The Impact of Artificial Intelligence Techniques as a Modern Trend to Reinforcing the Competitive Advantage in the Egyptian Hotels Establishments
(Applied Study on Four and Five Stars Hotels)

El impacto de la inteligencia artificial como instrumento para reforzar la ventaja competitiva de los establecimientos hoteleros egipcios
(Estudio de aplicación a hoteles de 4 y 5 estrellas)

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Abstract

The study aims to identify the impact of artificial intelligence techniques as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments. The study population included all the Egyptian hotels in the governorates of (Greater Cairo, South Sinai, the Red Sea) with four stars, numbering (176), as well as five-star hotels, numbering (94), so that the total number of hotels is (270) hotels with a total number of employees from managers and heads of departments In these hotels (2430) individuals, and given the size of the target study community, which is difficult to reach due to its size, A sample of the study population was chosen to represent it by applying Stephen Thompson's equation, so that the sample size was (332) individuals. The study tools included distributing an electronic questionnaire on Google Form. The data on Through

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the SPSS 25 program for the social and behavioral sciences, the most important results that were reached were: that the Egyptian hotel sector uses artificial intelligence techniques, but to a lesser extent. The most important advantages of these applications are increasing the quality of services provided, improving performance, reducing human errors, overcoming problems related to the mental and psychological state of employees and achieving competitive advantage Egyptian hotel establishments, As for the most important obstacles to the applications of artificial intelligence, it is the need for huge investments, the increase in cost, and the absence of human resources qualified to use it, which in turn leads to reducing face-to-face communication between tourists and service providers in hotels. Artificial intelligence and enhancing the competitive advantage of Egyptian hotel establishments, as the greater the use of artificial intelligence techniques, the more this enhances the competitive advantage of Egyptian hotels establishments, The most important recommendations were to seek to expand the use of artificial intelligence techniques and remove all obstacles to application in Egyptian hotels facilities as a modern trend for the Egyptian state by following the steps and recommendations of Egypt Vision 2030 to enhance the competitive advantage of Egyptian hotels, as well as providing government financial support for the hospitality sector, and achieving cooperation with private international companies With Artificial Intelligence to maintain smart systems and ensure their sustainability, implement the concept of smart hospitality to gain a competitive advantage, and finally take into account some other factors such as service, quality and price for those systems in which hotel services will be provided.

Key words: Artificial Intelligence Techniques, Competitive Advantage, Hotels Establishments, Egypt.

Resumen

Este estudio tiene como objetivo identificar el impacto de las técnicas de inteligencia artificial como una tendencia moderna para reforzar la ventaja competitiva en los establecimientos hoteleros egipcios. La población de estudio incluyó todos los hoteles egipcios en las gobernaciones de Gran Cairo, Sinaí del Sur, Mar Rojo con cuatro estrellas (176) y cinco estrellas (94), encuestando a empleados, gerentes y jefes de departamento. Dado el tamaño de la comunidad objetivo del estudio, se ha tomado una muestra aplicando la ecuación de Stephen Thompson (332 individuos). Las herramientas de estudio incluyeron la distribución de un cuestionario electrónico en Google Form. Los datos se procesaron en el programa SPSS 25. Los resultados más importantes que se obtuvieron fueron que el secor hotelero egipcio utiliza técnicas de inteligencia artificial, pero en menor medida de las necesarias. En cuanto a los obstáculos más importantes para las aplicaciones de la inteligencia artificial figura la necesidad de grandes inversiones, el aumento de costes y la ausencia de recursos humanos cualificados para utilizarla, lo que a su vez lleva a reducir la comunicación cara a cara entre turistas y proveedores de servicios en los hoteles. La inteligencia artificial y la mejora de la ventaja competitiva de los establecimientos hoteleros egipcios, ya que cuanto mayor es el uso de técnicas de inteligencia artificial puede, sin embargo, mejorar la ventaja competitiva de los establecimientos hoteleros y las recomendaciones más importantes obtenidas fueron buscar ampliar el uso de técnicas de inteligencia artificial y eliminar todos los obstáculos para la aplicación en las instalaciones hoteleras siguiendo las indicaciones de Egypt Vision 2030, además de brindar apoyo financiero gubernamental al sector hotelero y lograr una mayor cooperación con empresas

privadas internacionales para mantener sistemas inteligentes y garantizar su sostenibilidad, implementar el concepto de hospitalidad inteligente y, finalmente, tener en cuenta algunos otros factores como el servicio, la calidad y el precio.

Palabras clave: Técnicas de Inteligencia Artificial, Ventaja Competitiva, Establecimientos hoteleros, Egipto.

1. Introduction and objectives

The importance of this study lies in dealing with artificial intelligence. this by its turn shows "to what extent do artificial intelligence impact as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments?" therefore this research can shed the light on the impact of artificial intelligence techniques and its advantage in the Egyptian hotels establishments.

The importance of this study lies in dealing with the impact of artificial intelligence techniques as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments. this by its turn shows the artificial intelligence Techniques effects where they demonstrate their experiment, and the study can provide a description of this technology and its applications and practices to manage them to improve guests' satisfaction and profit.

Study aims to identify the impact of artificial intelligence techniques as a modern trend to Reinforcing the competitive advantage in the Egyptian hotels establishments to improve guest' satisfaction and profits, the study relied on the descriptive analytical approach.

The research objectives are to:

1. Identify the   artificial intelligence techniques as a modern trend to Reinforcing the competitive advantage.

2. Shed light on the impact of applicate Artificial Intelligence Techniques in the Egyptian Hotels Establishments.

3. Assessment the role of hotel management and its policy in entitles workers to the impact of artificial intelligence techniques in order increase Guest' Satisfaction and safety.

4. Illuminate the Obstacles to applying artificial intelligence in Egypt

5. Advise a strategic framework for artificial intelligence techniques as a modern trend in marketing to reinforcing the competitive advantage.

Despite the importance of studying IT guidelines management in hotels, little research has been conducted in the hospitality industry, especially in Egypt. This study will focus on The Impact of Artificial Intelligence Techniques as A Modern Trend to Reinforcing the Competitive Advantage in the Egyptian Hotels Establishments (Applied Study on Four and Five Stars Hotels). This study will add to the existing literature and managerial procedures in several ways. The contributions of this study as follows:

1) investigating Artificial Intelligence Techniques practices in Egyptian hotels, 2) build practical best practice guidelines in Artificial Intelligence Techniques practices management for Egyptian hotels, 3) Artificial Intelligence Techniques practices management will translate to significant hotel profits in the long term and a direct positive impact on the guests' satisfaction and Reinforcing the Competitive Advantage , and 4) after the success of this best practice guidelines will directly impact on Reinforcing the Competitive Advantage in the Egyptian Hotels.

Research question:

This study seats out to address this main question within the hospitality industry context: "to what extent do Artificial Intelligence practices affect as A Modern Trend to Reinforcing the Competitive Advantage in the Egyptian Hotels Establishments?"

Research Conceptual Framework:

Study the artificial intelligence techniques as a modern trend to reinforcing the competitive advantage to increase Guest' Satisfaction in the Egyptian hotels establishments based on the Assessment of Benefits, impact, and Obstacles of applicate Artificial Intelligence Techniques in the Egyptian hotels establishments.

This section constructs a conceptual framework to explore the impacts of artificial intelligence techniques as a modern trend use in Egyptian Hotels Establishments. The framework comprises three parts regarding the artificial intelligence techniques as a modern trend. First part: (The Value of applicate the AI in Egyptian hotels establishments). The second part Challenges facing application of AI in Egypt. The third part is the Importance of AI as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments. The fourth part: The role of AI in the Hospitality Industry Establishments.

Figure 1. Conceptual framework
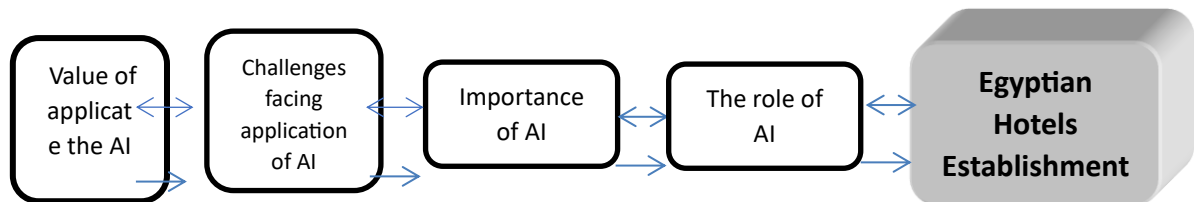
Research Hypotheses:

H1: There are significant relationships between the main AI variables of the study (Value of applicate the AI; Challenges facing application of AI; Importance of AI; The role of AI; Egyptian hotels establishments).

H2: There is a significant impact between the main AI variables of the study (Value of applicate the AI; Challenges facing application of AI; Importance of AI; The role of AI) as a modern trend in the Egyptian Hotels Establishments.

H3: There is a significant impact difference of applying artificial intelligence techniques as a modern trend in the development on Egyptian hotels establishments in accordance to employee's department and positions level.

2. Background and Literature Review

Artificial intelligence (AI) is the most current technology development that is becoming more and more interwoven into our daily life. AI is utilised in a wide range of applications. As a result, employees are one of the most significant sectors to gain from these technologies. On the other side, it raises the prospect of a work shift. Robotics, artificial intelligence, and service automation (RAISA) technologies are rapidly being used in tourism and hospitality organizations throughout the world.

It has mainly gone unnoticed in the Egyptian tourist and hospitality industries due to a lack of study on the subject. As a result, there is a scarcity of study in the hotel industry on artificial intelligence and employee performance. The study is to investigate the influence of artificial intelligence on employee performance in the hotel industry, as well as the reasons behind Egyptian hotels' reluctance to adopt contemporary technology.

Data were collected from managers and employees working in five-star hotels in greater Cairo, Egypt, while primary data were collected through an empirical study conducted by questionnaire on a convenience sample of hotel employees and managers, and the data were analysed using frequencies and descriptive analysis. Finally, basic linear regressions were utilised in SPSS version 25 to examine the impact of artificial intelligence on employee performance in the hotel industry.

The findings show that the hotel uses artificial intelligence; moreover, there is a link between artificial intelligence dimensions and staff performance aspects. Finally, the findings show that the overall dimensions of artificial intelligence have a considerable influence on the dimensions of employee performance in the hotel industry.

The largest influence on employee performance is efficiency, followed by simplicity of use, and automation has no substantial impact on total employee performance characteristics. The study recommends conducting similar studies in other sectors in Egypt

as well as the same sector outside of Egypt to test the generalizability of its findings, so this study may be considered one of the few studies that discuss the impact of artificial intelligence on employee performance in the hotel industry.

Machine intelligence is another name for artificial intelligence (AI). It is demonstrated by humanoid or non-humanoid robots that act like humans and may be used to boost and improve operational efficiency in businesses (Russell and Norvig, 2016). Despite its establishment as an academic field in the 1950s, artificial intelligence (AI) has only lately acquired popularity in the relevant literature. Artificial intelligence is penetrating many sectors and has the potential to dramatically boost financial profitability for businesses, particularly in the service industries of banking, human resource recruitment, healthcare transportation, tourism, and the hotel industry. (See, for example, Buhalis and Leung (2018), Kim (2011), and Yu and Schwartz (2006). To operationalize AI, Russell Stuart and Norvig (2009) examined it from three perspectives: thinking humanly, behaving humanely, and reasoning logically.

According to Rijsdijk, Hultink, and Diamantopoulos (2007), there are six AI dimensions: autonomy, ability to learn, responsiveness, ability to collaborate, humanlike interaction, and personality.AI may also be categorised according to its stage of development and applications. Artificial intelligence (AI) is classified into three types: artificial narrow intelligence, artificial general intelligence, and artificial superintelligence (Kaplan and Haenlein, 2019).

The first generation of AI is artificial narrow intelligence, which is used to accomplish certain tasks. While acknowledging its popularity and impact on boosting company efficiency, artificial intelligence (AI) is also raising concerns about its potential to replace human workers. Robinson (2017) claims that the "Momentum Machines Plan" is one step closer to eliminating fast-food jobs. In the case of hotels and restaurants, AI-related technology is predicted to automate around 25% of tasks (Chui, Manyika, and Miremadi, 2016).

According to the Organisation for Economic Cooperation and Development (OECD) research from 2016, 9 percent of occupations in 21 countries might be automated. According to a 2017 McKinsey analysis, AI will cause a 5% employment loss (Manyika et al., 2017), while an Oxford University research predicts that 47% of occupations would be automated by 2033 (Ramaswamy, 2017). According to Research Internet (Smith and Anderson, 2017), over 72 percent of Americans are concerned about AI replacing human workers. However, AI can only play dominating roles in low-level boring tasks, according to (Morikawa, 2017; Smith and Anderson, 2017). The AI aspects as a whole represent employees' opinions of AI quality.

Previous research has shown that these features of information and system quality can contribute to favourable attitudes towards technology and improve job-related results

(for example, Forsgren, Durcikova, Clay, and Wang, 2016; Wixom and Todd, 2005). Employees can benefit from AI by analysing client inquiries (through language translation, for example), exploring corporate knowledge systems, and producing human-friendly replies (Kirkpatrick, 2017).

In the travel sector, AI may also give information such as pricing adjustments and scheduling topics. Serbanescu and Necsulescu (2013) demonstrate that analytical AI may enhance tasks; AI has sparked debate among practitioners and academics alike. According to Calo (2015), artificial intelligence (AI) could replace millions of jobs and perhaps increase the number of jobless, creating new difficulties such as infrastructure repair, automobile safety, and law and regulation adaptation.

AI may be used to create HR activities, however there are various concerns, including human replacement by computers, undervaluing humans, and overcomplicating the system (Reilly, 2018). According to Nilson (2006), AI can assist firms enhance their performance. Crews (2019) predicts that AI services will be employed in 40% of digital transformation activities in 2019 and 75% of commercial applications by 2021. Service quality is typically described as the gap between the organization's service quality and the service performance that workers anticipate. Service quality is described conceptually as a global judgement or attitude related to the overall excellence or superiority of the service (Parasuraman et al., 1988). The Evaluated Performance model (Caro, 2007) is a model developed by Teas (1993) that indicates the gap between perceived performance and the optimal level of a feature. Chowdhary and Prakash (2007) revisited service quality metrics.

Tourism and hospitality businesses are embracing new RAISA technology. They use RAISA to improve operational quality, increase productivity and profitability, reduce employee workload, lower labour costs, and provide high-tech entertainment and delight experiences to customers (Ivanov et al., 2017; Drexler, Lapré, & Group, 2019; Lukanova & Ilieva, 2019). The robot is an intelligent physical device having autonomy, intelligence, interaction, movement, and sensory capacities that allow it to carry out tasks and activities (Wirtz, Patterson, Kunz, Gruber, & Paluch, 2018). Industrial robots, professional service robots, and personal service robots are the three sorts of robots (Lukanova & Ilieva, 2019). In tourism and hospitality, industrial robots and professional service robots can conduct back-office tasks such as mowing grass and cleaning floors that do not require humans to engage (Lukanova & Ilieva, 2019). Personal service robots, on the other hand, are tangible embodiments of automated technology with adjustable interfaces (Hin Ho, Tojib, & Tsarenko, 2020). Service robots that have been advanced by AI technologies are more suited for front-office operations, can do more complex duties, and actively engage with people (Lukanova & Ilieva, 2019). Furthermore, the application and adoption will be expanded in the near future, and technical developments in robots powered by AI will be adopted to enable them to be more capable of serving clients in tourist and hospitality settings, as well as executing other occupations (Ivanov, 2019; Ivanov & Webster, 2019).

AI is the capacity of a computer system to comprehend external input in order to achieve specified objectives and tasks through flexible adaptation (Haenlein & Kaplan, 2019). As a result, AI is capable of doing tasks and solving issues by learning, analysing, and understanding data (Prentice, Weaven, & Anthony, 2020). The algorithms integrated in various types of software, such as search engines (e.g., Google), are the most visible instances of AI, Financial platforms, chatbots, or social media networks (e.g., Facebook) are examples of such platforms (Haenlein & Kaplan, 2019; Lu, Cai, & Gursoy, 2019). Furthermore, numerous AI software applications have already automated many services in the tourism and hospitality industry (Ivanov & Webster, 2019), such as those systems integrated into robots, smartphones, and computers that are used in various departments in travel agencies and hotels (Berezina et al., 2019). AI performs activities ranging from simple, like Siri, to more complex, such advanced social skills and creativity (Prentice et al., 2020). Travel agencies and hotels use AI to modernise and speed up operations and actions such as responding to customer queries, preparing and serving food and beverages, check-in/out processes, room service tasks, forecasting demand, and analysing customer online reviews (Ivanov, 2019; Justin, Bonn, & Haobin, 2019; Tuomi et al., 2020). AI methods enable tourism and hospitality management to attract customers, identify their emotions, reduce costs, eliminate waste, advance productivity, reduce errors, increase speed, develop accuracy, improve perceived service quality, streamline operations, design service experiences, boost revenues, and enhance customer engagement (Berezina et al., 2019; Ivanov, 2019; Justin et al., 2019; Prentice et al., 2019).

Whatever areas of human work AI replaces, the argument over AI vs. human intellect rages on, with numerous open concerns in a range of sectors. Despite the fact that replacing people saves money and provides a unique experience for clients, "artificial intelligence" will never be able to beat human intellect because the field is still in its early stages (Samala et al.,2020). Customers, according to Lommatzsch (2018), continue to rely on human employees for difficult enquiries, despite the fact that chatbots and robots can do so. Chatbots, for example, can only answer simple inquiries. Based on the keywords in the questions, these technologies give solutions. When there is an emergency or a difficult issue to be handled, customers continue to rely on the human staff.

One of the most significant barriers to continued assimilation of information and communication innovations into businesses to improve performance is the country's IT infrastructure, which is the service network that supports innovation and new technology adoption (the state of ICT infrastructure influences hotels' willingness to implement e-participation). According to Huang et al. (2021), numerous fundamental aspects impact human and organisational adoption of new technologies (including AI): Several criteria must be considered, such as relative advantage, compatibility, complexity, trialability, and observability. Because it combines social ability, intelligence, and collaboration, intelligent agent technology is one of the most beneficial approaches for supply chain management (Alsetoohy and Ayoun, 2018). Current procurement practises, according to Alsetoohy et al.

(2019), lack coordination and proactivity between suppliers and buyers, as well as intelligent tools for selecting relevant suppliers, performance evaluation, and automation. As AI replaces jobs, another internal challenge is employee churn. This might constitute a "serious threat to human employment," according to (Huang and Rust, 2018). The following diagram depicts the most significant RAISA implementation hurdles and problems.
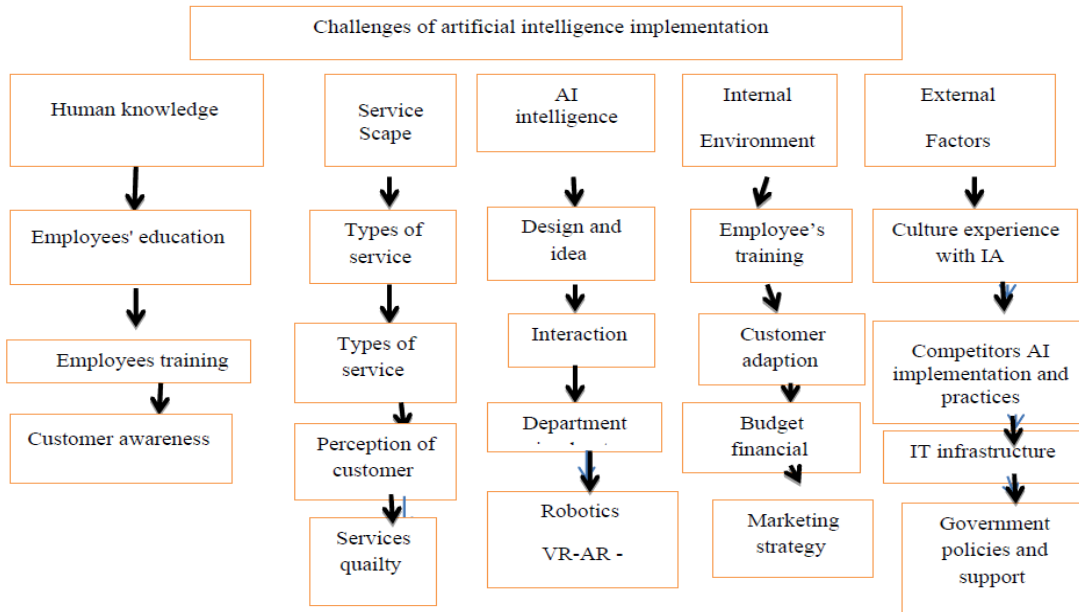
Figure (2): The most important barriers to implementation of RAISA
Source : Jabeen, et al . (2021).

3. Materials and methodology

This research used the Mixed Approach methods through Survey "An exploratory study" and quantitative study by Questionnaire to collect the data. The study methodology was supported by Guest questionnaires. This paper adopts a descriptive quantitative analysis technique. The exploratory study was directed in this study during November 2022. The aim of the exploratory study was to find out artificial intelligence techniques as a modern trend to reinforcing the competitive advantage Applied in the Egyptian Four and Five Stars Hotels establishments. Moreover, to ensure that the survey was well designed and easily understood by potential respondents, to examine the reliability and validity of the research tools as well as to develop and perfect degree of the questions. Questionnaire was reviewed by some academic scholars from "The higher institutes for Tourism and Hotels, Badr City; The higher institutes for Tourism and Hotels "EGOTH" Luxor; The higher institutes for Tourism and Hotels, El king Marriott" to found their relevance, clarity and to ease the understanding. Some modifications were suggested and then were realized.

Questionnaires provide an efficient way of collecting a large amount of data from a sizable population of artificial intelligence techniques as a modern trend as a tool to increase guest.

Questionnaire was adopted from previous studies such as: (Kozmal, 2020; Kozmal et al., 2021; Huang et al., 2021; Yasin et al., 2022[A]; Yassin et al., 2022[B].

Questionnaire was evaluated using a five-point Likert scale ranging from 1= 'Not important at all' to 5= Extremally Important'. The questionnaire form consists of socio-demographic and general questions such as: gender, age, education. The questionnaire prepared for this study is based on a comprehensive literature review and consistent with the objectives of the study. The questionnaire formulated through divided into three main parts or dimension: The first dimension: Knowing the Value of Artificial Intelligence among providers of tourism services, the Second dimension: Challenges facing the application of Artificial Intelligence techniques in the Egyptian Tourism Sector, the third dimension: The Importance of Artificial Intelligence in the Hotels and Tourism Establishments.

Questionnaire was then pre-tested in order to investigate the respondent's understanding of scale items and to identify also any issues that was multifaceted or unclear in order to develop suitable scale items to ensure the validity and reliability of the research. For this determination, a questionnaire was distributed to a sample of managers.

A pilot study of 45 forms were distributed to respondents who were asked to complete them 42 of them were received and found that 39 of them ready to analysis by 86 %. valid response percentage

The field study accomplished through survey by personal visits, phone calls, social media networks, and emails. The target population for this study was carried out with senior managers was mainly conducted through a self-administered questionnaire on the Rooms division, Information Technology "I T", F&B and Sales and marketing departments', The questionnaire was focused on the management and supervisors and employees' expectations about the impact of artificial intelligence techniques as a modern trend to increase the guest satisfaction in Egyptian Hotels Establishments.

The Sample Population: The study population included all the Egyptian hotels in the governorates of (Greater Cairo, South Sinai, the Red Sea) with four stars, numbering (176), as well as five-star hotels, numbering (94), so that the total number of hotels is (270) hotels with a total number of employees from managers and heads of departments In these hotels (2430) individuals, and given the size of the target study community, which is difficult to reach due to its size, A simple random sampling of the study population was chosen to represent it by applying Stephen Thompson's equation, so that the sample size was (332) individuals. The study tools included distributing an electronic questionnaire on Google Form. because they are the five-star hotels is the highest category of hotels. The

chosen of the hotels were due to variety of the locations and availability and opening they are on operation**.**

The target population for this study was the hotel employees, supervisors, Departmental head and managers; moreover, questionnaires were conducted with personal visits, phone calls, social media networks, and emails.

Data collection: A self-administered questionnaire includes the employees' expectations about artificial intelligence techniques as a modern trend as a tool to Reinforcing the competitive advantage in the Egyptian hotels establishments. The data was collected "from December 2022 to March 2023".

Survey: The field study accomplished through survey by personal visits, phone calls, social media networks, emails, and fax. A survey was carried out on all the Egyptian hotels in the governorates of (Greater Cairo, South Sinai, the Red Sea) with four stars, as well as five-star hotels, to know which implement or use the artificial intelligence techniques as a modern trend. The questionnaire used to assess how artificial intelligence techniques as a modern trend as a tool to Reinforcing the Competitive Advantage in the Egyptian hotels establishments to increase Guest' Satisfaction in Egypt.

The data collected from hotels were used declares a descriptive analysis of managers, supervisors and employees' questionnaire by using Statistical package of social sciences "SPSS" 25 program for the social and behavioral sciences. was used to analyze and compute the collected data, except the open question. Frequencies and percentage distributions were used to shed the light on the role of artificial intelligence techniques as a modern trend.

Study Instrument reliability. For all scales, Cronbach's Alpha, the correlation coefficient was calculated to regulate the internal consistency of the scale. The Cronbach's Alpha reliability was computed, and the tests showed that the reliability coefficients for all the instruments the questionnaire was tested for validity and reliability where alpha Cronbach values were 0.88 which refer to acceptable levels, which indicates that the instrument was reliable for being used. Cronbach alpha for all survey instruments as shown in the following table (1). The Reliability coefficient is over 0.70 it is considered "strongly acceptable" in most social science situations.

Table 1: Reliability Statistics

Dimension	Cronbach's Alpha	No. of Items	No of questionnaires
Scale all variables	.989	30	332

Value of applicate the AI	.964	8
Challenges facing application of AI	.974	6
Importance of AI	.959	8
The role of AI in Egyptian hotels establishments	.959	8

3. Results

This part of the study included the results of the questionnaire forms distributed on the internet on Facebook, online Google drive, email, and personnel visits. To find out what are the managers, supervisors and employees' opinions regarding the role of artificial intelligence techniques as a modern trend as a Tool to Increase Guest' Satisfaction in the Egyptian hotels.

Statistical package of social sciences (SPSS) version 25.0 for windows was used to analyze and compute the collected data, except the open question. Frequencies and percentage distributions were used to shed the light on the impact of artificial intelligence techniques as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments.

Respondent's Demographics

Table 2. The respondents according to demographic and career data (n =332)		
Categories	**Sample (n = 332)**	
	Frequency	%
Gender		
Male	212	63.9
Female	120	36.1
Marital status		
Single	83	25.0
Married	249	75.0
Age group		
Less 21	21	6.3

21-36	128	38.6
37-49	147	44.3
50 above	36	10.8
Department		
General manager	15	4.5
Rooms division	125	37.7
Information Technology "I T"	63	19.0
F&B	39	11.7
Sales and marketing departments	81	24.4
Other	9	2.7
Position Level		
Managereal	123	37.0
Supervisory	168	50.6
Rank and file staff	41	12.3

The distribution of the respondents according to demographic data (n = 332) indicated that regarding the gender most of the respondents were Men by percentage of 63.9 % of all respondents. Regarding the Marital status, most of the respondents were Married by the percentage of 75 %. The percentage of respondents was 44.3 % at the age of 37 to 49 years and 38.6 from 21 to 36 years. Regarding the Department, most of the respondents were Rooms division by the percentage of 37.7 % and Sales and marketing departments by the percentage of 24.4 % of all respondents.

Concerning the position, most of the respondents were Supervisory level by the percentage of 50.6 % and followed by Managerial level by the percentage of 37%. The results indicate that most of the respondents are well educated, experience and able to apply Artificial Intelligence techniques as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments as shown in table (2).

Evaluating the employees' vision regarding the AI in the Egyptian hotels: Rendering the first dimension: Knowing the Value of Artificial Intelligence among providers of tourism services the results showed that:

In accordance to the first acceptance average level Artificial intelligence use has aided in hastened tourist destinations' recovery from the Covid pandemic. With (95.42%) average, mean (4.77) and Std (0.51). results show that the importance of Applying the AI since the Covid pandemic . Concerning the second level agrees average was (93.92%) regarding agree with that Hotel industry professionals need to understand the latest trends in artificial intelligence. with mean (4.69) and Std (0.46). this indicate the importance of the AI for Hotel industry.

Regarding the amount of enjoyment tourists get from the tourism programs and excursions has decreased since artificial intelligence was introduced as a replacement for the human factor. Achieved the third level by average acceptance (92.11%) with a mean (4.60) and Std (0.64). One of the most crucial qualifications for hiring new employees in the tourism and hospitality establishments is the ability to use contemporary technology. achieved the fourth level by average acceptance (87.83 %) with mean (4.39) and Std (0.77). In the fifth rank was that   Artificial intelligence helps tourists make their purchasing decisions and make comparisons between different tourist destinations easily and effectively, by a percentage of (84.22%) as agree average, with a mean (4.21) and Std (0.81).

In accordance to the sixth acceptance average levels were Artificial intelligence technologies help to better understand the needs and desires of tourists. With (83.55%) average, mean (4.17) and Std (0.71). Concerning the seventh level agrees average was (61.75%) regarding agree with that Hotels Association and Tourism Establishment have enhanced their interaction and communication with tourists. with mean (3.08) and Std (0.67). Regarding The use of artificial intelligence technologies in the tourism and hospitality Sector has a negative effect on those who work in the tourism field were Achieved the eighth level by average acceptance (59.94%) with a mean (2.99) and Std (0.60). results show the Value of Artificial Intelligence among providers of tourism services. These results agreed with (Trejos, 2015; Gladstone, 2016; Tung and Law, 2017; Murphy et al., 2017[A] ; Kelly et al., 2017; Kim and Kim, 2018; Tussyadiah and Park, 2018; Ivanov, 2019; Murphy et al., 2019; Kozmal et al., 2021) .

According to the second dimension: Challenges facing the application of Artificial Intelligence techniques in the Egyptian Tourism Sector the results showed that: the results showed that most of the samples (93.07%) were agreed that the hotels Establishments (4,5) stars uses an artificial intelligence tool to ensure that they can identify issues that arise during the application process and handling procedures, with a mean (4.65) and std. deviation (0.63). Item no. 2, was regarding providers of tourism services lack a clear understanding of how to use artificial intelligence in these technologies, results showed that most of the sample 92.11%) was agreed with that, with a mean (4.60) and std. deviation (0.64). results showed that (91.20%) of the respondents were agreed about these the steps

taken to incorporate artificial intelligence technologies in the hotel offer ways to boost users' confidence in online transactions with a mean (4.56) and std. deviation (0.72).

People in the tourism industry lack the expertise needed to advance in the application of artificial intelligence methods Achieved the fourth level by average acceptance (90.90%) with mean (4.54) and Std (0. 65). In the fifth rank was that the concept of artificial intelligence and the need to follow it are not sufficiently embraced by managers and leaders, by a percentage of (89.70%) as agree average, with a mean (4.48) and Std (0.65). In accordance to the sixth acceptance average levels were There is no adequate infrastructure to support AI technologies. With (85.42%) average, mean (4.27) and Std (0.75). results show that there are many Challenges facing the application of Artificial Intelligence techniques in the Egyptian Tourism Sector. These results agreed with (Tung and Au, 2018; Kim and Kim, 2018; Tussyadiah and Park, 2018 Ivanov, 2019; Webster and Ivanov, 2020; Kozmal, 2020). As shown in table (3).

According to the third dimension: The Importance of Artificial Intelligence in the Hotels and Tourism Establishments. the results in table (3) showed that in accordance to the 1st acceptance average level was that AI can automate repetitive tasks, allowing hotel staff to focus on more strategic activities such as building relationships with key clients and providing personalized service to guests, with (98.19%) average, mean (4.91) and Std (0.28); this indicated that AI is a mandatory for the hotel success. In the 2nd position was that Predictive analytics can help hotel professionals to analyze data and forecast customer behavior and market trends, allowing them to make data-driven decisions and develop more effective marketing strategies., by a percentage of (95.42 %) as agree with average, with a mean (4.77) and Std (0.51).

Table 3

Evaluating the employees' vision regarding the AI in the Egyptian hotels

No.	Code	Factor	Strongly disagree Freq	%	Disagree Freq	%	Uncertain Freq	%	agree Freq	%	Strongly agree Freq	%	Mean Statistic	Std. Error	Std. Deviation	Weighted Average %	Rank
		A- Knowing the Value of Artificial Intelligence among providers of tourism services															
1.	VAI1	Artificial intelligence technologies help to better understand the needs and desires of tourists.	0	0	0	0	61	18	151	46	120	36	4.178	0.039	0.718	83.55	6
2.	VAI2	Hotels Association and Tourism Establishment have enhanced their interaction and communication with tourists.	0	0	61	18	181	55	90	27	0	0	3.087	0.037	0.670	61.75	7
3.	VAI3	The use of artificial intelligence technologies in the tourism and hospitality Sector has a negative effect on those who work in the tourism field.	0	0	61	18	211	64	60	18	0	0	2.997	0.033	0.605	59.94	8
4.	VAI4	4- The amount of enjoyment tourists get from the tourism programs and excursions has decreased since artificial intelligence was introduced as a replacement for the human factor.	0	0	0	0	30	9	71	21	231	70	4.605	0.036	0.649	92.11	3
5.	VAI5	5- Artificial intelligence use has aided in hastened tourist destinations' recovery from the Covid pandemic.	0	0	0	0	15	5	46	14	271	82	4.771	0.028	0.517	95.42	1
6.	VAI6	6- One of the most crucial qualifications for hiring new employees in the tourism and hospitality establishments is the ability to use contemporary technology.	0	0	0	0	61	18	80	24	191	58	4.392	0.043	0.779	87.83	4

Table 3

Evaluating the employees' vision regarding the AI in the Egyptian hotels

No.	Code	Factor	Strongly disagree Freq	%	Disagree Freq	%	Uncertain Freq	%	agree Freq	%	Strongly agree Freq	%	Mean Statistic	Std. Error	Std. Deviation	Weighted Average %	Rank
7.	VAI7	7- Artificial intelligence helps tourists make their purchasing decisions and make comparisons between different tourist destinations easily and effectively.	0	0	0	0	81	24	100	30	151	46	4.211	0.044	0.810	84.22	5
8.	VAI8	8- Hotel industry professionals need to understand the latest trends in artificial intelligence.	0	0	0	0	0	0	101	30	231	70	4.696	0.025	0.461	93.92	2
		B- Challenges facing the application of Artificial Intelligence techniques in the Egyptian Tourism Sector														0.00	
1.	ChAI1	Providers of tourism services lack a clear understanding of how to use artificial intelligence in these technologies.	0	0	0	0	30	9	71	21	231	70	4.605	0.036	0.649	92.11	2
2.	ChAI2	People in the tourism industry lack the expertise needed to advance in the application of artificial intelligence methods.	0	0	0	0	30	9	91	27	211	64	4.545	0.036	0.656	90.90	4
3.	ChAI3	The concept of artificial intelligence and the need to follow it are not sufficiently embraced by managers and leaders.	0	0	0	0	30	9	111	33	191	58	4.485	0.036	0.657	89.70	5
4.	ChAI4	There is no adequate infrastructure to support AI technologies.	0	0	0	0	61	18	120	36	151	46	4.271	0.041	0.753	85.42	6
5.	ChAI5	The steps taken to incorporate artificial intelligence technologies in the hotel offer ways to boost users' confidence in online transactions.	0	0	0	0	45	14	56	17	231	70	4.560	0.040	0.720	91.20	3

Table 3

Evaluating the employees' vision regarding the AI in the Egyptian hotels

No.	Code	Factor	Strongly disagree		Disagree		Uncertain		agree		Strongly agree		Mean		Std. Deviation	Weighted Average %	Rank
			Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Statistic	Std. Error			
6.	ChAI6	The hotels Establishments (4,5) stars uses an artificial intelligence tool to ensure that they can identify issues that arise during the application process and handling procedures.	0	0	0	0	30	9	55	17	247	74	4.654	0.035	0.639	93.07	1
		C- The Importance of Artificial Intelligence in the Hotels and Tourism Establishments.														0.00	
1.	IAI1	AI can improve housekeeping room assignments and maintenance by using sensors and cameras to monitor and control the temperature, lighting, and security of guest rooms.	0	0	0	0	45	14	56	17	231	70	4.560	0.040	0.720	91.20	7
2.	IAI2	AI can automate repetitive tasks, allowing hotel staff to focus on more strategic activities such as building relationships with key clients and providing personalized service to guests.	0	0	0	0	0	0	30	9	302	91	4.910	0.016	0.287	98.19	1
3.	IAI3	Predictive analytics can help hotel professionals to analyze data and forecast customer behavior and market trends, allowing them to make data-driven decisions and develop more effective marketing strategies.	0	0	0	0	15	5	46	14	271	82	4.771	0.028	0.517	95.42	2
4.	IAI4	AI improving energy efficiency by using smart building systems.	0	0	0	0	30	9	71	21	231	70	4.605	0.036	0.649	92.11	5
5.	IAI5	Improving the overall efficiency of hotel operations by using AI for forecasting demand, inventory management, and logistics optimization.	0	0	0	0	0	0	81	24	251	76	4.756	0.024	0.430	95.12	3*

Table 3

Evaluating the employees' vision regarding the AI in the Egyptian hotels

No.	Code	Factor	Strongly disagree Freq	%	Disagree Freq	%	Uncertain Freq	%	agree Freq	%	Strongly agree Freq	%	Mean Statistic	Std. Error	Std. Deviation	Weighted Average %	Rank
6.	IAI6	AI can identify opportunities for upselling and cross-selling to guests, and optimize pricing and inventory decisions in real-time based on market conditions, guest behavior, and other factors.	0	0	0	0	0	0	81	24	251	76	4.756	0.024	0.430	95.12	3*
7.	IAI7	AI can help hotels to identify patterns and anomalies in revenue data that can reveal new revenue opportunities and trends.	0	0	0	0	0	0	141	43	191	58	4.575	0.027	0.495	91.51	6
8.	IAI8	The hotel's processes for implementing AI technology provide ways to support customer service while maintaining their quality and dependability.	0	0	0	0	30	9	51	15	251	76	4.666	0.035	0.636	93.31	4
		D- The role of AI in the Hospitality Industry Establishments.															
1.	RAI1	Do you think the role of using AI in the hospitality industry is an important and vital?	0	0	0	0	45	14	36	11	251	76	4.621	0.039	0.713	92.41	7
2.	RAI2	Do you agree to activate hotels for AI to provide products and services to all guests and customers in a professionalism manner?	0	0	0	0	0	0	15	5	317	96	4.955	0.011	0.208	99.10	1
3.	RAI3	The presence of AI inside hotels helps to improve hotel services and skills leadership development.	0	0	0	0	61	18	20	6	251	76	4.572	0.043	0.784	91.45	8
4.	RAI4	Do you think that AI will replace the human element in hotels and hospitality establishments in the future?	0	0	0	0	0	0	33	10	299	90	4.901	0.016	0.300	98.01	2
5.	RAI5	Do you think that AI create a competitive advantage for guests to select their hotels?	0	0	0	0	18	5	30	9	284	86	4.801	0.028	0.518	96.02	3

Table 3

Evaluating the employees' vision regarding the AI in the Egyptian hotels

No.	Code	Factor	Strongly disagree		Disagree		Uncertain		agree		Strongly agree		Mean		Std. Deviation	Weighted Average %	Rank
			Freq	%	Freq	%	Freq	%	Freq	%	Freq	%	Statistic	Std. Error			
6.	RAI6	Do you appreciate that using AI in the hospitality industry filed that will be minimize errors percentages and it will be increased profitability and customer confidence?	0	0	0	0	33	10	32	10	267	80	4.705	0.035	0.639	94.10	5
7.	RAI7	Do you think that using AI in hotels establishments will be prevent terrorism and theft incidents?	0	0	0	0	15	5	50	15	267	80	4.759	0.029	0.524	95.18	4
8.	RAI8	Do you think that using of AI in hotels establishments will be prevent fire accidents in it, and assist in firefighting operations and using the industrial security equipment without human losses?	0	0	0	0	33	10	52	16	247	74	4.645	0.036	0.655	92.89	6

Regarding the 3rd priority average level was both of Improving the overall efficiency of hotel operations by using AI for forecasting demand, inventory management, and logistics optimization; and AI can identify opportunities for upselling and cross-selling to guests, and optimize pricing and inventory decisions in real-time based on market conditions, guest behavior, and other factors, with agree average level (95.12%), mean was (4.75) and Std (0.43). Dealing with the 4th importance with (93.31%) as an acceptance average for the hotel's processes for implementing AI technology provide ways to support customer service while maintaining their quality and dependability, with a mean (4.66) and Std (0.63).

Concerning the 5th agree level AI improving energy efficiency by using smart building systems, by average (92.11%), with Std (0.64) and mean (4.60). Concerning the 6th agree level were AI can help hotels to identify patterns and anomalies in revenue data that can reveal new revenue opportunities and trends, by average (91.51%), with Std (0.57) and mean (4.57). Concerning the seventh level agrees average was (91.20%) regarding agree with that AI can improve housekeeping room assignments and maintenance by using sensors and cameras to monitor and control the temperature, lighting, and security of guest rooms. with mean (4.56) and Std (0.72). These results agreed with (Kuo and Boger, 2016; Murphy, 2017[B]; Tussyadiah and Park, 2018; Tung and Au, 2018; Qiu et al., 2019).

Rendering the fourth dimension: The role of AI in the Hospitality Industry Establishments, the results in table (3) showed that:

In accordance to the first acceptance average level respondents agree to activate hotels for AI to provide products and services to all guests and customers in a professionalism manner, with (99.10%) average, mean (4.95) and Std (0.20). Concerning the second level agrees average was (98.01%) regarding agree with that respondents think that AI will replace the human element in hotels and hospitality establishments in the future, with mean (4.90) and Std (0.30). Regarding think that AI create a competitive advantage for guests to select their hotels, Achieved the third level by average acceptance (96.02%) with a mean (4.80) and Std (0.51). Respondents think that using AI in hotels establishments will be prevent terrorism and theft incidents, achieved the fourth level by average acceptance (95.18%) with mean (4.75) and Std (0.52).

In the fifth rank was that respondents appreciate that using AI in the hospitality industry filed that will be minimize errors percentages and it will be increased profitability and customer confidence, by a percentage of (94.10%) as agree average, with a mean (4.70) and Std (0.63). In accordance to the sixth acceptance average levels were that respondents think that using of AI in hotels establishments will be prevent fire accidents in it, and assist in firefighting operations and using the industrial security equipment without human losses, with (92.89%) average, mean (4.64) and Std (0.65). Concerning the seventh level agrees average was (92.41%) regarding agree with that respondents think the role of using AI in the hospitality industry is an important and vital, with mean (4.62) and Std (0.71). Regarding the presence of AI inside hotels helps to improve hotel services and skills leadership development, were Achieved the eighth level by average acceptance (91.45%) with a mean (4.57) and Std (0.78). results show the role of AI in the Hospitality Industry Establishments. These results agreed with (Tussyadiah and Park, 2018; Ivanov, 2019; Murphy et al., 2019; Kozmal et al., 2021).

Respondents' opinion regarding the impact of artificial intelligence techniques as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments

The following table illustrates the means, standard deviations and ranking of the factors clarifying the respondents' opinion regarding the impact of artificial intelligence techniques as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments.

Results showed that the mean scores of the respondents were as following: the first acceptance level was the role of AI in the hospitality industry establishments.by mean 4.74 and SD 0.50; the second level the importance of artificial intelligence in the hotels and tourism establishments by mean 4.70 from and SD 0.47. The third acceptance level: Challenges facing the application of Artificial Intelligence techniques in the Egyptian Tourism Sector by mean 4.52 and SD 0.64. The fourth acceptance level Knowing the Value of Artificial Intelligence among providers of tourism services by mean 4.11 from and SD 0.47. As shown in table (4).

Table 4. Descriptive analysis of the respondents' opinions according to the impact of artificial intelligence techniques as a modern trend to reinforcing the competitive advantage

Code	Dimension	Mean		Std. Deviation	Rank
		Statistic	Std. Error	Statistic	
VAItotal	A- Knowing the Value of Artificial Intelligence among providers of tourism services	4.117	0.032	0.590	4
CHAItotal	B- Challenges facing the application of Artificial Intelligence techniques in the Egyptian Tourism Sector	4.520	0.035	0.640	3
IAItotal	C- The Importance of Artificial Intelligence in the Hotels and Tourism Establishments.	4.700	0.026	0.473	2
RAItotal	D- The role of AI in the Hospitality Industry Establishments.	4.745	0.028	0.506	1
AItotalaverage	Total AI dimensions average	4.521	0.030	0.540	

4. Hypotheses of the study test

H1: There are significant relationships between the main variables of the study (Value of applicate the AI; Challenges facing application of AI; Importance of AI; The role of AI; Egyptian hotels establishments). As shown in tables (5 and 6) and figure (2).

Regarding the research hypothesis test H1: There are significant relationships between the main variables of the study (Value of applicate the AI; Challenges facing application of AI; Importance of AI; The role of AI; Egyptian hotels establishments). Research hypotheses were tested using Pearson correlation coefficient. Analyses were done to ensure that no violation of assumptions of normality and linearity.

Results showed that there is a significant correlation between the benefits; strangeness and weakness points "reality"; and the predictable opportunities and threats of AI. With (r) values ranging from (0.886**) to (0.992**) (p<.01) **. The correlation was significant at the 0.01 level (1-tailed). Based on the results of Pearson correlation analysis which represent proposed linear relationship, all the research hypotheses were positive and supported.

On other words, Results showed that there is a significant correlation between: (1) Challenges facing the application of Artificial Intelligence techniques in the Egyptian Tourism Sector vs the Importance of Artificial Intelligence in the Hotels and Tourism Establishments., with (r) values (0.981**). and p (.000). (2) The Importance of Artificial Intelligence in the Hotels and Tourism Establishments vs the role of AI in the Hospitality Industry Establishments, with (r) values (0. .962**). and p (.000). (3) Knowing the Value of Artificial Intelligence among providers of tourism services vs Challenges facing the application of Artificial Intelligence techniques in the Egyptian Tourism Sector, with (r) values (0. .958**). and p (.000). (4) Knowing the Value of Artificial Intelligence among providers of tourism services vs The Importance of Artificial Intelligence in the Hotels and Tourism Establishments.

, with (r) values (0 .940**), and p (.000). The following tables (12) illustrate that:

Table 5. The relationships between the main variables of the study.		VAItotal	CHAItotal	IAItotal	RAItotal	AItotalaverage
Correlations						
Knowing the Value of Artificial AI	Pearson Correlation	1				
	Sig. (1-tailed)					
Challenges facing the application of AI	Pearson Correlation	.958**	1			
	Sig. (1-tailed)	.000				
Importance of AI	Pearson Correlation	.942**	.981**	1		
	Sig. (1-tailed)	.000	.000			
The role of AI.	Pearson Correlation	.886**	.921**	.962**	1	
	Sig. (1-tailed)	.000	.000	.000		
Total AI dimensions average	Pearson Correlation	.971**	.989**	.992**	.960**	1
	Sig. (1-tailed)	.000	.000	.000	.000	
**. Correlation is significant at the 0.01 level (1-tailed).						

Table 6. Hypothesis test summary

Null Hypothesis	Test	Sig.	Decision

The distribution of VAItotal; CHAItotal; IAItotal; RAItotal are the same.	Related Samples Friedman's Two-way analysis of variance by ranks	0.000	reject the null hypothesis

Asymptotic significances are displayed. The significance level is 0.05

Figure.2. Hypothesis test summary

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

Regarding, H2: There is a significant impact between the main AI variables of the study (Value of applicate the AI; Challenges facing application of AI; Importance of AI; The role of AI) as a modern trend in the Egyptian Hotels Establishments.

There is a significant impact of applying AI in the development on the main variables of the study. One-Sample Test (T – test) in table (7) used to compare means to show the values differences regarding the extent of the impact of applying AI in the development on the main variables of the study (Knowing the Value of AI; Challenges facing the application of AI techniques; The Importance of AI; The role of AI).

Moreover, to apply one-sample T-test, the value (RAItotal) were suggested because they were a suitable value that referred to the highest levels were RAItotal: The role of AI in the Hospitality Industry Establishments. with Mean 4.74; Std. Deviation 0.50; T value -9.184; Mean Difference -.25527; and Sig. (2-tailed) was 0.000.

Followed by IAItotal: The Importance of Artificial Intelligence in the Hotels and Tourism Establishments. with Mean 4.69; Std. Deviation 0 .47; T value -11.552; Mean Difference -.30008; and Sig. (2-tailed) were 0.000. The results showed that the p-value were definitely less than .05 (0.00). So, the null hypothesis was rejected and the first hypotheses of the research were valid. In the other word, there is a significant impact difference of applying artificial intelligence techniques as a modern trend in the development on Egyptian hotels establishments in accordance to obstacles to applying AI. These results assured the H2.

Table 7. One-Sample Test (T – test) used to compare means

One-Sample Statistics	One-Sample Test
	Test Value = 5

Code	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
								Lower	Upper
VAItotal	4.1171	.58990	.03238	-27.271	331	.000	-.88291	-.9466	-.8192
CHAItotal	4.5201	.63963	.03510	-13.671	331	.000	-.47992	-.5490	-.4109
IAItotal	4.6999	.47331	.02598	-11.552	331	.000	-.30008	-.3512	-.2490
RAItotal	4.7447	.50644	.02779	-9.184	331	.000	-.25527	-.3099	-.2006

Nonparametric tests regarding independent samples **H2:** There is a significant impact between the main AI variables of the study (Value of applicate the AI; Challenges facing application of AI; Importance of AI; The role of AI) as a modern trend in the Egyptian Hotels Establishments.

Results showed that T-test value was significant at (0.00) in each dimension this means that is revealed a statistically significant difference between the dimensions. On other words regarding the impact of artificial intelligence techniques as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments on comparing the (Knowing the Value of AI; Challenges facing the application of AI techniques; The Importance of AI; The role of AI) Paired Samples Test assuring **H2** through that:

Pair 1: Value of applicate the AI influences Challenges facing application of AI, the Paired Samples Test were with t value (-41.679), and Sig. (2-tailed) (0 .000). Moreover, Paired Samples Correlations was with Correlation (0.866), and Sig. (0.000).

Pair 2: Challenges facing application of AI; positively Reinforcing the role of AI in Egyptian hotels establishments, the Paired Samples Test were with t value (-41.679), and Sig. (2-tailed) (0 .000). Moreover, Paired Samples Correlations was with Correlation (0.921), and Sig. (0.000).

Pair 3: Importance of AI influences the role of AI in the Egyptian hotels establishments, the Paired Samples Test were with t value (-5.880), and Sig. (2-tailed) (0 .000). Moreover, Paired Samples Correlations was with Correlation (0.962), and Sig. (0.000).

Pair 4: Value of applicate the AI positively influences Total AI dimensions average, the Paired Samples Test were with t value (-.051-), and Sig. (2-tailed) (0 .000). Moreover, Paired Samples Correlations was with Correlation (0.971), and Sig. (0.000).

Pair 5: Challenges facing application of AI positively influences Total AI dimensions average, the Paired Samples Test were with t value (35.676), and Sig. (2-tailed) (0 .000). Moreover, Paired Samples Correlations was with Correlation (0.989), and Sig. (0.000).

Pair 6: Importance of AI; positively Reinforcing the total AI dimensions average, the Paired Samples Test were with t value (35.676), and Sig. (2-tailed) (0 .000). Moreover, Paired Samples Correlations was with Correlation (0.999), and Sig. (0.000).

Pair 7: The role of AI in the Egyptian hotels influences Total AI dimensions average, the Paired Samples Test were with t value (26.829), and Sig. (2-tailed) (0 .000). Moreover, Paired Samples Correlations was with Correlation (0.960), and Sig. (0.000).

Results show that there is a significant impact difference of applying artificial intelligence techniques as a modern trend in the development on Egyptian hotels establishments. as shown in table 8.

Table 8. Paired Samples T-Test of the variables compared to each other (N: 332).

Paired Samples Statistics		Mean	Std. Deviation	Std. Error Mean	**Paired Samples Test**		Paired Samples Correlations	
					t	Sig. (2-tailed)	Correlation	Sig.
Pair 1	Value of applicate the AI	4.1171	.58990	.03238	-41.679	.000	.886	.000
	The role of AI in the Egyptian hotels	4.7447	.50644	.02779				
Pair 2	Challenges facing application of AI	4.5201	.63963	.03510	-15.600	.000	.921	.000
	The role of AI in the Egyptian hotels	4.7447	.50644	.02779				
Pair 3	Importance of AI	4.6999	.47331	.02598	-5.880	.000	.962	.000
	The role of AI in the Egyptian hotels	4.7447	.50644	.02779				
Pair 4	Value of applicate the AI	4.1171	.58990	.03238	-.051	.000	.971	.000
	Total AI dimensions average	4.5205	.54014	.02964				
Pair 5	Challenges facing application of AI	4.5201	.63963	.03510	35.676	.000	.989	.000
	Total AI dimensions average	4.5205	.54014	.02964				
Pair 6	Importance of AI	4.6999	.47331	.02598	35.676	.000	.992	.000
	Total AI dimensions average	4.5205	.54014	.02964				
Pair 7	The role of AI in the Egyptian hotels	4.7447	.50644	.02779	26.829	.000	.960	.000
	Total AI dimensions average	4.5205	.54014	.02964				

Moreover; there is Impact of Artificial Intelligence Techniques as A Modern Trend to Reinforcing the Competitive Advantage in the Egyptian Hotels Establishments. a. Friedman Test shows that evaluating the employees' vision regarding the role of AI in the Hospitality Industry

Establishments. were the 'higher main rank and agree with Mean Rank (3.37) followed by the role of AI in the Hospitality Industry Establishments. with Mean Rank (3.16). Regarding, evaluating the employees' vision regarding the impact of SART on support CCM and increase Guest' Satisfaction.

The results also showed that Chi-Square 850.572 and the parameter ratio Sig. (0.000). This means that there is an effect of different degrees of statistical significance between the average of the different variables that measure the various variables that influence the impact of artificial intelligence techniques as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments (N. 332).in the main variables of the study (The Value of Artificial Intelligence - Challenges facing the application of Artificial Intelligence techniques - The Importance of Artificial Intelligence- The role of AI in the Hospitality Industry). These confirm the H2**:** There is a significant impact of applying AI in the development on the main variables of the study (The Value of Artificial Intelligence - Challenges facing the application of Artificial Intelligence techniques - The Importance of Artificial Intelligence- The role of AI in the Hospitality Industry).   As shown in table (9).

Table 9. a Friedman Test among the various variables that influence the impact of artificial intelligence techniques as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments (N. 332).

code	**Ranks**	Mean Rank	**a. Friedman Test (N. 442).**		
			Chi-Square	df	Asymp. Sig.
VAItotal	Knowing the Value of Artificial Intelligence among providers of tourism services	1.02	**850.572**	**3**	**.000**
CHAItotal	Challenges facing the application of Artificial Intelligence techniques in the Egyptian Tourism Sector	2.44			
IAItotal	The Importance of Artificial Intelligence in the Hotels and Tourism Establishments.	3.16			
RAItotal	The role of AI in the Hospitality Industry Establishments.	3.37			

H3: There is a significant impact difference of applying artificial intelligence techniques as a modern trend in the development on Egyptian hotels establishments in accordance to employee's department and positions level.

Regarding respondents' opinion concerning, applying artificial intelligence techniques as a modern trend in the development on Egyptian hotels establishments.

The third hypotheses were tested using NPar Tests **"Kruskal-Wallis Test"**. Test Statistics [a, b] (a. Kruskal Wallis Test for Value of applicate the AI; Challenges facing application of AI; Importance of AI; The role of AI) and b. Grouping Variable: respondents' department. Results shows that there is a statically differences in accordance employee's department on Employees opinion regarding the impact of artificial intelligence techniques as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments, with (Chi-Square) values ranging from (232.31) to

(301.89); Asymp. Sig. (.000) this indicate there is statistically significant relations. Results indicate that There is a significant impact difference of applying artificial intelligence (Value of applicate the AI; Challenges facing application of AI; Importance of AI; The role of AI) in the Egyptian in accordance employee's department. This agreed with H3.

On other words: The effect of the respondents' opinions regarding AI in accordance to the respondents' level NPar Tests were as following: Results shows that there is strong impact of Knowing the Value of Artificial Intelligence among providers of tourism services, with (Chi-Square) values ranging (283.889) Asymp. Sig. (0.000); there is strong impact of the Challenges facing the application of Artificial Intelligence techniques in the Egyptian Tourism Sector, with (Chi-Square) values ranging (301.895) Asymp. Sig. (0.000); there is strong impact of the Importance of Artificial Intelligence in the Hotels and Tourism Establishments, with (Chi-Square) values ranging (257.101); there is strong impact of the role of AI in the Hospitality Industry Establishments, with (Chi-Square) values ranging (232.318); all Asymp. Sig. were (.000). these indicate there is statistically significant relations. These results agreed with H3: There is a significant impact difference of applying artificial intelligence techniques as a modern trend in the development on Egyptian hotels establishments in accordance to employee's department and positions level. As shown in table (10) and figure (3).

Table 10. The effect of the main variables of the study on accordance to respondents' department NPar Tests

Ranks				Test Statistics[a,b]	
	Department	N	Mean Rank	Chi-Square	Asymp. Sig.
Knowing the Value of Artificial Intelligence among providers of tourism services	General manager	15	302.50	283.889	.000
	Rooms division	125	111.09		
	Information Technology "I T"	63	267.85		
	F&B	39	31.31		
	Sales and marketing departments	81	230.70		
	Others	9	8.00		
Challenges facing the application of Artificial Intelligence techniques in the Egyptian Tourism Sector	General manager	15	257.00	301.895	.000
	Rooms division	125	111.87		
	Information Technology "I T"	63	244.87		
	F&B	39	27.08		
	Sales and marketing departments	81	257.00		
	Others	9	15.50		

	General manager	15	237.00	257.101	
The Importance of Artificial Intelligence in the Hotels and Tourism Establishments.	Rooms division	125	131.20		.000
	Information Technology "I T"	63	237.00		
	F&B	39	28.81		
	Sales and marketing departments	81	237.00		
	Others	9	8.00		
The role of AI in the Hospitality Industry Establishments.	General manager	15	209.00	232.318	
	Rooms division	125	166.97		.000
	Information Technology "I T"	63	209.00		
	F&B	39	28.31		
	Sales and marketing departments	81	209.00		
	Others	9	8.00		
Total AI dimensions average	General manager	15	302.50	285.336	
	Rooms division	125	112.02		.000
	Information Technology "I T"	63	267.85		
	F&B	39	28.31		
	Sales and marketing departments	81	230.70		
	Others	9	8.00		
a. Kruskal Wallis Test b. Grouping Variable: Department					

Figure 3. hypotheses test summary on accordance to respondents' department

The third hypotheses were tested using NPar Tests "**Kruskal-Wallis Test**". Test Statistics[a,b] (a. Kruskal Wallis Test for Value of applicate the AI; Challenges facing application of AI; Importance of AI; The role of AI) and b. Grouping Variable: respondents' level. Results shows that there is a statically differences in accordance employee's level on Employees opinion regarding the impact of artificial intelligence techniques as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments, with (Chi-Square) values ranging from (158.279) to (258.000); Asymp. Sig. (.000) this indicate there is statistically significant relations. Results indicate that There is a significant impact difference of applying artificial intelligence (Value of applicate the AI; Challenges facing application of AI; Importance of AI; The role of AI) in the Egyptian in accordance employee's department. This agreed with H3. This indicate there is statistically significant relations. As shown in table (11) and figure (4).

On other words: The effect of the respondents' opinions regarding AI in accordance to the respondents' level NPar Tests were as following: Results shows that there is strong impact of Knowing the value of artificial intelligence among providers of tourism services, with (Chi-Square) values ranging (258.000) Asymp. Sig. (0.000); there is strong impact of the Challenges facing the application of Artificial Intelligence techniques in the Egyptian Tourism Sector, with (Chi-Square) values ranging (226.387) Asymp. Sig. (0.000); there is strong impact of the Importance of Artificial Intelligence in the Hotels and Tourism Establishments, with (Chi-Square) values ranging (173.650); there is strong impact of the role of AI in the Hospitality Industry Establishments, with (Chi-Square) values ranging (173.650); all Asymp. Sig. were (.000); there is strong impact of the role of AI in the Hospitality Industry Establishments, with (Chi-Square) values ranging (158.279); all Asymp. Sig. There is a significant impact difference of applying artificial intelligence techniques as a modern trend in the development on Egyptian hotels establishments in accordance to employee's department and positions level.

Table 11. The effect of the respondents' opinions regarding AI in accordance to the respondents' positions level NPar Tests.

Ranks				Test Statisticsa,b	
	Level	N	Mean Rank	Chi-Square	Asymp. Sig.
Knowing the Value of Artificial Intelligence among providers of tourism services	Managerial	123	270.66	258.000	
	Supervisory	168	121.45		.000
	Rank and file staff	41	38.63		
Challenges facing the application of Artificial Intelligence techniques in the Egyptian Tourism Sector	Managerial	123	257.00	226.387	
	Supervisory	168	131.38		.000
	Rank and file staff	41	38.93		
The Importance of Artificial Intelligence in the Hotels and Tourism Establishments.	Managerial	123	237.00	173.650	
	Supervisory	168	144.34		.000
	Rank and file staff	41	45.80		
The role of AI in the Hospitality Industry Establishments.	Managerial	123	209.00	173.650	
	Supervisory	168	165.75		.000
	Rank and file staff	41	42.06		
Total AI dimensions average	Managerial	123	270.66	158.279	
	Supervisory	168	121.81		.000
	Rank and file staff	41	37.13		

a. Kruskal Wallis Test   b. Grouping Variable: position level

Figure 4. hypotheses test summary on accordance to respondents' position level

Hypothesis Test Summary

	Null Hypothesis	Test	Sig.	Decision
1	The distribution of VAItotal is the same across categories of Level.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
2	The distribution of CHAItotal is the same across categories of Level.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
3	The distribution of IAItotal is the same across categories of Level.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
4	The distribution of RAItotal is the same across categories of Level.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.
5	The distribution of AItotalaverage is the same across categories of Level.	Independent-Samples Kruskal-Wallis Test	.000	Reject the null hypothesis.

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

　　　　To demonstrate the effect of different degrees of statistical significance between the mean of the different variables that effect the role of AI as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments in accordance to the different employees' positions level, analysis of variance - ANOVA was used. A one-way ANOVA method was used to study a role of AI from the different employees' positions; evaluate the impact of the employees' positions on the main study variables (Value of applicate the AI; Challenges facing application of AI; Importance of AI; The role of AI). The study evaluates the employees' vision regarding the impact of employees' positions level on evaluating the main study variables (Value of applicate the AI; Challenges facing application of AI; Importance of AI; The role of AI). As a comparison of both the scale and application possibility of the employees' positions level point of views and the extent of application of AI.

　　　　On the other hand, compared to evaluating the employees' vision in accordance to position level regarding the impact of AI as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments.

　　　　Therefore, the important result means that: The extent of Value of applicate the AI the value for F was "354.212", with Sig "0.000"; and Challenges facing application of AI the value for F was "300.037", with Sig "0.000"; The extent of Importance of AI the value for F was "242.009", with Sig "0.000". and the role of AI the value for F was "318.300", with Sig "0.000". These indicate there are statistically significant relations, as shown in table (12).

Table 12. One-way analysis of variance - ANOVA to compare the impact of the respondents' opinions regarding AI in accordance to the positions level

ANOVA "level position"					
	Sum of Squares	df	Mean Square	F	Sig.

Knowing the Value of AI	Between Groups	78.654	2	39.327	354.212	.000
	Within Groups	36.528	329	.111		
	Total	115.182	331			
Challenges facing the application AI	Between Groups	87.467	2	43.733	300.037	.000
	Within Groups	47.955	329	.146		
	Total	135.422	331			
The Importance of AI.	Between Groups	44.145	2	22.073	242.009	.000
	Within Groups	30.007	329	.091		
	Total	74.152	331			
The role of AI.	Between Groups	55.971	2	27.985	318.300	.000
	Within Groups	28.926	329	.088		
	Total	84.897	331			
Total AI dimensions average	Between Groups	63.275	2	31.637	312.623	.000
	Within Groups	33.295	329	.101		
	Total	96.570	331			

Furthermore, the study evaluates the employees' vision regarding the impact of employees' department level on evaluating the main study variables. To demonstrate the effect of different degrees of statistical significance between the mean of the different variables that effect the role of AI as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments in accordance to the different employees' department, analysis of variance - ANOVA was used.

Therefore, the important result means that: The extent of Value of applicate the AI the value for F was "366.008", with Sig "0.000"; and Challenges facing application of AI the value for F was "346.388", with Sig "0.000"; The extent of Importance of AI the value for F was "269.114", with Sig "0.000". and the role of AI the value for F was "419.881", with Sig "0.000". These indicate there are statistically significant relations, as shown in table (9). These results agreed with H3: There is a significant impact difference of applying artificial intelligence techniques as a modern trend in the development on Egyptian hotels establishments in accordance to employee's department and positions level. As shown in table (13).

Table 13. ANOVA "Department". Evaluating the employees' vision regarding the AI in the Egyptian hotels:

		Sum of Squares	df	Mean Square	F	Sig.
Knowing the Value of AI	Between Groups	97.766	5	19.553	366.008	.000
	Within Groups	17.416	326	.053		
	Total	115.182	331			
Challenges facing the application AI	Between Groups	113.969	5	22.794	346.388	.000
	Within Groups	21.452	326	.066		
	Total	135.422	331			
The Importance of AI.	Between Groups	59.690	5	11.938	269.114	.000
	Within Groups	14.462	326	.044		
	Total	74.152	331			
	Between Groups	73.486	5	14.697	419.881	.000
	Within Groups	11.411	326	.035		
	Total	84.897	331			
The role of AI.	Between Groups	82.622	5	16.524	386.231	.000
	Within Groups	13.947	326	.043		
	Total	96.570	331			

6. Conclusions and Recommendations

Rendering the first dimension: Knowing the Value of Artificial Intelligence among providers tourism services the results showed that the most accepted factors were: level Artificial intelligence use has aided in hastened tourist destinations' recovery from the Covid pandemic; importance of Applying the AI since the Covid pandemic; Hotel industry professionals need to understand the latest trends in artificial intelligence; the amount of enjoyment tourists get from the tourism programs and excursions has decreased since artificial intelligence was introduced as a replacement for the human factor; and One of the most crucial qualifications for hiring new employees in the tourism and hospitality establishments is the ability to use contemporary technology.

According to the second dimension: Challenges facing the application of Artificial Intelligence techniques in the Egyptian Tourism Sector the results showed that the most accepted

factors were: the hotels Establishments (4,5) stars uses an artificial intelligence tool to ensure that they can identify issues that arise during the application process and handling procedures; providers of tourism services lack a clear understanding of how to use artificial intelligence in these technologies; the steps taken to incorporate artificial intelligence technologies in the hotel offer ways to boost users' confidence in online transactions; People in the tourism industry lack the expertise needed to advance in the application of artificial intelligence methods; The concept of artificial intelligence and the need to follow it are not sufficiently embraced by managers and leaders.

According to the third dimension: The Importance of Artificial Intelligence in the Hotels and Tourism Establishments results showed that the most accepted factors were: the results showed that AI can automate repetitive tasks, allowing hotel staff to focus on more strategic activities such as building relationships with key clients and providing personalized service to guests; Predictive analytics can help hotel professionals to analyze data and forecast customer behavior and market trends, allowing them to make data-driven decisions and develop more effective marketing strategies; Improving the overall efficiency of hotel operations by using AI for forecasting demand, inventory management; logistics optimization; and AI can identify opportunities for upselling and cross-selling to guests, and optimize pricing and inventory decisions in real-time based on market conditions, guest behavior, and other factors; the hotel's processes for implementing AI technology provide ways to support customer service while maintaining their quality and dependability.

Rendering the fourth dimension: The role of AI in the Hospitality Industry Establishments, the results showed that the most accepted factors were: to activate hotels for AI to provide products and services to all guests and customers in a professionalism manner; respondents think that AI will replace the human element in hotels and hospitality establishments in the future; think that AI create a competitive advantage for guests to select their hotels; using AI in hotels establishments will be prevent terrorism and theft incidents. Research hypotheses were tested and statically analyzed and accepted. These results agreed with (Trejos, 2015; Gladstone, 2016; Tung and Law, 2017; Murphy et al., 2017[A] ; Kelly et al., 2017; Kim and Kim, 2018; Tussyadiah and Park, 2018; Tung and Au, 2018; Ivanov, 2019; Murphy et al., 2019; Webster and Ivanov, 2020; Kozmal, 2020; Kozmal et al., 2021).

The hotel employees' Preferences Regarding the impact of artificial intelligence techniques as a modern trend to reinforcing the competitive advantage in the Egyptian hotels establishments model. The process of developing was a ranking model regarding the employees' evaluation regarding the effect of using AI in Egyptian hotels which aim to shed light on the most recurrent importance and situation. The aim of this model was to shed the light on the most important attributes of Facilities AI from the perspectives of employees and managers in order to better meet the guest satisfaction and to Reinforcing the Competitive Advantage in the Egyptian Hotels Establishments (see table   3). The importance of this ranking model was to provide the perspectives regarding the most important guests' requirements and priorities for Facilities Technological Amenities, in order to better understand the guests' requirements for the role of applying AI as A Modern Trend to Reinforcing the Competitive Advantage in the Egyptian Hotels Establishments.

Referring to the previous conclusion the study recommends the following to increase the impact of artificial intelligence techniques as a modern trend to reinforcing the competitive advantage in the Egyptian hotel's establishments:

1. Improve the awareness regarding the impact of artificial intelligence techniques as a modern trend to reinforcing the competitive advantage.

2. Should be fully aware of guest' priorities regarding the role of applying artificial intelligence techniques at the guest services on the guest's choice of the hotel.

3. Guest' priorities should be the core priorities of the artificial intelligence techniques.

4. Identify the factors and elements that would increase competitive advantage through the artificial intelligence techniques.

5. Pay attention to evaluate and improve the artificial intelligence techniques continually.

6. Increase artificial intelligence techniques and update modern trend to reinforcing the competitive advantage frequency.

7. Hotels must develop a plan for artificial intelligence techniques to increase competitive advantage.

8. Egyptian hotels should apply artificial intelligence techniques and introduce new practices frequency.

9. More attention should be paid to the aspect of artificial intelligence techniques inside hotels, through the loyalty programs

10. Establishing and institutes to teach artificial intelligence for hospitality industry are recommended.

11. Manage the weaknesses of artificial intelligence techniques to reinforcing the competitive advantage.

12. Egyptian hotels need more care regarding applied the artificial intelligence techniques as a modern trend.

13. More care regarding the adequate artificial intelligence techniques systems preparing .

14. More care regarding the effectively implement of adequate artificial intelligence techniques.

15. More care regarding improving employees' skills regarding artificial intelligence techniques.

Suggestion for further studies:

✓ Using new Artificial Intelligence Techniques strategies

✓ Use other variables

✓ Could focus on other categories of hotels such as three and two-star hotels

✓ Could focus on other types of hotels such as conference hotels, resorts, motels and business hotels, or other destinations

✓ Could focus on other categories of hospitality fields such as Nile Cruise boats, restaurants, schools, hospitals, catering, airways, and railways.

✓ Use other quantitative and qualitative approaches, including a focus group.

✓ The business model for this study has not been tested; therefore, future research may test the business model for hotel studies.

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