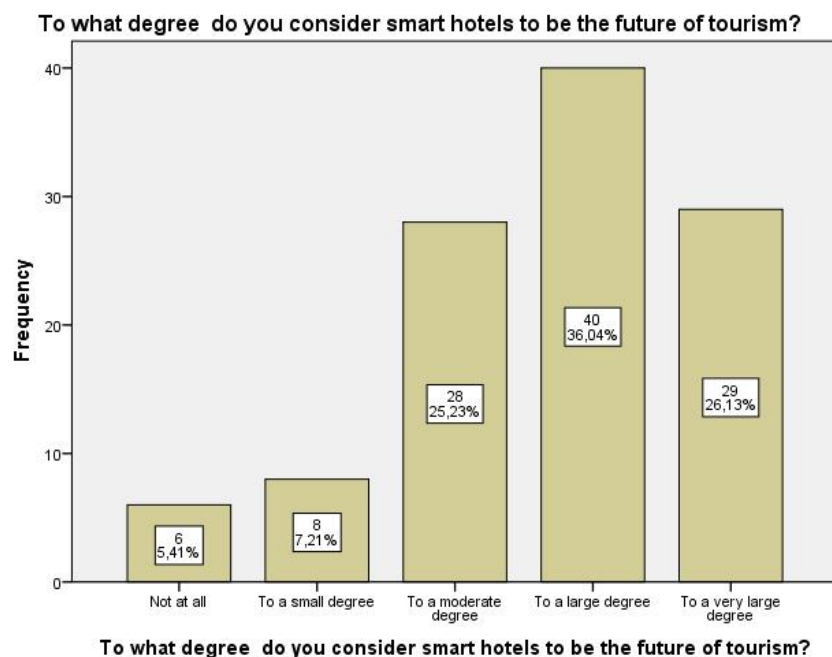
As seen in the above table, in all of the cases, the mean value is more than 3=to a moderate degree but less than 4=to a large degree. Specifically, the most important reason is saving time (MV=3.60, SD=1.223) and slightly below is the speed of service provided by the hotel (MV=3.59, SD=1.155). Follows the need to follow competition (MV=3.41, SD=1.164) and organizational reasons (MV=3.35, SD=1.181) and reduction of operating costs (MV=3.35, SD=1.181). Other reasons have mean value between 3.20 and 3.32, while the less significant reasons seems to be the harmonization with technological developments (MV=3.17, SD=1.103) and the collection of data on accommodation and customer service (MV=3.07, SD=1.158).

The next question was about the reasons which might not lead a hotel to transform into a smart hotel. In the table below we can see the mean value (MV) and standard deviation (SD) of each reason.

	Minimum	Maximum	Mean	Std. Deviation
Installation costs	1	5	3,32	1,113
Maintenance cost	1	5	3,29	1,021
Lack of know-how by the staff	1	5	3,20	1,043
Lack of know-how by customers	1	5	2,93	0,979
Insufficient human resources	1	5	3,21	1,019
Absence of personal contact	1	5	2,95	1,043
Protection of customers' personal data	1	5	3,02	1,272
Small benefits	1	5	2,71	1,065
Ethical reasons such as dismissal of staff, interference with the privacy of customers, etc.	1	5	2,86	1,040

As seen in the above table, in all of the cases, the mean value is slightly above and below 3—to a moderate degree. Specifically, the most important seems to be installation costs (MV=3.32, SD=1.113) and slightly below is maintenance cost (MV=3.29, SD=1.021). Follows the insufficient human resources (MV=3.21, SD=1.019) and the lack of know-how by the staff (MV=3.20, SD=1.043) and protection of customers' personal data (MV=3.02, SD=1.272). Other reasons have mean value below 3, while the less significant reasons seems to be various ethical reasons such as dismissal of staff, interference with the privacy of customers, etc (MV=2.86, SD=1.040) and small benefits (MV=2.71, SD=1.065).

In the final question, participants were asked to state to what degree do they consider smart hotels to be the future of tourism. As seen in the below diagram, the majority of them agree with that to a large or vary large degree (69 persons, 52.17%). Also, 28 of them agree to a moderate degree (28 persons, 25.23%) and only 14 of them (12.62%) agree to a small degree or not at all.



Some of the participants justified their answer, in the only open question in the questionnaire. Specifically the answers were:

- “Automatization, save of time, money, personal Data, online marketing, some of the reasons they will lead to smart hotels”

- “Just as running technological development as the tourism will be lead by the upper reasons”
- “More and more people turn their homes into smart homes using AI like Siri/Alexa etc. , so they are used to automations in their every day life. It is only natural to expect the same, if not more advanced, AI applications in their vacation space.”
- “Well we can see that as time pass by we use apps and sites so human connection is fading.”
- “With the growth of technology every business tries to develop their resources in order to please their customers”
- “Artificial Intelligence will allow hotels to implement better processes, anticipating needs, problem solving. On the other hand, some guests may be put off by the lack of human touch or a friendly smile as we used to. Hospitality is the ability to make people feel welcomed, valued. A facial expression as simple as a smile can make a difference in the guest's experience and satisfaction level. Robots can efficiently perform the service portion by checking guest in/out, answering questions, and delivering room service but they can never interact hospitably with the guests due to their lack of emotion.”

“A smart hotel, will reduce operational costs, maximize customer satisfaction by better managing the booking systems and by identifying and managing the restoration maintenance needs. By using sophisticated machine learning algorithms hotels will be able to offer personalized services once enough data are collected. In addition smart CCTV systems will significantly improve the safety of the hotel (i.e. similar to Shanghai's smart monitor system) and will be able to acquire data which can be used to maximize the potential of the employers, their well-being and safety. Finally big hotel brands (such us Marriot, Hilton, Accor etc.) can benefit from ethically selling and using anonymous collected data which are crucial to many other industries and/or research organizations and data analytic companies. Thus smart hotels are the future of the tourism industry, since these technologies can be used to maximize efficiency, offer personalized services and reduce costs. An extra remark to

consider. Since big brands are currently using these technologies, smaller hotel branches will be "forced" to use them in order to withstand the competition. However, there is an ongoing effect of people treating such technologies as "black boxes" which can lead to the opposite effects; thus highly specialized and skilled employees are definitively required which small branches can not afford. Thus a small minority of hotels will be against this smart revolution and will try to highlight their limitations.”

Chapter 5th: Discussion

5.1. Future Research

In addition to the issues that have been partially addressed in the above study, the implications of artificial intelligence technology for the tourism industry and the travel industry need further research at various points. The key issues that require further research are: whether robotics in the hospitality industry is fully acceptable to the customers themselves, the impact that artificial intelligence technology will have on the economic and tourism economy, and its replacement human resources from machines.

It is important to conduct further research on individual issues such as: the impact of artificial intelligence systems on promotion and advertising processes. It is also important to explore the impact that artificial intelligence will have on industry dynamics, such as the sale of packages. Finally, more research is needed on whether artificial intelligence is a viable system. In conclusion, more research should be done on the big data part, in order to make clear how the information collected, in order to make a more efficient assessment.

5.2. Future development

The future of AI technology in the tourism and hospitality industry is promising. However, there are still significant challenges. Some of them are: whether the secrecy of transactions and communication will be observed, whether the employees will not lose their position from these systems. By approaching the issue from this perspective, AI technology can be approached as a new technological system that can enhance the tourism experience so that it is even better for all involved. This technology can enable tourism companies to better understand the needs of their customers and thus create products, facilities and experiences tailored to the needs of customers, designing tailored packages according to the interests of customers. New technologies will replace and accompany specific jobs, thus reducing overall operating costs and saving resources that will then be passed on to customers. It also means that organizations will be able to provide services at a reasonable price, which may have been too expensive in the past (Bowen & Morosan, 2018).

From the guests' viewpoint, AI technology will offer them the opportunity to arrange their tours instantly, with lower costs and a fully customized packages that fit their needs and interests. AI technologies will help guests to explore unknown places flawlessly, minimizing the anxiety and concern of the unknown. Language and cultural differences will not be obstacles to tourism, but a further fascination instead. AI Technologies will offer guests the best potential of service while ensuring confidentiality as much as possible (Bowen & Morosan, 2018).

On the contrary, there is a less positive viewpoint. In this viewpoint, the majority of the business's positions will be replaced by machines, which will create the failure of the hospitality sense. Situations can be found in which using machines is mandatory and not just a possibility, as is by now happening in many airports. Tourists will have to deal with machines and robots that are not yet suitable to be applied in a production environment and organizations will prefer to utilize lower-cost products even if their function is suboptimal. In most negative circumstances, technology will replace employees, but the potential labor costs will not be translated to customers, who will be charged the same receiving a worse total experience. The data for privacy and safety will not be ensured. Employees will find difficulties in collaborating with robots and AI systems, and organizations will not be completely prepared to adopt AI technology systems.

5.3. Conclusions

The physical world is becoming digital. We are in the middle of the third industry revolution and we are moving in the time frame of the "Internet of Things", while we are already familiar with the Internet of Communication. In particular for tourism, a vacation package was once the sole business of the traveler, the hotelier and the travel agent. Business websites, web brokers and mobile services and applications are now in the reins. At the same time, tourists have the opportunity to share what they feel and experience at a given moment and are able to share information with someone who, may or may not, use this information for their own benefit. In the near future, mobile services will be the main means of making and extracting information.

Marketing is the area where we encounter the most digital trends. Thanks to the wealth of new digital technologies, businesses now have the ability to interact with their customers anywhere, anytime. "Participatory Culture" is a concept that can be an important research field of marketing and can help to explore what goes beyond the limits proposed by the tourism industry today. This concept is found in various social media. In this new huge public web, the ones that seem to have the most power are the rating sites and bloggers. Legal ethics and ensuring e-privacy are perhaps the two main challenges for e-Marketers.

The penetration and contribution of Digital tourism in the Digital Economy is steadily increasing and it seems that in the future it will continue the same course. But while globally Digital tourism is growing rapidly, Greece, despite being one of the top tourist destinations, is in the last positions of competitiveness in the digital world of companies operating in the industry. The digital transformation of the Greek tourism small and medium enterprises has been delayed and this is the responsibility of the companies themselves that have not been introduced to digital services but also of the state that has not given the appropriate weight corresponding to the critical issue of Digital Economy development. Knowing that with the integration of new technologies and the provision of digital services we reduce costs, while increasing market share, we should as a country be in the first places of this ranking and not in the last. Internet presence tends to be just as critical as our presence in the real world. This is true both on a personal level with the social media we participate in, and on a business level with the digital evolution and growth of our businesses. It is important for all stakeholders to understand the need to adapt to the digital environment before the country's tourism product is significantly degraded in relation to direct competitors in Europe and globally. The competition in the Digital Market and the current digital deficit of Greece, require a determined digital strategy that will make full use of the potential of the digital transformation of the economy. At the same time, it will be possible to create new jobs that fit the profile of the younger generations and reduce the high unemployment rates at these ages. GDP is growing, employment is boosting, local communities are growing and

Greece's digital deficit is shrinking. These four points compose Greece's digital opportunity in tourism.

Without the use of digital tools, there can be no growth and viability of companies operating in the industry. Today's landscape and future trends make it clear that in the future we will become completely dependent on the Internet and if we do not want to go against the digital age we must adapt. The main issues and challenges lie in the security and in general the reliability of the transactions that take place in the digital market. Prerequisites for companies that exploit digital tools are proper training and continuous monitoring. The most important issue for all those who trade within the Digital Economy is to pay attention to how they utilize the wealth of information available on the Internet (Kotler et al., 2009).

But there are still many that have not been resolved or have not yet been the focus of research. One of them is to offer a better experience to the visitor, something that can happen by serving - serving the information that exists for each visitor in the best possible way. This is achieved through the proper use of digital tools such as CRM systems. Personalization has progressed but there is still much room for use in this information. Also, it is the activities that form an experiential experience better than any other way, and yet they remain in obscurity with thousands of small operators still offline or those who are online failing to do so properly. In the "Economy of Experiences" the involvement of consumers in research and development is considered necessary and companies must invest in the future based on these characteristics, ie offering a personalized experience to their customers with a variety of activities and options.

The rapid spread of online bookings in the last 5 years has raised critical concerns. The transparency of online platforms is at the heart of these concerns, as they are often the phenomenon in which many consumers may be misled or pressured for quick bookings due to offers, without being given some time to further investigate and research. the final choice of destination or accommodation. For this reason, consumers must be familiar with electronic systems, feel confident in the online booking process and always have the last word. In addition, profit margins are high in the new digital environment and law-making policies are less decisive,

making profit a key market player. Consumers now have the tools to mitigate market price pressure from suppliers by making good use of the many available online options.

In conclusion, after presenting the most critical and latest digital trends in detail and giving the meaning of the critical concepts of Innovation, "Experience Economy" and "Sharing Economy", it is important to understand the dimensions of the phenomenon of the spread of digital services. Typically, the digital tourism product is available to all Internet users who are currently approaching about half of the world's population. Therefore 50% of customers of a tourism business may come from the Internet. For this reason, the dynamic presence of companies on the Internet today, is set as a prerequisite and the best possible use of digital tools, theories and trends, is the only way for their development and sustainability.

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