STUDIA UBB NEGOTIA, LXVI, 2, 2021, pp. 41-60
(RECOMMENDED CITATION)
DOI:10.24193/subbnegotia.2021.2.03

ARTIFICIAL INTELLIGENCE IN TOURISM & HOSPITALITY – THE PERCEPTION OF TOURISTS AND TOURISM COMPANIES IN ROMANIA

MIHAELA-FILOFTEIA TUTUNEA[1]

ABSTRACT. In a world where everyday life is directly influenced and focused on the use of technology as a support for individual and professional daily activity, we are all witnessing an increasingly obvious change in human interaction; we all notice how interpersonal interaction is rapidly being replaced by new technologies, solutions and application such as IoT and AI and which are going to completely change the perspective on human life so far. From this perspective and in the conditions of the ongoing pandemic, the present study focused on identifying the changes brought by AI solutions and applications in some of the most flexible and adaptable industries such as tourism and hospitality; in order to obtain a more complete picture, the study was oriented in a double perspective, namely the offer from the tourism & hospitality industry, on the one hand and the tourists, on the other hand; regarding the offer from tourism and hospitality, the study used both primary and secondary information, to visualize an image of the existing AI solutions/applications and adopted by the companies in these industries; For the category of tourists, knowing the generational difference regarding the new technologies from the perspective of the level of acceptance and their use, the study aimed at identifying generational profiles regarding the acceptance and use of AI applications in the tourist experience. We consider that the results of the study can be an important support for conducting more complex and comparative studies, related to the use of new technologies that obviously change the development of human society.

Keywords: AI (artificial intelligence), tourism, hospitality, generations

JEL classification: L86, M15, L83

[1] Associate Professor, Babeş-Bolyai University, Cluj-Napoca, Romania, Faculty of Business, Dept. of Hospitality Services, e-mail: mihaela.tutunea@tbs.ubbcluj.ro

Recommended citation: Tutunea, M-F., ***Artificial Intelligence in tourism & hospitality – the perception of tourists and tourism companies in Romania***, Studia UBB Negotia, vol. 66, issue 2 (June) 2021, pp. 41-60, doi: 10.24193/subbnegotia.2021.2.03

Introduction

In the last two decades, our everyday, ordinary reality, began to be modified, remodeled, improved, being added new levels of detail, new forms of visualization and interpretation. There is nothing new in the fact that everyday life, generally anchored in our well-known reality, has begun to be populated by some very interesting acronyms such as VR (Virtual Reality), AR (Augmented Reality), MR (Mixed Reality), XR (Extended Reality), ML (Machine Learning), AI (Artificial intelligence) and the like.

Also, in the business environment, companies have begun to face a new type of challenge related to adapting and adopting new solutions offered by current technologies, namely "artificial intelligence, augmented reality, blockchain, drones, internet of things, robotics, virtual reality, 3-D printing" (PWC, 2021).

Thus, today it can no longer be classified as being in the SF category, none of the activities such as: "smart personal assistants, ride sharing apps like Uber and Lyft, commercial flights use an AI autopilot, spam filters or smart email categorization, plagiarism checkers or robo-readers, mobile check deposits or credit decisions, fraud prevention, machine learning to identify the contextual meaning on social networking, recommendations in online shopping, etc." (Emerj, 2021).

It is obvious that Artificial Intelligence (AI), with all the solutions/ applications it brings in the real world, marks more and more deeply the individual life as well as the business life, in all fields of activity and all industries.

It is well known that the term "Artificial Intelligence" was introduced by John McCarthy in 1956 during a conference; but the concept that machines can think came into existence long before that" (Verma et al., 2021, p. 402).

Artificial Intelligence (AI), is defined in multiple forms, from very suggestive and simple, to very technical and complex; AI, can be considered as "a branch of computer science which believes in giving machines human resemblance to facilitate human tasks in a better way" (Verma et al., 2021, p. 402).

AI, is defined as "sophisticated computing capabilities as it can deal with complex relationships and problems among different concepts and can easily work with a big amount of data; also, "AI functions similar to a human brain as it thinks, learns, makes decisions and inferences through given data by using intelligent machines; the main purpose of AI is to enable machines to complete tasks automatically without needing a human brain "(Kirtil & Askun, 2021, p. 206).

We've all seen how in recent years, they have imposed other well-known solutions in the artificial intelligence category, such as: „manufacturing robots, self-driving cars, smart assistants, proactive healthcare management, disease mapping, automated financial investing, virtual travel booking agent, social media monitoring, inter-team chat tool, conversational marketing bots, Natural Language Processing (NLP) tools" (Builtin, 2021).

AI, is considered a universal background, being able to cover extremely varied activities, "all of an intellectual nature, starting with learning and perception, in general and continuing with the game of chess, proving mathematical theorems, writing poems, driving a car on a street agglomeration and disease diagnosis " (Russel & Norvig, 2010, p.1); we can also find AI applications, in "speech recognition, autonomous planning and scheduling, spam fighting, logistics planning, robotics, etc." (Russel & Norvig, 2010, p.28-29).

In transport, AI solutions will be able to solve problems of "reducing traffic congestion and carbon emissions, using the solutions such as: autonomous vehicles, delay predictions, traffic management, drone taxis" (Verma et al., 2021, p. 407).

In medicine and patient care, there are AI solutions known and used: "smart patient monitoring systems, surgery assisting healthcare robots, mobile driven robotic consultants and intelligent system to reveal patterns in disease and their aid treatment by accessing multiple sources of data; also, it is expected that AI systems, will be able to predict the risk of certain disease of an individual and accordingly suggest preventive measures" (Verma et al., 2021, p. 408).

The highly sensitive field of public safety and security has also been enriched with AI solutions, based on "facial recognition and speech recognition system will improve the efficiency of administrative systems and reduce crime rates, fraud and sudden accidents; also AI applications are used to prevent from malwares and viruses and cybercrime" (Verma et al., 2021, p. 408).

By 2030, it is expected to develop AI-based services for home and service facilities, such as "robots tasks related to home and service, home robots would become common but the high costs and technical constraints will continue to limit commercial opportunities for future" (Verma et al., 2021, p. 408).

In education, AI will replace traditional system and "would help in evaluating the tests and giving the unbiased responses to the students with cost effectiveness" (Verma et al., 2021, p. 409)

AI solutions, can provide real help in "supporting communities with poor living conditions, being able to improve their conditions through applications to predict the needs of these communities for food or medicine and also by serving them with intelligently controlled devices, such as drones; these devices, we have all seen that they have received destinations as support vehicles in a lot of other special transport activities" (Verma et al., 2021, p. 409).

In Gaming industries, AI applications having "3D gaming system and playing with robots would be more fun" (Verma et al., 2021, p. 409-410).

In the tourism industry, in a case study of tourism city, a "conceptual framework was established from two perspectives, namely: the development of AI system for being a good host - with independent variables (attraction, accessibility, amenity, accommodation, activity) and the efficiency of artificial intelligence system for being a good host following the dependent variables (function, humanity, satisfaction)" **(**Hayeewangoh, et al., 2021, p.2581); the results showed that "AI system for being a good host can provide information according to the tourism component; it has the highest level of overall efficiency **(**Hayeewangoh, et al., 2021, p.2585).

In recent years, in the tourism and hospitality industry, we have encountered robots, "intelligent physical devices with a certain degree of autonomy, mobility, and sensory capabilities that allow them to perform intended tasks without human intervention" (Zlatanov & Popesku, 2019, p.87).

Real robots, which appear in hotels and airports, offering concierge-type information, are no longer part of the imaginative; the Hilton robot Connie is well-known, which offers suggestions based on the already known preferences.

Booking.com, showed that 80% of customers prefer self-service, so it is very logical that the interaction of tourists-AI solutions, will be very common in travel (Medium, 2021).

In the same industry, a new concept was imposed, namely, smart hotel, defined as "hotel which makes use of advanced technologies to streamline its operation in interacting with customers". (Kim et al., 2021, p. 2).

As tourists, we have all witnessed the smartification of accommodation, especially hotels by adopting new sets of devices and technologies to improve the tourist experience; such solutions as: "keyless entry, concierge video chat/mobile concierge, voice search for hotel room bookings, streaming devices for travel, wireless device charging, contactless and mobile check-in, digital controls (light, temperature, etc), robot room service, chatbots, smart management software, etc.", are part of quite common applications used by recognized companies in tourism and hospitality (Hoteltech, 2021).

It is also useful to consider "the most successfully realized applications of AI & Machine Learning in the travel industry, of which we all know the following: prediction system, chatbots, user experience management, recommender systems, sales optimization, costs optimization, fraud detection"(Hack, 2021).

According to Salesforce, "64% of travelers and 80% of business users expect travel companies to respond to them in real time"; that's why companies need to automate routine activities using chatbots, as a personal assistant who can answer questions or make recommendations on a particular topic in real time, offer a lot of benefits pre, during, and post-booking, for travelers as well as for companies using them (Inbenta, 2021).

Regarding the adoption of AI and robotics in the hospitality industry, a "set of influencing factors was established, namely: technology, organization, environment" (Nam et al., 2020, p.7); also, the role of AI solutions in this industry was analyzed, depending on the type of specific back-office and front-office activities, from two perspectives, namely - containment and substitution of manpower (Nam et al, 2020, p.8).

From another perspective, the adoption by tourism companies of AI solutions, robots and service-automation, can provide benefits from two major categories, namely financial (reduction of labour costs, increased sales) and non-financial (increased quality of services offered, creating added value for tourists by offering more fun services) (Ivanov and Webster, 2017, p. 2-3).

Also, the use of AI solutions in tourism can provide additional benefits, on the one hand for companies, by reducing the execution times of specific tasks and on the other hand, for tourists, who can receive useful information in real time, thus having much more time dedicated to the tourist experience itself (Grunder & Neuhofer, 2021, p. 8).

Problems related to the expansion of AI in our lives must also be considered; and here at least the following must be mentioned: "personal data and privacy, liability, consumer protection and empowerment, intellectual property rights, ethical aspects" (Europarl, 2021); also, it is very possible to predict that "AI, will may displace the jobs but it will create more jobs than it displaces as well as the costs will cut by 30-34% (Verma et al., 2021, p. 410).

AI, can have limiting effects both from an individual and social and economic perspective, "narrowing our field of vision and reducing our social and economic choices" (Drexler & Lapre, 2019, p.119).

From a statistical perspective, however, we must emphasize that, "the travel and hospitality AI market is estimated to surpass $1.2 billion mark by 2026 growing at an estimated CAGR of more than 9.7% during the forecast period 2021 to 2026. Most hotels and resorts rely heavily on delivering excellent customer service to build their reputation based on AI technology" (Industryarc, 2021).

From another point of view, considering global demographic statistics, we can identify that, in 2020, the structure of the global population by age was (Indexmundi, 2021):

- 0-14 years: 25.33% (male 1,005,229,963/female 941,107,507)
- 15-24 years: 15.42% (male 612,094,887/female 572,892,123)
- **25-54 years: 40.67%** (male 1,582,759,769/female 1,542,167,537)
- 55-64 years: 9.09% (male 341,634,893/female 357,176,983)
- 65 years and over: 9.49% (male 326,234,036 / female 402,994,685)".

Also, we have to underline that in the study we considered the generational classification based on the birth year of individuals: Gen Z/iGen/Centennials (1996 to present), Millennials/Gen Y (1977 to 1995), Generation X (1965 to 1976), Baby Boomers (BB) (1946 to 1964), Traditionalists or Silent Generation (1945 and before) (Busin, 2021).

From previous statistics, it is easy to see that the world's richest age group, 25-54, covers two generations, namely Gen X and Millennials.

Given the current pandemic situation, which humanity is going through and all the changes it has brought in all areas of activity, we also consider it useful to have a comparative view of the tourism industry before and after this period.

According to WTTC, prior to the pandemic, the tourism industry created across the world 10.6% of all jobs (334 million), generating 10.4% of global GDP (US$9.2 trillion) and the international visitor spending amounted to US$1.7 trillion in 2019 (6.8% of total exports, 27.4% of global services exports); during the pandemic, the same industry, in 2020, suffered a loss of almost US$4.5 trillion, 62 million jobs were lost, representing a drop of 18.5%, the Domestic visitor spending decreased by 45% and the international visitor spending declined by 69.4% (WTTC, 2021).

Expedia has reported encouraging issues, such as: travelers will take more trips and extend their vacations, consumer spending will be high in 2021 and travel will serve as a force for good, generating greater cultural understanding and being healing (Businesswire, 2021).

Considering these aspects related to AI and the use of its solutions both on a large scale and in tourism, the present study aimed to identify the perception regarding the adoption and use of AI solutions in the tourism and hospitality industry; the study was conceived in a double vision, tourists and companies from the tourism and hospitality industry in Romania.

From the perspective of the obtained results, we consider that these can provide the useful informational basis for studies from the same area, more extensive, more complex or comparative; also, the tourism companies as well as the companies from the software industry and the developers of solutions/applications and AI technologies, can benefit from an important information source for their specific activity.

Materials and methods

Knowing that the pandemic period, we all went through, brought some specific limitations in all activities, for conducting this study were used time-differentiated periods; thus, in the case of tourists, the study period was 20 February-15 March 2021, and for tourism and hospitality companies, two distinct periods were completed, namely 20 February - 15 March 2021 and 1 April - 1 May 2021.

The mobile survey was used based on the administration of two questionnaires specific to each segment studied; the questionnaires were placed in social networks; only Facebook and Tweeter were used in this phase, given the fact that the study targeted the Romanian digital segment; the studied population, in the case of individuals from their perspective of tourists, was made up of 687 subjects, users of mobile social networks, of which 655, formed the final sample; the questions of the questionnaire were divided into two modules; the first module aimed at identifying the aspects regarding the utility and use of AI applications in the tourist experience; the second module, covering questions related to the socio-demographic profile of the respondents (gender, age, educational level, income).

In the case of tourism & hospitality companies in this phase of the study, only those from Romania were selected, present as corporate users of Facebook and Tweeter; the questionnaire for this segment of the population was also structured in two parts; the first part was composed of general identification questions of the company (type of activity, age on the profile market), and the second part was dedicated to collecting information on companies' perception of utility, use of AI solutions, and advantages and disadvantages perceived by them on these solutions; in the study were considered 197 companies in total, and valid questionnaires maintained for analysis were 194.

Results and discussions

After the analysis of the data collected from the two questionnaires, the following aspects could be identified:

For tourism & hospitality companies:

- The structure of the sample, depending on the type of activity and their age on the profile market, identified the restaurants as the best represented (40.21%), followed by hotels; and, from the perspective of their age on market, the companies with over 10 years of profile activity represent the most important segment (Table 1);

Table 1. Sample structure
(companies in tourism sector - activity and age)

Type of activity		
	No (194)	**%**
Hotels	72	**37.11%**
Hostels	23	11.86%
Restaurants	78	**40.21%**
Travel agencies	21	10.82%
The age of the company on the market		
		%
Under 5 years		12.5%
5-10 years		28.4%
>10 years		**59.1%**

Source: author's data

- Appreciation of the utility in adopting AI solutions in one's own activity, was identified using a Likert scale from 1 to 5; the results identified the predominant segment of companies that consider AI solutions very useful (63.13%) in their own activity, while low levels of perception of no or very little importance are completely missing (Figure 1);

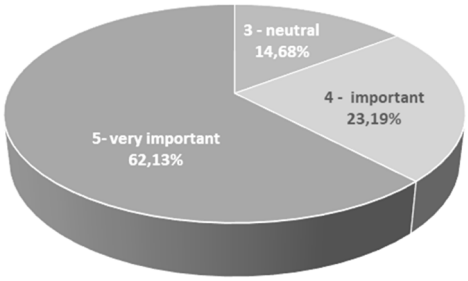

Figure 1. Perception of AI utility

Source: author's data

- Regarding the type of activity for which the companies consider useful the use of AI applications, the ones specific to the activities in the restaurant/dining service were indicated as preferred (23.12%), followed closely by room service and informational support; the least indicated in the preferences are the applications dedicated to events (Figure 2);

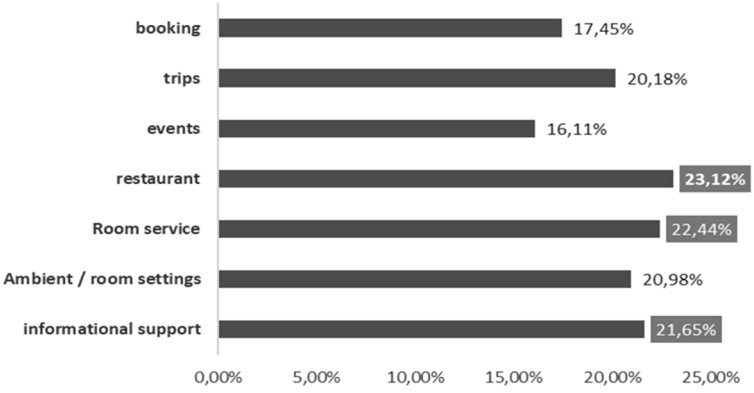

Figure 2. AI application type considered to be used

Source: author's data

- In identifying the current use of AI applications, the list of options was made up of chat bots, ambient/room settings, room service, restaurant, events, trips, booking, mobile AI app, decision support systems and we do not have; a very high percentage of respondents, 90.83%, answered that they do not have an AI application at all,

while the remaining 9.17% indicated that they use chat-bots; it is possible, however, that in this answer, there is a significant percentage of confusion between web chat-bots and AI chat-bots, which can bring a possible alteration of the result, from this perspective;

- The perceived advantages/benefits in using AI solutions (Figure 3) - identified the competitive differentiation (87.12%) as the main perceived advantage and customers database as the last perceived (48.67%);

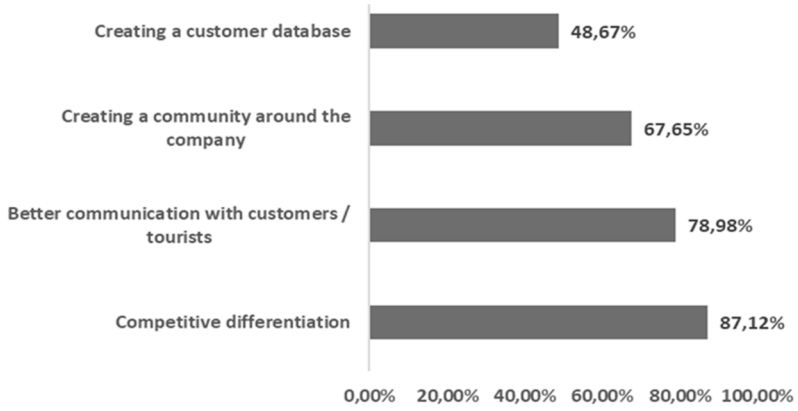

Figure 3. The advantages of using AI

Source: author's data

- From the perspective of the disadvantages generated by the adoption of AI solutions, the main indication is related to the high costs imposed by the adoption of these solutions, and the least indicated was the potential reduction of the number of jobs, as a result of adopting AI alternatives (Figure 4);

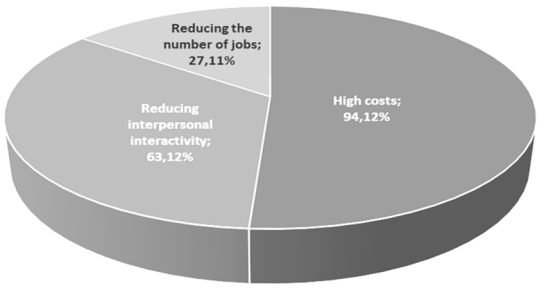

Figure 4. The disadvantages of using AI

Source: author's data

For Tourists:

- the data provided by the socio-demographic module of the questionnaire, identified Gen X, as the best represented segment, followed by those in Gen Y, with university education (40.31%), being slightly more present men (50.93%), and those with incomes over 5000 lei, represent the most consistent segment (68.96%) (Table 2);

Table 2. Socio-demographic structure

		(%)
Generation	After 1997 – Gen Z/iGen/Centennials	19.27
	1981-1996 – Millenials/ Gen Y	**24.56**
	1965-1980 – Gen X	**31.12**
	1946-1964 – Baby Boomers	19.32
	1928-1945 - Silent Generation	5.73
Education	Basic	0.87
	High school	25.62
	College	22.07
	University	**40.31**
	Post university	11.13
Gender	Female	49.07
	Male	**50.93**
Income	< 300 lei	8.29
	3001-5000 lei	22.75
	> 5000 lei	**68.96**

Source: author's data

- Tourists' perception of the usefulness of AI applications in the tourist experience was identified using a Likert scale, and the results identified that more than half of respondents (52.35%) consider these solutions useful, while there is a segment of almost 30 % of respondents who consider them unimportant or do not matter at all to them, having a neutral attitude (Table 3);

Table 3. Perception of AI utility

1 - not at all	0.00%
2 - little important	10.98%
3 - neutral	19.78%
4 - important	27.87%
5- very important	**52.35%**

Source: author's data

- in terms of activities where tourists would use AI, the largest segment indicated solutions dedicated to environmental settings (64.78%), followed by location/guidance (63.32%), and the least selected was booking (Table 4);

Table 4. Specific use of AI solutions

Accommodation assistance	49,57%
Restaurant/dining	38,76%
Booking	28,94%
Trips	55,78%
Location guidance	63,32%
Museums/tourist attractions	51,23%
Games/entertaining	46,12%
Informational support	59,13%
Ambient/room settings	**64,78%**
Room service	56,23%
Chat bots	51,45%
Communications	48,11%

Source: author's data

- Identifying the stage of the trip where tourists consider these AI solutions very useful, brought as a preference during-trip (69.54%), and lastly the post-trip stage; It should be noted that 32.11% of respondents indicated the usefulness of AI in all stages of the trip (Table 5);

Table 5. The trip stage of using AI

Pre-trip	15,67%
During trip	**69,54%**
Post-trip	12,04%
In all phases	32,11%

Source: author's data

- For the AI solutions, already used by the respondents, the largest segment is of those who have never used such an application; out of the 2.73% of AI users, most respondents indicated primarily that they use specific applications for museums/tourist attractions, followed by those for accommodation assistance, and the last one those for communications (Table 6);

Table 6. AI solutions used

I never used it	**97.27%**
Used	**2.73%**
Accommodation assistant	9.11%
Restaurant/dining	8.06%
Booking	6.78%
Trips	4.67%
Location/guidance	7.11%
Museums/tourist attractions	**9.65%**
Games/entertaining	7.11%
Informational support	3.75%
Ambient/room settings	2.57%
Room service	3.22%
Chat bots	15.77%
Communications	2.17%

Source: author's data

- The benefits perceived by tourists in the use of AI solutions, the main one indicated was the one support for tourists (76.11%), followed by those for improving the tourist experience, and the last perceived one was the quick access to useful information (Table 7);

Table 7. Perceived benefits in the use of AI

Quick access to useful information	59.23%
Reduction of waiting/service time	60.34%
Entertaining	48.23%
Support for tourists	**76.11%**
Improving the tourist experience	74.22%

Source: author's data

- The disadvantages perceived by tourists, imposed on the first places the one on lack of anonymity (39.59%) and privacy, and the last perceived one was the reduction of human interactivity (Table 8);

Table 8. Perceived disadvantages in the use of AI

Lack of anonymity	**39.59%**
Privacy	38.01%
Personal data security	34.26%
Reduced human interaction	19.11%
I don't see any disadvantages	34.57%

Source: author's data

- From the perspective of the influence of the existence of AI applications in selecting a certain tourism company, 67.78% of respondents answered yes, they would opt for such a company; this may indicate that for tourism companies, the adoption of AI solutions may become an important element of competitive differentiation.

Conclusions

For tourism companies, several important aspects can be outlined:

- it can certainly identify a current non-consumer profile of AI solutions (90.83%), but which is aware and obviously appreciates the need to use these solutions, regardless of their declared activity and their age on the market;

- the usefulness of adopting AI solutions in their own activity has been identified; this aspect reflects the knowledge of new technologies and solutions dedicated to the tourism and hospitality industry and the fact that they are aware of the need to adopt these solutions to keep up with tourists who are constantly up to date with new technologies and applications;
- can be identified their preference for a specific set of AI applications dedicated to activities directly focused on tourists, such as restaurant/dining, room service and informational support for tourists, which also indicates a very good knowledge of the profile of tourism consumers;
- the correct perception of the adoption and use of these solutions as a competitive advantage can also be emphasized; this may reflect a good knowledge of the competitive environment and about the huge need for differentiation in the profile market;
- the category of disadvantages in adopting AI solutions is clearly marked by the high costs of these solutions; but this may also suggest a lack of information and knowledge about the solutions and alternatives offered by ITC companies for SMBs or about or about highly diversified financial plans which can provide very advantageous conditions for companies.

At the level of the tourist segment, the results allow the identification, on the one hand, of a very wide segment of effective non-users of AI (97.27%), and on the other hand, from the very narrow segment of users, o be able to sketch a profile of AI user; this can be a man, from Gen X, with university studies, with incomes over 5000 lei, who perceives as very important AI applications in the tourist experience and considers especially useful those in the category of environmental support/room settings, location/guidance and informational support; has already used during-trip, dedicated applications from the museums/tourist attractions and location/guidance category; the AI user perceives as the main advantage of using AI, the improvement of the tourist experience and support for tourists; is well informed about privacy and data confidentiality, therefore the perceived disadvantages are directly connected with these issues; then, a very important aspect, especially for tourism companies, is the fact that the presence of these applications would clearly influence the choice of one company to the detriment of another that has not adopted AI solutions.

From a generational perspective, very useful aspects can be identified, also:

- a trans-generational preference for AI solutions, used during-trip, in the category museums/tourist attractions and for those that offer support for tourists;
- Gen X, Y, BB prefer AI applications from the category accommodation assistance, booking, trips, room service;
- Silent Gen, is the only one that has never used AI solutions in travel and does not consider them as an advantage in the selection of a travel company;
- Gen Z, is interested in solutions in the category trips/location guidance, museums/tourist attractions, games/entertaining, chat bots; they have already used these applications in these categories, they do not perceive any disadvantage and they are not yet influenced by the existence of these solutions in choosing the tourism company.

From the results obtained, ***tourism companies can identify****:*

- the existence of a very important demand for AI applications, from tourists of all generations;
- the activities and categories of applications requested by tourists;
- the fact that the adoption of these solutions would ensure a real competitive advantage for them.

Also, companies in the ITC and new technologies industry would be extremely useful to launch campaigns to intensively promote the AI solutions they develop, as well as to conceive attractive financial plans, so that the tourism companies know how to select and adopt, the most suitable solution for their activity, as soon as possible.

Limitations

In this study, can be marked some limitations regarding the insufficient representativeness of the population included in the study and the consideration only of the one that can be subscribed to the Romanian online segment; but, we consider that the obtained results can constitute an important informational base for several categories of corporate users,

obviously starting with the companies in tourism, then with those in the software industry and the development of technologies; also, the results of the study can be used in the development of other more complex and comparative studies that can be carried out at regional and global level.

REFERENCES

1. Builtin (2021), https://builtin.com/artificial-intelligence/examples-ai-in-industry, accessed in January 2021
2. Businesswire (2021), https://www.businesswire.com/news/home/20210216005474/en/Expedia-Group-Releases-Trends-and-Predictions-for-2021, accessed in February 2021
3. Busin (2021), https://www.businessinsider.com/generation-you-are-in-by-birth-year-millennial-gen-x-baby-boomer-2018-3, accessed in January 2021
4. Drexler Nadine, Lapré Viyella Beckman (2019), "For better or for worse: Shaping the hospitality industry through robotics and artificial intelligence", *Research in Hospitality Management*, Vol. 9 No. 2, DOI: 10.1080/22243534.2019.1689701, p. 119, https://www.ajol.info/index.php/rhm/article/view/192222
5. Emerj (2021), https://emerj.com/ai-sector-overviews/everyday-examples-of-ai/, accessed in January 2021
6. Europarl (2021), https://www.europarl.europa.eu/doceo/document/TA-8-2019-0081_EN.html, accessed in March 2021
7. Grundner Lukas, Neuhofer Barbara (2021), "The bright and dark sides of artificial intelligence: A futures perspective on tourist destination experiences", *Journal of Destination Marketing & Management*, Volume 19, March 2021, 100511, p. 8, https://www.sciencedirect.com/science/article/pii/S2212571X20301335
8. Hack (2021), https://hackernoon.com/successful-implications-of-ai-machine-learning-in-travel-industry-3040f3e1d48c**,** access in March 2021
9. Hayeewangoh Nimarunee, Graitapon Temwitkajorn, Amorntep Maneenium (2021), "The Development of Artificial Intelligence System for Being a Good Host: A Case Study of Tourism City in Betong District, Yala, Thailand"**,** P*sychology and education,* 58(2): 2579-2586 ISSN: 00333077, p. 2581, 2585, http://psychologyandeducation.net/pae/index.php/pae/article/view/2419/2112
10. Hoteltech (2021), https://hoteltechreport.com/news/100-hotel-trends, accessed in January 2021

11. Inbenta (2021), https://www.inbenta.com/en/blog/chatbot-tourism-industry/, accessed in March 2021
12. Indexmundi (2021), https://www.indexmundi.com/world/age_ structure.html, accessed in January 2021)
13. Industryarc (2021), https://www.industryarc.com/Report/18662/travel-hospitality-ai-market.html#, accessed in February 2021
14. Ivanov Stanislav Hristov, Webster Craig (2017), "Adoption of Robots, Artificial Intelligence and Service Automation by Travel, Tourism and Hospitality Companies – A Cost-Benefit Analysis", Prepared for the International Scientific Conference "*Contemporary Tourism – Traditions and Innovations*", Sofia University, 19-21 October, p. 2-3, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3007577
15. Kim Jinkyung Jenny, Montes Antonio Ariza and Heesup Han (2021), "The Role of Expected Benefits towards Smart Hotels in Shaping Customer Behavior: Comparison by Age and Gender", *Sustainability,* 13(4), 1698, p. 2, https://doi.org/10.3390/su13041698, https://www.mdpi.com/2071-1050/13/4/1698
16. Kırtıl, İ., Aşkun, V. (2021), "Artificial Intelligence in Tourism: A Review and Bibliometrics Research", *Advances in Hospitality and Tourism Research* (AHTR), DOI: 10.30519/ahtr.801690, p. 206, https://dergipark.org.tr/en/download/article-file/1315726
17. Medium (2021), https://medium.com/@Imaginovation/ai-assistant-the-future-of-travel-tourism-with-emergence-of-artificial-intelligence-f9ea3cad0cc, accessed in March 2021
18. Nam Kichan & Dutt Christopher S. & Prakash Chathoth & Abdelkader Daghfous & M. Sajid Khan (2020), "The adoption of artificial intelligence and robotics in the hotel industry: prospects and challenges", *Electronic Markets*, p.8, https://doi.org/10.1007/s12525-020-00442-3,)https://link-springer-com.am.e-nformation.ro/content/pdf/10.1007/s12525-020-00442-3.pdf
19. PWC (2021), https://www.pwc.com/gx/en/issues/technology/essential-eight-technologies.html, accessed in February 2021
20. Russell Stuart J. and Norvig Peter (2010), "Artificial Intelligence A Modern Approach" Third Edition, *Prentice hall*, 2010, p. 1, 28-29 https://cs.calvin.edu/courses/cs/344/kvlinden/resources/AIMA-3rd-edition.pdf;
21. Verma Indradeep, Krishna K. Rama, Divya Sen, Jyoti Kumari Prasad (2021), "Artificial Intelligence on Future Aspects (How AI Will Impact in 2030)", *Psychology And Education,* 58(2): 401-414, p. 402, 407-410, http://psychologyandeducation.net/pae/index.php/pae/article/view/1855/1616

22. WTTC (2021), https://wttc.org/Research/Economic-Impact, accessed in February 2021
23. Zlatanov Sonja, Popesku Jovan (2019), "Current Applications Of Artificial Intelligence In Tourism And Hospitality", *Sinteza*, p.87, https://doi.org/10.15308/Sinteza-2019-84-90, http://portal.sinteza.singidunum.ac.rs/paper/648