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# Analysis of the Opinions of Lebanese Tourists' Sample on Choosing Hotels with Artificial Intelligence Features

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**ABSTRACT:** This study investigates the opinions of Lebanese tourists regarding the adoption of Artificial Intelligence (AI) in the hotel industry. As AI technologies more and more immerse various aspects of customer service, including personalized recommendations, virtual assistants, and check-in experiences, understanding tourist attitudes towards these novelties becomes serious. This study involved a selective related papers from literature review to gather existing knowledge on our topic. Therefore, through the quantitative analysis of a survey in which data on the opinions of Lebanese tourists were collected, this research analyzes how the capabilities of artificial intelligence influence tourists' hotel choices. The findings disclose that while Lebanese tourists are somewhat familiar with AI technologies, their overall knowledge of AI applications in hotels is moderate. Key factors such as price, location, and online reviews were found to have a more significant impact on hotel selection compared to AI-powered services, which held neutral importance. The presence of AI in hotels did not strongly influence tourists' booking decisions, although respondents generally agreed that AI could enhance their travel experiences. Satisfaction with AI capabilities in hotels was also neutral, and while there was some likelihood of recommending AI-enabled hotels, the overall interest

continued cautious. Opinions on Likert scale questions were similar in most statements across gender and age. Also, Education and income levels influenced attitudes towards AI in hotels. The study was conducted by the "Technology Acceptance Model (TAM)" to understand and predict how users come to accept and use technology. It can be said that from the perspective of the TAM model, Lebanese tourists have moderate actual use of AI in hotels, neutral in statements of perceived usefulness, neutral in statements of perceived ease of use, and cautiously positive in statements of behavioral intention.

**Keywords:** *AI Capabilities - Lebanese Tourists - Hospitality Industry - Tourism Preferences - Customer Experience*

## 1. Introduction

Over the last few decades, the tourist and hospitality industries have seen considerable technological improvements. One of the most significant breakthroughs has been the use of artificial intelligence (AI) into hotel operations. AI technology, like as chatbots [1] [2] [3], virtual assistants, and personalized suggestions [4], etc. there are many others..., have the potential to improve customer experiences, rearrange processes, and improvement efficiency. As tourists become more tech-knowledge, their opportunities for whole and personalized experiences have grown. In Lebanon, a nation with a rich cultural past and a booming tourism industry, knowing how travelers view AI in hotels is critical to the business's growth.

The Problem Statement of this study is that despite the expanding use of AI in hotels worldwide, it is important to know how Lebanese visitors view these technological improvements. It is unknown if the existence of AI capabilities impacts their hotel preferences when travelling for tourism. The primary objective of this study is to evaluate the opinions of Lebanese tourists regarding the use of AI capabilities in hotels. Specific objectives include: 1) Assessing the level of awareness and understanding of AI technologies among Lebanese tourists; 2) Determining the factors that influence Lebanese tourists' decisions to choose hotels with AI capabilities; 3) Analyzing the perceived benefits and drawbacks of AI in hotels from the perspective of Lebanese tourists. To achieve these objectives, the study will address the following research questions: 1) How aware are Lebanese

tourists of AI technologies used in hotels; 2) What factors influence Lebanese tourists' preferences for hotels with AI capabilities; 3) What are the perceived benefits and disadvantages of AI in hotels according to Lebanese tourists?

In this research, we aim to provide a comprehensive overview of "The opinions of a sample of Lebanese tourists on Choosing hotels with artificial intelligence features" through a descriptive analysis. Although we did not formulate specific hypotheses at the outset, our study is guided by clear research objectives and questions designed to uncover key patterns and trends within our data. By utilizing descriptive statistics such as means, standard deviations, and frequencies, we aim to accurately summarize and present our findings. The significance of the study is notable for a variety of reasons. First, it offers insights into the attitudes and preferences of Lebanese visitors. Second, the findings can assist Lebanon's hotel operators and marketers better understand how AI affects consumer happiness and decision-making. Finally, the study adds to the existing academic literature on technology adoption in the tourist and hospitality industries.

A quantitative research design will be employed, utilizing a structured survey to collect data from a sample of Lebanese tourists. The survey will include questions on demographics, awareness of AI, factors influencing hotel choice, and perceptions of AI benefits and drawbacks. The study focuses on Lebanese tourists who have traveled for any type of tourism. Data will be collected through surveys; then Data will be analyzed using statistical methods to identify trends and correlations. The study may limit the depth of insights compared to qualitative methods. Additionally, the study is limited to the opinions of tourists, not hotel operators or employees.

The report is structured as follows: in section 2 Selective Review of Related Literature will be presented; in section 3 the methodology, research design and data analysis procedures will be described; in section 4 the results and analysis will be explained; in section 5 the discussion, conclusions and recommendations will be summarized.

## 2. Selective Review of Related Literature

AI-powered solutions in the travel and hospitality sectors are changing the way businesses operate and engage with customers. Chatbots offer 24-hour customer

support and booking help, whilst personalized recommendations improve travel experiences by adapting ideas to individual interests. Virtual assistants, which are generally voice-activated, enhance the guest experience by providing easy services. Dynamic pricing models, enabled by AI, enable real-time rate modifications based on demand and competition. Predictive analytics enables firms to foresee trends and customer behavior, resulting in better informed decision-making. In hotels, smart rooms employ automation to regulate lighting, temperature, and entertainment, increasing visitor comfort. Robotics are increasingly being utilized for duties such as luggage handling and hotel service, which improves efficiency. Furthermore, face recognition technology simplifies check-in procedures and improves security, resulting in a more smooth and safe travel experience. Additionally, robotics and automation in hotels and travel services are revolutionizing guest interactions and operational processes, making AI a critical component in shaping the future of tourism and hospitality.

In this section, a selective review of related literature papers and works will be presented in order to know more about the usage of AI in hotel industry. Starting by a theoretical study reviews about and robotics' development and current use in tourism and hospitality, which is presented in [5], and it evaluates these technologies' future forecasts in the industry, offering insights from experienced sector writers. Also, the study aims to contribute to both academic literature and industry practices by highlighting the current state and future potential of AI and robotic technologies in tourism. In [6], a qualitative analysis to explore AI's impact on the hotel industry sector, finding that AI positively affects service quality and risk management is presented. The research highlights that due to AI's lack of emotional intelligence, it cannot yet fully replace human workers. In [7] eight major IT acceptance models are presented, including the technology acceptance model, and others. It introduces the Unified Theory of Acceptance and Use of Technology (UTAUT), which provides a framework for assessing technology acceptance and designing targeted interventions to encourage adoption. In [8] a study is presented, and it hypothesizes that individual differences like age, gender, and experience moderate the constructs' effects on behavioral intention and technology use. The study is based on the Unified Theory of Acceptance and Use of Technology (UTAUT). In [9] a study about Tourists'

Willingness to Adopt AI in Hospitality - case of Sustainability in Developing Countries – has been presented. The study investigates the impact of artificial intelligence (AI) on customer behavior within Iran's hospitality industry, specifically in restaurants, airline companies, and hotels. In [10] a study about "Artificial intelligence's impact on hospitality and tourism marketing: exploring key themes and addressing challenges" has been presented where the study explores the impact of AI on hotel marketing using a grounded theory approach through in-depth interviews, focus groups, and a survey. In [11] an empirical study about "Impact Of AI In Tourism And Hospitality Industry" was presented. It shows at how key tourism and hospitality industries have been modified and continue to adjust to Artificial Intelligence (AI). The focus of the study is also on the future advancements and problems in tourism.

In [12] a paper titled "Innovation Dynamics in Hospitality and Tourism: AI, Sustainability, and Customer Satisfaction" investigates into the evolving landscape of these sectors, exploring the transformative role played by artificial intelligence (AI) and sustainability practices in enhancing the overall guest experience. In [13] a paper titled "AI-Enabled Insights into Customer Satisfaction: A Case Study in the Hospitality Industry" presents a case study utilizing AI-enabled insights to delve into customer satisfaction within the hospitality sector. In [14] a paper titled "Maximizing Hospitality Industry Efficiency: AI Applications for Sustainability and Customer Satisfaction" explores the various applications of AI within the hospitality sector, focusing on optimizing resource utilization, streamlining processes, and personalizing guest experiences. In [15] a paper titled "Analyzing the Impacts of Artificial Intelligence Service Quality and Human Service Quality on Customer Satisfaction and Customer Loyalty in the Hospitality Sector" explores the differential role of artificial intelligence (AI) and human interface (HI) in the hospitality industry and their impact on customer satisfaction and loyalty. In [16] a paper titled "Enhancing Hospitality Service Quality with Artificial Intelligence" provides theoretical and practical insights into how artificial intelligence service agents such as chatbots and robots in key hospitality sectors can provide excellent service quality and enhance customer relationships and well-being. In [17] a paper titled "The Impact of Artificial Intelligence (AI) On Guest Satisfaction In Hotel Management:

An Empirical Study Of Luxury Hotels" examines the impact of artificial intelligence (AI) (Personalized Guest Experience, Chatbots and Virtual Assistants, Revenue Management, Operational Efficiency, Fraud Detection and Security, Predictive Maintenance) on guest satisfaction in luxury hotels from perspective of managers. A quantitative methodology was employed through adopting questionnaire within luxury five stars hotels in Amman – Jordan. In [18] a paper titled "AI In Hospitality Industry: A Comprehensive Study on Its Impact on Operations, Customer Experience, And Revenue Management" discusses some potential future developments or trends in the use of AI in the hospitality industry including the integration of AI with other emerging technologies, such as virtual and augmented reality.

Now some studies related to Lebanon are presented. In [19] an important question is asked, answered and explained. The question is "How AI Could Revitalize Lebanon's Hospitality Industry". It explains the importance of Predictive Maintenance, Voice Assistance and Smart Devices, Enhanced Security, Improve Restaurant Management, Customer Service and Personalization, Menu Optimization and Recommendations. In [20] AI adoption factors' impact on service quality in international hotels in Beirut is evaluated. It classifies these factors by their significance, using a questionnaire distributed to guests. The study found that perceived trust and usefulness are critical factors, significantly influencing service quality. One-way ANOVA revealed that interactivity and customization are important, but ease of use was not perceived as beneficial, suggesting a need for simplified AI applications. In [21] the eWOM Platforms is treated in function of Moderating the Relationships between Political and Terrorism Risk, Destination Image, and Travel Intent: The Case of Lebanon. In [22] a study about the Effect of Social Media on Tourism during Lebanese Political Crisis was presented. Social media was the goal in that study while in this study our goal is the AI effect.

The study in this report will focus on the Lebanese Tourists' Opinions about Choosing Hotels with AI Capabilities. The study must address and answer three research questions (awareness of Lebanese tourists of AI technologies - influence Factors - perceived benefits and disadvantages), and it is based and grounded in the

Technology Acceptance Model (TAM) which is presented in [23], which suggests that perceived usefulness and perceived ease of use influence individuals' acceptance of technology. This model will be used to analyze Lebanese tourists' acceptance and opinions of AI technologies in hotels.

## 3. Methodology

Knowing that there are Qualitative Method (e.g., interviews, focus groups), Quantitative Method (e.g., surveys, statistical data), and mixed method that includes the two previous methods. Knowing that those methods are the basics of most research context design. But in this research, and in order to simplify the work, we will concentrate only on the quantitative methods and future work will include qualitative method where the hotel operators and employees will be taken into account.

The questionnaire in this study was designed to gather comprehensive insights into Lebanese tourists' perceptions and experiences with AI technologies in hotels by using the Technology Acceptance Model (TAM) framework. It is structured into five sections and 15 questions: Section 1 with 4 questions collects demographic information, including age, gender, education, and income levels, to profile the respondents; Section 2 with 3 questions focuses on awareness and Actual Use (AU) of AI technologies, probing familiarity with AI, previous experiences in AI-equipped hotels, and overall knowledge of AI in the hospitality industry; Section 3 with 3 questions focuses on the perceived usefulness (PU) of AI in hotels, asking participants to evaluate the importance of various factors when choosing a hotel with AI capabilities, to express their agreement with statements regarding AI's role in enhancing their travel experience, and the benefits the customers can see; Section 4 with 2 questions examines perceived ease of use (PEOU) and potential drawbacks of AI in hotels, such as privacy concerns and the lack of human interaction, as well as overall satisfaction with AI capabilities in hotels; Section 5 with 3 questions explores behavioral intentions (BI) related to AI in hotels, including the likelihood of recommending AI-enabled hotels, beliefs about the impact of AI on travel experiences, and opinions on whether hotels in Lebanon should invest more in AI technologies. This structure provides a clear, multilayered understanding of

consumer attitudes towards AI in the hospitality sector. The questionnaire employs a mix of question types, including multiple-choice, and Likert scale, to gather diverse and detailed insights. Multiple-choice questions efficiently collect demographic data, allowing for easy categorization and analysis. Likert scale questions assess respondents' attitudes and perceptions toward AI technologies, providing a nuanced understanding of their opinions through a range of agreement levels. Table 1 shows the Five-Point Likert Scale Interpretation Guide for the different questions.

Table 1:Rating Scale Reference Table.

| Level | Range | Goodness | Importance | Satisfaction | Familiarity | Likely | Agreement |
|---|---|---|---|---|---|---|---|
| 1 | 1-1.8 | Very poor | Very unimportant | Very unsatisfied | Very unfamiliar | Very unlikely | Strongly Disagree |
| 2 | 1.8-2.6 | Poor | Unimportant | Unsatisfied | Somewhat Unfamiliar | unlikely | Disagree |
| 3 | 2.6-3.4 | Fair | Neutral | Neutral | Neutral | Neutral | Neutral |
| 4 | 3.4-4.2 | Good | important | satisfied | Somewhat familiar | likely | Agree |
| 5 | 4.2-5 | Excellent | Very important | Very satisfied | Very familiar | Very likely | Strongly Agree |

The data collection for this questionnaire was conducted using a structured, quantitative approach. The survey was administered online, which facilitated broad participation by making it accessible to a wide audience. This method allowed respondents to complete the questionnaire at their convenience, leading to more thoughtful and accurate responses. This approach provided a comprehensive understanding of respondents' demographics, their familiarity with AI technologies in hotels, and their perceptions of these technologies' usefulness and ease of use. The collected data was subsequently analyzed to identify trends and patterns, yielding valuable insights into consumer attitudes towards AI in the hospitality industry.

The sampling technique is very important for Inferential Statistics in order to generalize sample results to the population. Normally we have to respect these points: 1) The sample must be representative of the broader population and the sampling techniques must reflect the population's demographics accurately and, in this study, this point not fully respected since it is limited more to who can we reach

to fill the questionnaire; 2) The sample must have a sufficient large sample size to ensure that findings are statistically significant and reliable and, in this study, a limited number of random answers from online through google form have been collected; 3) Random Sampling method must be applied in order to minimize bias and improve the representativeness of the sample and, in this study, the link of google form has been sent through WhatsApp and published on social media platforms. For the above three mentioned limitations, the title proposed in this study used “Opinions of a sample of Lebanese tourists” and not “Opinions of Lebanese tourists”.

The data analysis procedures for this study involved quantitative methods to interpret the collected responses. Descriptive statistics by SPSS were used to summarize demographic information and overall trends in awareness and perceptions of AI technologies in hotels. Likert scale responses were analyzed using mean scores and frequency distributions to assess attitudes and perceived usefulness. Relationships between different variables were done. These techniques enabled a detailed understanding of the data, helping to identify key insights and patterns relevant to the study's objectives.

Ethical considerations were dominant in conducting this study. Informed consent was obtained from all participants, ensuring they were aware of the study's purpose, the voluntary nature of their participation, and their right to withdraw at any time without consequence. The anonymity and confidentiality of respondents were strictly maintained, with no personally identifiable information collected or stored. Data security measures were implemented to protect the integrity and privacy of the information gathered. Additionally, the study design and procedures were reviewed to ensure they complied with ethical standards and guidelines for conducting research involving human subjects, thereby safeguarding the rights and well-being of all participants.

## 4. Findings and Analysis

First of all, the reliability must be computed in order to be aware about the internal consistency of the collected data. The SPSS results show that the reliability analysis

of the dataset, measured using Cronbach's Alpha, is .890 across 14 items. This indicates a high level (very good to excellent) of internal consistency among the items in the dataset, suggesting that the items' reliability measure the same underlying construct.

### 4.1 Descriptive Statistics of Demographic Information

Demographic information results are shown in Table 2. The majority are aged above 40 (56.4%), with (43.6%) under 40. In terms of gender, 53.8% are female, and 46.2% are male. Regarding education, the largest group holds a PhD degree (43.6%), followed by those of Bachelor's degree (30.8%), then those of Master's degree (25.6% each). Most respondents have a medium income level (66.7%), while 25.6% have a low income and 7.7% have a high income.

Table 2: Descriptive Statistics of Demographic Information.

| Question | Class | % Percent |
|---|---|---|
| Age | Under 40 | 43.6 |
| | Above 40 | 56.4 |
| Gender | Female | 53.8 |
| | Male | 46.2 |
| Education Level | Bachelor's Degree | 30.8 |
| | Master's Degree | 25.6 |
| | PhD degree | 43.6 |
| Income Level | Low | 25.6 |
| | Medium | 66.7 |
| | High | 7.7 |

### 4.2 Descriptive Statistics of Opinion Questions

Figure 1 & Figure 2 present a comparative analysis of the perceived benefits and drawbacks of Artificial Intelligence (AI).

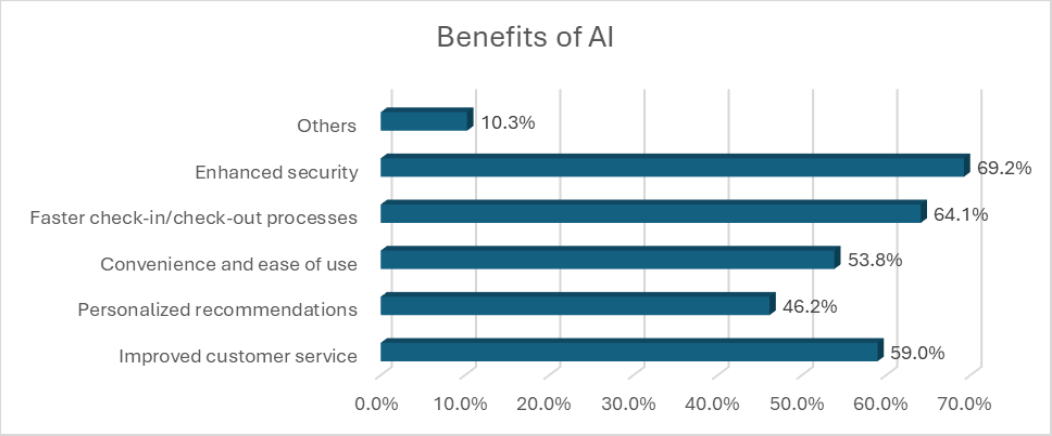


Figure 1: perceived benefits of Artificial Intelligence (AI).

On the positive side (Figure 1), AI is seen as significantly enhancing security (69.2%), accelerating check-in/check-out processes (64.1%), and offering convenience and ease of use (53.8%). It is also valued for personalized recommendations (46.2%) and improved customer service (59.0%).

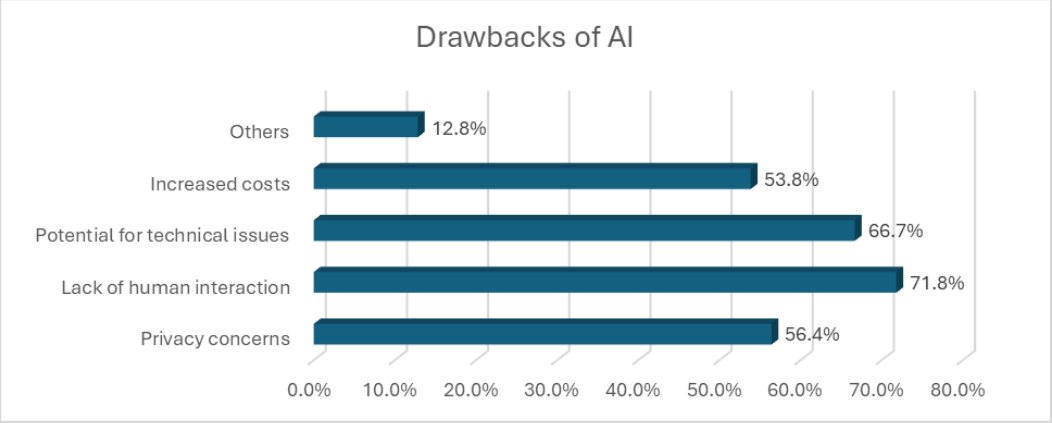


Figure 2: Drawbacks of Artificial Intelligence (AI).

However, the drawbacks (Figure 2) are equally prominent, with increased costs (53.8%), potential technical issues (66.7%), and a perceived lack of human interaction (71.8%) being major concerns. Privacy worries (56.4%) also contribute to a more cautious outlook on AI adoption.

Table 3 presents the descriptive statistics for a Likert scale question assessing the attitudes and perceptions towards Artificial Intelligence (AI) in the hotel industry. It includes items measuring familiarity with AI, knowledge of AI in hotels, importance of AI-related factors in hotel selection, agreement with AI-related statements, satisfaction with AI in hotels, and intentions to recommend AI-enabled hotels. For

each item, Table 3 shows the number of valid responses, missing values, mean score, standard deviation, range, and minimum and maximum values. These statistics provide a quantitative overview of the respondents' opinions on AI in the hotel context.

Table 3: Descriptive statistics for a Likert scale question assessing the attitudes and perceptions towards AI.

| Likert Scale Statement / Ordinal Questions | | Valid cases | Mean | Std. Deviation | Range | Minimum | Maximum |
|---|---|---|---|---|---|---|---|
| How familiar are you with the term "Artificial Intelligence" (AI)? - Actual Use (AU) | | 100% | 3.82 | 1.219 | 4 | 1 | 5 |
| How would you rate your overall knowledge about AI technologies in the hotel industry? - Actual Use (AU) | | 97% | 3.29 | 1.00 | 4 | 1 | 5 |
| How important are the following factors when choosing a hotel with AI capabilities? - Perceived Usefulness (PU) | Price | 100% | 4.20 | 1.03 | 4 | 1 | 5 |
| | Location | 100% | 3.85 | 1.05 | 4 | 1 | 5 |
| | Hotel Brand | 100% | 3.21 | 1.02 | 4 | 1 | 5 |
| | AI-powered services | 100% | 3.10 | 1.03 | 4 | 1 | 5 |
| | Recommendations | 100% | 3.85 | 1.05 | 4 | 1 | 5 |
| | Online reviews and rating | 100% | 3.97 | 1.05 | 4 | 1 | 5 |
| To what extent do you agree with the following statements? - Perceived Usefulness (PU) | AI capabilities in a hotel are a deciding factor for me when booking | 100% | 2.82 | 1.01 | 4 | 1 | 5 |
| | I prefer hotels that offer AI-driven personalized experiences | 97% | 2.89 | 1.00 | 4 | 1 | 5 |
| | The presence of AI in hotels enhances my overall travel experience | 97% | 3.39 | 0.94 | 4 | 1 | 5 |
| How satisfied are you with the AI capabilities in hotels you have stayed at? - Perceived Ease of Use (PEOU) | | 92% | 3.31 | 0.85 | 4 | 1 | 5 |
| How likely are you to recommend a hotel with AI capabilities to others? - Behavioral Intention to Use (BI) | | 100% | 3.64 | 0.83 | 4 | 1 | 5 |
| Do you believe that AI technologies in hotels significantly enhance the travel experience?- Behavioral Intention to Use (BI) | | 100% | 4 | 3.69 | 3 | 1 | 4 |

Table 4 presents the summary of respondents' attitudes and perceptions by using the mean scores, and the equivalent level of Goodness, importance, Likely, agreement, importance, familiarity, and satisfaction. Respondents indicated a "somewhat familiar" level of knowledge (Since mean value = 3.82 which falls in [3.4-4.2] or level 4) about AI in the hotel industry and considered "price" as a "very important" factor (Since mean value = 4.2 which falls in [4.2-5.0] or level 5) when choosing an AI-enabled hotel. Neutral sentiments towards AI-powered services and AI-driven personalized experiences are generally revealed. Overall, the data suggests a positive outlook on AI's role in enhancing the hotel experience.

Table 4: Summary of respondents' attitudes and perceptions by using the mean scores, and the equivalent level of Goodness.

| Likert Scale Statement / Ordinal Questions | | Mean | Category Level |
|---|---|---|---|
| How familiar are you with the term "Artificial Intelligence" (AI)? - Actual Use | | 3.82 | Somewhat familiar |
| How would you rate your overall knowledge about AI technologies in the hotel industry? - Actual Use | | 3.29 | Fair Goodness |
| How important are the following factors when choosing a hotel with AI capabilities? - PU | Price | 4.20 | Very important |
| | Location | 3.85 | important |
| | Hotel Brand | 3.21 | Neutral importance |
| | AI-powered services | 3.10 | Neutral importance |
| | Recommendations | 3.85 | important |
| | Online reviews and rating | 3.97 | important |
| To what extent do you agree with the following statements? - PU | AI capabilities in a hotel are a deciding factor for me when booking | 2.82 | Neutral agreement |
| | I prefer hotels that offer AI-driven personalized experiences | 2.89 | Neutral agreement |
| | The presence of AI in hotels enhances my overall travel experience | 3.39 | Neutral agreement |
| How satisfied are you with the AI capabilities in hotels you have stayed at? - PEOU | | 3.31 | Neutral satisfaction |
| How likely are you to recommend a hotel with AI capabilities to others? - BI | | 3.64 | likely |
| Do you believe that AI technologies in hotels significantly enhance the travel experience? - BI | | 3.69 | Agree |

Regarding TAM model, the survey results reveal that Lebanese tourists demonstrate moderate "Actual Use (AU)", being somewhat familiar with AI and possessing fair knowledge of its applications in the hotel industry. "Perceived Usefulness (PU)" shows that while price, location, recommendations, and online reviews are important when choosing a hotel, AI-powered services and hotel brand hold neutral importance. Respondents exhibit neutral satisfaction in "Perceived Ease of Use (PEOU)" regarding their experience with AI in hotels, indicating that while AI might be user-friendly, its benefits are not strongly perceived. Finally, "Behavioral Intention to Use (BI)" reflects a cautious but positive attitude, with respondents moderately likely to recommend AI-enabled hotels and agreeing that AI can enhance the travel experience, though not overwhelmingly convinced.

Table 5 shows the descriptive statistics for the question about staying in AI hotels (25.6% of respondents have stayed in an AI-enabled hotel, while 74.4% have not) and for the question about Hotels in Lebanon should invest in AI technologies (61.5% of respondents said Yes, while 38.5% said no or not sure).

Table 5: Descriptive statistics about staying in AI hotels and about Hotels in Lebanon should invest in AI.

| Question | Class | Frequency | Percent |
|---|---|---|---|
| Stayed in AI hotel | Yes | 60 | 25.6 |
| | No | 174 | 74.4 |
| Hotels in Lebanon should invest in AI technologies | Yes | 144 | 61.5 |
| | No | 18 | 7.7 |
| | Not Sure | 72 | 30.8 |

### 4.3 Relative Important Index of Opinion questions

The Relative Importance Index (RII) [24] is a crucial metric for understanding the relative significance of different factors or attributes assessed using Likert scale questions. By assigning numerical weights to Likert scale responses and calculating the RII for each item, researchers can determine the order of importance of the factors being evaluated. RII is computed by the following formula: RII % = (Mean / A) *100; Where A is the number of levels, and in our case is 5 levels.

For our example, the results are shown in Table 6. This result underscores the importance of price for consumers (RII = 83.1%, Rank = 1 and high level) when

considering hotels with AI capabilities. It suggests that even with the attraction of advanced technology, cost-effectiveness remains a primary driver of decision-making. Hotels should carefully balance their AI investments with competitive pricing strategies to attract guests. Price importance is followed by Online reviews and rating (Price, RII = 79.5%, Rank = 2 and high level), then by Recommendations (Price, RII = 76.9%, Rank = 3 and high level). Bottom-ranked Item (AI capabilities in a hotel are a deciding factor for me when booking, RII = 56.4%, Rank = 14). This finding indicates that while AI is a valued feature, it's not yet a decisive factor for most consumers when choosing a hotel. This suggests that while incorporating AI technologies can enhance the guest experience, it shouldn't overshadow other essential factors like location or price. Hotels should focus on integrating AI into their offerings, rather than relying on it solely as a selling point.

Table 6: Relative Important Index - Mean - Rank – Level for different statements.

| Statements | | Mean | RII | Rank | Level |
|---|---|---|---|---|---|
| How familiar are you with the term "Artificial Intelligence" (AI)? - Actual Use | | 3.821 | 76.4% | 5 | High |
| How would you rate your overall knowledge about AI technologies in the hotel industry? - Actual Use | | 3.289 | 65.8% | 10 | Medium |
| How important are the following factors when choosing a hotel with AI capabilities? - PU | Price | 4.154 | 83.1% | 1 | High |
| | Location | 3.846 | 76.9% | 3 | High |
| | Hotel Brand | 3.205 | 64.1% | 11 | Medium |
| | AI-powered services | 3.103 | 62.1% | 12 | Medium |
| | Recommendations | 3.846 | 76.9% | 3 | High |
| | Online reviews and rating | 3.974 | 79.5% | 2 | High |
| To what extent do you agree with the following statements? - PU | AI capabilities in a hotel are a deciding factor for me when booking | 2.821 | 56.4% | 14 | Medium |
| | I prefer hotels that offer AI-driven personalized experiences | 2.895 | 57.9% | 13 | Medium |
| | The presence of AI in hotels enhances my overall travel experience | 3.395 | 67.9% | 8 | Medium |

| | | | | |
|---|---|---|---|---|
| How satisfied are you with the AI capabilities in hotels you have stayed at? - PEOU | 3.306 | 66.1% | 9 | Medium |
| How likely are you to recommend a hotel with AI capabilities to others? - BI | 3.641 | 72.8% | 7 | High |
| Do you believe that AI technologies in hotels significantly enhance the travel experience? - BI | 3.692 | 73.8% | 6 | High |

In summary, the top-ranked item highlights the crucial role of price in the hotel selection process, while the bottom-ranked item suggests that AI, while valuable, is not currently a primary driver of booking decisions. Hotels should strike a balance between offering competitive pricing and leveraging AI to enhance the overall guest experience.

### 4.4 Consensus of Opinion questions

Consensus in Likert scale questions is crucial for drawing meaningful conclusions from survey data. When respondents exhibit a high degree of agreement on a particular item, it indicates a strong shared opinion or attitude. This consensus strengthens the reliability and validity of the findings. Consensus is measured by the following formula [25]:

$$Cns(X) = 1 + \sum_{i=1}^{n} p_i \log_2\left(1 - \frac{|X_i - \mu_x|}{d_x}\right)$$

which depends on the percentage value of each level. Its value ranges from 0 (dissention - fully disagreement) to 1 (Consensus - fully agreement)]. Table 7 presents the consensus value for different statements.

Table 7: Rating of different statements with Consensus percentage.

| Statements | 1 | 2 | 3 | 4 | 5 | Consensus Value |
|---|---|---|---|---|---|---|
| How familiar are you with the term "Artificial Intelligence" (AI)? - Actual Use | 7.7% | 7.7% | 15.4% | 33.3% | 35.9% | 54.29% |
| How would you rate your overall knowledge about AI technologies in the hotel industry? - Actual Use | 7.9% | 2.6% | 55.2% | 21.1% | 13.2% | 66.32% |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| How important are the following factors when choosing a hotel with AI capabilities? - PU | Price | 2.6% | 5.1% | 15.4% | 28.2% | 48.7% | 62.68% |
| | Location | 5.1% | 2.6% | 25.6% | 35.9% | 30.8% | 62.58% |
| | Hotel Brand | 5.1% | 15.4% | 46.2% | 20.5% | 12.8% | 65.04% |
| | AI-powered services | 10.3% | 10.3% | 46.2% | 25.6% | 7.7% | 65.93% |
| | Recommendations | 2.6% | 10.3% | 17.9% | 38.5% | 30.8% | 62.80% |
| | Online reviews and rating | 5.1% | 2.6% | 17.9% | 38.5% | 35.9% | 64.48% |
| To what extent do you agree with the following statements? - PU | AI capabilities in a hotel are a deciding factor for me when booking | 15.4% | 10.3% | 56.4% | 12.8% | 5.1% | 67.10% |
| | I prefer hotels that offer AI-driven personalized experiences | 7.9% | 23.7% | 47.4% | 13.2% | 7.9% | 67.57% |
| | The presence of AI in hotels enhances my overall travel experience | 5.3% | 5.3% | 44.7% | 34.2% | 10.5% | 67.22% |
| How satisfied are you with the AI capabilities in hotels you have stayed at? - PEOU | | 5.6% | 0.0% | 61.1% | 25.0% | 8.3% | 72.58% |
| How likely are you to recommend a hotel with AI capabilities to others? - BI | | 2.6% | 0.0% | 43.6% | 38.5% | 15.4% | 70.55% |
| Do you believe that AI technologies in hotels significantly enhance the travel experience? - BI | | 2.6% | 2.6% | 28.2% | 56.3% | 10.3% | 73.64% |

The percentage of respondents selecting each response option is shown, along with a calculated consensus value for each statement. A higher consensus value indicates a greater degree of agreement among respondents on a particular statement. All values are ranged between 50% and 75% which means the strength of consensus is Majority Approval for all statements.

### 4.5 Inferential Statistics for each Opinion Question

Knowing that previously in this report that the sample we took has limitations and does not completely respect the representation of the Lebanese people, then the use of inferential statistics is not suitable; but by supposing that the sample taken is sufficiently representative, then the results in this and next sections will be presented. In this section, a hypothesis for each question/statement has been done. Started by the question if the Lebanese people are somewhat familiar (it means level 4) with the term AI. Based on the sample taken in this work, the SPSS output using One-Sample Wilcoxon Signed Rank Test is shown Figure 3.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 1 | The median of 1. How familiar are you with the term "Artificial Intelligence" (AI)? equals 4. | One-Sample Wilcoxon Signed Rank Test | .050 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

Figure 3: SPSS output using One-Sample Wilcoxon Signed Rank Test - null hypothesis is accepted.

The null hypothesis states that the median response to the question "How familiar are you with the term 'Artificial Intelligence' (AI)?" equals 4 (somewhat familiar). The test significance (Sig.) value is 0.050, which is equal to the significance level of 0.05. Since the significance value is not less than 0.05, the decision is to retain the null hypothesis. This means there is not enough statistical evidence to reject the null hypothesis, suggesting that the median familiarity with AI among the respondents is indeed 4 (it means that somewhat familiar).

Figure 4 postulates that the median response to the question "How would you rate your overall knowledge about AI technologies in the hotel industry?" is equal to 4 (good knowledge). The significance (Sig.) value for the test is 0.000, which is much less than the significance level of 0.05. As a result, the decision is to reject the null hypothesis. This indicates that there is strong statistical evidence to conclude that the median rating of overall knowledge about AI technologies in the hotel industry among the respondents is not equal to 4 (not good knowledge) but it may fair knowledge.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 1 | The median of 3. How would you rate your overall knowledge about AI technologies in the hotel industry? equals 4. | One-Sample Wilcoxon Signed Rank Test | .000 | Reject the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

Figure 4: SPSS output using One-Sample Wilcoxon Signed Rank Test - null hypothesis is rejected.

“How important are the following factors when choosing a hotel with AI capabilities?” results have been done by SPSS and by using One-Sample Wilcoxon Signed Rank Test:

- The Lebanese people Sees that the price is very important.
- The Lebanese people Sees that the hotel location is important.
- The Lebanese people Sees that the Hotel brand is not important but it may be neutral important.
- The Lebanese people Sees that the AI power services is not important but it may be neutral important.
- The Lebanese people Sees that Recommendations is important.
- The Lebanese people Sees that the online reviews and ratings is important.

“To what extent do you agree with the following statements?” results have been done by SPSS and by using One-Sample Wilcoxon Signed Rank Test:

- The Lebanese people Neutrally agree that “AI capabilities in a hotel are a deciding factor for me when booking” is important (not very important).
- The Lebanese people Neutrally agree that “I prefer hotels that offer AI-driven personalized experiences” is important (not very important).
- The Lebanese people Neutrally agree that “The presence of AI in hotels enhances my overall travel experience” is important (not very important).

Finally,

- The Lebanese people who are stayed in AI Hotels are neutrally satisfied.
- The Lebanese people are likely (not strongly likely) recommending people to stay and book in AI Hotels.
- The Lebanese people agree (not strongly agree) that AI technologies in hotels significantly enhance the travel experience.

### 4.6 Relationship between Opinion & Gender-Age-Stayed in Hotels with AI

Relationship between Likert scale statements Lebanese people opinions and Gender (Male/Female) – Age (<40 / >=40/) – Stayed in Hotels (Yes/No) will be presented in this section. It has been seen as Inferential Statistics between Likert scale statements and Binary-Two Levels Questions. Normally it is used the independent sample Mann-Whitney U test to test this type of relationship. Table 8 shows the independent sample Mann-Whitney U test, which is used to test if the distribution of Lebanese people opinions on different Likert-scale questions are the same across categories of Gender (Male or Female), Age (< 40 or > = 40), and stayed in AI Hotels (Yes or No). Retain means that the null hypothesis is accepted which means they have the same distribution across categories while reject means that the null hypothesis is rejected which means they have different distribution across categories.

Table 8: Independent sample Mann-Whitney U test for testing the distribution of Lebanese people opinions on different statements across three categories of staying in AI hotels, Age, and Gender.

| The distribution of answers with respect to | Stayed in AI hotels | | Age | | Gender | |
|---|---|---|---|---|---|---|
| How familiar are you with the term "Artificial Intelligence" (AI)? - Actual Use | 0.0% | Reject | 0.1% | Reject | 12.5% | Retain |
| How would you rate your overall knowledge | 0.0% | Reject | 9.7% | Retai | 0.0% | Reject |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| about AI technologies in the hotel industry? - Actual Use | | | | | n | | |
| How important are the following factors when choosing a hotel with AI capabilities? - PU | Price | 0.0% | Reject | 12.1 % | Retai n | 12.3 % | Retai n |
| | Location | 80.0 % | Retain | 35.8 % | Retai n | 51.0 % | Retai n |
| | Hotel Brand | 35.0 % | Retain | 0.0% | Rejec t | 79.6 % | Retai n |
| | AI-powered services | 0.0% | Reject | 85.2 % | Retai n | 9.5% | Retai n |
| | Recommendations | 0.0% | Reject | 63.2 % | Retai n | 36.0 % | Retai n |
| | Online reviews and rating | 19.0 % | Retain | 2.1% | Rejec t | 23.7 % | Retai n |
| To what extent do you agree with the following statements? - PU | AI capabilities in a hotel are a deciding factor for me when booking | 0.0% | | 8.0% | Retai n | 0.0% | Reject |
| | I prefer hotels that offer AI-driven personalized experiences | 0.0% | Reject | 0.4% | Rejec t | 81.7 % | Retai n |
| | The presence of AI in hotels enhances my overall travel experience | 0.0% | Reject | 5.6% | Retai n | 0.3% | Reject |
| How satisfied are you with the AI capabilities in hotels you have stayed at? - PEOU | | 0.0% | Reject | 43.7 % | Retai n | 0.0% | Reject |
| How likely are you to recommend a hotel with AI capabilities to others? - BI | | 0.0% | Reject | 67.7 % | Retai n | 82.1 % | Retai n |
| Do you believe that AI technologies in hotels significantly enhance the travel experience? - BI | | 0.0% | Reject | 63.7 % | Retai n | 41.2 % | Retai n |

The results show that the distribution of Lebanese opinions is the same in the categories of gender (male or female) and age (< 40 or >=40) for most of the questions, while the distribution is different in the categories of staying in AI hotels (Yes or No) for most of the questions. It is clear that the opinions of those who have stayed in AI hotels are different from those who have not yet stayed there.

### 4.7 Relationship between Opinion & Educational - Income

Relationship between Likert scale statements Lebanese people opinions and Education Level (Bachelor/ master/PhD) – Income Level (Low/Medium/High) will

be presented in this section. It has been seen as Inferential Statistics between two ordinal Questions. Normally it is used the Gamma test to test this type of relationship. Table 9 shows the Gamma test, which is used to test if the Lebanese people opinions on different Likert-scale questions have relationship with education and Income questions. The relationship has been interpreted as (Negligible, Weak, Moderate, relatively strong, strong). The results in Table 9 have been done by SPSS and using Gamma test, where most of them are negligible to weak and the rest are moderate to relatively strong.

Table 9: Gamma test for testing if the Lebanese people opinions on different statements have relationship with education and Income questions.

| Gamma Coefficient interpretation | | Education Level Gamma Coefficient | | Income Level Gamma Coefficient | |
|---|---|---|---|---|---|
| How familiar are you with the term "Artificial Intelligence" (AI)? - Actual Use | | 0 | Negligible | -0.221 | Moderate |
| How would you rate your overall knowledge about AI technologies in the hotel industry? - Actual Use | | 0.188 | Weak | 0.288 | Moderate |
| How important are the following factors when choosing a hotel with AI capabilities? - PU | Price | 0.157 | Weak | -0.436 | Relatively strong |
| | Location | 0.157 | Weak | 0.119 | Weak |
| | Hotel Brand | 0.114 | Weak | 0.5 | Relatively strong |
| | AI-powered services | 0.489 | Relatively strong | 0.065 | Negligible |
| | Recommendations | 0.392 | Moderate | -0.18 | Weak |
| | Online reviews and rating | 0.243 | Moderate | -0.059 | Negligible |
| To what extent | AI capabilities in a hotel | 0.44 | Relativ | 0.04 | Negligib |

| | | | | | |
|---|---|---|---|---|---|
| do you agree with the following statements? - PU | are a deciding factor for me when booking | 4 | ely strong | | le |
| | I prefer hotels that offer AI-driven personalized experiences | 0.403 | Relatively strong | -0.172 | Weak |
| | The presence of AI in hotels enhances my overall travel experience | 0.155 | Weak | -0.031 | Negligible |
| How satisfied are you with the AI capabilities in hotels you have stayed at? - PEOU | | 0.212 | Moderate | 0.169 | Weak |
| How likely are you to recommend a hotel with AI capabilities to others? - BI | | 0.161 | Weak | 0.112 | Weak |
| Do you believe that AI technologies in hotels significantly enhance the travel experience? - BI | | 0.46 | Relatively strong | 0.013 | Negligible |

### 4.8 Relationship between composite score of Opinion & (Age, Gender, Education, and Income)

In this section, a composite score was created by averaging multiple Likert scale statements to form a single continuous variable. This composite score, or composite index, serves as a summary measure that captures the overall attitude or behavior related to the underlying concept being assessed. By transforming individual ordinal Likert items into a continuous variable, we can influence the interval properties of the composite score, enabling more robust statistical analyses. This approach not only simplifies the data by reducing dimensionality but also enhances the precision of statistical operations such as correlation, regression, and hypothesis testing. Consequently, the composite score provides a more comprehensive and nuanced understanding of the respondents' perspectives, facilitating deeper insights and more reliable conclusions in the research findings. Two composite scores have been created:

- How important are the following factors when choosing a hotel with AI capabilities? Where there are six statements (Price-Location-Hotel Brand-AI

powered services-Recommendations-Online reviews and rating) - composite scores variable is named as “Important”;

- To what extent do you agree with the following statements? Which includes three statements - composite scores variable is named as “Extent”.

To analyze the composite score (Important & Extent) in relation to Age and Gender, we employed t-tests. Specifically, an independent samples t-test was used to compare the composite score between gender (Male/Female) and Age (< or > 40). This test allows us to determine whether there are statistically significant differences in the average composite scores between male and female respondents. The results show us that the null hypothesis is accepted which means that there are no statistically significant differences of Important on Age (P-value = 47.6%) & Extent on Age (P-value = 11.9%) and Important on Gender (P-value = 33.6%) & Extent on Gender (P-value = 12.1%).

To analyze the composite score (Important & Extent) in relation to variables Income and Education, we employed one-way ANOVA. By using ANOVA, we can assess whether the mean composite scores differ significantly across multiple categories (more than 2). The results show us that the null hypothesis is rejected which means that there are statistically significant differences of Important & Extent on Income (P-value = 0.000% & 0.007%) and Education (P-value = 0.000% & 0.004%).

## 5. Conclusion, Recommendations and Future Work

This study looked at the attitudes of Lebanese visitors towards the use of artificial intelligence (AI) in hotels. The findings reveal that while Lebanese tourists are somewhat familiar with AI technologies, their overall knowledge of AI applications in the hotel industry is moderate. Factors like price, location, and online reviews were found to be more significant in hotel selection than AI-powered services, which held neutral importance. The study also highlighted that the presence of AI in hotels did not strongly influence tourists' booking decisions, however they generally agreed that AI could enhance their travel experiences. Satisfaction with AI capabilities in hotels was neutral, and while there was some likelihood of recommending AI-enabled hotels, the respondents' interest remained cautious.

The Relative Importance Index (RII) analysis further emphasizes the importance of price (RII = 83.1%, Rank = 1), which ranks highest among the factors considered, underscoring that cost-effectiveness remains a primary driver of decision-making. Additionally, the analysis of consensus in Likert scale questions shows a moderate level of agreement among respondents, with consensus values ranging from 50% to 75%, indicating majority approval for most statements.

Knowing that the sample we took has limitations and does not fully respect the representation of the Lebanese people, then the use of inferential statistics is not appropriate; but by applying it and by using the One-Sample Wilcoxon Signed Rank Test via SPSS, the study can tell that Lebanese tourists consider location and price as important to very important factors, while hotel brand and AI-powered services were believed neutrally important. Recommendations and online reviews were also identified as significant factors.

Using independent sample Mann-Whitney U test, the study determined that the Lebanese people's opinions on most Likert scale questions are similar across gender and age groups but differ significantly between those who have and haven't stayed in AI hotels.

The study examined that most of the relationship strength between Lebanese people's Likert scale responses and their education level and income level are negligible to weak and the rest are moderate to relatively strong.

Finally, the study can tell that by creating two composite scores averaging Likert scale items: "Important" and "Extent". No significant differences in composite scores were found between genders or age groups (under/over 40) using t-tests. However, significant differences were identified in composite scores based on income and education levels using one-way ANOVA, indicating that these factors influence attitudes and opinions towards AI hotels.

Concerning TAM model, the survey shows Lebanese tourists have moderate “Actual Use (AU)” of AI in hotels, with fair familiarity. “Perceived Usefulness (PU)” ranks AI services and hotel brand as neutral compared to other factors. “Perceived Ease of Use (PEOU)” indicates neutral satisfaction, implying AI is user-friendly but its benefits aren't strongly perceived. “Behavioral Intention to Use (BI)” is cautiously

positive, with moderate willingness to recommend AI-enabled hotels and belief in AI's potential to enhance travel experiences.

Our future research should explore the perspectives of hotel operators and employees to gain a more comprehensive understanding of AI's role in the hospitality industry. Qualitative methods, such as interviews or focus groups, could provide deeper insights into the challenges and opportunities associated with AI adoption. Additionally, expanding the sample size and employing more rigorous sampling techniques could help in generalizing the findings to a broader population. Investigating the impact of AI on customer satisfaction over time and in different cultural contexts would also be valuable.

In conclusion, while AI offers great prospects for improving the hotel experience, its acceptance among Lebanese visitors is still in its early stages. The future of AI in hospitality is dependent on a collaborative effort between industry stakeholders and researchers to constantly refine and promote these technologies, ensuring they meet the needs and preferences of modern travelers while also taking into account the price factor, which is a critical factor as demonstrated in this study.

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