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Mapping The Landscape as Artificial Intelligence (AI) Applications in Cairo hotels

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Abstract

Artificial intelligence (AI) is considered as one of the greatest important innovative technologies. This paper aims to discover the application of AI techniques in the Egyptian hotel sector and investigate the employees' perceptions of using AI tools in the hotel sector.This paper applies the quantitative approach; a questionnaire was designed and distributed to employees' in cairo hotels, and only 380 replies were valid for statistical analysis. This research found two essential employees' views of applying AI: advantages of AI and disadvantages of AI. This research illustrates the AI techniques that are applied in the Egyptian hotel sector as well as categorizes the perceptions of employees regards AI, which may help managers to generate policies and strategies to recover their technological infrastructure and skills, as well as to implement the most beneficial AI tools. As a result, their performance improves while they save time and money. Furthermore, the researcher demonstrates that the hotel industry is undergoing significant technological changes in Egypt Vision 2030. The current study was conducted in five-star hotels in Cairo, Egypt. The research findings include, it suggests that future studies collect more data over a longer period to test the measuring instrument. It also suggests conducting similar studies in other sectors in Egypt as well as the same sector outside Egypt to test the generalizability of its findings, so this study may be considered one of the few studies that discuss Artificial Intelligence in the Egyptian Hotel Sector: Application and Impression.

Keywords: Artificial Intelligence, Applications, perceptions, Hotels

1. Introduction

Artificial intelligence (AI) remains a cutting-edge technology. AI is the study of computational processes used to perform human-like actions that require intelligence, This term stands for the performance of intelligent behaviors by computers or machines, It allows hotels to implement better processes, anticipating needs, problem solving and knowing the traveler pattern to choose

(Talwar and Koury, 2017). In 1955, John Mc Mullach was the first to define AI as "the use of engineering to fabricate smart machines" (Hsu, 2018).AI is now widely used in everyday

life by many consumers, even if they are unaware of it (Shandwick, 2016; krogue *et al.*, 2017; Tussyadiah and Miller, 2019). The widespread use of digital personal assistants powered by Natural Language Processing (NLP) and voice recognition apps, such as Google's Allo and Apple's Siri, has resulted in apps that are becoming increasingly popular for finding personalised recommendations and information around services and products (An, 2017; Alpaydin, 2020).

AI can function similarly to tendency modelling, which gathers and processes large datasets of previous tourists' choices in order to forecast their future behaviour (Dimitris and Prokopis, 2019).To the researcher's information, the literature concerning the application of AI in the Egyptian hotel sector is limited.

The aims of this research are to a) Display the concept of artificial intelligence b) Identify the importance of applying AI in the hotel sector, and d) Discover the employees' perceptions of using AI in the hotel sector. This research shows the suitable AI techniques that can be applied in the hotel sector, in addition to identify the impacts of implementing AI in the hotel sector, which may assist managers in developing tactics and strategies to develop their technological infrastructure and improve the skills of their employees. This improves their performance while also saving them time and money.

2. Review of literature

2.1 Artificial Intelligence in the hotel sector

The AI dimensions together reflect employees' perception of AI quality. Previous literature has shown that the dimensions of information and system quality can result in individuals' positive attitudes toward technology and facilitate employees' job-related outcomes (Forsgren, Durcikova, Clay, and Wang, 2016). AI can facilitate employees' work by interpreting customers' questions (e.g., language translation), searching business knowledge systems, and preparing human-friendly responses (Kirkpatrick, 2017). AI can provide information including changes in fees and scheduling issues. Serbanescu and Necsulescu, (2013) show that analytical AI can enhance task performance and efficiency. Consequently, employees complete work more effectively, which will likely affect their job retention.

Today, AI is the most spectacular IT application, a technology that has evolved at an unprecedented rate over the last decades (Blanchet, 2016; Lee *et al.*, 2018; Wiljer and Hakim, 2019). It is defined as a collection of "theories and techniques for creating machines capable of simulating intelligence." AI is a broad term that refers to the use of a computer that can simulate intelligent behaviour with little human intervention" (Benko and Lanyi, 2009; Haenlein and Kaplan, 2019). The term artificial intelligence (AI) was coined by John McCarthy in 1956 (Russell and Norvig, 2016). It is defined as a computer "system's ability to correctly interpret external data, to learn from such data."

Artificial intelligence (AI) refers to machines' ability to recognize and use human language and then continue to work on their own. Modern AI is used for a variety of purposes in public life, including reasoning, knowledge, learning, communication, perception, planning, and so on (Bollier, 2017; Hill, Ford, and Farreras, 2015).

AI is defined as "the pursuit of developing computers that can simulate human intelligence – specifically, learning, reasoning, and self-correction" as a branch of computer discipline (Oracle, 2019). The field of artificial intelligence attempts to create and improve intelligent

systems that can operate autonomously in a human-like manner. According to a study conducted by Accenture and Frontier Economics (as cited in Statista, 2019), AI could increase economic growth in the accommodation and food services industry by 1.4 percent by 2035, In the AI steady state, which assumes AI integration into economic processes, this estimate rises to 3.2 percent. Chatbots, voice-activated technologies, and biometric recognition are some examples of AI-powered technologies.

2.2 Main types of Artificial Intelligence

The literature identifies three types of AI, (Kaplan and Haenlein, 2019):

- Artificial Narrow Intelligence (weak AI) is applied in a specific field where it outperforms humans but cannot be used in other fields Such as:identifying patterns in hotel booking data or translating text) because it lacks the algorithms to successfully cope in the other field. This is the stage of AI development that we are currently in.
- Artificial General Intelligence (strong AI) is intelligence on par with (or close to) human intelligence (Goertzel and Pennachin, 2007), It can outperform humans in a variety of fields.
- Artificial Superintelligence (AI) is a conscious, self-aware AI that outperforms humans in all fields (Bostrum, 2014), for the time being, this type of AI is more akin to science fiction than reality.

Researchers express-open fear of AI (Bostrum, 2014; Leonhard, 2016) and regard self-aware AI as "our ultimate invention" (Barrat, 2013). Other authors appear to be very optimistic, seeing technology as the ultimate solution to all human problems and advocating for the merger of humans and machines (Barfield, 2015; Callaghan, Miller, Yampolskiy, and Armstrong, 2017; Kurzweil, 2005; Shanahan, 2015).

AI has made inroads into the hospitality industry in a variety of ways. Smart hotel rooms, review tracking software, customer statistics monitoring software, and chatbots are some of the most common examples of AI technologies used in hospitality, AI allows hospitality managers to present intelligent/smart hotel rooms that allow guests to interact with in-room facilities via beacons and sensors Such as: Marriott International) (Buhalis and Leung, 2018) or control his/her room atmosphere verbally (Lin *et al.,* 2020).Hence, AI can help to improve the comfort of guests' accommodations (Buhalis and Leung, 2018). Alexa (Alexa digital assistant) happening Amazon's Echo (e.g., Wynn hotel in Las Vegas) (Ivanov et al., 2017; Lukanova and Ilieva, 2019), Siri, and Cortana are examples of AI applications used for these purposes (Lu et al., 2019). AI software such as Reviewer enables managers toward track customer online reviews on social media and travel websites to monitor hotel online reputation (Buhalis and Leung, 2018).

Chatbots are a vital AI technology that can be defined as software that stimulates a human counterpart with whom the user can interact (written, oral, or mixed) (Ukpabi, Aslam, and Karjaluoto, 2019). To summarize, AI in hospitality is used not only to improve efficiency and effectiveness but also to improve Guest experiences and improve performance (Buhalis and Leung, 2018).According to Calo, (2015) AI will replace millions of jobs and possibly increase the number of unemployed, posing new challenges such as infrastructure rebuilding, vehicle safety, and law and regulation adaptation. AI can be used to develop Human resource functions, but there are numerous risks, such as humans being replaced by machines, humans

being undervalued, and the system is overly complex (Reilly, 2018). Nilson, (2006) on the other hand, claims that AI can help businesses improve their performance.

AI services will be used in 40% of digital transformation initiatives in 2019 and 75% of business applications by 2021 (Crews, 2019).

2.3 The importance of AI in the hotel sector

The current research may be considered the first of its kind in the Egyptian hotel industry; it could also serve as a foundation for future research**.** The advantages of AI in today's world, and indeed in the business environment, are numerous; here is a list of a few advantages associated with AI systems:

- The introduction of new technologies necessitates that employees in an organization improve their skills (Holtel, 2016).
- Operational cost reduction.
- Lessening of man-hour waste (time wastage).

The acceptance of AI systems in hotels such as(robots,sensory systems,chatbot) can reduce the time taken to achieve tasks, in addition to enhancing the accuracy of processes and outputs, AI technologies could be operational 24 hours a day, seven days, AI technologies could perform a variety of tasks and expand their capabilities with software and hardware upgrades. AI technologies could complete their work correctly and on time by adhering to service procedure scripts.AI technologies could provide consistency or improve work quality. At the current state of technological development service, RAISA technologies lack creativity. Robots, kiosks, and chatbots cannot create new ways to provide services. Human employees may (will) perceive RAISA technologies as a threat. People are concerned about robots posing a threat to their jobs, and their concerns are understandable. According to study (Frey and Osborne, 2017) computerization could result in the loss of 47 percent of jobs in the United States. People perceive RAISA technologies as a threat to their survival because they are afraid of losing their jobs and income. Humans would no longer have to compete for jobs only with other humans, but also with robots (Webster and Ivanov, 2019), Companies that use RAISA technologies in travel, tourism, and hospitality must consider and address these concerns.

3. Methodology

The researchers had a thorough discussion with AI experts from various hotels regarding the original questionnaires relating to AI dimensionality before the survey. To confirm the validity of the questionnaire (Tabachnick, Fidell, and Ullman, 2007) and ensure a survey completion time of fewer than 15 minutes to minimize respondent fatigue, a pilot test was conducted with 20 randomly selected employees who have worked with AI tools in hotels after this testing, the questionnaire was modified based on feedback provided by these participants. Rewording the items to make them more clear was one of the changes, and simplifying complex sentences to improve face validity and readability. To achieve the objectives of this research, a quantitative approach was applied; a questionnaire was designed to explore the implementation of AI techniques in the hotel sector in Egypt and to explore the perception of employees using AI in their operations.

Finn *et al.*, (2000) defined population as the target audience, the group of people that you will ask to respond to your questions. This population must be reasonable in size because if you have a narrow size of population you will limit your resulting data, and if you have a

large size of the population it will cost more money, time, and effort, and to overcome the study of a large population is sampling. This sampling should be representative and appropriate size from the population. This study population consists of managers and employees at five-star hotels in great Cairo city in Egypt. The sampling strategy should include details on the size of the sample, the structure of the sample, and how the sample will be chosen (Gray, 2013). It was found that the number of five-star hotels in greater Cairo city in Egypt) is 28 hotels, there are 18 hotels in Cairo and 10 hotels in Giza city) *According to the Egyptian hotel Association (the hotel guide) 2020-2021.* The researcher was unable to determine the size of the sample used in the study because there are no statistics on the number of employees in five-star hotels in Greater Cairo. We used a convenience sample as well as a simple random sample. In the current research, only one Arabic copy of the questionnaire was distributed to managers and employees; the total number of forms distributed was 400; from these 400 copies, 380 forms were reached and answered; 20 invalid questionnaires were excluded.

3.1. Data Analysis

3.1.1 Demographic Analysis

The demographic analysis presented in the below sections is based on the characteristics of the valid respondent such as frequency and percentage of participants such as age, gender, educational level, position, and experience. In addition, how familiar are the respondents with artificial intelligence in the hotel sector.

3.1.2 Frequency Table

Age: Table (1.1) shows that the majority of respondents' ages are between (25-35 years) (43.7%), followed by the less than 25 are (23.2%), and the respondents from (36 - 45), (46-55) are the same percentage 16.6%, the highest percentage was(43.7%) were in the group from (25-35), while the lowest was (16.6%) in the group(36-45 and 46-55).

Table (1.1): Respondents' Age

	Frequency	Percent	Valid Percent	Cumulative Percent
less than 25	88	23.2	23.2	23.2
25-35	166	43.7	43.7	66.8
36-45	63	16.6	16.6	83.4
46-55	63	16.6	16.6	100.0
Total	380	100.0	100.0	

Gender: According to Table (1.2), the majority of respondents are males, with 395 (94.5%) being males and only 21 (5.5%) being females; the highest percentage of respondents were (94.5%) males, while (5.5%) were females.

Table (1.2): Respondents' gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	female	21	5.5	5.5	5.5
	male	359	94.5	94.5	100.0
	Total	380	100.0	100.0	

Educational Level: (1.3) shows that the majority of respondents hold a university degree, where the majority of 226 (59.5%) have a university degree, 85 (22.4%) have a secondary education, and 42 (11.1%) have basic education, finally, 27(7.1%) are postgraduate, Where the highest category was university 59.5%. the highest percentage (59.5%) of respondents hold a university degree, while the lowest was (7.1%) holds a (postgraduate).

Table (1.3): Respondents' educational level

	Frequency	Percent	Valid Percent	Cumulative Percent
basic education	42	11.1	11.1	11.1
secondary education	85	22.4	22.4	33.4
postgraduate	27	7.1	7.1	40.5
university	226	59.5	59.5	100.0
Total	380	100.0	100.0	

Position: The majority of respondents (75.5 percent) were employees, with (24.5 percent) being managers, according to Table (1.4); the highest percentage of respondents (75.5 percent) were employees, (24.5 percent) being managers.

Table (1.4): Respondents' position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	employee	287	75.5	75.5	75.5
	manager	93	24.5	24.5	100.0
	Total	380	100.0	100.0	

Experience: Table (1.5) shows that the majority of those who have an experience is less than 5 (53.7%), then respondents with experience between (5-11) are (37.1%), Finally, respondents who have (11-15) are (9.2%), the highest percentage of respondents was(53.7%) were in (less than 5), while the lowest was(9.2%) from (11-15).

Table (1.5): Respondents' experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	less than 5	204	53.7	53.7	53.7
	5-11	141	37.1	37.1	90.8
	11-15	35	9.2	9.2	100.0
	Total	380	100.0	100.0	

Table (1.6): shows that the majority of respondents (69.5 percent) are extremely familiar, followed by (30.5 percent) who are not at all familiar, with the highest category being extremely familiar (69.5 percent).

Table (1.6): Respondents how familiar are you with artificial intelligence in the hotel sector

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	not at all familiar	116	30.5	30.5	30.5
	extremely familiar	264	69.5	69.5	100.0
	Total	380	100.0	100.0	

The weighted average of the sample's responses to questions in the form of a five-point Likert scale to determine the direction of the respondents' opinions (Attitude).

Table: (2.1) Descriptive Statistics for Advantages

Advantages	Attitude	N	Mean	S.D	Percentage				
					SD	D	N	A	SA
Artificial intelligence technologies could work 24/7. Unlike human employees who can work 40-60 hours a week conditional on their job position, legal regulations, health, mental situation, and work resolution.	agree	380	3.96	1.11	7.1	1	20.8	33.2	38.9
Artificial intelligence technologies could fulfill their work correctly	agree	380	3.96	1.11	7.1	2	20.8	33.7	38.4
without complaints and they do not need to be motivated to do it	agree	380	4.00	1.12	7.1	1	20.8	30.1	42.1
Artificial intelligence technologies do not go on strikes, spread rumors, discriminate against customers or employees, quit their job without notice, show negative emotions, shirk work, ask for pay increases, and get ill	agree	380	3.95	1.10	7.1	2	20.8	34.5	37.6
Artificial intelligence technologies by themselves do not discriminate against people.	agree	380	3.94	1.10	7.1	3	20.8	35.5	36.6
increase productivity, efficiency, and cost savings work	agree	380	3.99	1.12	7.1	2	20.8	35.5	36.6
Grand mean	strongly agree	380	4.76						

(SD= strongly disagree, D= Disagree, N= Neutral, A= Agree, SA= strongly agree)

Table (2.1): Results indicated that variables' means choice from 4.00 to 3.95; with a grand mean of **4.76** which is near to the choice (5) "strongly agree". This result indicates that strongly agree with the Advantages.Most of the respondents' perceptions of the dimension of the Advantages Were acceptable as the grand mean (4.76), which means that respondents strongly agree with the dimension of the Advantages. And the standard deviations refer to the accepted normality of data distribution. The standard deviation of the previous indicators illustrations that the researcher can rely on the mean to provide a meaningful representation of the data. As a standard deviation from 1.12 to 1.10 is not far off from the mean, showing that a majority of data points are positioned close to the mean, The closer the standard deviation is to 0, the more reliable the mean is, that though standard deviation values are close to 0 which tells that there is little volatility in the sample.

Table: (2.2) Descriptive Statistics for disadvantages

Disadvantages	Attitude	N	Mean	S.D	Percentage				
					SD	D	N	A	SA
Artificial intelligence technologies lack creativeness at the current state of technological development service robots, kiosks or create new ways to deliver services.	agree	380	3.99	1.12	7.1	2	20.8	30.3	41.8
Artificial intelligence technologies may (will) be perceived as a risk by human employees,People consider robots as a threat to their work	agree	380	3.96	1.11	7.1	1	20.8	33.4	38.7
Grand mean	agree	380	3.97						

(SD= strongly disagree, D= Disagree, N= Neutral, A= Agree, SA= strongly agree)

Table (2.2): Results show that variables' means choice from 3.99 to 3.96; with a grand mean of **3.97** which is near to the choice (4) "agree". This result indicates that agree with the disadvantages.Most of the respondents' perceptions of the dimension of the disadvantages were acceptable as the grand mean (3.97), which means that respondents strongly agree with the dimension of the disadvantages. And the standard deviations refer to the accepted normality of data distribution. The standard deviation of the previous indicators indications that the researcher can rely on the mean to provide a meaningful representation of the data. As a standard deviation from 1.12 to 1.11 is not far off from the mean, showing that a majority of data points are positioned close to the mean, The closer the standard deviation is to 0, the more reliable the mean is, that though standard deviation values are close to 0 which tells that there is little volatility in the sample.

Table (2.3): Descriptive Statistics for the current use of artificial intelligence applications and types in the hotel sector

the current use of artificial intelligence applications and types in the hotels	Attitude	N	Mean	S.D	Percentage				
					SD	D	N	A	SA
AI is used in personalized service for customers.	agree	380	3.40	1.23	7.9	21.3	12.1	39.7	18.9
Using Intelligent Chabot's services for	Disagree	380		1.20	19.7	35.3	22.4	13.9	8.7

the current use of artificial intelligence applications and types in the hotels	Attitude	N	Mean	S.D	Percentage				
					SD	D	N	A	SA
easy communication			2.56						
Robotic process Automation and revenue accounting.	Disagree	380	2.55	1.29	28.7	23.4	18.2	23.2	6.6
AI is used in sentiment and loyalty analysis.	Disagree	380	2.57	**1.17**	13.9	51.3	5.5	23.2	6.6
AI is used in lodging services.	Disagree	380	2.55	1.17	20.8	32.8	23.9	16.1	6.6
Using beacon technology to promote the organization	Disagree	380	2.28	.96	20.5	46.6	16.8	16.1	
Using service automation technologies	Disagree	380	2.41	.98	20.3	33.9	29.7	16.1	
Robot concierges	Disagree	380	2.33	.99	20.0	45.0	16.8	18.2	
Check-in with facial recognition is to allow guests to skip lines at the front desk and complete registration forms.	Disagree	380	2.24	.96	27.9	29.2	33.1	9.5	
By A Smartphone Application as A Digital Key	Disagree	380	2.24	.94	19.2	35.2	11.6	16.1	
Using hotel software systems in operational analytics	Disagree	380	2.37	.92	19.20	36.1	32.1	12.1	
Guests can use their mobile devices to control all the functions within the room	Disagree	380	2.10	1.04	33.9	33.1	12.9	16.1	
Room service robots bring food, drink, and extra towels to guests	Disagree	380	2.11	1.04	35.8	30.3	17.9	16.1	
The hotel is mainly staffed by robots for	Disagree	380	2.14	1.07	19.2	35.2	11.6	16.1	

the current use of artificial intelligence applications and types in the hotels	Attitude	N	Mean	S.D	Percentage				
					SD	D	N	A	SA
example the reception is staffed by multi-lingual robots									
Grand mean	Disagree	380	2.17						

(SD= strongly disagree, D= Disagree, N= Neutral, A= Agree, SA= strongly agree)

Table (2.3): Results declared that variables' means choice from 4.42 to 4.31; with a grand mean of 2.17 which is near to the choice (5) "Disagree". This result indicates that strongly agree with the current use of artificial intelligence applications and types in the hotel Dimension.Most of the respondents' perceptions of the dimension of the current use of artificial intelligence applications and types in the hotel Dimension were acceptable as the grand mean (2.17), which means that respondents strongly agree with the dimension of the current use of artificial intelligence applications and types in the hotel Dimension. And the standard deviations refer to the accepted normality of data distribution.The standard deviation of the previous indicators illustrations that the researcher can rely on the mean to provide a meaningful representation of the data. As a standard deviation from 1.02 to .92 is not far off from the mean, indicating that a majority of data points are positioned close to the mean, The closer the standard deviation is to 0, the more reliable the mean is, that though standard deviation values are close to 0 which tells that there is little volatility in the sample.

H01: ***there are some (advantages and disadvantages) to Adopting AI in the hotel sector effect on employees' performance***

Table (3.1): illustrate that, there are some (advantages and disadvantages) to Adopting AI in the hotel sector on employees' performance dimensions (quantity, quality, and speed of work).

Table (3.1)Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.564[a]	.508	.315	.867

a. Predictors: (Constant), disadvantages, advantages

The result in table (3.1) shows that, the R and R-square standards. The R-value is the correlation coefficient between; some (advantages and disadvantages) of Adopting AI in the hotel sector and employees' performance dimension (quantity of work). (R=.564[a]) It shows a strong positive correlation between s some (advantages and disadvantages) of Adopting AI in the hotel sector and employees' performance dimension (quantity of work). The R2 value mentions to the coefficient of determination which shows how much of the total variation in the dependent variable employees' performance dimension (quantity of

work), Can be explained by the independent variables some (advantages and disadvantages) to Adopting AI in the hotel sector. In this case, .508% of the dependent variable employees' performance dimension (quantity of work) can be explained by the some (advantages and disadvantages) of Adopting AI in the hotel sector. This result reflects the good influence of some (advantages and disadvantages) of Adopting AI in the hotel sector on employees' performance dimension (quantity of work). That leads to validate the assumption that employees' performance dimension (quantity of work) is transformed/ affected by the level of changes in some (advantages and disadvantages) to adopt AI in the hotel sector as independent variables .To examination the significance of the (linear) relationship between some barriers to Adopting AI in the hotel sector as independent variables and employees' performance dimension (quantity of work) as a dependent, F- test can be used as revealed in table (3.2)

Table (3.2): there are some advantages and disadvantages to Adopting AI in the hotel sector on employees' performance dimension (quantity of work)

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	132.399	2	66.199	88.079	.000[b]
	Residual	283.349	377	.752		
	Total	415.748	379			

a. Dependent Variable: quantity of work

b. Predictors: (Constant), disadvantages, advantages

The ANOVA indications whether the regression model significantly predicts the employees' performance dimension (quantity of work).

Table (3.2): illustrates that F2, 377 = 88.079 and P<0.01 this means that there is a important relationship between some advantages and disadvantages of Adopting AI in the hotel sector and employees' performance dimension (quantity of work).

Table (3.3): simple linear Regression analysis for some advantages and disadvantages of Adopting AI in the hotel sector on employees' performance dimension (quantity of work**)**

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.307	.167		13.840	.000
	advantages	.598	.350	.208	.566	.000
	disadvantages	.538	.349	.357	.968	.000

a. Dependent Variable: quantity of work

Table (3.3): shows that all coefficients are not equal to zero, showing that we can still reject the null hypothesis where t for x1=.566, x2=.968, P0.01 for all x variables, It is also clear that

= 2.307 and 1=.598, 2=.538 As shown in the table (3.3), the regression model found a significant effect of some benefits and drawbacks of AI adoption in the hotel sector as an independent variable on employees' performance dimension (quantity of work) as a dependent variable. Furthermore, the table clarifies why and how some benefits and drawbacks of AI adoption in the hotel sector had a positive effect on employees' performance dimensions (quantity of work).

- **Table (4.1):The relations between advantages and disadvantages of Adopting AI in the hotel sector on employees' performance dimensions (quality of work).**

Table (4.1)Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.720[a]	.518	.515	.713

a. Predictors: (Constant), disadvantages, advantages

The result in table (4.1) shows that, the R and R-square standards. The R-value is the correlation coefficient between; some (advantages and disadvantages) of Adopting AI in the hotel sector and employees' performance dimension (quality of work). (R=.720[a]) It shows a strong positive correlation between s some (advantages and disadvantages) of Adopting AI in the hotel sector and employees' performance dimension (quality of work). The R2 value mentions to the coefficient of determination which shows how much of the total variation in the dependent variable employees' performance dimension (quality of work), Can be explained by the independent variables some (advantages and disadvantages) to Adopting AI in the hotel sector. In this case, .518% of the dependent variable employees' performance dimension (quantity of work) can be explained by the some (advantages and disadvantages) of Adopting AI in the hotel sector. This result reflects the good influence of some (advantages and disadvantages) of Adopting AI in the hotel sector on employees' performance dimension (quality of work). That leads to validate the assumption that employees' performance dimension (quality of work) is transformed/ affected by the level of changes in some (advantages and disadvantages) to Adopting AI in the hotel sector as independent variables.To test the impact of the (linear) relationship between some obstacles and barriers to Adopting AI in the hotel sector as independent variables and employees' performance dimension (quality of work) as a dependent, F- test can be used as revealed in table (4.2)

Table (4.2): there are some advantages and disadvantages to Adopting AI in the hotel sector on employees' performance dimension (quantity of work)

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	206.140	2	103.070	202.466	.000[b]
	Residual	191.920	377	.509		
	Total	398.060	379			

a. Dependent Variable: quality of work
b. Predictors: (Constant), disadvantages, advantages

The ANOVA test determines whether the regression model accurately predicts the employees' performance dimension (quality of work)
This Table (4.2) shows that F2, 377 = 202.466 and P 0.01 means there is a significant connection between some benefits and drawbacks of AI adoption in the hotel sector and employee performance dimension (quality of work).

Table (4.3): simple linear Regression analysis for some advantages and disadvantages of Adopting AI in the hotel sector on employees' performance dimension (quality of work)

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.624	.137		11.839	.000
	advantages	.907	.288	.975	3.144	.002
	disadvantages	-.238	.287	-.258	-.831	.407

a. Dependent Variable: quality of work

Table (4.3): reveals that totally coefficients are not equal to zero, suggesting that we can still reject the null hypothesis where t for x1= 3.144, x2=-.831, and P0.01 for all x variables, It is also obvious that = 1.624 and 1=.907, 2-.238 so: According to the regression model (4.3) there was a significant effect of some benefits to adopting AI in the hotel sector as an independent variable on employees' performance dimension (quality of work) as a dependent variable. Furthermore, some disadvantages of adopting AI in the hotel sector as an independent variable have no significant effect on employees' performance dimension (quality of work) as a dependent variable. In addition, the table clarifies why and how some benefits and drawbacks of AI adoption in the hotel industry.

- **Table (5.1):The relations between advantages and disadvantages of Adopting AI in the hotel sector on employees' performance dimensions (speed of work).**

Table (5.1) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.614[a]	.377	.374	.809

a. Predictors: (Constant), disadvantages, advantages

The result in table (5.1) shows that, the R and R-square standards. The R-value is the correlation coefficient between; some (advantages and disadvantages) of Adopting AI in the hotel sector and employees' performance dimension (speed of work). (R=.614[a]) It shows a strong positive correlation between s some (advantages and disadvantages) of

Adopting AI in the hotel sector and employees' performance dimension (speed of work). The R2 value mentions to the coefficient of determination which shows how much of the total variation in the dependent variable employees' performance dimension (speed of work), Can be explained by the independent variables some (advantages and disadvantages) to Adopting AI in the hotel sector. In this case, .377% of the dependent variable employees' performance dimension (quantity of work) can be explained by the some (advantages and disadvantages) of Adopting AI in the hotel sector. This result reflects the good influence of some (advantages and disadvantages) of Adopting AI in the hotel sector on employees' performance dimension (speed of work). That leads to validate the assumption that employees' performance dimension (speed of work) is transformed/ affected by the level of changes in some (advantages and disadvantages) to adopt AI in the hotel sector as independent variables.To test the significance of the (linear) relationship between some obstacles and barriers to Adopting AI in the hotel sector as independent variables and employees' performance dimension (speed of work) as a dependent, F- test can be used as revealed in table (5.2)

Table (5.2): there are some advantages and disadvantages to Adopting AI in the hotel sector on employees' performance dimension (speed of work

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	149.606	2	74.803	114.295	.000[b]
	Residual	246.736	377	.654		
	Total	396.342	379			

a. Dependent Variable: speed of work

b. Predictors: (Constant), disadvantages, advantages

The ANOVA illustrations whether the regression model significantly predicts the employees' performance dimension (speed of work).
This table (5.2) clear that, F2, 377 = 114.295and P<0.01 this means that there is a important relationship between some advantages and disadvantages of Adopting AI in the hotel sector and employees' performance dimension (speed of work).

Table (5.3): simple linear Regression analysis for some advantages and disadvantages of Adopting AI in the hotel sector on employees' performance dimension (speed of work)

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.116	.156		13.606	.000
	advantages	-.371	.327	-.400	-1.135	.257
	disadvantages	.933	.325	1.010	2.867	.004

a. Dependent Variable: speed of work

Table (5.3): illustrates that totally coefficients are not equal to zero, implying that we can still reject the null hypothesis with t for x1=-1.135, x2=2.867, and P0.01 for totally x variables, It is also obvious that = 2.116 and 1= -.371, 2=.933 As shown in table (5.3), the regression model found a non-significant effect of some disadvantages of AI adoption in the hotel sector as an independent variable on employees' performance dimension (speed of work) as a dependent variable. Furthermore, there is a significant effect of some benefits of adopting AI in the hotel sector as an independent variable on employees' performance dimension (quality of work) as a dependent variable. In addition, the table clarifies why and how some advantages and disadvantages of AI adoption in the hotel sector were discovered.

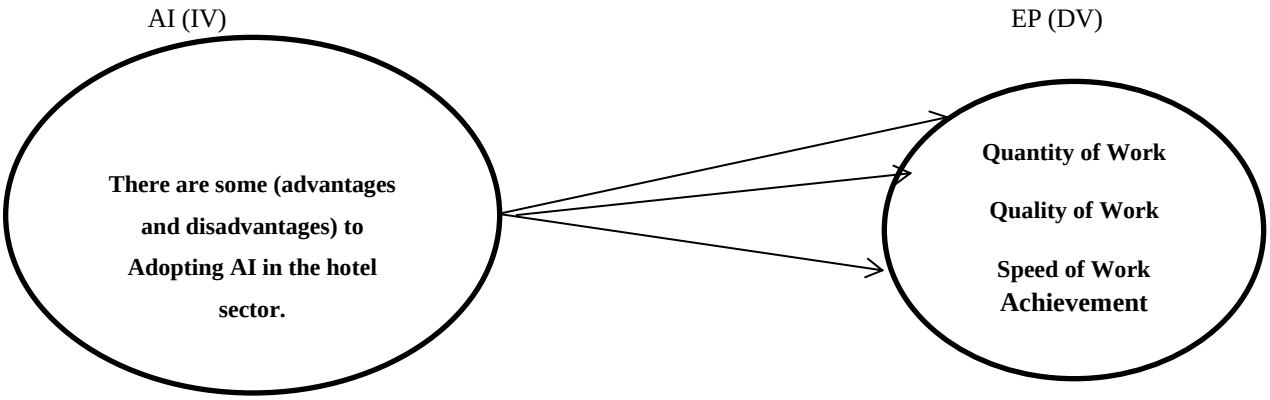

Figure (1): Summary of testing the main hypotheses, there are some obstacles and barriers to Adopting AI in the hotel sector) on employees' performance dimensions (Quantity, Quality, and Speed of Work Achievement, and source: (Researcher).

H02: There are current use of artificial intelligence applications and types in hotels and effect on employees' performance

Table (6.1): illustrate that, the current use of artificial intelligence applications and types in hotels on employees' performance dimensions (quantity, quality, and speed of work).

Table (6.1): Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.383[a]	.147	.144	.969

a. Predictors: (Constant), current use, and types

The result in table (6.1) shows that, the R and R-square standards. The R-value is the correlation coefficient between; the current use of artificial intelligence applications and types in the hotels and employees' performance dimension (quantity of work). (R=

.383[a])It indicates a non-strong positive correlation between the current use of artificial intelligence applications and types in the hotels and employees' performance dimension (quantity of work).

The R2 value mentions to the coefficient of determination which shows how much of the total variation in the dependent variable employees' performance dimension (quantity of work), Can be explained by the independent variables the current use of artificial intelligence applications and types in the hotels. In this case, .147% of the dependent variable employees' performance dimension (quantity of work) can be explained by the current use of artificial intelligence applications and types in hotels. This result reflects the non-good influence of the current use of artificial intelligence applications and types in the hotels on employees' performance dimension (quantity of work). That leads to validate the assumption that employees' performance dimension (quantity of work) is not transformed/ affected by the level of changes in the current use of artificial intelligence applications and types in the hotels as independent variables

To test the impact of the (linear) relationship between the current use of artificial intelligence applications and types in the hotels as independent variables and employees' performance dimension (quantity of work) as a dependent, F- test can be used as shown in table (6.2)

Table (6.2): the current use of artificial intelligence applications and types in the hotels on employees' performance dimension (quantity of work)

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	60.966	1	60.966	64.956	.000[b]
	Residual	354.782	378	.939		
	Total	415.748	379			

a. Dependent Variable: quantity of work

b. Predictors: (Constant), current use, and types

The ANOVA illustrations whether the regression model significantly predicts the employees' performance dimension (quantity of work).

From table (6.2) it is clear that F1, 378 = 64.956 and P<0.01 this means that there is a important relationship between the current use of artificial intelligence applications and types in the hotels on and employees' performance dimension (quantity of work).

Table (6.3): simple linear Regression examination for the current use of artificial intelligence applications and types in the hotels on employees' performance dimension (quantity of work)

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.397	.138		24.563	.000
	current use and types	.430	.053	.383	8.059	.000

a. Dependent Variable: quantity of work

From table (6.3) shows that all β coefficients are not equal to zero which means we still can reject the null hypothesis where t for x1= 8.059, P<0.01 for totally x variables, It is recognizable also that α = 3.397 and β1= .430, so: From the table (21) the regression model show that were the significant effect of the current use of artificial intelligence applications and types in the hotels as an independent variable on employees' performance dimension (quantity of work) as the dependent variable. Also, the table clarifies why and how the current use of artificial intelligence applications and types in hotels had a positive effect on employees' performance dimensions (quantity of work).

- Table (7.1):The relations between the current use of artificial intelligence applications and types in the hotels on employees' performance dimensions (quality of work).

Table (7.1):Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.499[a]	.249	.247	.890

a. Predictors: (Constant), current use, and types

The result in table (22) shows that, the R and R-square standards. The R-value is the correlation coefficient between; the current use of artificial intelligence applications and types in the hotels and employees' performance dimension (quality of work). (R= .499[a])It indicates a non-strong positive correlation between the current use of artificial intelligence applications and types in the hotels and employees' performance dimension (quality of work).

The R2 value mentions to the coefficient of determination which indicates how much of the total variation in the dependent variable employees' performance dimension (quality of work), Can be explained by the independent variables the current use of artificial intelligence applications and types in the hotels. In this case, .249% of the dependent variable employees' performance dimension (quality of work) can be explained by the current use of artificial intelligence applications and types in hotels. This result reflects the non-good effect of the current use of artificial intelligence applications and types in hotels on employees' performance dimension (quality of work). That leads to validate the assumption that employees' performance dimension (quality of work) is not transformed/ affected by the level of changes in the current use of artificial intelligence applications and types in the hotels as independent variables

To test the significance of the (linear) relationship between the current use of artificial intelligence applications and types in the hotels as independent variables and employees' performance dimension (quality of work) as a dependent, F- test can be used as revealed in table (7.2)

Table (7.2): the current use of artificial intelligence applications and types in the hotels on employees' performance dimension (quality of work)

ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	98.973	1	98.973	125.086	.000[b]
	Residual	299.087	378	.791		
	Total	398.060	379			

a. Dependent Variable: quality of work

b. Predictors: (Constant), current use, and types

The ANOVA indications whether the regression model significantly predicts the employees' performance dimension (quality of work).
From table (7.2), it is clear that F1, 378 = 125.086 and P<0.01 this means that there is a important relationship between the current use of artificial intelligence applications and types in the hotels on and employees' performance dimension (quality of work).

Table (7.3): simple linear Regression analysis for the current use of artificial intelligence applications and types in the hotels on employees' performance dimension (quality of work)

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.950	.127		23.229	.000
	current use and types	.547	.049	.499	11.184	.000

a. Dependent Variable: quality of work

Table (7.3): clearly shows that coefficients are not equal to zero, implying that we can still reject the null hypothesis where t for x1= 8.059, P0.01 for x variables, It is also clear that = 3.397 and 1=.430, implying: According to the regression model in the table (7.3), there was a significant effect of the current use of artificial intelligence applications and types in hotels as an independent variable on employees' performance dimension (quality of work) as a dependent variable. In addition, the table clarifies why and how the current use of artificial intelligence applications and types in hotels has had a positive effect on employee performance (quality of work).

- Table (8.1):The relations between the current use of artificial intelligence applications and types in the hotels on employees' performance dimensions (speed of work).

table (8.1) :Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.241[a]	.058	.056	.994

a. Predictors: (Constant), current use, and types

The result in table (8.1) shows that, the R and R-square standards. The R-value is the correlation coefficient between; the current use of artificial intelligence applications and types in the hotels and employees' performance dimension (speed of work). (R= .241[a])It indicates a non-strong positive correlation between the current use of artificial intelligence applications and types in the hotels and employees' performance dimension (speed of work).
The R2 value mentions to the coefficient of determination which shows how much of the total variation in the dependent variable employees' performance dimension (speed of work), Can be explained by the independent variables the current use of artificial intelligence applications and types in the hotels. In this case, .058% of the dependent variable employees' performance dimension (speed of work) can be explained by the current use of artificial intelligence applications and types in hotels. This result reflects the non-good influence of the current use of artificial intelligence applications and types in hotels on employees' performance dimension (speed of work). That leads to validate the assumption that employees' performance dimension (speed of work) is not transformed/ affected by the level of changes in the current use of artificial intelligence applications and types in the hotels as independent variables.The F-test can be used to test the impact of the (linear) relationship between the current use of artificial intelligence applications and hotel types as independent variables and employees' performance dimension (speed of work) as dependent variables, as shown in table (8.2)

Table (8.2): the current use of artificial intelligence applications and types in the hotels on employees' performance dimension (speed of work)

ANOVA

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	23.082	1	23.082	23.375	.000[b]
	Residual	373.260	378	.987		
	Total	396.342	379			

a. Dependent Variable: speed of work

b. Predictors: (Constant), current use, and types

The ANOVA confirmations whether the regression model significantly predicts the employees' performance dimension (speed of work).
From table (8.2) it is clear that F1, 378 = 23.375and P<0.01 this means that there is a important relationship between the current use of artificial intelligence applications and types in the hotels on and employees' performance dimension (speed of work).

Table (8.3): simple linear Regression analysis for the current use of artificial intelligence applications and types in the hotels on employees' performance dimension (quality of work)

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.717	.142		26.200	.000
	current use and types	.264	.055	.241	4.835	.000

a. Dependent Variable: speed of work

Table (8.3) indicates that coefficients are not equal to zero, implying that we can still reject the null hypothesis where t for x1=4.835, P0.01 for x variables, It is also clear that = 3.717 and 1=.264, so: According to the regression model (8.3), the current use of artificial intelligence applications and types in hotels as an independent variable had a non-significant effect on employees' performance dimension (speed of work) as a dependent variable. Furthermore, the table clarifies why and how the current use of artificial intelligence applications and types in hotels has had a negative impact on employees' performance dimensions (speed of work).

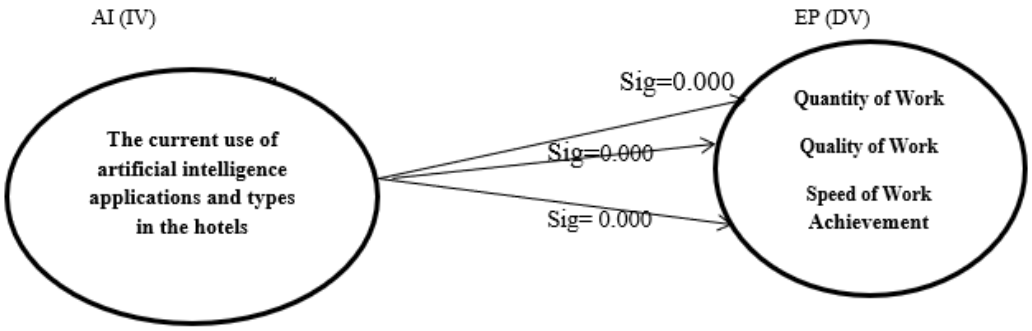

Figure (2): Summary of testing the main hypotheses, the current use of artificial intelligence applications and types in the hotels) on employees' performance dimensions (Quantity, Quality, and Speed of Work Achievement, and source: (the researcher).

4. Conclusion and Future Research

This research aims towards the application of artificial intelligence techniques in cairo hotels, and employees' perceptions of the use of AI in the Egyptian hotel industry. According to the findings, the majority of the hotel industry employs only a few AI tools in their work.Concerning employees' perspectives of the use of artificial intelligence tools in the hotel industry, two factors emerged: advantages of AI and disadvantages of AI, This research illustrates the current use of applications and types in the hotel,This research contributes by exploring AI tools that can be implemented in the hotel sector and demonstrating the importance of applying AI techniques, as a result opening a pathway for drawing policies and strategies to support using such technology, as the human part is very vital for the hotels' field that can't be substituted. This paper investigated the applied AI tools in the Egyptian hotel sector. Many other concerns can be studied in future research. It recommended that future research should carry out a cost-benefit analysis for applying AI in the hotel sector.

Second, this paper discussed the employees' perception of using AI techniques in the Egyptian hotel sector but didn't discuss tourists' perspectives concerning using AI tools. Future studies should study tourists' perceptions of using AI in the hotel.

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