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The Use of Intelligent Automation as a Form of Digital Transformation in Tourism: Towards a Hybrid Experiential Offering

Abstract

The purpose of this study is to explore the extent to which intelligent automation (IA) should be used to provide the best possible service quality and experience to customers, an area that needs further exploration. The study draws on an inductive qualitative inquiry from the supply side which has been rather overlooked despite its significant role in designing and shaping experiences. The data were gathered by conducting a total of 39 semi-structured interviews with tourism service providers in Cyprus. The findings revealed insightful information regarding human-IA tasks and interaction from a tourism provider perspective while stressing the cooperation between humans and IA within a service context. The importance of the human element, individual characteristics and key human capabilities are particularly stressed within a continuous digitally transformative industry. The paper concludes with theoretical contributions in regard to the experiential theoretical milieu, practical implications, and future research directions.

Keywords: Intelligent automation, digital transformation, tourism, customer service, tourist experience; qualitative research.

1. Introduction

Intelligent automation (IA) utilizes artificial intelligence to create smart processes that “think”, function, and adapt on their own to deliver automated services, such as in the case of robots. In a diagram of a technological framework, Tussyadiah (2020) centered intelligent automation amidst three overlapping cycles of: artificial intelligence, the internet of things, and robotics, with pervasive and intelligent robots falling within the overlapping cycles.

The physical and social distancing practices as a result of the pandemic, reinforced and intensified intelligent automation particularly in services. During the lockdown, industries in the service sector rushed to embrace automation processes. Businesses looked to the application of artificial intelligence (Coombs, 2020) to the extent of the human element being excluded from the delivery process and being replaced by (e.g.) robotic means (Cuthbertson, 2020). In fact, robots have attracted considerable attention from academics in recent years (Lu et al., 2020; Rampersad, 2020; Reis et al., 2020; Shin and Jeong, 2020; Tuomi et al., 2020; Tussyadiah et al., 2020), with researchers (such as, Lu et al., 2020; Webster and Ivanov, 2019) predicting that robots will have a profound impact on services in the future.

Studies have examined and revealed various impacts of such intelligent automation on the procedures of businesses, their employees and customers, with a number of both positive and negative influences being recorded (Ballestar, 2020; Lu et al., 2020; Rampersad, 2020). These can be summarized into certain risks, such as decreased opportunities for employment for humans and loss of control due to robot autonomy (Tussyadiah, 2020). Also, benefits that come in the form of increased productivity, efficiency, cost savings, and improved support for customers/users. Despite the overabundance of studies that have examined aspects of intelligent automation and service provision/experience nexus (Yam et al., 2021; Park, 2020; Jörling et al., 2019; Mende et al., 2019), the question of “what level of intelligent automation is to be used to provide the best possible customer service quality and experience?” remains

rather elusive. On one hand, we have evidence supporting the experiential value of new technology in services. Indeed, the importance of intelligent automation within the experiential milieu rests on the fact that it is connected with digital transformation which deals with the process of using digital technologies to create new (or modify existing) customer experiences (Kraus et al., 2021; Matarazzo et al., 2021). On the other hand, organizations may find it hard to find a balance between customer expectations and operational efficiency (Tuomi et al., 2021). Also, there are fears about technology particularly in the form of robots, eliminating and marginalizing the “human touch” within the service context (Christou et al., 2020). Therefore, there are still gaps linked to both the precise identification of human or machine services and answers to questions regarding how organizations should implement and manage new technological systems in their organizations (Loureiro et al., 2021).

A potentially suitable context for addressing such research gap is the tourism context. Within the last two decades, the tourism industry has adopted radical technological innovations and intelligent automation (Tussyadiah et al., 2020; Kuo et al., 2017). Literature suggests that tourism embraces both intangible/serviceable and tangible characteristics. Furthermore, it relies heavily on the human factor for the delivery of services, yet simultaneously uses new technology, such as in the form of robots and virtual reality (Flavián et al., 2021). Tourism, through its idiosyncratic nature that often entails high levels of human interaction, provides excellent opportunities for the investigation of human/automation linked phenomena. The need for – and importance of – this study is underpinned by the study of Tussyadiah (2020) who reviewed research into automation in tourism and proposed a relevant research agenda for preparing tourism for a more automated future. More specifically, the research questions that guided our study were, firstly: “Which aspects of the tourism experience can be enhanced with the application of intelligent automation?”, and secondly, “How should humans and intelligent automation separate and/or merge their tasks to improve tourism service provision?” Despite

the fact that certain tourism organizations continue to rely heavily on the human provision of exceptional service and hospitality to ensure an enhanced customer experience, intelligent automation has been adopted to ease procedures and enhance experiences. However, it may be argued whether aspects of intelligent automation (such as, robotic means) may – or should – replace human-linked characteristics within a service context. For instance, although there is evidence suggesting that robots may enhance the overall tourist experience, some firms may avoid the use of humanlike (otherwise referred to as anthropomorphic) robots to avoid feelings of eeriness that customers may experience (Blut et al., 2021). Furthermore, the adaptation of intelligent automation may strike as an antithesis to the very core of an industry that remains heavily reliant on human-delivered services, human interactions and hospitality offering (Lynch et al., 2021; Christou and Sharpley, 2019; Lashley, 2015).

This study takes into account the perspectives people (that is, suppliers) in regard to intelligent automation in tourism, as presented in the recent research milieu (Akdim et al., 2021; Odekerken-Schröder et al., 2021; Park et al., 2021; Cha, 2020). More specifically, it delivers the perspectives of tourism suppliers who have been largely overlooked by academics despite their important role in the designing, shaping, and offering of customer value experiences. The importance of the study rests on the fact that it addresses gaps regarding the use of new technology in the service delivery process, and explores the extent to which it may be used by organizations that rely on service provision. Technology will remain vital for the expansion of the service economy (Huang and Rust, 2017). Intelligent automation will continue to change the way services are provided and the manner in which customers and firms interact with each other (van Doorn et al., 2017). All the same, the anthropocentricity of the service industry which rests on human attributes and human-linked service provision and qualities, such as empathy, is challenged through the implementation of such new technology (Christou et al., 2020). Service-linked organizations are in need of clear directions as to what extent they are to

rely on technological means and human-led service in their service/experiential delivery process. Besides this, recent studies call for further insights regarding how organizations are to manage and implement such new technologies in their organizations (Loureiro et al., 2021). The theoretical discussion that follows places intelligent automation within an experiential tourism context. As explained in the following section, experiences are situated in the very core of the tourism domain since they impact on the perceptions, motivations, and attitudes of people, not least satisfaction, re-purchase decisions, and loyalty towards organizations.

2. Intelligent automation within an experiential tourism context

Experiences are particularly important for specific industries, such as the general service sector, businesses that provide gamified services (Wolf et al., 2020), the events sector, entertainment industries, and tourism (Sugathan and Ranjan, 2019; Coudounaris and Sthapit, 2017). Customer experience remains a topic of high interest and importance for both managers and academics (Keiningham et al., 2020) due to its importance at a personal, organizational, and societal level.

Experiences are at the very core of the tourism industry. They embrace an integral part of the travel, tourism, event, and hospitality sector. They are regarded as generators of memories (Coudounaris and Sthapit, 2017). “Remembered” experiences are acknowledged as a dominant force in consumers’ future choice behaviour. A strong sensorimotor association with a past service experience may lead consumers to think more frequently about their experience and ultimately lead to improved word-of-mouth recommendations (Reitsamer et al., 2020). In addition, experiences may trigger positive emotional responses, consecutively contributing towards value creation for individuals. For instance, tourists gaining and benefiting the most from their time/money/effort spent at a particular tourism organization or setting. It has been advocated that a human being implicated as a person in a focal interactive

system is a value creator (Ramaswamy and Ozcan, 2018; Grönroos and Voima, 2013). Indeed, consumers may shape and create their own value from their experience. Service providers may also foster the value of a tourist experience by providing “exceptional” service or offering increased opportunities for socializing and relationship building. Despite such “human-related” aspects, other factors such as the place itself and technological advancement may shape tourists’ experiences. As a result, tourists may potentially perceive experiences as valuable, life-changing, unexpected, astonishing, surprisingly good and satisfying (Christou, 2020a; Huang et al., 2016). Besides this, tourists rely on cognitive and emotional involvements/transactions in the physical or artificial world (such as the case of virtual reality) to feed their travel cosmology and form perceptions of the (tourism) world. This may eventually be translated into guest dis/satisfaction and future behavioural intentions, such as positive/negative word-of-mouth recommendations, re-visits and loyalty (Christou, 2020b).

It has been advocated that technological advancement may impede or enhance the tourist experience (Fusté-Forné, 2021; Han et al., 2019). Currently, intelligent automation is enforced by tourism organizations to improve procedures for customers and impact favourably on their overall experience. One such type of intelligent automation that has received increased attention by the research community is the use of robots. Certain researchers argue that future tourism will take place in a type of “robonomic” experiential environment in which the vast majority of tourists will enjoy a highly automated tourist experience (Webster and Ivanov, 2019). This increased academic attention may possibly turn on the fact that robots are creators of intense reactions for their users, as well as contributors to the overall experience of consumers (Fusté-Forné, 2021). As Park (2020, p. 10) appropriately positions, “one of the vital purposes to adopt service robots is to enhance consumer experiences”.

Various studies have examined the “demand”, that is, consumer side, in terms of perceptions and reactions in response to intelligent automation. These have yielded some

important outcomes regarding the perceptions of people in relation to the endorsement of (e.g.) robots in businesses and the impact of these on their experiences. Study findings on such perceptions vary, with some being positive, such as the generation of positive emotions. For instance, the study of Kuo et al. (2017) identified that both “curiosity” and “fun” aroused in consumers. Even so, most studies refer to contrasting results by noting both positive and negative perceptions of people that lead to either enhanced or deteriorated experiences. In the study of Fusté-Forné (2021), within the context of gastronomy tourism, robot chefs were perceived as creators of unique entertainment experiences. However, the same study also revealed that such robots are “feared” for their potential to dehumanize dining. Another study that investigated attitudes toward robot concierges revealed that guests preferred caricatured robots in terms of shape and appearance. Yet, even those who expressed favourable attitudes towards robot concierges also expressed a preference for human employees over robots. Their reasoning was based on the fact that human-human (compared to robot-human) interactions are sincere and genuine (Shin and Jeong, 2020). Similarly, users in the study of Tung and Au (2018) felt insecure and “freaked out” when they had to share the same physical environment with robots. These feelings were particularly more intense in tightly spaced areas, such as elevators.

Negative emotional responses from people in response to robots in tourism are based on various reasons. These may include personal reasons, such as the reluctance of some people to interact with robots. Also, the manner in which some robots resemble/act as humans may ultimately trigger feelings of awkwardness and eeriness. Furthermore, there is concern about possible malfunctions of automated procedures and robots, as well as the inability of machines to respond to specific needs or provide personalized service. All these factors may result in feelings of frustration and disappointment. Finally, people may express fears that technological and robot determinism will take over and replace humane, genuine, authentic, and sincere

interactions between tourists and service providers (Christou et al., 2020; Fuentes-Moraleda et al., 2020; Bhimasta and Kuo, 2019; Tung and Au, 2018). Even so, human-resembling robots have started being used in the service sector. This, despite arguments that anthropomorphism may increase feelings of discomfort for consumers and pose a threat to their human identity (Mende et al., 2019). The relationship between anthropomorphism and customer use is complex with research results once more being mixed (Blut et al., 2021). This is why researchers (such as Park, 2020) call for further research regarding this complex topic.

It may be argued regarding to what extent intelligent automation may replace human assistance and perhaps most importantly “care-giving” towards people with special needs, people with disabilities, elders, and minors. The role of human-provided assistance/service is vital in such cases. Tourism organizations, including airlines and hotels, often provide special, personalized, and human assistance to people with special needs in order to relieve anxiety feelings, and causing guests to feel welcomed, comforted, safe, and “being taken care of”. One such example is Singapore Airlines (2021), which states the following on its official site:

For the visually-impaired, our cabin crew will conduct a special safety briefing before take-off and help orientate them to their surroundings. Our cabin crew will also assist in preparations for meal consumption and help identify food items.

Tourism organizations may be nominated and awarded by official bodies based on the soft and hard skills of their employees and the “personal service” they provide to passengers in their attempt to enhance their on-board experiences (Skytrax, 2019). Nonetheless, in commenting on the COVID-19 pandemic, Coombs (2020) made reference to a key argument in favour of increased artificial intelligence adaptation, which includes peoples’ preferences having changed in favour of a degree of intelligent automation and an increased familiarity with such technologies. In all likelihood, the application of IA in tourism is expected to increase

in the future, while according to some researchers (such as, Tussyadiah, 2020) there is a need for further studies to prepare the sector for a more automated future. Likewise, Lu et al. (2020) feel that there is a need for more empirical research within the general sphere of IA, particularly in the case of service robots and their impacts on behaviour, well-being, and the potential downsides for service customers. Besides this, in the case of negative experiences resulting from the implementation of IA, tourism organizations run the risk of being negatively commented on in social networks and having their image damaged. This poses a dilemma to service organizations within the tourism sector regarding the extent to which they are to embrace IA, particularly in the form of robotics. On one hand, robotic devices could be associated with better organizational performance (Ballestar et al., 2020) and opportunities for “interesting” interactions with customers. On the other hand, as discussed earlier, they may trigger undesirable emotional responses and negative future intentions.

Technological advancement, innovation, digitalization, and smart procedures penetrate business functions, societies, cities and businesses within (Bresciani et al., 2021; Popkova et al., 2021; Ferraris et al., 2018; Ferraris et al., 2017). All the same, a number of studies in the tourism and general business field highlight the importance and value of new technology for organizations that want to obtain greater performance and deliver value co-creation (Allal-Chérif, 2021; Lalicic and Weismayer, 2021; Bresciani et al., 2018). Yet, answers to the questions of how, when, and where businesses and their managers should use automation technologies remain rather elusive, hence this topic deserves further attention by the academic community (Engel et al., 2022; Zarkadakis et al., 2016).

3. Methodology

3.1 Research purpose, design, and context

Based on the aforementioned discussion and research gap, the purpose of this study is to explore the extent to which intelligent automation should be used to provide the best possible customer service quality and experience to customers from a service-provider angle. The *supply side* is an important perspective that has been rather overlooked by researchers in the academic community. Qualitative inquiry principles have been employed to enable deep understandings of people's (in this case, suppliers) perceptions, opinions, and feelings in the topic under investigation (Christou and Farmaki, 2020). Our study draws on an inductive qualitative inquiry which is consistent with the exploratory nature of the study and well suited to answering "how" questions (Yin, 2018). Hence, it provides an in-depth exploration (Christou, Hadjielias, & Farmaki, 2019a; Farmaki et al., 2020) and a better understanding of a scarcely researched topic with no clear theoretical basis (Rodell, Sabey, & Rogers, 2020). The study focuses on tourism providers in Cyprus, and more specifically, tourism agencies, tour operators, guided tour services, and tourism accommodation establishments. Cyprus was regarded as an ideal place context as it is particularly popular for the international tourist clientele, with tourism contributing significantly to the country's economy (Zopiatis et al., 2020). The tourism sector of the European market is well established, and uses several tourism services that address various age groups and differing types of visitors, being supported by technologically-advanced services and infrastructure (Christou, 2018).

3.2 Sampling and data collection

In line with previous work researching the use of innovative technologies within a tourism context (Hadjielias, Christofi, Christou, & Drotarova, 2021; Stylos et al., 2021), we carried out qualitative in-depth interviews with managers from respective tourism organizations. Managers are key informants within tourism organizations who can elaborate on the strategic decisions of their firm, including decisions to adopt intelligent automation (Hadjielias,

Christofi, Christou, & Drotarova, 2021). To identify suitable informants and achieve the study's objectives, we employed a combination of purposive and snowball sampling strategies (Bazi, Filieri, & Gorton, 2020; Husemann, Eckhardt, Grohs, & Saceanu, 2016).

First, based on the principles of purposive sampling, which is a type of non-probability sampling (Jahanmir, Silva, Gomes, & Gonçalves, 2020) interviewee selection was based on a number of (inclusion) criteria (Bosangit & Demangeot, 2016). A key selection criterion was to choose managers who had knowledge on intelligent automation and who could influence firm decisions regarding the adoption of intelligent technologies (Hadjielias, Christofi, Christou, & Drotarova, 2021). Another important criterion was to select a diverse sample of research informants for obtaining insights on the research phenomenon from multiple perspectives. Based on this criterion, the selection of informants took into consideration their background, role, position within their company, age, and gender, to ensure that proper diversity could be found within the sample (Farmaki et al., 2020).

Second, drawing on snowball sampling, research informants fitting the above criteria were recruited through contacts of the co-authors and recommendations from interviewees (Hussain, Salia, & Karim, 2018). The end sample (see Table 1) includes informants who are (professional) managers or owner-managers from diverse companies operating within the tourism sector. These include tour operators, tour guided services, travel agents, hotels, short-term rental management companies, theme parks, online booking platforms, and destination management companies.

Insert Table 1

In line with other inductive studies examining technology adoption in the tourism sector (Liu & Hung, 2021; Spencer, Buhalis, & Moital, 2012), we used in-depth semi structured interviews to collect data from our sample. In-depth interviews are well suited to obtaining rich and meaningful information (Ferraris et al., 2019a), such as from tourism providers

(Hadjielias, Christofi, Christou, & Drotarova, 2021). The questions in the interview protocol were primarily focused on identifying the perceptions and attitudes of tourism providers against intelligent technologies, and their understandings of how intelligent automation can be used to provide the best possible customer service quality and experience. However, the research informants were also provided sufficient space to speak freely about other related matters in the course of the interview (Spencer et al., 2021). The interview protocol employed open-ended questions in order to gain deep insights on respondents' perceptions, attitudes, and opinions (Ferraris et al., 2019a; Spencer et al., 2021) on intelligent automation. Open-ended questions were included under broader interview themes (McAdam, Harrison & Leitch, 2019) and included: *(1) Background information about the company and research respondent; (2) Experiences and use of intelligent automation at work; (3) Perceptions and attitudes towards intelligent automation?; (4) Benefits and costs/drawbacks from using intelligent automation?; (5) Aspects of the tourism experience that can be enhanced with the application of intelligent automation?, and (6) human-intelligent automation interaction.*

Prior to commencing our study, we carried out a pilot study with three informants: one general manager of a travel agency, one owner-manager of a guided tours company, and one owner-manager of an accommodation booking platform. In line with previous work, the pilot interviews were not included in the final sample and were primarily used for refining and improving our study's interview protocol, with the intention of making the interview questions more understandable to the research participants (Hadjielias, Christofi, Tarba, 2021; Hadjielias, Dada, Eliades, 2021). Before each interview, the purpose of the study was communicated to the research participants. These were informed that their participation was strictly voluntary and that they could either refuse to participate or they could withdraw at any time during the interview (Bonfanti, Vigolo, & Yfantidou, 2021). Participants were guaranteed full anonymity and confidentiality of their responses (Burghausen & Balmer, 2014).

Each interview lasted, on average, between 45 and 55 minutes, and these interviews were audio recorded (Essamri, McKechnie, & Winklhofer, 2019). Complementary notes on nonverbal aspects were taken by the researcher during the interview process, as suggested by qualitative researchers (Christou et al., 2018). Semi-structured interviews were carried out, allowing the collection of individual respondent meanings in the form of ideas, opinions, and emotions, while encompassing a common structure to aid the subsequent comparison of data between interviews (Autio et al., 2011; Hadjielias, Christofi, Vrontis, & Khan, 2022).

The interviews were carried out between February and April 2021 at the organizational premises of each research participant (Morrish & Jones, 2020). In line with previous work, the interviews were carried out in the native language (that is, Greek), of the research participants (Hadjielias, Christofi, & Tarba, 2021). Drawing on an inductive research process, data were collected and analyzed based on an iterative process until reaching saturation; the point where new theoretical insights can no longer be gained with additional data collection (Hampel, Tracey, & Weber, 2020; Chase & Murtha, 2019). The saturation point was reached when collecting data from our 39th research informant. Consequently, the findings of 39 interviews with owners or managers of tourism-related businesses were retained in the study, and were used in data analysis.

3.3. Data analysis

Following previous practice, the interviews were initially transcribed verbatim in the Greek language and subsequently transcribed into the English language (Grinevich et al., 2019) using a back-translation process (Harbi, Thursfield, & Bright, 2017). The interview transcripts were 22-25 double-spaced pages in length on average, with a total number of 895 pages from the 39 interviews.

While analysing our data, the Gioia methodology was applied (Gioia, Corley, & Hamilton et al., 2013) which involves three distinct analytical stages. During the first stage of the analysis, an inductive open coding process was facilitated which involved scrutiny of the interviews line by line, transcript by transcript, to code chunks of text such as sentences, phrases, and words (Corbin & Strauss, 2014; Holton, 2007) while adhering to participant terms (Gioia et al., 2013). The first analytical stages led to the generation of a large number of emergent “first-order concepts”, which were included in a master coding list (Hadjielias, Christofi, & Tarba, 2022).

During the second stage of analysis, an axial coding process was facilitated (Corbin & Strauss, 2014). This involved looking at the list of “first-order concepts” produced during the first analytical stage to group them into fewer “second-order categories” based on the similarities between them (Corbin & Strauss, 2014; Holton, 2007). During the second stage, the process of analyzing the data shifted to abductive in order to provide comparisons of the emergent themes with the literature. This enabled us to gain a better understanding of the findings and to identify which of these findings reflected existing concepts and which reflected new notions (Dubois & Gadde, 2002; Sillince et al., 2012). This back-and-forth process between the analyzed data and the literature helped us to get a better sense of interrelationships between our emergent concepts and categories, allowing us to distil second-order categories into fewer aggregate dimensions during our third and last analytical stage (Gioia et al., 2013). Figure 1 provides the data structure of our findings, illustrating the relationships between first-order concepts, second-order categories, and aggregate dimensions.

Insert Figure 1

4. Findings

4.1 Perceptions of tourism providers of IA: Ascertaining the value-addedness and applicability of IA in tourism

Industry professionals use a number of IA techniques widely, and they perceive them as factors that add value to their internal and external customers, as well as to their organization. Interviewee R4 discussed IA techniques and how they are being used by their organization, by identifying firstly the importance of those techniques (referring to the functionality/efficiency aspect), and secondly, the “demand” arising from customers: *“Can we actually perform our everyday duties and keep our customers happy without using IA techniques? Even the older customers are expecting them nowadays, and this puts pressure on us to increase the use of technology even more.”*

Various technological advancements seem to be preferred more by industry professionals. The most highly preferred are the internet of things, biometrics, and virtual reality. There is a general perception that these three advancements are highly preferred by customers (demand-led dynamics). Interviewee R7 fully supported the great benefit of the use of virtual reality: *“Through the virtual tour, we provide tourists with a realistic point of view, whether they live nearby or somewhere else in the world. That’s really fascinating, and I am very happy that we are able to do that. Customers love it as well.”* Hence, the functionality rationale and the demand/pressure of customers is brought up by the *supply end*. Research has so far indicated that the use of IA techniques will be increasing in the future and this seems to be the reality for organizations that will be struggling if they do not manage to add this value for their customers (Tussyadiah, 2020; Mende, 2019; Atzori et al., 2017).

On the other hand, informants stressed the cost factor often associated with the use of IA as a prohibiting factor. They also expressed increased hesitation and concern with the use of specific forms of IA, such as the case of robots in the service context. Their hesitation reflects to some extent some personal (i.e., negative) perceptions regarding the use of certain IA

technologies. For instance, R9 expressed concerns about the increased use of robotics in the industry: *“I know some do use them, even direct competitors. As a management team, we have been trained and we know a lot about their existence and how they can be utilized. We do not use any kind of robotics now, but I know that at some point in the future it will be inevitable. I am not sure if all customers will be ready for it.”* Likewise, R22 said the following: *“I am not a fan of all these technological advances that are actually eliminating the use of the human factor to the minimum required, but this is today’s reality. If you do not manage to advance your organization and what it offers in terms of all those advances, then you are left with customers that will be dissatisfied in that aspect. And I am not talking about the younger generations only.”* Industry professionals are sceptical about the increased use of a number of IA techniques (such as, robotics) and this is evidenced both in this current research as well as in the literature (Baisch et al., 2017; Broadbent et al., 2008; Huang and Rust, 2018; Mende et al., 2019). Figure 2 below summarizes in a diagrammatical format the use and provision of IA, as informed and shaped by tourism providers’ perceptions in regard to IA in service provision, customers’ demand for IA services, and functionality rationale (e.g., the availability of supporting technology to provide specific IA-linked services).

Insert Figure 2

4.2 Perceptions on human-IA interaction: The tourism provider perspective

Perceptions vary in regard to how tourism providers feel about the increased use of IA in the current tourism scene. Issues of willingness to use them due to the increased needs of customers more or less contradict the element of losing the “human touch” that is present in the participants’ responses. R12 said: *“For airports contending with increasing passenger numbers, expanding the use of advanced technology should help in terms of airports’ ability to*

handle enhanced capacity and operational flexibility. This is the future's reality. On the other hand, I believe we are losing the interaction between people, and this seems a bit disturbing to me."

The human element seems to be still very important to tourism providers, but they support the tendency to use IA as long as this does not interfere with the human interaction. Some level of human element is desired by them, such as interviewee R15, who stressed: *"The increased need to use IA improves passenger experience as the process becomes much more seamless, which helps drive revenue generation for airline companies. This will involve airlines investing in those technologies in the short term, but there are indeed long-term effects. I would not eliminate the human interaction completely, though; this would not reach the fully desirable outcomes that service provision requires"*. Parallel views are expressed by interviewee R32: *"If I was told that I need to interact with a non-human element and that this required no human interaction at all it would make me feel uncomfortable, especially when their appearance is inconsistently humanlike. It would make me feel much more uncomfortable if there was no real human interaction at all and it was all up to the IA techniques..."*

Based on the above, there seems to be an understanding and a support of the use of IA, as long as it does not eliminate human-customer interaction. The feeling of potential discomfort from human-robot interaction and the need to interact to a certain extent with customers seems to be fully supported by tourism providers. This outcome addresses critical questions set in the literature as to the future of IA in tourism (Tussyadiah, 2020), as discussed in the theoretical section of this paper. Figure 3, which follows, summarizes the contradictory views and attitudes of informants regarding the use of IA. In more detail, there seems to be opposing dynamics linked to IA provision, with certain contradictory feelings being expressed by informants. The diagram illustrates the willingness of service providers to support the use of IA to address

increased customer demands, as well as to “*improve passenger experience*” (R15) and not to eliminate the human factor, particularly within the service provision context.

Insert Figure 3

4.3 Task allocation and cooperation between humans and IA in tourism: separating the boundaries

There seems to be a clear distinction between the service providers in terms of how they envision IA and people “cooperating” effectively towards providing the best possible customer service experience. To a large extent there is a separation of tasks that IA and people undertake at the moment, but it seems that industry professionals perceive this as the beginning of a new era in tourism. On one hand, there was a clear distinction in responses between tasks that require empathy and understanding and dealing with dissatisfied customers (e.g., providing personalized and enhanced customer service, and handling customer dissatisfaction). On the other hand, there seems to be a very positive attitude towards IA technology in procedures in which the human element is not necessary, such as the case of bookings/reservations. A rather “grey zone” probably remains in the case of check-in/out tasks, which may be performed by either means, or in combination of IA and employees. Shifting completely to IA (in service provision) is not preferred, and the responses are negative in regard to this aspect. Interviewee R20 was very clear: “*I can clearly see the need to use more IA techniques and even robotics, which is the future. But, I cannot see a robot treating a dissatisfied customer. It would be so wrong. I don’t want this interaction to be completely machine-led – it is simply not desired.*” In agreement with the previous response, interviewee R39 added: “*I am working 30 years in this industry, and I must say that human interaction cannot be stopped completely. I don’t know what the future is, but for sure we still need people for certain tasks. Customer satisfaction*

depends on how humane I am and how polite. A smile on my face is always helpful. Can we get robots that genuinely smile? I am afraid they will do that in the future but right now we are simply not ready for that. Customers neither.”

According to the opinions of informants, technology will slowly overtake humans in terms of performing more tasks in the workplace. Interviewee R28 said: *“I know that the future holds a lot. I believe more tasks will be overtaken by machines and robots. There are things that technology cannot do, such as empathizing with the customer. They could do that in the future, though, but now we need both to survive.”* Even so, based on providers’ responses, there is a clear distinction as to what tasks can be completely overtaken by IA and those that should remain in “human hands”. However, it is perceived by interviewees that in the future more tasks will be allocated to technology, with both positive as well as negative outcomes. According to R22: *“With the increasing use of technologies, employees will have to use them to complete daily tasks. Then their minds will not grow and stick with the daily routine. Employees will not get a challenge in their work, and their talent will not grow. Also, they might feel trouble in having face-to-face communication, because for face-to-face contact, you need different communication skills.”* It is perceived that the increased use of technology will modify the way people perform their work, as well as the way people feel and react to certain job requirements. This supports previous evidence from the literature – that increasing the use of technology results in various consequences, towards customers and employees (Cohen et al., 2008; Cornil et al., 2013; Curtis, 2016). Figure 4, which is presented in the form of a Venn diagram, illustrates the current overlapping tasks between IA and human-performed tasks, and how technology penetrates those task areas that have traditionally been offered by employees.

Insert Figure 4

5. Discussion

5.1 The value and usage of IA in the industry, and a reply in regard to which aspects of tourism service and experience can be enhanced with the application of IA

A very important component of this study is the fact that it provides perspectives from the *supply end* in regard to IA and how it will be utilized by service providers in the future. Through the current study several outcomes have been revealed as to the value of IA within the service context, and more specifically in the tourism industry. At least from a supplier perspective. Through the findings of this study, it may be acknowledged that there is a highly perceived value among industry professionals regarding the use of IA. In more detail, the outcomes of the study have revealed that the use of IA is perceived as a way to increase both value and efficiency in a number of ways. Firstly, IA assists organizations to perform activities much faster and in a more effective way than in the past. Secondly, tourism providers recognize that IA enhances customers' experiential value and, consequently, increases their satisfaction. Thirdly, service providers are fully aware that customers are expecting – and in all likelihood demanding – IA to be used by them.

Nonetheless, informants acknowledge the significant role of human-human (compared to human-IA means) interactions in securing “sincere” and “genuine” (Shin and Jeong, 2020) experiential provision for their customers. In more detail, aspects of the tourist experience that can be enhanced with the application of IA are (and should remain) restricted to functional and rather arithmetic/computerized elements, such as the case of booking arrangements, the internet of things, and biometrics. Practitioners recognize that IA offers solutions to problems and provides effective means for them in dealing with large numbers of customers simultaneously, as well as implementing procedures in a fast, efficient, and error-free manner. As a result, this enables them to respond more appropriately to customer demands and requests, while adding customer experiential value. Furthermore, they recognize that some areas of experiential provision are enhanced through the use of IA. These findings are in accord with findings linked

to IA in its most advanced form. Specifically, in the case of virtual reality and/or interactive technology which enables providers to contribute towards value and experiential creation (Kirova, 2021; Flavián et al., 2019).

Literature so far has researched whether customers are willing to accept automations in customer service procedures and the extent to which it offers value to them (Baisch et al., 2017). Our findings have shown that industry professionals are experiencing positive comments regarding the use of IA in service provision – not only by the younger generation, but also by the older generation. The latter age group may not be comfortable in using all IA-linked provided means, but in general, they seem to be willing to accept them. As a result, this brings us to the conclusion that the use of IA in service provision may offer great value to the industry. Hence, professionals are urged to use it since they may harvest positive results in terms of offering customer value and satisfaction. Nonetheless, a probable obstacle for implementing certain IA technologies is the cost factor, as explained by providers. Also, for those aspects of the service provision/experience that require a more emotional and empathetic engagement by the two parties, then the human factor is not only deemed extremely important, but vital. This is despite the fact that a number of organizations in recent times have proceeded with the employment of automated means to reply to customer complaints. All the same, fears that technological determinism (such as in the form of robots) are taking over and replacing human, genuine, authentic, and sincere interactions between service providers and customers is once more highlighted, as in previous studies (Christou et al., 2020; Fuentes-Moraleda et al., 2020; Bhimasta and Kuo, 2019; Tung and Au, 2018). Of great importance is the acknowledgement of the *supply side* – that human-human interactions are extremely important within the service provision context and should remain “in human hands”.

5.2 The degree of automation as opposed to the human element, and a reply in regard to how should humans and IA separate and/or merge their tasks to improve tourism service and experiential provision

The level of acceptable automation, as opposed to the human element, has been an interesting finding of this study. It has been argued that as part of the urgent need to respond to the pandemic, organizations looked to the application of IA (Coombs, 2020). This, largely to the extent of the human element being almost or even completely excluded from the delivery process (Cuthbertson, 2020). As expressed by the informants of this study, there is a clear and acceptable degree of fully utilizing technology for certain tasks instead of using the human element (such as, for reservations). It has been acknowledged in the current literature that the level of automation is an element that needs to be addressed and discussed by future researchers (Mende et al., 2019; Tussyadiah, 2020). This study has made a step towards addressing this issue. More specifically, service providers through their responses, support on the one hand the full utilization of IA techniques for certain mechanic tasks, such as booking/reservation arrangements and reporting special requests. A grey zone probably remains in the case of check-in/check-out tasks which can be performed either by humans or automated means, or as a combination of both means. On the other hand, it has been strongly stressed by the participants that the human element should remain a vital component during service provider/customer interactions, particularly in the case of a more personalized level of service.

This finding seems promising for the future of the tourism industry, which is strongly founded upon anthropocentric, loving and caring, hospitable and welcoming pillars (Christou and Sharpley, 2019; Christou et al., 2019b; Lashley, 2015). Yet, the informants do not fail to express “fears” (in this case coming from the supply side) that IA will continue to take over traditional human-performed activities in the service context. Figure 5 illustrates IA and human overlapping relationships, as discussed above and in the previous section. More specifically,

the stacked Venn diagram with its circles highlights the use of IA for functional and experiential purposes in the service context (such as the case of “virtual reality”), while being supported by the human factor. The hybrid (IA and human) offering assumes an optimum use of technology that does not reject or ignore the human factor in shaping experiences and creating customer value. This hybrid offering addresses customer demands for new technology in service provision, while simultaneously assuaging their concerns about technology taking over (Christou et al., 2020). While technology may increasingly penetrate into human territory, such as in the case of robots replacing traditional human tasks in service provision, it is important to safeguard the human element and its core (for the tourism industry) characteristics. These characteristics embrace actions of politeness, a genuine smile, empathy, and hospitality offering that may not be replaced by robotic or other technological and automated means.

Insert Figure 5

5.3 Theoretical contributions

There are three main theoretical contributions that arise from this study. First, by researching the *supply side* (that is, tourism organizations) perspective on IA, this study addresses recent calls to understand how and where businesses and their managers should use automation technologies (Engel et al., 2022; Zarkadakis et al., 2016). We provide new theoretical understanding on the perceived value-addedness and applicability of IA in organizations including the dynamics and overlap of IA and the human factor in service provision. Our study contributes to the acknowledgement of a significant dimension/factor (that of the human element and its individual characteristics) within the overall penetration of IA technologies and digital transformation of businesses in the contemporary world (Verhoef et al., 2021).

Second, this study addresses a gap regarding the use of IA in the service delivery process. It provides insights regarding the use of IA within service organizations, that are characterized by certain idiosyncrasies that involve both automated and human means in the service delivery process (Akdim et al., 2021; Christou et al., 2020). This study acknowledges the pivotal role of IA in forming, shaping, and even enhancing tourism service experiences. Even so, it progresses by adding the crucial element of the “human factor” and its personal characteristics expressed in the service context when it comes to the adoption of IA within service provision. Such as for instance, the significant role and impact of a genuine smile, hospitality provision, and empathetic stance on behalf of service providers.

Third, this study contributes to the discourse of human and associated human characteristics/capabilities in a highly technologically advanced and digitally transformative industry. As has been discussed in this paper, there is a need to identify both the value that IA offers to a service-linked industry, as well as the degree of automation in comparison with the human element. The current study has revealed that there is a tremendous value in regard to utilizing IA techniques effectively and efficiently. Even so, this does not imply the exclusion of the human factor in the context of service provision and experiential value for our customers. Although the current situation of COVID-19 and measures linked to physical (human) distancing have led to the further embracement of IA in the tourism industry (Cuthbertson, 2020), this study stresses the human factor in service provision. Also, in an era in which technology has penetrated the tourism industry (Fusté-Forné, 2021; Park et al., 2021; Cha 2020), it is vital to safeguard the human factor, especially in the case of service/experiential provision. This does not imply the rejection of technological means and digital transformation that may be used to enhance the overall tourist experience, but instead the supplementing of these with one of the strongest (in its traditional sense) pillars of the tourism industry – that is, the human factor and its hospitality-related individual characteristics.

5.4 Empirical contributions

Current research has provided insights on the perspectives of customers regarding the use of IA, interactive technology, and new technology in the service provision context (Kirova, 2021). This study complements such findings, with outcomes delivered from the supply service-provision side. We are able to offer certain suggestions that are mainly directed towards service providers.

The tourism industry may benefit from the current research in a number of ways. First, it is suggested that practitioners and managers make use of IA techniques for their benefit, without however marginalizing the human factor (and its individual characteristics) when it comes to service provision. That is, a heavy reliance on technological means for service provision purposes may reduce – from both parties involved (that is, service providers and customers) – opportunities for personal communication and fruitful human-human interactions. Human relations, emotional exchanges, and hospitable service characterize the tourism domain (Solnet et al., 2019; Christou and Sharpley, 2019), and it seems that it shall continue to fuel the industry, despite challenges, digital transformation, and technological advancement. Second, it is recommended that practitioners use IA primarily for functional purposes and for enhancing the experiential value for their customers (such as, the case of robots, virtual reality tours and online experiences). Nonetheless, such IA means are to be complemented by the human element, particularly in case there is a problem that cannot be resolved through technological means. For instance, having an actual human person dealing with dissatisfied customers rather than an automated system may result in a more immediate, sincere, and personal manner of addressing customers' concerns and issues.

Third, practitioners could actively and continuously seek the opinion of their clientele in regard to which specific services are to be performed by IA or/and humans. As presented in this study, some duties fall under certain/clear categories, such as the case of online

reservations. Yet in other cases, the boundaries between the use of IA and human provision remain rather blurred and in grey areas, such as the case of a receptionist that may be replaced by a touch screen. Probably, a hybrid-offering that offers the opportunity for both technology and human interaction may work better in this case.

5.5 Limitations and future research opportunities

Despite the useful outcomes that were derived from this study, there are certain limitations that ought to be acknowledged. First, this study has not consulted the demand side (that is, customers). Though this may come across as a major limitation, it is stressed that there are several current studies that have examined tourists' perceptions and views regarding the use of IA in the tourism domain. Future studies may be directed to explore IA within services from both supply and demand ends, which can help to comprehensively and simultaneously capture the aspects of service provision that can be enhanced through IA and/or humans. Future qualitative studies drawing on nested case study research (Thomas, 2011) could focus on cases of specific service industries, researching sub-units at both the supply (e.g. service organizations, suppliers, industry experts) and demand-side (i.e. customers) to obtain comprehensive empirical insights (Perschina et al., 2019) about AI adoption within services.

Second, this research has not taken into consideration specific tasks or practices within service organizations that can be fully automated, but adopted a general approach and left this open to be discussed by the research participants. Future studies could embark on in-depth exploration leading to typologies classifying tasks between those that can be fully adopted by IA, others that are reliant on the human element, and those that can be undertaken by hybrid approaches. At the same time, future qualitative studies could produce typologies of respondents displaying different clusters of managerial attributes, attitudes, and behaviours regarding the adoption of IA within services. Such typologies will help in getting a better grasp

of the task and managerial-specific dynamics that govern the effective adoption of intelligent technologies within service organizations.

Third, due to the fact that our study was carried out within a specific place context, hence elicited insights from managers of a homogeneous cultural background, this may limit the generalizability of our results to other country-contexts and organizations managed by people with different cultural backgrounds. Future qualitative and quantitative studies could further investigate IA usage and customers' reactions while focusing on cultural elements and the perspectives of people coming from various cultural backgrounds (Ferraris et al., 2019b). Future research can also compare the findings of this study with other studies that may draw results from service suppliers coming from differing cultural backgrounds, and others coming from economies that may be heavily reliant upon technological means to perform tasks.

Fourth, while the study focuses on managerial perceptions, it interviews informants at one time point (i.e. cross-sectional). Yet, available evidence highlights that managers' perceptions change over time (Maule & Hodgkinson, 2003) through accumulated experiences or due to changes in the external business environment (Dowell & Killaly, 2009). As a result, a cross-sectional study like ours cannot sufficiently capture the antecedent conditions forming managerial perceptions (Sousa, Lengler, & Martínez-López, 2014) on IA, neither the way these perceptions change over time. Future research producing longitudinal data can be useful to examine changes in managers' perceptions of IA. In this way, studies could provide additional insights into the causal relationships and other dynamics involved in the formation of managers' perceptions regarding IA. Longitudinal studies could also be useful in terms of mapping the sequence of changes in managerial perceptions over specific critical events (e.g. crises or transformations in the external environment).

6. Conclusion

The main purpose of this study was to explore the extent to which intelligent automation (IA) should be used to provide the best possible customer service quality and experience. This study has addressed concerns in regard to the level of automation to be used within the service context (Tussyadiah, 2020; Mende et al., 2019). More specifically, it has taken into account suppliers' perspectives in regard to intelligent automation in tourism. The perspectives of tourism suppliers have been rather overlooked in previous studies, despite the fact that these suppliers come into direct contact with customers, are receivers of their requests, comments, reviews, and feedback, respond to their demands, and they are the key people responsible for shaping experiences for customers.

The study has employed qualitative inquiry principles to enable deep understandings of people's (i.e., suppliers) perceptions and opinions (Christou and Farmaki, 2020). The findings were derived from the interviews of 39 managers or owners of tourism-linked businesses, and were analysed through Gioia methodology (Gioia, Corley, & Hamilton et al., 2013) which involved three distinct analytical stages. The analysis of findings enabled further understandings of those aspects of the tourism experience that may be enhanced with the application of IA, and addressed issues concerning which tasks are to be performed by humans to improve service/experiential provision, as expressed by service tourism providers. Of note is the importance of the human element and associated individual characteristics and key capabilities (e.g., a welcoming/warm attitude) that are not only to be not ignored, but rather re-enforced in a highly digitally transformative and increasingly automated service industry, such as the tourism field.

As a concluding statement, this study stresses the importance of IA in the current and in all likelihood future tourism scene, yet simultaneously highlights the significant role of the human element within the service delivery context, despite external challenges such as the pandemic and the technological advancement that is pervading the entire tourism industry.

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