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Chatbots in Red Sea Travel Agencies: Opportunities, Challenges, and Future Directions

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Abstract

Chatbots are increasingly vital in the travel sector, catering to younger travelers who prefer fast, app-based interactions. They streamline trip planning by providing quick information without browsing multiple sites. However, their benefits and challenges in Egyptian travel agencies are still underexplored. This research addresses the gap in studying the experiences of travel agency employees in Egypt regarding chatbots integration. A quantitative approach was employed, involving online surveys from travel agencies in the Red Sea region. The findings reveal that while agencies recognize significant benefits of chatbots technology, such as improved productivity and enhanced customer interaction, they also face notable challenges like technical issues and integration difficulties. To address these challenges, it is recommended that agencies enhance their technical infrastructure by investing in advanced IT systems and ensuring robust internet connectivity, in collaboration with service providers and technology partners. Prioritizing customization is essential – agencies should develop personalized chatbots solutions tailored to customer preferences to streamline booking processes and enhance interactions using AI-driven analytics. Building trust and acceptance among customers requires transparent data protection policies, robust cybersecurity measures, and educational campaigns on the benefits of chatbots technology. Additionally, addressing Egypt's linguistic and cultural diversity by developing multilingual chatbots with localized features is crucial for enhancing customer engagement. Employee training plays a key role – agencies should invest in comprehensive sessions focusing on chatbots functionality and troubleshooting, encouraging regular employee interaction with the technology. This research contributes to the growing body of literature on digital transformation in the Egyptian travel sector by providing actionable insights into the opportunities and challenges of chatbots integration. The recommendations outlined can help travel agencies optimize operations, improve customer service, and strengthen their competitive advantage in a rapidly evolving market.

1. Introduction

In recent years, the use of chatbots in the travel industry has gained increasing attention. Chatbots, which are computer programs that simulate human conversation, have the potential to enhance customer service and operational efficiency in travel agencies. According to

Research and Markets **(2019)**, the global chatbot market is expected to reach $9.4 billion by 2024, with a compound annual growth rate of 29.7% from 2019 to 2024. In Egypt, chatbots have the potential to transform the travel industry by improving customer engagement and operational efficiency. Chatbots have a lot of promise in the many tourism-related industries. Hotels, restaurants, car rental services, travel agencies, and tourist information centers can all benefit from this technology **(Suanpang and Jamjuntr, 2021; Ukpabi et al., 2019)**.

Several studies have explored the challenges and best practices of implementing chatbots in the travel industry. For instance, Xiang *et al.*, **(2019)** investigated the effectiveness of chatbots in hotel booking and found that they can enhance customer satisfaction and reduce the workload of hotel staff. However, the study also identified challenges such as privacy concerns and limitations in natural language processing. Another study by Li *et al.*, **(2020)** examined the impact of chatbots on customer loyalty in the airline industry and found that personalized chatbot interactions can enhance customer loyalty. However, the study also emphasized the importance of integrating chatbots with human agents to address limitations in chatbot capabilities.

With the aid of digitization and service automation, the travel and tourism sector has seen a number of technical improvements. Robotics and service automation, including conveyor restaurants, robot concierges, and self-service information, have been widely used by the travel and hotel industries **(Hill *et al.*, 2015)**. The chatbots development is growing fast in the travel industry and enables users to interact with digital assistants, using natural language to answer travel-related questions and process bookings **(Keskar et al., 2022; Sheffield, 2016)**.

This study addresses the gap in understanding the adoption and integration of chatbots in Egyptian travel agencies, an area that has not been extensively explored despite the growing reliance on artificial intelligence in the travel sector. The travel industry in Egypt faces challenges in maintaining high customer service standards while adapting to digital advancements. Chatbots, as AI-driven tools, offer potential solutions to enhance operational efficiency and customer engagement. However, the successful integration of chatbots in Egyptian travel agencies remains uncertain, with challenges related to awareness, benefits, feasibility, and implementation. This study is important as it provides insights into how travel agencies can leverage chatbots to improve service quality, stay competitive, and overcome the barriers to adoption, ultimately contributing to the broader understanding of AI integration in the tourism industry.

2. Literature Review

2.1 Chatbots Definitions

Chatbots are proven to be a ray of hope in making customers happy and bridging the gap between human connection and technology **(Kaczorowska-Spychalska, 2019)**. Chatbots are a computer programmer that can carry on a conversation with a person using natural language. The first chatbots were created in the 1960s by Joseph Weizenbaum, who created ELIZA. That could identify keywords and patterns and matched those keywords to produce a proper answer **(Mehfooz *et al.*, 2021)**. Chatbots are robots that use computers, mobile messaging apps, or websites to simulate natural language discussions with customers **(Dale, 2016)**. A chatbots, also referred to as a talkbot, chatterbot, Bot, IM bot, interactive agent, or Artificial Conversational Entity, is a computer program that conducts a conversation in natural language via auditory or textual methods, understands the user's intent, and sends a response based on the organization's business rules and data **(Spahic *et al.*, 2019)**. Chatbots are a type of computer programmer that is created to communicate with people using natural language

or text so that the user believes he is speaking with a real person. The majority of chatbots use artificial intelligence (AI) algorithms to produce the necessary answer **(Hussain *et al.*, 2019)**. Chatbots, often referred to as a virtual agent, is a computer programmer that answers questions and requests by text or voice and offers assistance in place of a human. The chatbots programmer can comprehend one or more human languages and can conduct voice or text conversations **(Ayanouz *et al.*, 2020)**. According to Ivanov **(2020)** chatbots are a technology that makes it easier to respond to (often requested) questions and stimulates user interaction. It should enhance rather than replace human-to-human connection. Chatbots should be developed as a tool to deliver speedier responses when organizations are unable to communicate with its consumers, not to prevent them from doing so.

2.2 Chatbots Functions

The programmer can be divided down into seven sections, according to Khanna *et al.*, **(2015)**, including an introduction screen, a chat interface and manager, a database, a productivity application, ambiguity management, data handling, and error handling. The chatbots functionality and productivity tools are created to perform basic tasks, much like a basic calculator or dictionary. AI agents are increasingly more functional, and they are capable of booking flights, hotels, and do other useful tasks based on customer requirements. Several studies have explored the potential benefits and challenges of implementing chatbots in tourism and travel. For instance, a study by Yu **(2023)** investigated the effectiveness of chatbots in hotel booking and found that chatbots can enhance customer satisfaction and reduce service time. However, the study also highlighted the importance of chatbots having the ability to understand customers' needs and preferences.

Previous studies demonstrated that chatbots serve as sales assistants, assisting online customers with recommendations and guidance **(chen *et al.*, 2021)**. With technological advancements, tailored services offered by offline salespeople are being complemented by new sales assistant approaches, such as individualized chatbots in online and mobile settings. At an offline business, a salesperson frequently gives one-on-one customer service, including verbal and visual advice. Chatbots, or sales assistants, may provide more real-time visual information to consumers in online and mobile contexts (**Whang *et al.*, 2022**).

2.3 Chatbots in Travel Sector

The growing need for automated services is driving the rapid transformation of the travel industry through chatbots technology and artificial intelligence (AI), which have behavioral and sociological impacts **(Tussyadiah, 2020)**. As stated by Farkash **(2018),** users of mobile travel apps often find themselves complaining about the absence of an app that does every activity necessary when travelling. For instance, one app may provide information on transportation options while the other app focuses on restaurants. However, after travel, these applications might be required. According to Rajaobelina and Ricard **(2021),** the use of chatbots in travel agencies is expected to increase in the coming years, with a projected growth rate of 26% from 2020 to 2027. This growth is driven by the benefits of chatbots in enhancing the customer experience, reducing costs, and increasing revenue for travel agencies. According to AltexSoft **(2018)**, the use cases of a travel chatbots goes under the five followings categories:

(a) ***Reservation Bots:*** Many reservation companies like Kayak, booking.com, and Expedia have presented chatbots to tourists in order to search for accommodation and flight through Facebook Messenger. These chatbots improve the customer experience in comparison with other websites and search engines.

(b) ***Customer Support:*** Companies support their customers via chatbots, which allows users to collect information or complain about issues privately with someone who is in charge.

(c) ***Online Travel Agency****:* With the development of AI, travel chatbots can assist travelers and provide suggestions or services according to their needs. The typical example of these offers is hotel suggestions, transportation, flights, and restaurants.

(d) ***Expense management****:* Tourists can collect their travel receipts and also analysis of trip expenses with the help of some modern AI chatbots.

(e) ***Local Insider:*** With the recent advancement of travel-related technologies, visitors are looking for new adventures and experiences such as taste local foods and places. These chatbots can suggest multiple activities to travelers based on their location. In that way, holidaymakers find the data easier while they do not have to search for different web pages manually.

The following examples are some popular chatbots in the travel industry:

- ***Booking.com:*** new service and support chatbot is widely available to English-language bookings, handling 30% of those customer questions automatically in less than five minutes **(Amiri, 2022).**
- ***Kayak:*** This chatbot help travelers to search for accommodation, flights, and transportation. Kayak's chatbot is working on the Slack platform, and with the Slack bot, travelers can find flight terminal gates **(Sheffield, 2016)**.
- ***Expedia:*** Expedia is an Online Travel Agency (OTA) that offers a chatbot on the Facebook platform. Travelers enter the destination, travel dates, and the chatbot provides available results about hotels and flights. Users can also reserve a hotel straightaway on the Expedia website **(Marques, 2018)**.
- The chatbot of ***Sky scanner*** is designed to perform on Facebook Messenger. This chatbot offers possible low-cost flights, and users can book a flight easily.
- ***Finnair***: Finnair's chatbot helps users get their flight status and also book future flights and engage with customer service. Furthermore, the bot can answer frequently asked questions. (chatbot guide, 2020).

2.4 Chatbots Challenges in Travel Agencies

Chatbots have emerged as a potential solution for addressing the challenges faced by travel agencies. However, their implementation is not without challenges. One of the key challenges is the need for effective natural language processing (NLP) algorithms to enable chatbots to understand customer queries and provide accurate responses **(Nirala et al., 2022)**. Thorat and Jadhav **(2020)** added another challenge is the need to ensure that chatbots are capable of handling complex and diverse travel-related queries, which often require a high level of domain expertise. *Furthermore,* travel agencies need to ensure that chatbots are integrated with their existing systems and technologies to provide seamless and personalized services to customers **(Nuruzzaman and Hussain, 2018)**. These challenges underscore the need for travel agencies to carefully evaluate their chatbot strategies and invest in the necessary technologies and expertise to successfully implement chatbots in their operations.

3. Research Methodology

3.1 Research Design

This study employs a quantitative research design to investigate the implementation, benefits, and challenges of chatbots technology in travel agencies located in the Red Sea governorate of Egypt. This study focuses on Egyptian travel agencies, particularly in the Red Sea Governorate, which is one of Egypt's most popular tourist destinations, attracting a high volume of international and domestic tourists. The region is a key hub for travel agencies. The Red Sea Governorate is considered one of the top regions, after Cairo, in terms of hosting the headquarters of major travel companies. An online questionnaire serves as the primary tool for data collection, targeting employees across multiple departments, including customer service, marketing, and IT. This approach enables the gathering of objective, measurable data, ensuring insights that are representative of the sample population and applicable to the broader travel agency community.

3.2 Sampling Method

A simple random sampling method was chosen to ensure fairness and minimize bias in selecting participants. According to data from the Egyptian Travel Agents Association (2022), there are 78 travel agencies operating in the Red Sea governorate. Given the logistical constraints of surveying the entire population, a sample of 30 travel agency employees was randomly selected. This method ensures that each employee has an equal chance of being included in the study, offering a representative subset of the travel agency community while maintaining statistical relevance across different departments. The sample includes employees from customer service, marketing, and IT departments, all of whom have some interaction with chatbots technology in their professional roles.

3.3 Questionnaire Design

The questionnaire used in this study was developed based on a review of existing literature on chatbots adoption in the travel industry, along with insights from academic studies and industry reports on AI in customer service. It was designed to capture data on employee demographics, awareness of chatbots, perceived benefits, challenges, and the feasibility of implementation in travel agencies. To analyze the data, descriptive statistics were applied to summarize the responses, while chi-square tests were used to explore relationships between key variables. The questionnaire is structured to capture a comprehensive understanding of chatbots integration in travel agencies through five key sections.

- **The first section** collects demographic information, such as gender, age, educational background, department, and years of experience. This demographic data is crucial for analyzing chatbots adoption patterns across different employee groups, departments, and levels of experience.
- **The second section** assesses respondents' awareness of chatbots technology. It includes questions about their familiarity with chatbots functionalities, their understanding of how chatbots are integrated into communication systems, and their awareness of the challenges that come with chatbots implementation. This helps determine knowledge gaps that agencies may need to address through training sessions or workshops.
- **The third section** focuses on the perceived benefits of implementing chatbots in Egyptian travel agencies. Respondents evaluate chatbots features such as enhancing customer experience, cost efficiency, personalization, multilingual support, streamlined

booking processes, and proactive marketing engagement. This part aims to capture how chatbots integration can improve service efficiency and customer satisfaction.

- **The fourth section** identifies the challenges travel agencies may face when deploying chatbots. This includes language and cultural nuances, technical infrastructure limitations, data privacy concerns, customer acceptance and trust issues, and integration complexities. Addressing these challenges can help agencies adopt effective strategies and technologies for a smoother chatbots integration process.
- **The fifth section** explores the feasibility of implementing chatbots across various dimensions. It addresses technical feasibility, financial viability, human resource constraints, customer acceptance, and market competitiveness. This part evaluates whether chatbots integration is a realistic and sustainable solution, considering factors like internet connectivity, chatbots platform costs, training requirements, and global trends in chatbots adoption among travel agencies.

3.4 Data Collection

The online questionnaire was created using Google Forms and distributed via email to employees in different travel agencies in the Red Sea governorate. The email contained a brief introduction to the research, the purpose of the study, and instructions for completing the questionnaire. Participants were assured of the confidentiality and anonymity of their responses.

3.5 Data Validity and Reliability

3.5.1 Data Validity

Researchers distributed a questionnaire to travel agency employees in the Red Sea governorate, seeking feedback from experts in tourism and chatbots technology. The questionnaire was revised and refined, enhancing its accuracy and relevance, thereby ensuring its validity and reliability.

3.5.2 Data Reliability

To evaluate the internal consistency of the questionnaire, Cronbach's alpha coefficient was calculated. Cronbach's alpha measures the degree to which items within a questionnaire are interrelated, with values ranging from 0 (no internal consistency) to 1 (perfect internal consistency). As noted by **Döckel (2003)**, a Cronbach's alpha value of 0.7 or higher is deemed "acceptable" in most social science research contexts **(Nunnally, 1978)**. For this study, Cronbach's alpha reliability was calculated for key sections of the questionnaire, yielding a high reliability value of 0.965 and accuracy coefficients of 0.982, as illustrated in Table 1. These results confirm the instrument's utility and reliability for data collection.

Table 1. Cronbach's Alpha Value

Section	Variables	No. of items	Cronbach 's Alpha	Validity Coefficient*
Awareness about chatbots technology	Awareness about chatbots technology	7	0.910	0.954
Benefits of Chatbots	Enhanced Customer Experience	4	0.882	0.939
	Cost Efficiency	2	0.699	0.836
	Personalization	2	0.735	0.857
	Streamlined Booking Process	2	0.823	0.907
	Marketing and Upselling	2	0.820	0.905

	Improved Crisis Management	2	0.712	0.844
	Competitive Advantage	2	0.854	0.924
The feasibility of implementing chatbots	Technical Feasibility	3	0.826	0.909
	Financial Feasibility	2	0.684	0.827
	Human Resource Feasibility	2	0.688	0.829
	Customer Acceptance	2	0.700	0.837
	Market Feasibility	2	0.743	0.862
Challenges of Chatbots	Language and Cultural Nuances	2	0.877	0.936
	Technical Infrastructure	2	0.672	0.819
	Data Privacy and Security	2	0.742	0.861
	Customer Acceptance and Trust	2	0.868	0.931
	Integration with Existing Systems	2	0.832	0.912

*** Validity coefficient = √Reliability coefficient**

Cronbach's alpha was employed to evaluate the internal consistency and reliability of the scales used in the study. Table 1 presents the reliability coefficients for various sections and variables of the questionnaire. The Cronbach's alpha values ranged from 0.672 to 0.910 for individual variables and were 0.965 for all questionnaire items combined. These values demonstrate acceptable internal consistency, as a Cronbach's alpha greater than 0.7 is considered appropriate for most fields. It can also be noted that the validity coefficient is 98.20%, suggesting that the tested sample is reliable and valid.

3.6 Data Analysis:

Science (SPSS) Version 24. A combination of descriptive and inferential statistical methods was applied to address the research objectives based on the design and sections of the questionnaire. The research utilized a combination of descriptive and inferential statistical methods to address the objectives based on the questionnaire's design and sections. Descriptive statistics were applied to summarize the demographic characteristics of the respondents, including variables such as gender, age group, educational level, department within the travel agency, and years of experience. Frequencies and percentages were used to provide a clear understanding of these characteristics. Additionally, descriptive statistics were employed to analyze responses in Sections Two (Awareness about Chatbots), Section Three (Benefits of Chatbots), Section Four (Feasibility of Implementing Chatbots), and Section Five (Challenges of Chatbots). This provided valuable insights into employees' familiarity, experiences, and perceptions of chatbots integration within travel agencies. The Likert scale used in this study is a 3-point scale, ranging from 1 (Disagree) to 3 (Agree), with a neutral option in between. This scale captures respondents' attitudes and perceptions toward chatbots adoption in travel agencies.

Inferential statistical tests, such as chi-square tests, were conducted to explore associations and differences among key variables. For instance, these tests examined the relationship between job departments and chatbots usage, as well as age groups and attitudes toward chatbots functionality. The aim was to identify patterns in interactions and attitudes across different departments and demographic groups. Additionally, Pearson correlation analysis was used to measure the strength and direction of relationships among continuous variables,

such as chatbots awareness and perceived benefits, or chatbots implementation feasibility and operational efficiency.

4. Results and Discussion

4.1. Descriptive Analysis of Research Variables

Section one: Demographic characteristics of respondents

Fig.1 shows the gender distribution of respondents, with 79% being male and 21% female. This reflects the workforce demographics of the travel agencies surveyed.

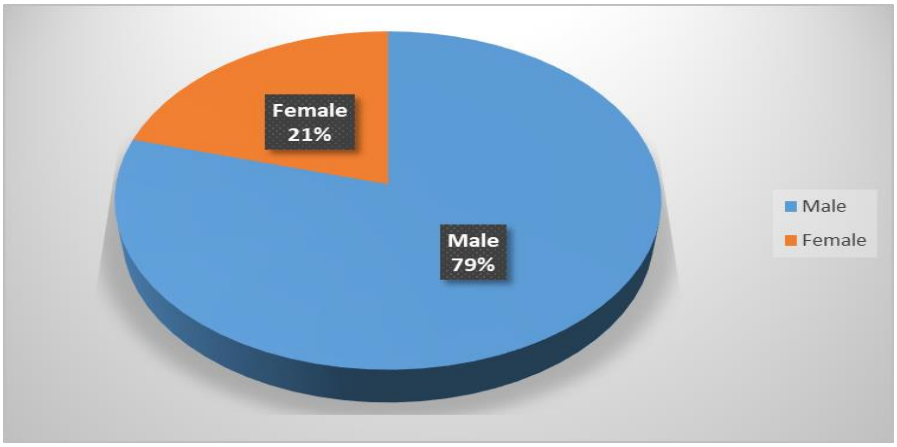

Figure 1. Gender distribution in the sample (%).

Fig. 2 illustrates the age distribution of respondents. The majority fall within the 25-34 years age group (41.2%), followed by 35-44 years (34%), indicating a predominantly young to mid-career workforce in the travel agencies surveyed.

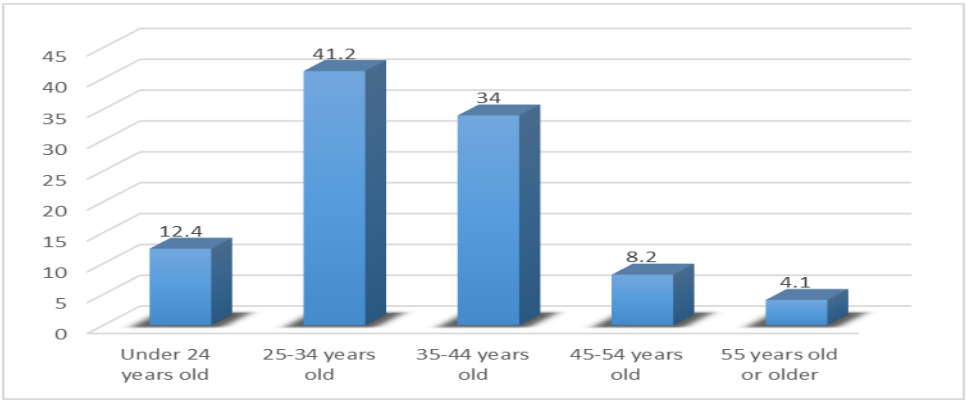

Figure 2. Age group distribution in the sample (%).

Fig.3 depicts the educational qualifications of respondents. Most hold either a bachelor's degree (37%) or a master's degree (37%), followed by those with a diploma (14%). A smaller percentage have a Ph.D. (8%) or professional training (4%), indicating a well-educated workforce.

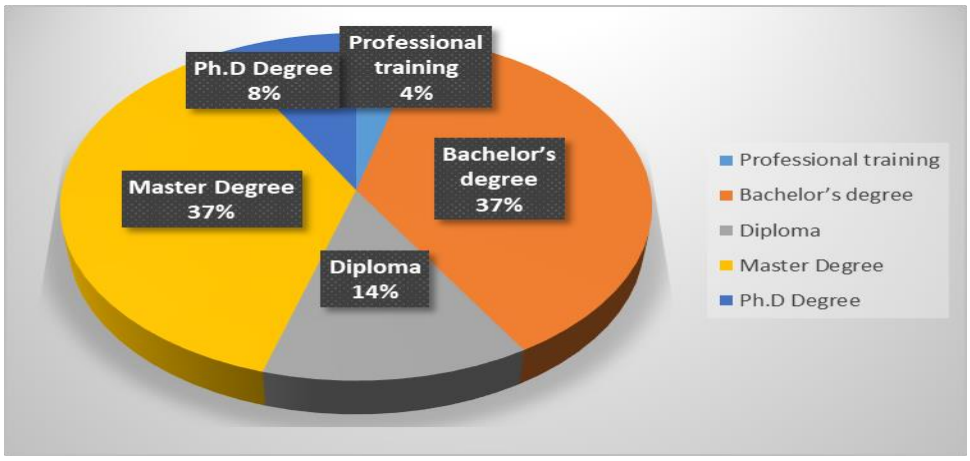

Figure 3: Educational qualifications distribution in the sample

Fig.4 displays the distribution of respondents by department reveals that the majority work in Sales (33%) and Customer Service (25.8%), followed by other roles such as administrative or operations staff, in chatbots-related activities (20.6%). Marketing accounts for 16.5% of respondents, while IT represents the smallest group at 4.1%.

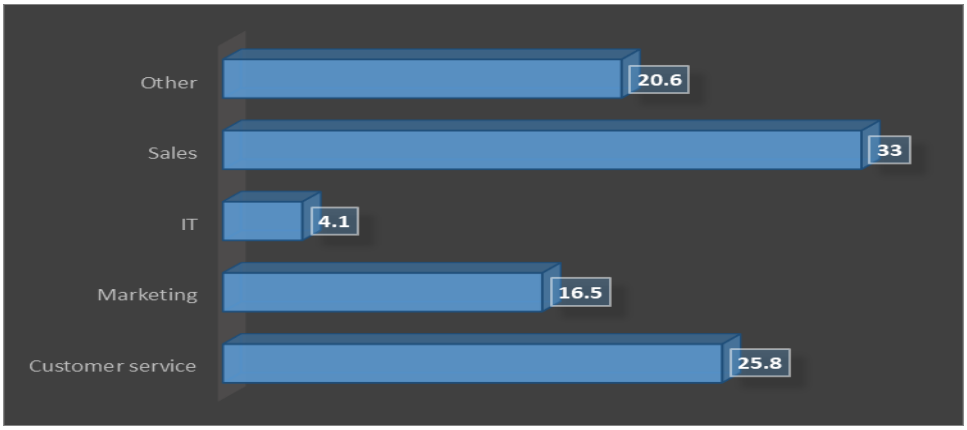

Figure 4: Employees department distribution in the sample

Fig.5 the majority of respondents (37.1%) have more than 10 years of experience, indicating a well-established workforce with extensive industry knowledge. Additionally, 24.7% have 7-10 years of experience, reflecting a significant portion of mid-level professionals. This distribution suggests that the study captures insights from a seasoned group, while also including contributions from less experienced employees.

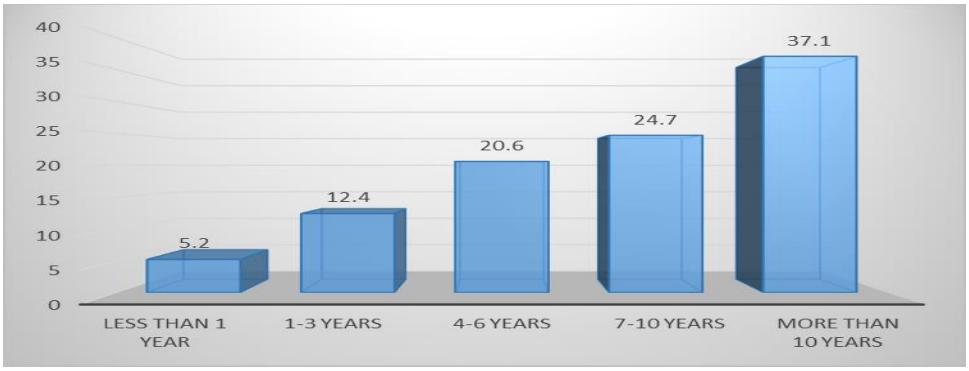

Figure 5: Years of experience distribution in the sample

Section Two: Awareness about chatbots technology

Table 2. Descriptive Analysis of Awareness

Statement	Disagree	Neutral	Agree	Mean	SD	Rank	Attitude
Your agency is familiar with the concept of chatbots	17	24	56	2.40	.773	3	Neutral
You understand how chatbots work in general and their role in digital communication.	8	29	60	2.54	.646	1	Agree
Your agency has used a chatbots in its work at the travel agency.	25	40	32	2.07	.767	7	Neutral
Your agency constantly follows the latest developments in chatbots technologies.	24	37	36	2.12	.781	6	Neutral
Your team has sufficient knowledge of how to use chatbots to improve operations.	29	24	44	2.14	.858	5	Neutral
Your agency is familiar with the challenges associated with using chatbots and how to overcome them.	12	33	52	2.41	.703	2	Agree
Your agency has attended training or workshops on chatbots technology and its applications.	29	20	48	2.20	.874	4	Neutral
Total Mean=2.27						**Neutral**	

Table (2) shows the overall mean of 2.27 suggests that the awareness of chatbots technology among travel agencies is generally neutral. The responses indicate that while some agencies have a basic understanding of chatbots and their role in digital communication, there is limited practical implementation or in-depth knowledge of chatbots usage within the agencies.

The highest-ranking statement, "Your agency understands how chatbots work in general and their role in digital communication" (mean = 2.54), reflects a solid understanding of the concept. However, the lower mean for the statement "Your agency has used chatbots in its work at the travel agency" (mean = 2.07) indicates that, despite the understanding, agencies have not yet fully integrated chatbots technology into their operations.

This pattern suggests that while awareness exists, agencies may lack the practical experience or necessary resources to implement and utilize chatbots effectively in their work. The standard deviations (ranging from 0.646 to 0.874) show moderate variability in responses, suggesting differing levels of awareness and experience across agencies.

Section Three: Benefits of Chatbots

Table 3. Descriptive Analysis of Benefits

Statement	Disagree	Neutral	Agree	Mean	SD	Rank	Attitude
Enhanced Customer Experience							
Chatbots provide 24 hours in the 365 days tourist support, assisting with inquiries and bookings anytime, even outside regular business hours.	13	16	68	2.57	.720	2	Agree
Chatbots respond to tourist queries immediately, reducing response time and improving satisfaction.	4	37	56	2.54	.578	3	Agree
Chatbots help tourists to access information quickly without lengthy calls or emails, enhancing the tourist's experience.	17	16	64	2.48	.779	4	Agree
Chatbots reduce wait times by handling multiple inquiries simultaneously, avoiding waits.	4	25	68	2.66	.557	1	Agree
Total Mean=2.56						**2**	**Agree**
Cost Efficiency							
Chatbots reduce the costs of agencies by handling routine inquiries and freeing employees for complex tasks.	13	28	56	2.44	.721	2	Agree
Chatbots easily handle increased tourist's inquiries, avoiding significant staffing increases.	16	17	64	2.49	.765	1	Agree
Total Mean= 2.47						**4**	**Agree**
Personalization							
Chatbots offer recommendations and travel options based on tourist data and interactions.	21	28	48	2.28	.800	2	Neutral
Chatbots collect tourists' data and their feedback to enhance service quality and marketing strategies.	8	29	60	2.54	.686	1	Agree
Total Mean= 2.41						**6**	**Agree**
Multilingual Support							
Chatbots support multiple languages, fulfilling the needs of a diverse tourist base.	13	28	56	2.44	.721	1	Agree
Streamlined Booking Process							
Chatbots help tourists search and book flights, hotels, and other travel services, simplifying the booking process.	16	25	56	2.41	.760	1	Agree

Chatbots provide accurate information consistently, reducing human errors in responses and bookings.	21	28	48	2.28	.800	2	Neutral
Total Mean=2.35						**7**	**Agree**
Marketing and Upselling							
Chatbots engage tourists with proactive messages, keeping them informed about promotions and travel advisories.	12	25	60	2.49	.709	1	Agree
Chatbots collect feedback post-trip, helping the agency to identify areas for improvement.	17	24	56	2.40	.773	2	Agree
Total Mean=2.45						**5**	**Agree**
Improved Crisis Management							
Chatbots provide real-time updates to tourists during emergencies, ensuring safety and proper communication.	4	25	68	2.66	.557	1	Agree
Chatbots assist in rescheduling bookings or providing alternative options during crises, maintaining tourist trust.	21	16	60	2.40	.825	2	Agree
Total Mean= 2.53						**3**	**Agree**
Competitive Advantage							
Chatbots allow agencies to stay ahead of competitors by leveraging cutting-edge technology in customer service.	8	13	76	2.70	.615	1	Agree
Chatbots enhance brand image by demonstrating innovation and a customer-focused approach.	13	20	64	2.53	.723	2	Agree
Total Mean= 2.61						**1**	**Agree**
Total Table Mean= 2.48						**Agree**	

The descriptive analysis of the chatbots benefits across various categories reveals positive attitudes among travel agencies. The highest overall mean of 2.61 in the Competitive Advantage category indicates a strong belief in chatbots as a crucial tool for staying ahead in the competitive market. Similarly, Enhanced Customer Experience (mean = 2.56) and Improved Crisis Management (mean = 2.53) show robust support for chatbots enhancing customer interactions and handling emergencies effectively.

However, the Cost Efficiency category (mean = 2.47) still shows room for improvement. The Personalization aspect (mean = 2.41) and Streamlined Booking Process (mean = 2.35) have lower mean values, suggesting that agencies seek better chatbots integration in these areas to optimize personalization and booking efficiency.

Section Four: The feasibility of implementing chatbots

Table 4. Descriptive Analysis of feasibility of implementing chatbots

Statement	Disagree	Neutral	Agree	Mean	SD	Rank	Attitude
Technical Feasibility							
Chatbots platforms like ChatGPT API, Dialog flow, and Rasa provide pre-made frameworks, simplifying development processes.	13	36	48	2.36	.710	1	Agree
Chatbots can be seamlessly integrated with various travel agencies' booking systems, CRM tools, and social media platforms.	8	25	64	2.58	.643	3	Agree
Egypt's increasing internet usage and smartphone adoption are leading to increased interaction with chatbots via websites, apps, and social media.	13	24	60	2.48	.723	2	Agree
Total Mean=2.47						**2**	**Agree**
Financial Feasibility							
Many chatbots platforms offer affordable subscription plans or even free tiers for basic features, making them accessible for small and medium-sized travel agencies.	8	33	56	2.49	.647	1	Agree
Chatbots reduce the need for extensive customer service staff, offering significant savings in operational costs.	25	20	52	2.28	.851	2	Agree
Total Mean= 2.39						**3**	**Agree**
Human Resource Feasibility							
Employees require minimal training to oversee chatbot operations, such as managing escalated queries or updating content.	4	17	76	2.47	.526	1	Agree
Automating repetitive tasks allows human employees to focus on high-value services, such as personalized travel planning.	17	32	48	2.32	.758	2	Neutral
Total Mean= 2.53						**1**	**Agree**
Customer Acceptance							
Tourists are increasingly accepting chatbots due to their familiarity with AI-powered tools.	16	41	40	2.25	.722	2	Neutral
Multilingual chatbots can cater to both Arabic-speaking locals and international tourists, enhancing inclusivity.	9	28	60	2.53	.663	1	Agree
Total Mean=2.39						**3**	**Agree**
Market Feasibility							

Many global travel agencies already use chatbots, making it essential for Egyptian agencies to adopt similar technology to remain competitive.	16	33	48	2.33	.746	2	Agree
Travelers value fast and reliable responses, especially when planning trips or handling last-minute issues.	17	28	52	2.36	.766	1	Agree
Total Mean=2.35						**4**	Agree
Total Table Mean= 2.43						**Agree**	

The descriptive analysis of the feasibility of implementing chatbots in travel agencies highlights various areas of support and challenges. The Human Resource Feasibility category shows a positive mean of 2.53, indicating that agencies believe their staff can effectively integrate chatbots solutions into operations.

However, the Technical Feasibility category has a moderate mean of 2.47, suggesting a reasonable but not fully optimized integration of chatbots technology. The Financial Feasibility (mean = 2.39) and Customer Acceptance (mean = 2.39) categories indicate some concerns about costs and achieving sufficient tourist engagement with chatbots tools. Finally, the Market Feasibility category, with the lowest mean of 2.35, suggests that agencies face challenges in integrating chatbots within the broader market dynamics and competitive landscape.

Section Five: Challenges of Chatbots

Table (5): Descriptive Analysis of Challenges of Chatbots

Statement	Disagree	Neutral	Agree	Mean	SD	Rank	Attitude
Language and Cultural Nuances							
Arabic is a complex language with multiple dialects. Chatbots need to be trained on a large dataset of Arabic text to accurately understand and respond to queries.	9	52	36	2.28	.625	2	Neutral
Egyptian culture and customs can influence how people interact and communicate. Chatbots must be designed to be culturally sensitive and avoid misunderstandings.	24	29	44	2.21	.816	1	Neutral
Total Mean=2.24						**5**	**Neutral**
Technical Infrastructure							
Reliable and high-speed internet connectivity is essential for chatbots operation. In some areas of Egypt, internet access may be limited or unreliable.	5	36	56	2.53	.597	2	Agree
Building and maintaining a chatbots requires technical expertise. Egyptian travel agencies may need to hire or train staff with the necessary skills.	4	29	64	2.62	.567	1	Agree

Total Mean= 2.57						**1**	**Agree**
Data Privacy and Security							
Chatbots may collect and process sensitive customer data, such as personal information and payment details. Ensuring data privacy and security is crucial.	13	40	44	2.32	.700	2	Neutral
Adhering to data protection regulations, such as the Egyptian Personal Data Protection Law, is essential to avoid legal issues.	4	37	56	2.54	.578	1	Agree
Total Mean= 2.43						**3**	**Agree**
Customer Acceptance and Trust							
Customers may be hesitant to trust a chatbots with their travel plans. Building trust and demonstrating the chatbot's capabilities is essential.	25	20	52	2.28	.851	2	Neutral
Some customers may prefer to communicate with a human agent, especially for complex queries or sensitive issues.	4	29	64	2.62	.567	1	Agree
Total Mean=2.45						**2**	**Agree**
Integration with Existing Systems							
Integrating chatbots with existing booking systems, payment gateways, and other travel agency systems can be complex.	17	28	52	2.36	.766	2	Agree
Ensuring that data is accurately transferred between the chatbots, and other systems is crucial.	12	29	56	2.45	.707	1	Agree
Total Mean=2.41						**4**	**Agree**
Total Table Mean= 2.42						**Agree**	

The descriptive analysis of the challenges associated with chatbots highlights key areas of concern for travel agencies. The Technical Infrastructure category has the highest mean of 2.57, indicating significant attention to ensuring robust systems to support chatbots implementation. Customer Acceptance and Trust (mean = 2.45) and Data Privacy and Security (mean = 2.43) reflect moderate challenges, emphasizing the need for strategies to build user trust and secure data handling processes.

Integration with Existing Systems (mean = 2.41) shows some difficulties in seamlessly incorporating chatbots into current operations. The lowest mean of 2.24 for Language and Cultural Nuances suggests that addressing linguistic diversity and cultural preferences remains a less critical but noteworthy challenge.

Overall, while agencies are making progress in addressing technical and trust-related challenges, there is room for improvement in areas such as system integration and multilingual support to fully leverage the benefits of chatbots technology.

Table 6. to what extent chatbots can replace human resources in the travel industry.

Disagree	Neutral	Agree	Mean	SD	Attitude
12	37	48	2.37	.697	Agree

The analysis of the extent to which chatbots can replace human resources in the travel industry indicates a cautiously positive attitude, with a mean of **2.37** and a standard deviation of **0.697**, reflecting moderate agreement among respondents. This suggests that while there is recognition of chatbots' potential to take over certain tasks, the industry may still value human involvement in areas requiring empathy, creativity, and complex decision-making. The balance between chatbots automation and human interaction remains a critical factor in shaping future workforce dynamics in the travel sector.

4.2. Pearson Correlation analysis

Table (7) Pearson Correlation Analysis: Examining the Relationship between Continuous Variables (e.g., Awareness Scores and Benefit Scores)

Correlations				
		Awareness	**Benefits**	**Challenges**
Awareness	Pearson Correlation	1	.474**	.361**
	Sig. (2-tailed)		.000	.000
	N	97	97	97
Benefits	Pearson Correlation	.474**	1	.630**
	Sig. (2-tailed)	.000		.000
	N	97	97	97
Challenges	Pearson Correlation	.361**	.630**	1
	Sig. (2-tailed)	.000	.000	
	N	97	97	97

The correlation analysis demonstrates significant relationships among the variables Awareness, Benefits, and Challenges in chatbots implementation within the travel industry.

- The Awareness variable shows a strong positive correlation with Benefits ($r = 0.474$, $p < 0.01$) and a moderate positive correlation with Challenges ($r = 0.361$, $p < 0.01$). This indicates that higher awareness about chatbots is associated with greater perceived benefits and recognition of potential challenges.
- The Benefits variable is highly correlated with Challenges ($r = 0.630$, $p < 0.01$), suggesting that as the benefits of chatbots integration increase, so do the perceived challenges.

These findings imply that while agencies see substantial advantages in chatbots technology, such as improved efficiency and customer interaction, they also acknowledge significant obstacles, such as technical issues and integration difficulties. Addressing these challenges effectively will be essential to maximizing the benefits of chatbots implementation in the travel sector.

4.3. Regression analysis

Table 8. Multiple Regression Analysis: To predict benefits or challenges based on awareness.

Model	R	R Square	B	F	Sig.	Results
1	.407[a]	.166	.407	18.884	.000[c]	Accepted

Table 8. shows the results of a multiple regression analysis predicting benefits or challenges in tourism based on awareness. The model has an **R value of 0.407**, indicating a moderate positive correlation, and an **R Square of 0.166**, meaning only 16.6% of the variance is explained by these factors. The **F-statistic of 18.884** with a highly significant **p-value of 0.000** suggests a strong overall model fit. These findings highlight that while awareness significantly influence benefits or challenges in tourism, a large portion of the variability remains unexplained, indicating the need to explore additional influencing factors.

4.4. Chi-Square Test

Table 9. Chi-Square Test of Independence

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	182.483[a]	52	.000
Likelihood Ratio	167.398	52	.000
Linear-by-Linear Association	3.338	1	.068
N of Valid Cases	97		

The Chi-Square test output indicates a significant relationship between **Years of employee's experience** and **perceived benefits**, as shown by the Pearson Chi-Square value of **182.483** and a **p-value of 0.000**. This suggests a strong association between the variables.

5. Conclusion

The research highlights chatbots as transformative tools in the travel industry, with the potential to improve efficiency and customer satisfaction. Addressing challenges such as technical infrastructure, cost concerns, trust, and cultural adaptation, along with targeted awareness campaigns and employee training, will enable travel agencies to fully leverage chatbots technology, ensuring competitiveness in the digital marketplace.

This research examined the use of chatbots in Egypt's travel agencies, focusing on their awareness, benefits, feasibility, challenges, and impact. The findings show a growing recognition of chatbots as essential tools for improving customer service, operational efficiency, and competitiveness. Travel agencies view chatbots as valuable tools for gaining a competitive advantage, enhancing customer experience, and crisis management. Areas like personalization and streamlined booking processes need more development to better align with customer expectations. Agencies are generally ready to adopt chatbots in terms of human resources and technical feasibility. Financial feasibility and customer acceptance remain areas of moderate concern but are manageable with strategic cost control and improved user engagement efforts. Technical infrastructure is the primary obstacle, requiring robust internet connectivity and data privacy measures. Customer trust and acceptance and language and cultural nuances also present challenges, highlighting the difficulty of creating chatbots suitable for Egypt's diverse cultural and linguistic landscape.

A positive correlation between awareness and perceived benefits suggests that higher chatbots awareness leads to recognizing their advantages. A strong correlation between benefits and challenges indicates that while benefits are acknowledged, obstacles remain a significant consideration. Regression and Chi-Square analyses show that awareness and predict chatbots benefits and challenges, while employee experience significantly influences their perception of chatbots advantages.

This research contributes to the growing body of literature on digital transformation in the Egyptian travel sector by providing actionable insights into the opportunities and challenges of chatbots integration. The recommendations outlined can help travel agencies optimize operations, improve customer service, and strengthen their competitive advantage in a rapidly evolving market.

6. Recommendations

To successfully integrate chatbots technology in Egypt's travel industry, travel agencies should focus on several key areas. First, they need to improve technical infrastructure by investing in robust internet connectivity and advanced IT systems, collaborating with internet service providers and technology partners. Additionally, agencies should prioritize customization and personalization by developing tailored chatbots solutions that align with customer preferences and streamline booking processes, using AI-driven analytics to enhance interactions.

Financial feasibility can be addressed through cost-sharing models and partnerships with technology providers, while also offering scalable solutions that can expand as needed. To build customer trust and acceptance, agencies should implement transparent data privacy policies and strong cybersecurity measures, alongside educational campaigns that inform customers about chatbots advantages and data protection practices.

Addressing cultural and linguistic diversity is also crucial. Developing multilingual chatbots with localized language features and integrating cultural nuances into interactions will make chatbots experiences more relatable to Egyptian customers. Investing in employee training is equally important; comprehensive training sessions should focus on chatbots functionalities and troubleshooting, encouraging employees to engage with chatbots regularly for practical experience.

Continuous improvement can be achieved through feedback mechanisms from customers and employees, ensuring that chatbots interactions are consistently refined based on real-world experiences. Partnering with AI developers and technology companies will also aid in creating customized chatbots solutions, leveraging machine learning algorithms to enhance performance and efficiency. By addressing these recommendations, travel agencies can fully leverage chatbots technology to improve customer service, operational efficiency, and competitive positioning in the dynamic, digital tourism market.

References

AltexSoft, (2018), Chatbots in Travel: How to Build a Bot that Travelers Will Love. (Accessed 20 April, 2023), [available at https://www.altexsoft.com/blog/business/chatbots-in-travel-how-to-build-a-bot-that-travelers-will-love/.

Amiri, M. (2022). *The influence of business intelligence and analytics on performance of tourism and hospitality companies* (Doctoral dissertation).

Ayanouz, S., Abdelhakim, B. A., & Benhmed, M. (2020, March). A smart chatbot architecture based NLP and machine learning for health care assistance. In *Proceedings of the 3rd international conference on networking, information systems & security* (pp. 1-6).

Chatbot guide. 2020. Finnair. Chatbot guide [accessed 21 March 2023]. Available at: https://www.chatbotguide.org/finnair-chatbot .

Chen, J. S., Le, T. T. Y., & Florence, D. (2021). Usability and responsiveness of artificial intelligence chatbot on online customer experience in e-retailing. *International Journal of Retail & Distribution Management*, *49*(11), 1512-1531.

Dale, R. (2016). The return of the chatbots. *Natural Language Engineering*, *22*(5), 811-817.

Döckel, A. (2003). "The Effect of Retention Factors on Organizational Commitment: An Investigation of High Technology Employees", Master Thesis, Faculty of Economics and Management Sciences, University of Pretoria.

Egyptian Tourism Authority. (2024). *The Red Sea.* Accessed 08Dec, available online at https://www.experienceegypt.eg/en/Region/13/the-red-sea

Hill, J., Ford, W. R., & Farreras, I. G. (2015). Real conversations with artificial intelligence: A comparison between human–human online conversations and human–chatbot conversations. *Computers in human behavior*, *49*, 245-250.

Hussain, S., Ameri Sianaki, O., & Ababneh, N. (2019). A survey on conversational agents/chatbots classification and design techniques. In *Web, Artificial Intelligence and Network Applications: Proceedings of the Workshops of the 33rd International Conference on Advanced Information Networking and Applications (WAINA-2019) 33* (pp. 946-956). Springer International Publishing.

Ivanov, S. H. (2020). The first chatbot of a tourism/hospitality journal: Editor's impressions. *Hospitality Journal: Editor's Impressions (March 1, 2020). European Journal of Tourism Research*, *24*, 2401.

Kaczorowska-Spychalska, D. (2019). How chatbots influence marketing. *Management*, *23*(1), 251-270.

Keskar, A., Mourya, R., Manihar, S., Gad, V., & Dange, J. (2022). Chat-Bot for Travel Assistance. *International Journal of Research in Engineering and Science (IJRES) ISSN (Online): 2320-9364, ISSN (Print): 2320-9356, 10* (11) PP. 45-48.

Khanna, A., Pandey, B., Vashishta, K., Kalia, K., Pradeepkumar, B., & Das, T. (2015). A study of today's AI through chatbots and rediscovery of machine intelligence. *International Journal of u-and e-Service, Science and Technology*, *8*(7), 277-284.

Marques, M. (2018). Top 3 chatbots that are changing the travel industry. *Pobrane z: https://medium. com/hijiffy/top-3-chatbots-that-are-changing-the-travel-industry-d325082c50b8 (22.07. 2019).*

Mehfooz, F., Jha, S., Singh, S., Saini, S., & Sharma, N. (2021). Medical chatbot for novel COVID-19. In *ICT Analysis and Applications: Proceedings of ICT4SD 2020, Volume 2* (pp. 423-430). Springer Singapore.

Nirala, K. K., Singh, N. K., & Purani, V. S. (2022). A survey on providing customer and public administration-based services using AI: chatbot. *Multimedia Tools and Applications*, *81*(16), 22215-22246.

Nunnally, J. (1978). "Psychometric Theory". McGraw-Hill, New York.

Nuruzzaman, M., & Hussain, O. K. (2018, October). A survey on chatbot implementation in customer service industry through deep neural networks. In *2018 IEEE 15th International Conference on e-Business Engineering (ICEBE)* (pp. 54-61). IEEE.

Rajaobelina, L., & Ricard, L. (2021). Classifying potential users of live chat services and chatbots. *Journal of Financial Services Marketing*, *26*, 81-94.

Research and Markets. (2019). Chatbot market by component, deployment, organization size, and application: *Global opportunity analysis and industry forecast*, 2018-2024. Retrieved from https://www.researchandmarkets.com/reports/4705061/chatbot-market-by-component-deployment.

Sheffield, J. (2016). The Ultimate Travel Bot List. 30 Seconds to Fly Homepage. *https://www. 30secondstofly. com/ai-software/ultimate-travel-bot-list Accessed On*, *30*(05), 2017.

Spahic, R., Basic, D., & Yaman, E. (2019). Zeka-Friendy Chatterbot. *Southeast Europe Journal of Soft Computing*, *8*(1).

Suanpang, P., & Jamjuntr, P. (2021). A chatbot prototype by deep learning supporting tourism. *Psychology and Education*, *58*(4), 1902-1911.

The Egyptian Travel Agents Association (2022). *The total number of travel agents operating within the Red Sea governorate in Egypt*. Available at https://www.etaa-egypt.org/SitePages/CompaniesEn.aspx .

Thorat, S. A., & Jadhav, V. (2020, April). A review on implementation issues of rule-based chatbot systems. In *Proceedings of the international conference on innovative computing & communications (ICICC)*.

Tussyadiah, I. (2020). A review of research into automation in tourism: Launching the Annals of Tourism Research Curated Collection on Artificial Intelligence and Robotics in Tourism. *Annals of Tourism Research*, *81*, 102883.

Ukpabi, D. C., Aslam, B., & Karjaluoto, H. (2019). Chatbot adoption in tourism services: A conceptual exploration. In *Robots, artificial intelligence, and service automation in travel, tourism and hospitality*. Emerald Publishing Limited.

Whang, J. B., Song, J. H., Lee, J. H., & Choi, B. (2022). Interacting with Chatbots: Message type and consumers' control. *Journal of Business Research*, *153*, 309-318.

Winkler, R., & Söllner, M. (2018). Unleashing the potential of chatbots in education: A state-of-the-art analysis. In *Academy of management annual meeting (AOM)*.

Yu, B. (2023). Deep Learning Applications for Interactive Marketing in the Contemporary Digital Age. *The Palgrave Handbook of Interactive Marketing*, 705-728.

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الملخص

يعد الشات بوت من الأدوات الحيوية المتزايدة في قطاع السفر، خاصةً للمسافرين الأصغر سناً الذين يفضلون التفاعل السريع عبر التطبيقات. يسهم الشات بوت في تسهيل تخطيط الرحلات من خلال توفير معلومات سريعة دون الحاجة للتنقل بين عدة مواقع. ومع ذلك، لا تزال فوائدها وتحدياتها في وكالات السفر المصرية غير مدروسة بما فيه الكفاية. تهدف هذه الدراسة إلى سد الفجوة في دراسة تجارب موظفي وكالات السفر في مصر بشأن دمج الشات بوت. تم استخدام المنهج الكمي ويتضمن استبيانات عبر الإنترنت من وكالات السفر في منطقة البحر الأحمر. تكشف النتائج أن الوكالات تعترف بالفوائد الكبيرة لتقنية الشات بوت، مثل تحسين الإنتاجية وتعزيز التفاعل مع العملاء، لكنها تواجه تحديات ملحوظة مثل المشكلات التقنية وصعوبات التكامل. وللتغلب على هذه التحديات، يُوصى بأن تقوم الوكالات بتحسين بنيتها التحتية التقنية من خلال الاستثمار في أنظمة تكنولوجيا المعلومات المتقدمة وضمان اتصال قوي بالإنترنت، بالتعاون مع مقدمي الخدمات والشركاء التكنولوجيين. كما أن تخصيص الحلول أمر بالغ الأهمية؛ يجب على الوكالات تطوير حلول شات بوت مخصصة تتماشى مع تفضيلات العملاء لتبسيط عمليات الحجز وتعزيز التفاعلات باستخدام تحليلات الذكاء الاصطناعي. بناء الثقة والقبول بين العملاء يتطلب سياسات واضحة لحماية البيانات، تدابير قوية للأمن السيبراني، وحملات توعية حول فوائد تقنية الشات بوت. بالإضافة إلى ذلك، من الضروري معالجة التنوع اللغوي والثقافي في مصر من خلال تطوير شات بوت متعدد اللغات يتمتع بميزات محلية لتحسين التفاعل مع العملاء. يلعب تدريب الموظفين دورًا رئيسيًا؛ يجب على الوكالات الاستثمار في جلسات تدريب شاملة تركز على وظيفة الشات بوت وحل المشكلات، مع تشجيع التفاعل المنتظم للموظفين مع التقنية. تساهم هذه الدراسة في الأدبيات المتزايدة حول التحول الرقمي في قطاع السفر المصري من خلال توفير رؤى قابلة للتنفيذ حول الفرص والتحديات في دمج الشات بوت. يمكن أن تساعد التوصيات الموضحة الوكالات في تحسين العمليات، وتعزيز خدمة العملاء، وتقوية ميزتها التنافسية في سوق سريع التطور.