THE NEED FOR ARTIFICIAL INTELLIGENCE (AI) IN TOURISM MANAGEMENT

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Abstract: The paper presents a model for evaluating the influence of Artificial Intelligence (AI) on the tourist experience. The proposed AIDE model performs AI evaluation in all travel stages, from pre-travel, during travel and post-travel. The results were obtained through the practical application of the model by using the Chat GPT application in the tourist-tourist destination interaction. The four evaluation components are: attract attention (A) and generate interest (I), stimulates the desire (D) to travel and creates emotion (E) through the experience of visitors.
Keywords: artificial intelligence, Chat GPT application, AIDE evaluation model, tourist experiences.

1. Introduction

Lately, Artificial Intelligence (AI) has started to influence the activities and role of the executive manager, in order for him to cope with changes in an economic environment increasingly subject to turbulence and shocks. Today's managers are beginning to use AI to improve productivity and efficiency in the process of management, planning, organization and decision-making, leadership and motivation.

1.2. Premises

As AI becomes an integral part of the Information Society (born August 12, 1981, when the first personal computer was launched), people fear that they will be replaced by AI. The paper shows that while AI has made great strides this year, there are still some limits. Therefore, instead of fearing AI, people should learn how to work alongside it and utilize the advantages it can bring. AI can take over many of the repetitive tasks of humans, freeing up employees to focus on the creative side of their work.

1.3. Literature Review

From the study of specialized literature [1], it can be said that AI is a new technology that in the coming years will significantly change the business landscape in the 21st century. Some articles present the advantages of implementing AI in a company [4], others claim that AI could change companies, industries and society for the worse in the future. Therefore, the implementation of AI involves significant investments and risks, which means that managers should learn from the experiences of others and analyze the impact of AI for businesses in tourism and other industries [2].

The present study sought to answer the research question proposed by Loreno[3]: How should organizations manage and implement AI in their organizations? If in the specialized articles reviewed [4], the authors focused especially on the banking industry, medicine, IT, the car construction industry, production, storage, logistics and transport, the present study is for specific applications in the tourism industry, with examples from tourism in Romania. The purpose of the study is for better and comprehensive understanding of the use of AI, and the objectives are to identify the impact, influence of critical success factors and limits of AI implementation in tourism management.

There is a need to synthesize the definitions of the term "Artificial Intelligence" versus "Human Intelligence". As stated by [1], in the definitions given in the specialized literature, it started from the question posed by Alan Turing (1950): Can machines think?

The possibility of machines reaching human intelligence has always been a concern in the scientific world. The term "artificial intelligence" was coined in 1956 by John McCarthy [3] who defined it as "the science and engineering of making intelligent machines".

In the 1970s and 1980s there was a shift from machines to computers, and Brooks [4] proposed a new definition for AI as "the science of making computers do things that, if done by humans, would require a lot of intelligence."

Whether computers and robots will replace humans in terms of intelligence is not overtly stated, so it is significant to define the term "intelligence" well. Intelligence can be seen as a person's ability to solve complex problems through logical thinking and rational-emotional knowledge. The paper proposes a definition for AI as the *ability of a computer or robot and a program or algorithm, a machine or application to achieve skillful things through a level of logical and cognitive thinking as close as possible to that of the*

human brain, through continuous learning from people and from itself, in order to become smarter over time and understand people and their emotions. Artificial intelligence encompasses smart technologies and tools, from machine learning to the Internet of Everything, from smart machines to computers, from robots to chatbots, from augmented reality to virtual reality.

With this new definition in mind, this study pursues a future approach to AI with the bright and dark sides of artificial intelligence in tourism management.

2. Method

A multitude of information and communication technology (IT) applications have been implemented in

tourism management [7].

IT integration is ubiquitous at all stages of a customer's journey: pre-travel, during travel and post-travel. At the same time, in the tourism management of tourist destinations, specific application programs are used to make services more efficient and create positive experiences for each tourist.

The interactions between tourists and the hosts of tourist destinations are essential in the introduction of Artificial Intelligence (AI) in the tourism industry. The concerns of tourism studies [8] are closely related to AI's ability to dynamically bring together the two entities: tourists are influenced by the tourist attractions of the destination, and tourist destinations are mostly visited by curious tourists.
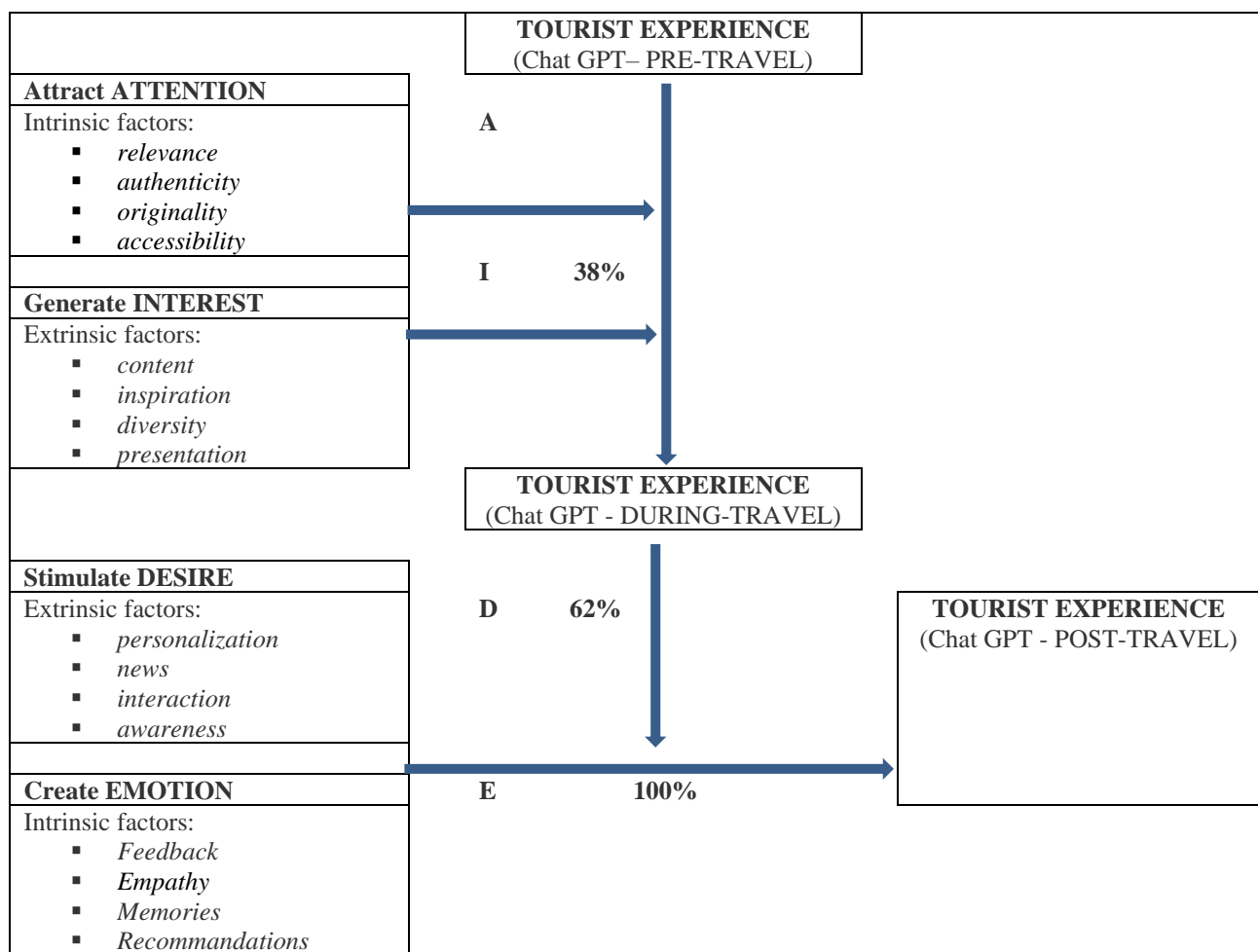

Fig. 1. Model for evaluating the influence of AI on the tourist experience

Interactions between the tourist and the host, whether with local residents or tourism workers, are sources of fulfillment, they lead to tourist satisfaction l binder for improving tourism experiences.

To analyze the influence of AI on the tourist experience, the AIDE model for evaluating the influence of Artificial Intelligence (AI) on the tourist experience

is proposed, as shown in figure 1. Intrinsic and extrinsic influencers are presented in the three journey stages across all four components: attract attention, generate interest, stimulate desire and create emotion [9].

The proposed model, also called the POPOVICI Model, has a well-defined and logical structure, dividing the tourist-destination interaction into three evaluation

stages and highlighting the four AIDE components. This structure facilitates its understanding and application in practice. Enchantment is holistic and covers the entire travel cycle of tourists, from the pre-travel phase (travel planning phase), to the actual travel phase and finally to the post-travel phase of tracking the travel experience. At the same time, the model emphasizes the importance of emotions in all three stages and highlights how AI can play a decisive role in creating positive emotions and satisfaction for tourists.

In order to evaluate the influence of AI on the tourist experience, a practical study of the use of the Chat GPT application, launched in November 2022 [5], was carried out for each AIDE component, in each travel stage, and the following results were obtained:

A. ATTENTION (pre-travel):

Chat GPT can be implemented on a travel website to interact with tourists seeking information about potential destinations. A tourist can initiate an online dialogue with Chat GPT and request recommendations about specific destinations based on his needs and desires. This interaction can be more attractive and user-friendly than static search on a website.

I. INTEREST (pre-travel and during travel):

By using Chat GPT, tourists can have quick and personalized access to relevant and up-to-date information about tourist attractions, activities and events organized in a tourist destination. Through the answers given, Chat GPT presents interesting and unique aspects of the place.

D. DESIRE (during travel):

While traveling, GPT Chat can suggest unique experiences or local activities to tourists in real time based on their preferences, such as a unique nature excursion or dining at an authentic local restaurant. All to stimulate tourists' desire to explore more on their travels and enjoy unique and authentic experiences.

E. EMOTION (during travel and post-travel):

Chat GPT can be a tourist guide during the travel and identify through voice analysis or facial expressions the emotions experienced by each tourist. Depending on the tourists' mood, Chat GPT can suggest what activities to practice and make them aware of what they gain emotionally if they do a certain relaxation activity and what they lose if they don't. After the trip, GPT Chat can ask for feedback from tourists about their experience and ask them for their travel impressions. At the same time, Chat GPT offers ways to track and organize travel memories and photos.

3. Main Results

The relevant intrinsic and extrinsic factors for each component of the AIDE model are presented in Table 1.

Contingency Table (Points)   **Tab.1**

Components of the AIDE Model	Influencing factors	Score (1-10)	Precent (%)
Attract ATTENTION	1. Relevance	2.5	20%
	2. Authenticity	2.5	
	3. Originality	2.5	
	4. Accessibility	2.5	
Generate INTEREST	1. Content	2.5	25%
	2. Inspiration	2.5	
	3. Diversity	2.5	
	4. Presentation	2.5	
Stimulate DESIRE	1. Customization	2.5	25%
	2. Novelty (News)	2.5	
	3. Interaction	2.5	
	4. Awareness	2.5	
Create EMOTION	1.Feedback	2.5	30%
	2. Empathy	2.5	
	3. Memories	2.5	
	4. Recommendations	2.5	
TOTAL			**100%**

The total influence score is given by the relationship:

Total Influence Score = ((A_Score * 20) +(I_Score *25) + (D_Score* 25) +(E_Score*30)) / 100

(1)

The score of each component is given by each factor:

A. ATTENTION:

1. Relevance: refers to how relevant the recommendations and information provided by Chat GPT are to tourists' preferences;
2. Authenticity: shows how credible and true the information provided by Chat GPT is about a destination or tourist attraction;
3. Originality: Chat GPT whether or not it provides unique and novel information about the tourist destination and travel experiences;
4. Accessibility: How easily tourists can interact with Chat GPT, through a friendly and intuitive interface.

I. INTEREST:

1.Content: The content information provided by Chat GPT is useful for the needs and wishes of tourists;
2.Inspiration: GPT Chat arouses tourists' curiosity and excitement about possible experiences during the trip;
3. Diversity: Chat GPT has or has not offered a wide range of experiences and offers of tourist destinations to meet the different preferences of tourists;
4. Presentation: Chat GPT has sought or not to provide visual images to support the information given to tourists.

D. DESIRE:

1. Customization: the recommendations made by Chat GPT during the trip are continuously adapted both to the meeting place and its attractions, as well as to the tourists' preferences;

2.Novelty: Chat GPT suggests or not new activities and experiences that make tourists want to explore more;

3.Interaction: Whether or not GPT Chat provides prompt support and assistance throughout the journey;

4.Awareness: Chat GPT seeks or not to make tourists aware of what they gain by visiting a place and what they lose by not visiting it, providing quick access to information, including through smart mobile phones or virtual assistants.

E. EMOTION:

1. Feedback: Chat GPT requests or not feedback on the travel experience and impressions of tourists;

2.Empathy: Chat GPT may or may not be close to a human tourist guide who always puts himself in the state of mind of tourists, with sensitivities and preferences;

3. Memories: Whether or not Chat GPT offers ways to track and organize travel memories and photos;

4.Recommendations: GPT Chat provides recommendations for future trips, built on tourists' preferences and experiences.

Once the scores on each influence factor and on the total component of the AIDE model are established, the total AI influence score can be calculated, in the given case for Chat GPT which will be between the values 0 and 10.

Applying the POPOVICI Criterion **[6]** also called the 38/62 Criterion based on the golden ratio, it can be established whether the influence of AI on the travel experience is significant or not:

- If the total score is less than 3.8, the influence of AI on the tourist experience is insignificant;
- If the total score is between 3.8 and 6.2, the influence of AI on the tourist experience is significant and sensitive;
- If the total score is higher than 6.2, the influence of AI on the tourist experience is particularly significant and hypersensitive.

In order to highlight the limits of using AI in tourism management, the strengths and limits of Artificial Intelligence are presented on the components of the AIDE model:

A. ATTENTION (pre-travel):

1.   Strengths:

Interactive communication: GPT Chat can attract tourists through a pleasant and personalized conversation, better capturing their attention and permanently maintaining their interest;

Quick information: through Chat GPT tourists can get relevant information in real time, with the help of quick and easy online chats.

2.   Limits:

Adaptation difficulties: Chat GPT may have difficulties adapting to the specific needs and wishes of each tourist, which may lead to recommendations that are too general than expected.

I. INTEREST (pre-travel and during travel):

3.   Strengths:

Personalization of recommendations: Chat GPT can take into account tourists' preferences and adapt its recommendations to spark their interest in unique experiences;

Accessibility to reviews and past experiences: Through GPT Chat tourists can get reviews from other travelers, which can influence tourists' decision and drive their desire.

4.   Limits:

Difficulty updating information: GPT Chat may provide out-of-date information about certain tourist attractions or events, which may lead to tourist disappointment.

D. DESIRE (during travel):

5.   Strengths:

Flexibility in interaction: GPT Chat can be available on smart mobile phones, giving tourists the ability to receive real-time recommendations based on their location and current activities;

Identifying changing interests: GPT Chat can identify changes in tourists' preferences throughout the trip and adapt recommendations to their new needs and desires.

6.   Limits:

Data access difficulties in places with limited Internet coverage: the use of Chat GPT may be restricted in certain tourist destinations where there is no good Internet connection signal, affecting the application's ability to provide real-time recommendations.

E. EMOTION (during travel and post-travel):

7.   Strengths:

Prompt Feedback Request: GPT Chat can request prompt feedback from tourists about their travel experience and impressions;

Recommendations for future trips: Through GPT Chat, recommendations can be made to tourists for future trips.

8.   Limits:

Difficulty in creating emotions: Chat GPT can have many difficulties in creating genuine emotions and real empathy in interactions with tourists.

The study carried out showed that GPT (Generative Pre-trained

Transformer) can be used as AI in tourism management through the proposed AIDE model.

The Popovici model also called the AIDE model has certain challenges such as: the focus on the use of AI in tourist-host interaction and the need for local adaptation in tourist destinations and to new trends in digital technology such as augmented and virtual reality.

It can be said that the AIDE model (Popovici Model) represents an interesting and promising proposal to describe the influence of AI in tourism management, especially on the tourist experiences lived by visitors in certain tourist destinations.

4. Conclusions

This paper presents the results of the study on the need for Artificial Intelligence to penetrate more and more into tourism management.

Some implications of implementing AI in the tourism industry are highlighted. First, there needs to be a balance between how much AI should penetrate into tourism activities and how well AI should understand tourists' needs and wants, emotions and real-time travel situations to provide useful information at the right place and time of travel. Second, people should not be afraid of AI, but should learn how to work alongside it and use the advantages it can bring to repetitive tasks in tourism and interacting with tourists.

In order to obtain practical results in achieving the objectives of the study, the influence of AI through the Chat GPT application on the tourist experience in the interaction of tourists with hosts in the tourism industry was evaluated.

A proprietary AIDE evaluation model was developed by which in the three stages of the travel (pre, during and post-travel) the influencing factors of the four components were evaluated: attracting attention, generating interest, stimulating desire and creating emotions throughout the travel.

The total influence was evaluated with a calculation formula that takes into account the scores of each influence factor and the weight on each component.

The proposed POPOVICI model has a well-defined and logical structure, dividing the tourist-destination interaction into three evaluation stages and highlighting the four AIDE components. This structure facilitates its understanding and application in practice. Addiction is holistic and covers the entire travel cycle of tourists.

Applying the POPOVICI Criterion for a golden ratio of AI-tourist interaction one can say whether the influence of AI is significant or not.

The main theoretical and practical contribution of the study is the conceptualization of the AIDE model of using AI in tourist-tourist destination interaction for unique and unforgettable experiences for tourists.

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Personal Notes

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