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WHEN TECHNOLOGY MEETS STAFF: THE INTERPLAY OF SERVICE AUTOMATION AND HUMAN RESOURCE PERFORMANCE IN THE EGYPTIAN HOTEL SECTOR

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الملخص

تستخدم تقنيات الروبوتات (R) والذكاء الاصطناعي (AI) وأتمتة الخدمات (SA) (RAISA) بشكل شائع في صناعات السياحة والضيافة حول العالم. وعلى الرغم من أن البحث في هذا المجال يكتسب أهمية كبري ، فإنه تم تجاهله إلى حد كبير في صناعة السياحة والفندقة المصرية ونتيجة لذلك ، فهناك ندرة وقلة في الأبحاث المتعلقة بالذكاء الاصطناعي وأداء العاملين في قطاع الفنادق وبالتالى ، يعد العاملون من أهم المجالات التي يمكن الاستفادة من هذه التقنيات الحديثة، ومن ناحية أخرى ، فإنه يعد تهديداً باستبدال الوظائف.

إن الغرض من هذا البحث هو استكشاف تأثير الذكاء الاصطناعي على أداء العاملين في قطاع الفنادق ولتحقيق الهدف البحثي ، تم جمع البيانات من المديرين واالعاملين في فنادق الخمس نجوم في القاهرة الكبرى ، مصر بينما تم جمع البيانات الأولية من خلال دراسة تجريبية أجريت باستخدام أداة استبيان على عينة ملائمة للعاملين والمديرين في الفنادق. وباستخدام الإصدار 25 من SPSS ، تم استخدام الانحدار الخطي البسيط للتحقق من التأثير، حين أظهرت النتائج أن هناك علاقة بين أبعاد الذكاء الاصطناعي وأبعاد أداء العاملين. أخيرًا ، أظهرت النتائج أن الأبعاد الكلية للذكاء الاصطناعي لها تأثير كبير على الأبعاد الكلية لأداء العاملين في قطاع الفنادق، حيث كانت الكفاءة لها التأثير الأكبر على أداء العاملين ، تليها سهولة الاستخدام ، في حين أن الأتمتة ليس لها تأثير كبير على إجمالي أبعاد

أداء العاملين. علاوة على ذلك ، يكشف الباحث أن صناعة الفنادق تمر بتغيرات تكنولوجية كبيرة في رؤية مصر 2030.

الكلمات المفتاحية: الذكاء الاصطناعي ، أداءالعاملين ، الفنادق ، القاهرة الكبرى ، مصر.

Abstract

Robots (R), artificial intelligence (AI), and service automation (SA) (RAISA) technologies are commonly used in the tourism and hospitality industries around the world. Although research in this area is gaining traction, it has been largely ignored in the Egyptian tourism and hospitality industries. As a result, there is a dearth of research on artificial intelligence and employee performance in the hotel industry, one of the most important fields to benefit from these technologies is employees. On the other hand, however, it poses a threat to job replacement. The purpose of this research is to explore the impact of artificial intelligence on employee performance in the hotel sector. To complete this research, data were gathered from managers and employees working in five-star hotels in greater Cairo, Egypt. while the primary data was collected

through an empirical study conducted using a questionnaire strategy on a convenience sample of employees and managers in hotels. Finally, using SPSS version 25, simple linear regressions were used to check the effect. The results show that there is a correlation between artificial intelligence dimensions and employee performance dimensions. Finally, the results show that the total dimensions of artificial intelligence have a significant impact on the total dimensions of employee performance in the hotel industry. Efficiency has the greatest impact on employee performance, followed by ease of use, whereas automation has no significant impact on total employee performance dimensions. Furthermore, the researcher reveals that the hotel industry is undergoing major technological changes in Egypt Vision 2030.

Keywords: Artificial Intelligence, Employees' Performance, Hotels, greater Cairo, Egypt.

Introduction

New technologies generate winners and losers in the labor market. Artificial intelligence is being used in hotels to decrease costs, raise efficiency, and increase quality. Today, artificial intelligence is driving change in a variety of industries, including employment which varieties use these technologies. However, it poses a threat to job replacement. The hotel industry has newly begun to use artificial intelligence more extensively in its operations. Many hotel employees are worried that AI will affect their jobs by changing them with automated machines, affecting the general terms of their employment. Furthermore, there is widespread agreement that AI will have a disruptive impact on work, with some jobs being missing, or the nature of these jobs changing.

According to Weizenbaum, (1972) artificial intelligence machines will replace or enhance human capabilities in many areas of the human domain. According to Albus, (1983) the problem is not finding enough work for both humans and robots but rather figuring out how to distribute the wealth created by robot technology as revenue to those who essential it. According to Rifkin, (1995) we are

entering a new era in world history in which fewer and fewer workers will be required to produce goods and services for the global population. According to Autor *et al.,* (2003) worker displacement is a potential result of automation as machines take over responsibilities previously performed by humans. According to Noe *et al.,* (2006) the impact of intelligence technology could change the manager's work contents, and artificial intelligence could take on and help managers speed up their daily boring and repetitive work. Artificial intelligence will have an impact on the global labor market over the next decade, leading to form unemployment. According to Ernst *et al.,* (2018)

The recent wave of technological change, fueled by advanc es in artificial intelligence has

generated widespread concern about job losses and further i nequality.

Based on the above-mentioned arguments, this study aims to answer the following study question: Do the dimensions of artificial intelligence (automation, efficiency, and ease of use) have an impact on the dimensions of employee

performance (quantity, quality, and speed of work) in the hotel sector?

Theoretical Background

Artificial Intelligence

According to Russell and Norvig, (2016) AI is a term that refers to computer programs capable of performing intelligent functions. According to Jackson, (2019) artificial intelligence remains a technology that is already influencing how users relate with and are influenced by the Internet. According to Prasanna and Kusuma, (2019) artificial intelligence is a tool that uses human intelligence to improve performance in various fields, and it is a new technology that is used in all industries to improve productivity and performance. According to Rifkin, (1995) artificial intelligence is the art of generating machines that perform jobs that require intelligence when performed by humans. Arntz *et al.,* (2016) defined artificial intelligence as the ability of machines to perform human-like tasks, In summary, artificial intelligence is computer systems that can perform routine tasks that would normally require the

use of human intelligence, Machines also help in the motivation of human intelligence processes including learning, reasoning, and self-correction.

Automation: Rifkin, (1995) Automation is defined as the use of control systems to operate equipment such as machinery, factory processes, and other applications and vehicles with minimal human intervention. Tzafestas, (2009) stated that the term "automation" refers to operations and activities that can be monitored and controlled by machines rather than humans. Groover, (2014) defined automation as the technology that allows a process or procedure to be carried out with little or no human intervention. Altemeyer, (2019) discussed that automation is the use of technology in a business to carry out recurring tasks or processes where manual labor can be changed. Wang and Siau, (2019) defined automation as the use of digital technology to carry out processes to complete a workflow or function

To summarize, automation is the use of machines and technology for various processes run on their own without

the need for human intervention; it entails using control systems to run equipment and applications with minimal human intervention.

Efficiency: Samset, (1998) defined efficiency as the amount of achievement of the project's goal, or as a measure of the project's long-term significance. Sufian, *et al.*, (2013) said that efficiency is the extent to which a firm has been able to transform its inputs into outputs following the firm's progressive goal. Olsson, (2017) indicated that efficiency is connected to generating direct outputs and adding value for owners and users. Palmer and Torgerson (2018) defined efficiency as the relationship between input resources (costs, labor, capital, or equipment) and intermediate outputs (numbers treated, waiting time, etc.). Ashtiani, *et al.*, (2019) pointed out that efficiency is the proportion of work done or energy produced by a machine, engine, or other devices to the amount of energy supplied to it, usually expressed as a percentage. Sattar *et al.*, (2019) defined efficiency as the level of performance characterized by using the least amount of input to create the greatest amount of output. In summary, efficiency is the extent to

which a machine performs beneficial work and the condition of producing the desired results without wasting material, energy, effort, money, or time.

Ease of Use: Lee and Park, (2008) defined use of use as the degree to which a user can use a specific system without exerting significant effort. Jen and Hung, (2010) said that it is the ease with which artificial intelligence can be understood and used by anyone. Lim, *et al.*, (2011) stated that the least amount of effort that a user can expend when using technology is referred to as ease of use. Jung and Yim, (2016) defined it as a press to use technology more regularly. Gursoy *et al.*, (2019) defined ease of use as the degree to which Users can easily recognize and control the application. In summary, ease of use is the degree to which an application can be simply understood and controlled by users.

Dependent variable - Employee performance

Employee performance can be defined as the behaviors that employees exhibit at work that result in the achievement of the organization's desired outcomes in terms of job quality,

quantity, and time (Na-Nan et al., 2018). According to Peterson and Plowman, (1953) meeting the set criteria and standards for procurement, production, quality inspection, and delivery of goods and services constitute job quality. The quantity refers to the output units produced by the actions of the employees, such as the quantity of products, the quantity of waste, and sales figures. Job time refers to the amount of time required to complete work-related activities about the task's difficulty.

Employee performance denotes an employee's ability (both physically and psychologically) to carry out a specific task in a specific manner. Employee performance will be measured in terms of quantity, quality, and speed of work completion (Mathis and Jackson 2009); the indicator of work size measures the quantity, the indicator of meeting or exceeding the standard set by the organization is used to assess work quality, the indicator of the time length of work completed measures the speed of work achievement.

Performance can be divided into two categories: organizational performance and employee performance.

Employee performance is also identified as job performance. However, it appears that employees' performance is normally objectively measured in organizations, and there seem to be few alternatives (Otley, 1999). Organizational performance depends on employee performance as well as other factors such as the organization's environment. Because the difference between organizational and employee performance is obvious, organizations that are doing well are successfully achieving objectives; in other words, effectively implementing and developing appropriate strategy, and employees' performance is the single result of an employee's work (Hunter, 1986).

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 clearer was one of the changes, and simplifying complex sentences to improve face validity and readability. To accomplish the objectives of this research, a quantitative approach was applied; a questionnaire was designed to investigate the impact of artificial intelligence on employee performance in the hotels

Population and sample

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. The study population consists of managers and employees of five-star hotels in Greater Cairo. 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 total number of five-star hotels in Greater Cairo 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 invalids and questionnaires were excluded. Thus, 380 forms were valid and ready for use and analysis.

Results

Table (1): The Attitude of employees toward the use of AI Automation

AI Automation	Attitude	N	Mean	S.D	Percentage				
					SD	D	N	A	SA
Hotels use AI to perform processes without human Intervention.	**Agree**	380	3.64	1.36	14.7	6.8	8.9	38.4	31.1
Hotels use AI to reduce administrative workload.	**Agree**	380	3.81	1.29	7.1	14.5	8.9	29.2	40.3
Hotels use AI to replace manual tasks.	**Agree**	380	3.89	.75	.7.1	6.8	8.9	43.9	33.2
Hotels use AI to replace repetitive tasks.	**Agree**	380	4.11	1.15	7.1		7.9	44.7	40.3
Hotels use AI to avoid errors automatically.	**Agree**	380	4.02	1.02	7.1		7.9	52.9	32.0
Artificial intelligence can help me	**Agree**	380	4.23	1.10	7.1		8.9	30.0	53.9

AI Automation	Attitude	N	Mean	S.D	Percentage				
					SD	D	N	A	SA
make important decisions in the hotel									
Artificial intelligence can protect the privacy of yourself and others	**Agree**	380	4.09	1.05	7.1		8.9	44.2	39.7
The application of AI is a modern trend to follow	**Agree**	380	4.09	1.05	7.1	8.9		44.2	39.7
Grand mean	**Agree**	380	**3.93**						

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

Table (1): Results indicated that variables' means choice from 4.23 to 3.64; with a grand mean of 3.93 which is near to the choice (4) "agree". This result indicates that agrees with the AI Automation dimension. Most of the respondent's perception of the dimension of AI Automation was acceptable as the grand mean (**3.93**), which means that

respondents agree with the dimension of AI Automation and the standard deviations refer to the accepted normality of data distribution. The standard deviation of the previous indicators illustrates that the researcher can rely on the mean to provide a meaningful representation of the data. As a standard deviation from 1.64 to .75 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. On the other hand, it is also found that hand; the highest indicator for respondents is "Artificial agreement was given to 'Artificial intelligence can help me make important decisions in the hotel, where its mean value is 4.23 as 44.6 %. These results agree with Rifkin, (1995) Tzafestas, (2009) Groover, (2014) Altemeyer, (2019), and Wang and Siau, (2019). In summary, automation is the use of machines and technology to make processes run on their own without human effort. It includes the use of control systems for

operating equipment and applications with minimal human intervention.

Table(2): The Attitude of employees toward AI Efficiency

AI Efficiency	Attitude	N	Mean	S.D	Percentage				
					SD	D	N	A	SA
Hotels use AI to efficiently convert resources (fewer inputs).	**Agree**	380	**4.13**	**.99**	7.1		,8	56.6	35.5
Hotels use AI to change inputs into outputs with high quality.	**strongly agree**	380	**4.26**	**1.04**	7.1		1.8	41.6	49.5
Hotels use AI in a cost-effective manner.	**strongly agree**	380	**4.26**	**1.04**	7.1		1.8	41.6	49.5
Hotels use AI to improve productivity	**strongly agree**	380	**4.41**	**1.05**	7.1		,8	28.4	63.7
Hotels use AI to speed up working processes.	**strongly agree**	380	**4.33**	**1.04**	7.1		,8	36.1	56.1
Artificial intelligence can help me find lost data	**strongly agree**	380	**4.32**	**1.05**	7.1		1.8	35.3	55.8

AI Efficiency	Attitude	N	Mean	S.D	Percentage				
					SD	D	N	A	SA
Artificial intelligence can help display hard-to-measure data	strongly agree	380	**4.25**	**1.04**	7.1		1.8	42.4	48.7
AI works more effectively than humans	strongly agree	380	**4.25**	**1.04**	7.1	8.9	1.8	42.4	48.7
Grand mean	strongly agree	380	**4.27**						

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

Table(2): The results indicate that the means choice from 4.13 to 4.41; with a mean of **4.27** which is near to the choices (5) strongly agree. This result indicates that strongly agree with the AI Efficiency dimension. Most of the respondent's perception of the dimension of AI Efficiency was acceptable as the grand mean (**4.27**), which means that respondents strongly agree with the dimension of AI Efficiency and the standard deviations refer to the accepted normality of data distribution. The standard deviation of the previous indicators illustrates that the

researcher can rely on the mean to provide a meaningful representation of the data. As a standard deviation from 1.05 to .99 is not far off from the mean, indicating that a majority of most data points are positioned close to the mean, The closer the standard deviation is to 0, the more reliable the mean is, though standard deviation values are close to 0 which tells that there is little volatility in the sample. On the other hand, it is also found that the highest indicator for respondents is 'Hotels use AI to improve productivity" where its mean value is **4.41** as 94.32 %. These results agree with Samset, (1998) Sufian, *et al.* (2013) Olsson (2017) Palmer and Torgerson, (2018) Ashtiani, *et al.* (2019) Sattar *et al.* (2019). In summary, efficiency is the extent to which beneficial work is performed by a machine and the condition of producing the results you desire without wasting material, energy, effort, money, and time.

Table(3): The Attitude of employees toward AI Ease of Use

AI Ease of Use	Attitude	N	Mean	S.D	Percentage				
					SD	D	N	A	SA

AI Ease of Use	Attitude	N	Mean	S.D	Percentage				
					SD	D	N	A	SA
The employee can understand the AI functions easily.	strongly agree	380	4.31	1.05	7.1		1.8	36.3	54.7
The employee uses AI systems with little effort.	strongly agree	380	4.24	1.02	7.1		.8	45.5	46.6
The employee uses AI to complete responsibilities with minimal supervision.	strongly agree	380	4.28	1.03	7.1		.8	41.1	51.1
The employee uses AI to achieve tasks easily.	strongly agree	380	4.38	1.05	7.1		.8	31.8	60.3
The employee uses AI to simplify complex tasks	strongly agree	380	4.35	1.05	7.1		1.8	32.9	58.2
Artificial intelligence provides	strongly agree	380	4.22	1.03	7.1		1.8	45.0	46.1

AI Ease of Use	Attitude	N	Mean	S.D	Percentage				
					SD	D	N	A	SA
accurate data and information									
Artificial intelligence can help me in getting the job done.	**strongly agree**	380	**4.30**	**1.04**	7.1		1.8	37.9	53.2
I help reduce the waiting time for services.	**strongly agree**	380	**4.30**	**1.04**	7.1		1.8	37.9	53.2
Grand mean	**strongly agree**	380	**4.29**						

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

Table(3): The results declared that the means choice from 4.38 to 4.30; with a mean of **4.29** which is near to the choices (5) "strongly agree". This result specifies that strongly agrees with the AI Ease of Use dimension. Most of the respondent's perception of the dimension of **AI** Ease of Use was acceptable as the grand mean (**4.29**), which means

that respondents strongly agree with the dimension of AI Ease of Use and the standard deviations refer to accepted normality of data distribution,The standard deviation of the previous indicators confirmations that the researcher can rely on the mean to provide a meaningful representation of the data. A standard deviation from 1.05 to 1.02 is not far off from the mean, indicating that most data points are positioned close to the mean, The closer the standard deviation is to 0, the more reliable the mean is, though, standard deviation values are close to 0 which tells that there is little volatility in the sample. On the other hand, it is also found that hand, the highest indicator for respondents is 'The employee uses AI to achieve tasks easily" where its mean value is **4.38** as 94.32 %. These results agree with Lee and Park, (2008) Jen and Hung, (2010) Lim *et al.*, (2011) Jung and Yim, (2016) Gursoy *et al.*, (2019). In summary, ease of use is the degree to which an application can be easily understood and measured by users.

Table(4): Descriptive Statistics for the Quantity of Work

Quantity of work	Attitude	N	Mean	S.D	Percentage				
					SD	D	N	A	SA
Artificial intelligence aids to achieve a larger number of tasks	strongly agree	380	4.39	1.05	7.1		.8	35.3	56.8
Artificial intelligence helps to reduce workload	strongly agree	380	4.46	1.05	7.1		.8	30.3	61.3
Artificial intelligence helps to save time.	strongly agree	380	4.44	1.05	7.1		.8	23.2	68.9
Grand mean	**strongly agree**	380	**4.43**						

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

Table(4): Results show that variables' means choice from 4.46 to 4.39; with a grand mean of **4.43** which is near to the choice (5) "strongly agree", This result shows that strongly agrees with the Quantity of Work Dimension. Most of the respondents' perceptions of the dimension of Quantity of

Work Dimension were acceptable as the grand mean (4.43), which means that respondents strongly agree with the dimension of Quantity of Work Dimension. And the standard deviations refer to the accepted normality of data distribution. The standard deviation of the previous indicators illustrates that the researcher can rely on the mean to provide a meaningful representation of the data. A standard deviation from 1.05 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, the standard deviation values are close to 0 which expresses to us that there is little volatility in the sample. On the other hand, it is also found that the highest indicator for respondents is 'Artificial intelligence helps to reduce workload' where its mean value is 4.46 as 93.82 %. These results agree with (Na-Nan *et al.,* 2018), Peterson and Plowman (1953), (Mathis and Jackson 2009), (Otley, 1999).

Table(5): Descriptive Statistics for Quality of Work

Quality of Work		N	Mean	S.D	Percentage				
	Attitude				SD	D	N	A	SA

Quality of Work	Attitude	N	Mean	S.D	Percentage				
					SD	D	N	A	SA
Artificial intelligence aids to achieve a larger number of tasks.	**strongly agree**	380	4.26	1.02	7.1			44.7	38.2
Artificial intelligence helps to achieve the work within the essential specifications.	**strongly agree**	380	4.26	1.02	7.1			44.7	48.2
Artificial intelligence helps to improve work continuously	**strongly agree**	380	4.28	1.03					
Grand mean	**strongly agree**	380	**4.26**						

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

Table(5): The results declared that the means choice from 4.28 to 4.26; with a mean of 4.26 which is near to the choices (5) "strongly agree". This result indicates that we strongly agree with the Quality of Work Dimension. Most of the respondents' perceptions of the dimension of Quality of Work Dimension were acceptable as the grand mean (4.26), which means that respondents strongly agree with the dimension of Quality of Work Dimension. And the standard deviations refer to the accepted normality of data distribution. The standard deviation of the previous indicators indicated that the researcher can rely on the mean to provide a meaningful representation of the data. A standard deviation from 1.03 to 1.02 is not far from the mean, indicating that the majority of data points are placed close to the mean. The closer the standard deviation is to 0, the more reliable the mean is, more than that though, standard deviation values are close to 0 which tells that there is little volatility in the sample. On the other hand, the highest indicator for respondents is "Artificial intelligence helps to continuously improve work continuously" where its mean value is 4.28 as 94.32 %. These results agree with

(Na-Nan *et al.*, 2018), Peterson and Plowman (1953), (Mathis and Jackson 2009) (Hunter, 1986).

Table(6): Descriptive Statistics for the Achievement of Speed of Work

Speed of Work Achievement	Attitude	N	Mean	S.D	Percentage				
					SD	D	N	A	SA
Artificial intelligence helps to save time.	**strongly agree**	380	4.24	1.02	7.1			46.8	48.1
Artificial intelligence helps to provide effort.	**strongly agree**	380	4.40	1.04	7.1			30.8	62.1
Artificial intelligence aids to achieve greater flexibility in work.	**strongly agree**	380	4.41	1.04	7.1			30.8	62.9
Grand mean	**strongly agree**	380	**4.35**						

(SD= strongly disagree, D = disagree, N = neutral, A = agree, SA = strongly agree)

Table(6): Results declared that variables' means choice from 4.40 to 4.24; with a grand mean of **4.35** which is near to the choice (5) "strongly agree". This result indicates that strongly agree with the Speed of Work Achievement. Most of the respondents' perceptions of the dimension of Speed of Work Achievement Were acceptable as the grand mean (**4.35**), which means that respondents strongly agree with the dimension of Speed of Work Achievement. And the standard deviations refer to the accepted normality of data distribution. The standard deviation of the previous indicators illustrates that the researcher can be dependent on the mean to give a meaningful representation of the data. A standard deviation from 1.04 to 1.02 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, more than that though, standard deviation values are close to 0 which tells that there is little volatility in the sample. On the other hand, the highest indicator for respondents is also found to be 'Artificial intelligence aids to achieve greater flexibility at work.' where its mean value is 4.41 as 95.12 %. These

results agree with (Na-Nan *et al.,* 2018), Peterson and Plowman (1953), (Mathis and Jackson 2009).

Research dimensions testing

The dimensions of artificial intelligence (automation, efficiency, and ease of use) impact the dimensions of employee performance in the hotel sector.

The first model in this study investigates the effect of artificial intelligence dimensions on employee performance (automation, efficiency, and ease of use) (Quantity, Quality, and Speed of Work Achievement).

Impact of AI on the quantity of work

Table (7) Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.951[a]	.904	.903	.326

a. Predictors: (Constant), ai ease of use, AI Automation, AI Efficiency

The result in the table (7) shows that, the R and R-square standards. The R-value is the correlation coefficient between Artificial intelligence

dimensions and employees' performance dimension (quantity of work). (R=.951[a]) It specifies a strong positive correlation between Artificial intelligence dimensions and employees' performance dimension (quantity of work).

The R2 value discusses the coefficient of determination which indicates how much of the total variation in the dependent variable employees' performance dimension (quantity of work), Can be explained by the independent variables' Artificial intelligence dimensions (automation, efficiency, and ease of use). In this case, .904% of the dependent variable employees' performance dimension (quantity of work) can be described by the Artificial intelligence dimensions. This result reflects the good impact of Artificial intelligence dimensions (automation, efficiency, and ease of use) on employees' performance dimension (quantity of work). That leads to validating the assumption that the performance dimension (quantity of work) is transformed/ affected by the level of changes in the dimensions of artificial intelligence (automation, efficiency, and ease of use) as independent variables.

To test the significance of the (linear) relationship between Artificial intelligence dimensions as independent variables and employees' performance dimension (quantity of work) as a dependent, F- test can be used as presented in table (8)

Table (8): (automation, efficiency, and ease of use) on employees' performance (quantity of work)

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	375.815	3	125.272	1179.513	.000[b]
	Residual	39.934	376	.106		
	Total	415.748	379			

a. Dependent Variable: quantity of work

b. Predictors: (Constant), ai ease of use, AI Automation, AI Efficiency

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

From table (8), it is clear that F3, 376 = 1179.513and P<0.01, and this means that there is a total significant relationship between Artificial intelligence dimensions (automation, efficiency, and ease of use) and employees' performance dimension (quantity of work).

Table (9): simple linear regression of (automation, efficiency, and ease of use) on the quantity of work

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.148	.075		1.971	.049
	AI Automation	-.049	.029	-.049	-1.689	.092
	AI Efficiency	.424	.055	.404	7.727	.000
	ai ease of use	.621	.045	.602	13.649	.000

a. Dependent variable: quantity of work

From table (9), all β coefficients are not equal to zero which means we still can reject the null hypothesis where t for x1= -1.689, x2= 7.727, x3= 13.649, x4 $P<0.01$ for x variables. It is also clear that $\alpha = .148$ and $\beta1 = -.049$, $\beta2 = .424$, $\beta3 = .621$ so: From table (9) the regression model shows that was a no significant effect on all Artificial intelligence dimensions (automation, efficiency, and ease of use) as an independent variable on employees' performance dimension (quantity of work) as the dependent variable.

Also, the table explains why and how the Artificial intelligence dimensions had a positive and negative effect on employees' performance dimension (quantity of work).

Impact of AI on the quality of work

Table (10)Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.801[a]	.642	.639	.616

a. Predictors: (Constant), ai ease of use, AI Automation, AI Efficiency

The result in Table (10) shows that, the R and R-square standards. The R value represents the correlation coefficient between the dimensions of artificial intelligence and employees' performance dimension of employees (Quality of Work). (R=.801[a]) It shows a strong positive correlation between Artificial intelligence dimensions and the performance dimension (Quality of work).

The R2 value denotes the determination coefficient which specifies how much of the total variation in the dependent variable employee performance dimension (Quality of Work), Can be explained by the independent variables

(automation, efficiency, and ease of use). In this case, .642% of the dependent variable employees' performance dimension (Quality of Work) can be described by the Artificial intelligence dimensions. This result reflects the good influence of Artificial intelligence dimensions (automation, efficiency, and ease of use) on employees' performance dimensions (Quality of Work). That leads to validating the assumption that the performance dimension (Quality of employees (quality of work) is transformed/ affected by the level of changes in the dimensions of artificial intelligence (automation, efficiency, and ease of use) as independent variables.

To test the significance of the (linear) relationship between Artificial intelligence dimensions as independent variables and employees' performance dimension (Quality of Work) as a dependent, F- test can be used as shown in table (11)

Table (11): (automation, efficiency, and ease of use) on employees' performance dimension (Quality of Work)

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.

1	Regression	255.390	3	85.130	224.358	.000[b]
	Residual	142.669	376	.379		
	Total	398.060	379			

a. Dependent Variable: quality of work

b. Predictors: (Constant), ai ease of use, AI Automation, AI Efficiency

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

From table (11), it is clear that F3, 376 = 224.358 and P<0.01 and this means that there is a major relationship between Artificial intelligence dimensions (automation, efficiency, and ease of use) and employees' performance dimension quality of work.

Table (12): simple linear Regression Artificial intelligence on the quality of work.

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.720	.142		5.059	.000
	AI Automation	-.004	.055	-.004	-.065	.948

	AI Efficiency	.353	.104	.343	3.398	.001
	ai ease of use	.479	.086	.474	5.572	.000

a. Dependent variable: quality of work

From table **(12)**, all **β** coefficients are not equal to zero which means we still can reject the null hypothesis were t for **x1= -.065, x2= 3.398, x3= 5.572 P<0.01** for x variables. It is clear also that **α = .720 and β1= -.004, β2= .353, β3=** .479 so**:** From the table **(12)** the regression model shows that was a significant influence on **Artificial intelligence dimensions as** an independent variable on employees' performance dimension quality of work as the dependent variable And there is no significant effect on AI automation on employees performance dimensions (quality of work) Also, the table explains why and how the **Artificial intelligence dimensions** had a positive effect on employees' performance dimension (quality of work).

Impact of AI on the speed of work

The relation between (automation, efficiency, and ease of use) on employees' performance dimension(Speed of work)

Table (13): Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.890[a]	.793	.791	.467

a. Predictors: (Constant), ai ease of use, AI Automation, AI Efficiency

The result in Table (13) shows that, the R and R-square standards. The R value represents the correlation coefficient between the dimensions of artificial intelligence and employees' performance dimension of employees (speed of work) (R= .890[a]) It shows a strong positive correlation between Artificial intelligence dimensions and the performance dimension (Speed of work).

The R2 value mentions the determination coefficient which indicates how much of the total variation in the dependent variable employee performance dimension (Speed of work), Can be explained by the independent variables' (automation, efficiency, and ease of use). In this case, .793% of the dependent variable employees' performance dimensions (Speed of work), Can be described by the Artificial intelligence dimensions. This result reflects the good

influence of Artificial intelligence dimensions (automation, efficiency, and ease of use) on employees' performance dimension (Speed of work).

That leads to validation of the assumption that the performance dimension ((Speed of work) is transformed/ affected by the level of changes in the dimensions of artificial intelligence (automation, efficiency, and ease of use) as independent variables.

To test the significance of the (linear) relationship between the dimensions of artificial intelligence as independent variables and the dimension of employee performance (speed of work) as a dependent, the F test can be used as shown in table (14)

Table (14): (automation, efficiency, and ease of use) on employees' performance dimension (Speed of work)

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	314.250	3	104.750	479.778	.000[b]
	Residual	82.092	376	.218		

Total	396.342	379			

a. Dependent Variable: speed of work

b. Predictors: (Constant), ai ease of use, AI Automation, AI Efficiency

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

From table (14), it is clear that F3, 376 = 479.779 and P<0.01 and this means that there is a major relationship between Artificial intelligence dimensions (automation, efficiency, and ease of use) and employees' performance dimension speed of work.

Table (15): simple linear regression of Artificial intelligence dimensions on the speed of work.

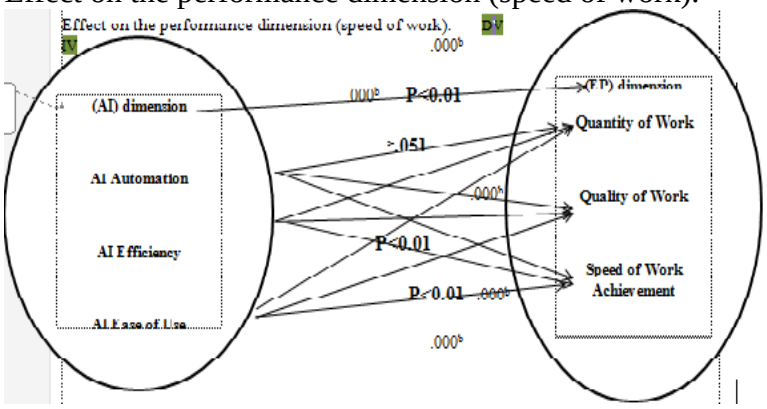
Coefficients

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.458	.108		4.237	.000
	AI Automation	-.082	.042	-.083	-1.956	.051
	AI Efficiency	.385	.079	.375	4.884	.000
	ai ease of use	.600	.065	.596	9.201	.000

a. Dependent Variable: speed of work

From table (15), all β coefficients are not equal to zero which means we still can reject the null hypothesis where t for x1= -1.956, x2= 4.884, x3= 9.201P<0.01 for x variables. It is observable also that α = .720 and β1= -.004, β2= .353, β3= .479 so: From the table (15) the regression model shows that was the significant effect of (efficiency, and ease of use) as the independent variable and AI Automation are non-significant effects on employees' performance dimension speed of work as the dependent variable. Also, the table explains why and how the Artificial intelligence dimensions had a positive effect on employees' performance dimension (speed of work).

Effect on the performance dimension (speed of work).



Figure(1): Summary of testing the main hypotheses of artificial intelligence dimensions (AI Automation, AI Efficiency, AI Ease of Use) on employees' performance dimension (Quantity, Quality, Speed of Work Achievement**, source: (the researcher).**

The total effect of AI on employee performance

Depending on simple linear regression analysis, the data illustrated a statistically significant impact sig = 0.000, P<0.01 of the independent variable artificial intelligence dimension on employees performance dimensions. It means that (automation, efficiency, and ease of use) affect employees' performance dimensions (Quantity, Quality, and Speed of Work Achievement). According to this significant impact, the study accepts the 1st Main Hypothesis. These results agree with (Rifkin, (1995) Tzafestas, (2009) Groover, (2014) Altemeyer, (2019), Wang and Siau, (2019), Samset, (1998)

- **Correlation coefficient using SPSS (version 25)**

The correlation coefficient between independent and dependent variables (automation, efficiency, and ease of

use) on employees' performance dimensions (Quantity, Quality, and Speed of Work Achievement) to determine which variables are more strongly correlated and which are less correlated table (16).

Correlations

		AI Automation	AI Efficiency	ai ease of use
AI Automation	Pearson Correlation	1	.829**	.749**
	Sig. (2-tailed)		.000	.000
	N	380	380	380
AI Efficiency	Pearson Correlation	.829**	1	.931**
	Sig. (2-tailed)	.000		.000
	N	380	380	380
AI Ease of use	Pearson Correlation	.749**	.931**	1
	Sig. (2-tailed)	.000	.000	
	N	380	380	380

**. Correlation is significant at the 0.01 level (2-tailed).

After studying the previous table, note that the relationship between the independent variables (AI automation, efficiency, and ease of use) has a very high statistical

significance less than or equal to 0.000, and note that (AI Efficiency, AI Ease of use.931**) are strongly correlated and (AI Automation.829**) are less correlated.

Table (16) Correlations

		quantity of work	quality of work	speed of work
quantity of work	Pearson Correlation	1	.784**	.867**
	Sig. (2-tailed)		.000	.000
	N	380	380	380
quality of work	Pearson Correlation	.784**	1	.818**
	Sig. (2-tailed)	.000		.000
	N	380	380	380
speed of work	Pearson Correlation	.867**	.818**	1
	Sig. (2-tailed)	.000	.000	
	N	380	380	380

**. Correlation is significant at the 0.01 level (2-tailed).

The results in a table (16) show that, after reviewing the previous table, the dependent variables' performance dimensions are employees (Quantity, Quality, and Speed of Work Achievement). Has a very high statistical

significance of less than or equal to 0.000; note that (Quantity and Speed of Work Achievement.867**) are strongly correlated, whereas (Quality of Work.818**) are less correlated.

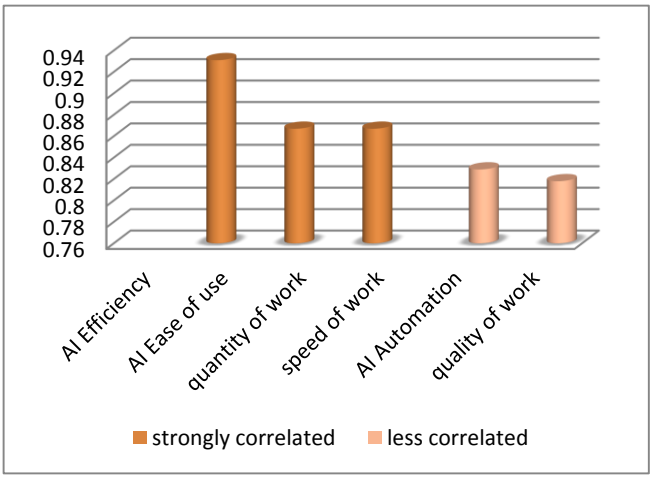


Figure (2): shows that (AI efficiency, Ease of use, Quantity, and Speed of Work Achievement) are more strongly correlated than (AI Automation, quality of work) is less correlated, Source :(the researcher).

Table(17) Cronbach's Alpha

Variables	Cronbach Alpha
AI Automation	**.967**
AI Efficiency	**.988**
AI Ease of use	**.991**
quantity of work	**.991**
quality of work	**.998**
speed of work	**.984**

Conclusion and Recommendations

This study is devoted to answering the research main question: do artificial intelligence dimensions have an impact on employees' performance dimensions in the hotel sector. Data was collected via a questionnaire, which was tested for its validity and reliability. Then simple linear regressions and Bivariate Pearson Correlation was used to show the relationship between variables of the study which presented independent variable artificial intelligence dimensions and dependent variable employees' performance dimensions used to test the hypotheses. The weighted average of the samples answers the questions contained in a form similar to the (five Likert –scale) to

know the direction of the respondents' opinions (Attitude). the researcher proposes a set of recommendations

- During the Covid-19 pandemic, Egypt's hotel industry should recognize the importance of robots and SA applications. They must also recognize the advantages of RAISA application in terms of improving service quality, lowering costs, and creating a positive image, as well as improving employee performance.
- The Egyptian hotel industry must set aside funds to upgrade their aging infrastructure, which is incapable of supporting the adoption of new RAISA technologies, and recognize that doing so is not a waste of money because the use of these technologies is now required.
- Hotel management and decision-makers should recognize that the cost of implementing RAISA now may save money in the long run by lowering employee salaries, training costs, and absenteeism. As a result, they will need to change some managerial beliefs and reshape their policies.

- Following the lead and recommendations of Egypt Vision 2030, the Egyptian government focuses its efforts and investments on implementing new technologies in various sectors. It should also prioritize the implementation of these technologies in the tourism and hospitality industries, as well as make mandatory decisions in this regard to ensure that they keep up with global technological changes.
- The ministry's tendency to keep up with the world's vast developments in the field of information technology.

Because this research was conducted in five-star hotels in Greater Cairo, Egypt, it is recommended that the same variables be applied to other sectors such as Fast food restaurants in the Egyptian hotel sector.

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