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The impact of management information systems on improving employee performance
A case study in the Financial and Administrative Department / Ministry of Higher Education and Scientific Research

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Abstract

The study indicated the importance of measuring the impact of management information systems on the performance of employees in the administrative and financial department. Where the size of the study population (203) was chosen from different employees. In addition, the surveys were sent out to various levels of management. The sample for the study was selected using a snowball method, as described by the researchers. There was a total of 57 surveys sent out, but only 55 valid responses.

The importance of research lies in the fact that information systems are of particular importance in light of the information and communication revolution, as modern information systems have turned out to be one of the most important sources of technology. The main research problem appears within the scope of the researchers' observation, bearing in mind that one of the researchers is among the workforce in the Ministry of Higher Education and Scientific Research. Specifically, this study aims to address the following question: How widespread is the usage of management information systems in the Iraqi Ministry of Higher Education? The results showed a statistically significant influence of the gadgets' efficacy on the productivity of staff at the Iraqi Ministry of Higher Education. Data about cutting-edge software systems Resources (both human and technological), knowledge, and skill. The effectiveness of the databases, usability, and systems used by the Iraqi Ministry of Higher Education.

After taking into account all of these factors, the researchers came to the conclusion that the Iraqi Ministry of Education should prioritize improving the effectiveness of its technology and programmers. This recommendation is in line with the fundamental needs of managing contemporary information systems and accounts for the use of Internet and Intranet-based communication technologies. Within this context, the Iraqi Ministry of Higher Education

Keywords: Management information systems (MIS), Employee efficiency, Employee performance, Performance improvement, administrative employees.

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أثر نظم المعلومات الإدارية في تحسين أداء العاملين
دراسة حالة على الموظفين في الدائرة المالية والادارية / وزارة التعليم العالي والبحث العلمي

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المستخلص

أشارت الدراسة إلى أهمية قياس أثر نظم المعلومات الإدارية على أداء العاملين في الدائرة الادارية والمالية، حيث تم اختيار حجم مجتمع الدراسة (203) من مختلف الموظفين. وتم توزيعهم على المستويات الوظيفية المختلفة في بيئة العمل، بينما بلغ حجم عينة الدراسة (57) عاملاً وتم اختيارهم بطريقة عشوائية بسيطة. وبذلك تكون وحدة المعاينة في عينة الدراسة المقدرة بـ (203) عاملة وعامل، وبعد توزيع الاستبيان تم استرجاع (55) منهم ثم (2). تم استبعاد الاستبيانات غير المكتملة بحيث استقرت عينة الدراسة على (55).

تكمن أهمية البحث في حقيقة أن نظم المعلومات لها أهمية خاصة في ظل ثورة المعلومات والاتصالات، حيث تحولت نظم المعلومات الحديثة من أهم مصادر التكنولوجيا.

تظهر مشكلة البحث الرئيسة في نطاق ملاحظة الباحثان، مع الأخذ في الاعتبار أن أحد الباحثين هو من بين القوى العاملة في وزارة التعليم العالي والبحث العلمي في التساؤل الرئيسي التالي (معرفة درجة نظم المعلومات الادارية المستخدمة في وزارة التعليم العالي العراقية؟). تم جمع وتحليل جميع البيانات الأساسية للدراسة، حيث النتائج أظهرت تأثيراً واضحاً ودلالة إحصائية لكفاءة الأجهزة على أداء العاملين في وزارة التعليم العالي العراقية، فضلاً عن وجود تأثير ذي دلالة إحصائية على تكنولوجيا البرمجيات المتقدمة. الموارد البشرية وتقنية الشبكات والكفاءة. قواعد البيانات وسهولة الممارسات والأنظمة المتعلقة بأداء العاملين في وزارة التربية والتعليم العراقية.

وأوصت الدراسة بأهمية التأكيد على زيادة درجة كفاءة التقنيات والبرامج المستخدمة في وزارة التربية والتعليم العراقية، بما يتماشى مع المتطلبات الأساسية الهامة لإدارة نظم المعلومات الحديثة ومراعاة تحديث تقنيات الاتصال عبر الإنترنت والإنترانت. في وزارة التعليم العالي العراقية.

الكلمات المفتاحية: نظم المعلومات الادارية، كفاءة العاملين، اداء الموظفين، تحسين الاداء، الموظفين الإداريين.

1. Introduction

The significance of the research lies in the fact that information systems are of particular significance in light of the information and communications revolution, as modern information systems have become the most important technology resources in the development of

organizations in the face of competitive conditions and challenges that arise in the organizational environment in general (Bergeron, 2014: 88-89).

Furthermore, at the start of the technological revolution (Abrego, 2009: 155-156), which has now become one of the most important foundations of organizational growth. The remarkable progress in information technology and internet networks has led to methods of producing information with precise measures in order to meet the needs of various companies to accomplish their programmers and activities (Caldeira, 2014: 121-122).

To better understand the significance of knowing the administrative tasks in order to make effective strategic decisions in light of the challenges and difficulties facing the administration; to generate the information most frequently requested by the administration; to characterize efficiency, strength, technology, and time (Ballantine, 2012: 15-17).

Keeping up with and experiencing the information technology revolution, which has resulted in any changes to the functional architecture of companies while conducting administrative, commercial, and financial matters, means that the last few years seem like yesterday (Cherobim, 2012: 147-148).

Information management systems and technology technologies that have been used as major determinants in competitive advantage have been developed to achieve the goals and objectives that organizations seek, in order to increase the degree of leadership for institutions and organizations, which have developed in accordance with their unique products, capabilities, experiences, efficiencies, and effectiveness in employing and expanding the use of Modern information system technologies (Bokhari et al., 2015: 212-214).

2. **Research problem:** Technology and information systems of all kinds, including modern management information technology, have advanced significantly in the modern era. However, the study's central issue lies within the researcher's own experience and observations, given that the researcher is a member of the Ministry of Higher Education and Scientific Research's staff. The management information systems techniques used in the work have a role in increasing the degree and type of services provided, with the presentation of the importance of accuracy and skills in accomplishing other work requirements, where the necessary questions

have been identified that should be answered by the various workforce in the financial and administrative departments. The Iraqi Ministry of Higher Education and Scientific Research is as follows:

The first primary inquiry is, how effective are the management information systems used by the Iraqi Ministry of Higher Education and Scientific Research?

The second primary concern is this: how have management information systems affected the efficiency and productivity of workers at the Iraqi Ministry of Higher Education and Scientific Research?

Which brings us to our third and last inquiry: how productive are the workers at Iraq's Ministry of Higher Education and Scientific Research?

The fourth primary inquiry is whether or not the sample's responses to the effect of management information systems vary.

Worker productivity in Iraq's Ministry of Science, Technology, and Research? In accordance with certain demographic factors (gender, age, average, years of experience, job level, or educational qualification),

3. **Research Questions:** This research study uses a scientific approach to investigate the topic of management information systems and their effect on the performance of employees in the Iraqi Ministry of Higher Education and Scientific Research. The study does so by considering the topic from multiple angles, including the technological development of the management information systems sector in light of global technological development, keeping pace with it, the extent to which these systems are applied, and the impact they have on the performance of employees. Excellent, since we expect to learn a lot about the key factors in the following areas:

1. Knowing the degree of management information systems employed in the Iraqi Ministry of Higher Education?
2. Are you aware of the level of performance of personnel at Iraq's Ministry of Higher Education and Scientific Research?
3. The degree of influence of management information systems on increasing the performance of workers in the Iraqi Ministry of Higher Education and Scientific Research?

4. **Research Objectives:** On the one hand, management information systems have become one of the fundamental principles in the establishment or establishment of any institution or organization, even a successful small

company, whether public or private, especially in our time, as it is based on accelerating the provision of services and the implementation of transactions accurately as well. On the other side, it lowers costs and increases trust in delivering services and closing deals. Carmines (2011), pp. 66-67. The value of the subject rests in its practical usefulness. This study derives its practical importance from the fact that it sheds light on the impact and importance of management information systems on the performance of employees to achieve the goals and the practical importance by clarifying how management information systems affect the performance of employees in the Iraqi Ministry of Higher Education through the integration of equipment efficiency, software modernity, human resources, network development, database efficiency, and flexibility of practices and systems..

5. **Research Importance**: Given the dynamic and uncertain nature of the business environment, information plays a crucial role in ensuring an organization's continued existence and success. However, in order to ensure its continued usefulness, information must be consistent with the needs of all levels of the organization, from the lowest operational levels to the highest levels of management. An incompetent employee's low job performance has a significant impact on the organization as a whole, and a person's communication skills can be a useful indicator of his performance on the job. People who are good communicators will see the benefits of their efforts in the form of enhanced productivity and strengthened relationships with clients and coworkers. They report directly to their boss, and the idea of "performance" is crucial to businesses and the focus of the vast majority of management researchers. Whether or whether an organization exists at all, this factor is the most crucial to its success.
6. **Hypothesis Model of the Research**: This research sought to test many fundamental assumptions about the causes of poor job performance in the workplace and the factors that may be done to alleviate those causes (Chen, 2014: 311-313):

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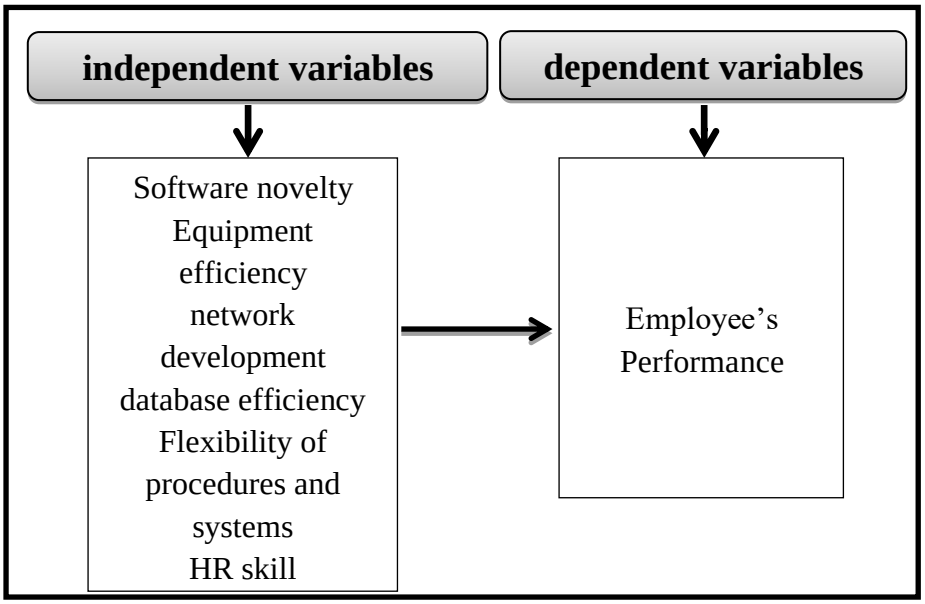

7. Literature Review: Theoretical framework and previous studies:

7.1. The concept of management information systems: The term "management information system" (MIS) refers to "a system that consists of computerized records and associated software used to manage business operations" (Fitzgerald, 2010: 66-67). MIS encompasses a wide range of activities, such as conducting a thorough survey of data and scheduling, collecting and analyzing it correctly, and transmitting the results to the organization's upper management. The term "information system" refers to a group of interconnected components that work together to gather, organize, store, retrieve, and disseminate data in support of managerial decision-making and control. Such a system also aids in the resolution of organizational issues and the analysis of their causes (Choe, 2010: 177-178).

7.2. Characteristics of management information systems: There are defining features that set management information systems apart from others. The most crucial ones among contemporary systems and technologies are:

To begin, the degree of administrative control and operation, as well as the structural and semi-structured administrative practices, are primary concerns for management information systems. It's also useful for strategic planning across the company's many divisions.

Second, considering historical data, real-time data, and projected outcomes is essential for effective decision-making through management information systems development (Davis, 2013: 222-233).

7.3. Management information systems and methods of implementation in the Iraqi Ministry of Higher Education: In order to make timely and effective administrative decisions, the Iraqi Ministry of Higher Education relies heavily on modern management information systems, which are supported by a plethora of cutting-edge technological tools spread across the ministry's many divisions. On the other hand, the Ministry's employees should be trained and qualified to be consistent and deal easily and flexibly with these technologies and software, namely administrative data systems, which are linked to decision makers in the upper and middle management with other executive units (DeLone, 2011: 225-226). Thus, facilitate and speed up the process of generalization and decision-making (Ballerine, 2012: 16-17).

8. **Performance of employees:** Whether they are commercial or service organizations, many businesses place a premium on techniques and strategies to improve performance and the amount to which the organization is capable of doing its core tasks and reaching its most critical objectives (Falk, 2009: 89-90).

What the world sees now in terms of institutions with strength and care in matters of performance is that they are focusing on human resources in order to meet and implement their goals through the efficient use of human resources and the investment of available opportunities and energies equipped for this. All of these rewards are meant to encourage businesses to improve their human and organizational resources so that they may better satisfy the demands of their customers (Ferreira, 2014: 145-146).

The quality and quantity of goods and services produced, as well as the number of jobs created, are the most important basic indicators that clarify the significance of job performance in corporate operations (Fornell, 2012: 95-97).

9. **Research Methodology**

9.1. The statistical practical aspect and field research procedures: A summary of the study community and the method used to choose a sample from it were provided, as well as a presentation and explanation of the findings of the questionnaire, along with the researcher's statistical analysis and interpretation of those data. It is descriptive in nature and seeks to reveal the responses of the study sample of employees of the Iraqi Ministry of Higher Education at its various functional levels, academic

qualifications, years of experience, and gender to the impact of management information systems on their performance. The main goal of the study was to look at the theoretical literature and how the research population answered the questionnaires.

9.2 Population and Sample Size of the Study: The sample size of the study was 57 (male and female workers from the Ministry of Higher Education in Iraq), and the form of the study population shows all the employees of the Iraqi Ministry of Higher Education, where the size of the study community was 203. The study sample community originated from the Human Resources Department of the Iraqi Ministry of Higher Education, and they were distributed among the various functional levels in the work environment. After sending the questionnaire to an estimated 203 male and female personnel in the Ministry's Directorate of Financial and Administrative Affairs, 55 were recovered, and two were disqualified due to incomplete responses, resulting in a final sample size of 102. (55). The study's primary data set consisted of male and female employees from Iraq's Ministry of Higher Education. The researcher already works for the Iraqi Ministry of Higher Education, so they have a good understanding of how things operate there. The SPSS and AMOS programmers were used to do a statistical analysis of the data from the 55 people who filled out the survey.

9.3. Statistical methods and treatments:

1. It is a statistical tool that reveals the extent to which there is a significant correlation between two or more variables, as the Spearman correlation coefficient for rank correlation will be adopted in the statistical analysis because the responses are qualitative and descriptive (strongly agree, agree, agree moderately, not agree, strongly disagree), and then the significance of the computed correlation coefficients will be tested using the T-test.
2. Regression analysis is one of the statistical techniques used to demonstrate the degree to which the independent variable is present in the dependent variable.
3. Confirmatory factor analysis: to demonstrate the breadth of the data's factor validity. Exploratory factor analysis is a statistical technique for identifying the degree to which paragraphs fall under a certain factor.
4. To illustrate the stability of the data based on the coefficient (Alpha-Cronbach).

5. Data credibility assessment.
6. Test the validity of the questionnaire using the approach of peripheral comparison.
7. Examine the validity of the questionnaire using the approach of factor analysis.

9.4. Test the validity of the questionnaire using the factor analysis method: To ensure the theoretical structures of the variables are valid and accurate in the field, confirmatory factor analysis of the measures adopted in measuring the main and sub-variables was adopted as the most prominent statistical method used in evaluating the ability of the factors model to express in the actual data set in the comparison between the models of factors in this area (CFA)

Management information systems variable shows evidence of

A.level confirmatory structural validity,

Table 1 displays the indicators of model fit for the model selected in the confirmatory factor analysis of the management information systems variable, and was produced by running the confirmatory factor analysis using the ready-made programme (AMOS v.24) and the ready-made programme (AMOS 23).

Table (1): shows the indicators of conformity to the management information systems model

indicators	optimum range	the value
chi-square value	to be spiritual	776.223
degree of freedom	What value?	2.84
Chi-square ratio to degree of freedom	Do not exceed (5) good	4.01
CFI Comparative Match Index	ranges between (0.9 - 1)	0.93
TLI Tucker-Lewis Index	ranges between (0.9 - 1)	0.91
RMSEA square root mean approximate error	ranges from (0 - 0.08)	0.05

Sarce: Everitt, Brian S., (2010), Multivariable Modeling and Multiaxiality Analysis for The Behavioral Sciences, CRC bress, Taylar& Francis, 6000, Broken, Sound Bark way NW, Suite 300, Boce RATON, USA, 211.

Table 1 displays the results of a factor analysis conducted with SPSS version 18 and AMOS version 24, demonstrating that the management information systems variable meets all the criteria for inclusion in the

factor analysis and allowing it to be conducted using the method with the highest probability of success (2).

Table (2): shows the results of the factor analysis of the management information systems scale

Questionnaire items	Factor saturations					
	Factor One	Factor Two	Factor Three	Factor Four	Factor Five	
Equipment efficiency						
The Ministry provides computers appropriate to the nature of work	0.47					
The Ministry provides devices with storage capabilities	0.57					
Suitable for storing information.	0.78					
The Ministry provides computers linked to lines	0.74					
internet connection	0.60					
The available devices are easy to use.	0.47					
Software novelty						
The ministry uses easy software that is easy to use		0.89				
dealing with it		0.86				
The necessary software is updated periodically		0.54				
The software provided in the ministry keeps pace with		0.35				
Evolution of functional needs		0.38				
Modern software enables flexible exchange		0.89				
information between system users		0.86				
The software used helps reduce		0.54				
Network Evolution						
The Ministry provides a high-speed internet			0.70			
The Ministry provides ease of communication with the departments the other			0.76			
The internal and external networks are maintained Regularly and café.			0.67			
The Ministry provides an internet network that is protected from hacking and tampering with information			0.49			
database efficiency						
Databases are characterized by the ability to Storage				0.67		
The Ministry updates the databases with Continuously compatible with work used in its field of work				0.73		
The university provides all computer accessories (printer, storage units, etc.)				0.61		
What the employee needs in his field of work				0.49		
Flexibility of procedures and systems						
The procedures followed in the use of the systems are distinguished					0.67	
flexible.					0.61	
The procedures are clear and uncomplicated.					0.59	
The value of the latent root	8.818	2.871	2.171	1.958	1.570	1.255
The percentage of the explained variance	33.916	11.042	8.348	7.531	6.038	4.828
The percentage of cumulative variance explained	33.916	44.958	53.306	60.838	66.876	71.703

Source: Everitt, Brian S., (2010), Multivariable Modeling and Multivariariate Analysis for The Behavioral Sciences, CRC press, Taylor & Francis, 6000, Broken, Sound Barkway NW, Suite 300, Boce RATON, USA, 211.

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Out of the 26 items comprising the management information systems scale, Table (2) of the confirmatory factor analysis reveals that there are six factors with varied numbers of items. Note that all variables were accepted since their saturations are greater than 0.30. This investigation is consistent with previous notions about the dimensions of this scale.

The values of the latent roots attained by each component surpass the right value and are equivalent to the preceding assumptions, as shown in the table. This is a good sign offered by the component analysis to support the creation of this measure, which accounts for a fourth of the overall variation.

B. Confirmatory construct validity of the performance variable: The confirmatory factor validity of the performance variable was tested using ready-made programmers (SPSS v.18) and ready-made programmers (AMOS 23), and the findings are shown in Table (3), which illustrates the model matching indicators used in the performance variable confirmatory factor analysis.

Table (3): shows the indicators of conformity to the job satisfaction model

indicators	optimum range	Values
chi-square value	to be spiritual	118.7
degree of freedom	What value?	27
Chi-square ratio to the degree of freedom	Do not exceed (5) good	4.38
CFI Comparative Match Index	ranges between (0.9 - 1)	0.94
TLI Tucker-Lewis Index	ranges between (0.9 - 1)	0.91
RMSEA square root mean approximate error	ranges from (0 - 0.08)	0.05

According to the above table, the performance variable has met all of the required criteria, and thus the factor analysis can be conducted using the method of greatest possibility, as the results of the factor analysis were obtained using the two programmers (SPSS v.18) and (AMOS v.24), as shown in the table (4).

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Table (4): shows the results of the factor analysis of the performance measure

Questionnaire items	Factor saturations
	Factor One
Performance	
The components of modern information systems have provided accuracy in	0.33
the performance	0.41
The work is done with great professionalism.	0.72
The work of the Ministry of Health was completed in a short time	0.73
and standard	0.82
The number of transactions completed daily has increased.	0.86
The performance level increased day by day	0.74
Decisions were made very efficiently.	0.75
Management information systems contributed to the acceleration of	0.30
The value of the latent root	4.444
The percentage of the explained variance	51.973
The percentage of cumulative variance explained	51.973

Source: Everitt, Brian S., (2010), Multivariable Modeling and Multivariariate Analysis for The Behavioral Sciences, CRC press, Taylor & Francis, 6000, Broken, Sound Bark way NW, Suite 300, Boce RATON, USA, 211.

There are nine sub-clauses (questions) for the performance scale in Table (4) of the confirmatory factor analysis, out of the nine (9) items in that scale. It should be noted that all of the items have been allowed since their saturations are more than 0.30, and this exploration is consistent with previous assumptions regarding the magnitude of this scale.

The table also shows that the factor's latent root values surpass the right value and are similar to the prior hypothesis. In terms of the value of the explained total variance, the factor was able to explain around 52 percent of the total variation, which is a very excellent sign offered by the analysis factor to support the building of this scale.

9.5. Stability: The term "stability" refers to the degree of consistency in the scale's answers, as the strength of the dependability resides in the questionnaire whenever the reliability coefficient is 0.70 or above. Using the half-segmentation approach and the internal consistency method.

9.6. Statistical analysis of the relationship between the dimensions of management information systems and performance: The first major hypothesis of the investigation, which includes six sub-hypotheses, will be established by calculating the Spearman association constant for the rank association between all dimensions of management information systems (equipment efficiency, software modernity, human resources, network development, database efficiency, flexibility procedures, and systems) and the performance axis, and then testing that association using the (T) test to demonstrate the meaning of the associative relationship:

Table (6): The values of Spearman's correlation coefficient and (T) test for the significance of the association amid the sizes of the management information systems axis and the performance axis

Y	X Dimensions of the management information systems axis	R Spearman's correlation coefficient	T (T) value computed	Indications
Performance	Equipment efficiency	0.532**	4.709	Significantly
	Software novelty	0.456**	3.595	Significantly
	Human Resources	0.475**	3.929	Significantly
	Network Evolution	0.574	4.910	Significantly
	database efficiency	0.602**	5.414	Significantly
	Flexibility of procedures and systems	0.549**	4.781	Significantly

Sarce: Everitt, Brian S., (2010), Multivariable Modeling and Multivariariate Analysis for The Behavioral Sciences, CRC bress, Taylar & Francis, 6000, Broken, Sound Bark way NW, Suite 300, Boce RATON, USA, 211.

Tabular (T) value at the equal of meaning (0.05) and degree of liberty (53) = 2.006

Tabular (T) value at a equal of meaning (0.01) and a degree of liberty (53) = 2.673

(*) Significant result at the level of significance 0.05.

(**) Significant effect at the level of significance 0.01.

1. The results of Table (6) showed that the value of Spearman's association constant between the measurement of equipment efficiency and the performance axis was (0.532), which is a positive direct-direction value with significant meaning at the significance levels (0.05) and (0.01) since the intended (T) values. It is (4.709), and the explanation for this conclusion is that when the extra equipment efficiency grows in the studied Ministry of Higher Education and Scientific Research, it will contribute to the first sub-hypothesis, which states that "there is a significant association link between equipment efficiency and performance," is hypothetical in terms of enhancing its performance.
2. The results of Table (6) also revealed that the value of Spearman's association constant between the newness of the software and the performance axis amounted to (0.456), which is better than its flat complement, which is equivalent to (2.006) and (2.673) at the two levels of significance (0.05) and (0.01), individually, and the clarification of this result is that the additional modern software in the Ministry of Higher Education and Scientific Research will contribute to improvement.
3. The results of Table (6) revealed that the value of Spearman's association constant between the human resources measurement and the performance axis hit (0.475), which is a positive, straight maneuvering value by important meaning at the same level of significance (0.05) and (0.01) because the calculated T values for it amount to (3.929), which is higher than its flat complement, the third sub-hypothesis, "there is a significant association," is accepted.
4. The results of Table (6) also revealed that the value of Spearman's association constant between network development and the performance axis touched (0.574), which is a positive direct-direction value by important meaning at the equal of significance (0.05) and (0.01) because the (T) values calculated for it are (4.910), which is better than its flat complement. The quarter sub-hypothesis is speculative, implying that "there is a significant association link between network growth and performance.
5. The results of Table (6) revealed that the value of Spearman's association constant between the database efficiency measurement and the performance axis reached (0.602), which is considered the largest and represents the strongest variables related to performance, and it is a

positive, direct maneuvering value with significant meaning at the equal of (0.05) and (0.01)., and thus the fifth sub-hypothesis is putative, which states "there is an important correlation

6. The results of Table (6) revealed that the value of Spearman's correlation constant between the measurement of the flexibility of procedures and systems and the axis of performance reached (0.549), which is a positive straight maneuvering value with significant meaning at the equal of significance (0.05) and (0.01) because the (T) values calculated for it. The more it helps to enhancing employee performance, the more it contributes to the sixth sub-hypothesis, which states that "there is an essential link between the flexibility of processes, systems, and performance."
7. Overall, we get the first chief theory as a consequence of the acceptance of six sub-hypotheses out of six (ie, acceptance of 100 percent) of the first chief theory, which states that there is a significant correlation connection between organizational information systems and performance.

9.7. Impact hypothesis testing Test the main effect relationship hypothesis of the research:

A. **The first sub-hypothesis states that** "there is a significant effect relationship for the efficiency of equipment in performance": The results of the arithmetical analysis according to Table (7) presented the presence of an important result at the level of meaning (05.0) and (0.01) for the measurement of equipment efficiency in the performance mutable since the intended (F) value of (22.17) is better than its flat complement, The value of the reversion constant in the above reckoning (0.54) designates that an upsurge in the equipment efficiency measurement by one component will be escorted by an upsurge in the performance mutable by (54%), and thus the chief sub-hypothesis is putative, which conditions “there is a important effect relationship The dimension of equipment efficiency in the performance variable.

B. **The second sub-hypothesis states that** "there is a significant influence relationship for the dimension of software novelty in the performance variable": The results of Table (7) presented an important result at the level of meaning (05.0) and (0.01) for the software novelty measurement in the performance mutable because the intended (F) value of (12.92) is better than its flat complement of (4.02) and (7.13 correspondingly and for together heights of morale, The value of the reversion constant in the

overhead reckoning (0.44) incomes that an upsurge in the newness of the software by one component will principal to an upsurge in the presentation variable by (44%). A significant sign of the dimension of software novelty in the performance variable.

C. **The third sub-hypothesis states that** "there is a significant influence relationship for the human resources dimension in the performance variable": The results of Table (7) showed an important result at the equal of meaning (05.0) and (0.01) for the human resources measurement in the performance mutable, assumed that the intended (F) value, which amounted to (26.51), is better than its flat complement of (4.02) and (7.13 For together heights of meaning (05,0) and (0.01), correspondingly, The value of the reversion constant in the overhead reckoning (0.58) designates that an upsurge in the human resources measurement by one component clues to an upsurge in the performance variable by (58%). Human resources in the performance variable.

The additional chief theory of the investigation conditions: There is an important impact relationship of management information systems on performance.

D. **The fourth sub-hypothesis states that** "there is a significant effect related to the network development dimension in performance": The results of the arithmetical analysis according to Table (7) presented an important result at the level of meaning (05.0) and (0.01) for the measurement of network development in the performance variable since the intended (F) value of (24.10) is better than its flat complement, which is (4.02) and (7.13) correspondingly and for together levels of morale, as the independent variable (equipment efficiency) explained its percentage (31%), The value of the reversion constant in the overhead reckoning (0.57) designates that an upsurge in the network development measurement by one component will be escorted by an upsurge in the performance mutable by (57%) and vice versa, and thus the quarter sub-hypothesis is putative, which conditions that “there is a important effect association Significant dimension of network development in the performance mutable.

E. **The fifth sub-hypothesis states that** "there is a significant effect relationship for the dimension of database efficiency in the performance

variable": The results of Table (7) presented an important result at the level of meaning (05.0) and (0.01) for the measurement of database efficiency in the performance variable, assumed that the intended (F) value of (29.30) is better than its flat complement of (4.02) and (7.13) correspondingly and for together heights of morale, and the independent variable (the efficiency of databases) was able to explain a rate of (36%) slightly more than one-third of the total vicissitudes or deviations in the values of the reliant on variable (performance) in the researched ministry, depending on the value of the constant of willpower, The value of the reversion constant in the overhead reckoning (0.60) incomes that an upsurge in the database efficiency measurement by one component will principal to an upsurge in the performance variable by (60%). It has significant significance for the database efficiency dimension in the performance variable.

F. **The sixth sub-hypothesis states that** "there is a significant effect related to the dimension of the flexibility of procedures and systems in performance": The results of the arithmetical analysis according to Table (7) presented an important result at the level of meaning (05.0) and (0.01) for the measurement of the flexibility of procedures and systems in the performance mutable since the intended (F) value of (27.02) is better than its flat complement, which generations (4.02). and (7.13), correspondingly, the value of the reversion constant in the overhead reckoning (0.55) indicates that an upsurge in the flexibility measurement of procedures and systems by one component will be accompanied by an upsurge in the performance variable by (55%) and vice versa. Significance of the dimension of the flexibility of procedures and systems in the performance variable. Overall, as a result of the achievement of acceptance of six sub-hypotheses out of six (ie, acceptance of 100%) of the second chief theory, we accomplish the receipt of the additional chief theory, which states "there is an important result of management information systems on performance.

Table (7): The results of the values of the coefficients used to measure the impact of the sizes of management information systems on performance

Variables		Transactions				
Y	X Dimensions of the management information systems axis	fixed limit A	Regression parameter Beta	(F) computed value	coefficient of determination (R2)	indication
Performance	Equipment efficiency	1.36	0.54	22.17	0.30	Significantly
	Software novelty	1.56	0.44	12.92	0.20	Significantly
	Human Resources	1.24	0.58	26.51	0.33	Significantly
	Network Evolution	1.42	0.57	24.10	0.31	Significantly
	database efficiency	1.32	0.60	29.30	0.36	Significantly
	Flexibility of procedures and systems	1.28	0.55	27.02	0.32	Significantly

Source: Everitt, Brian S., (2010), Multivariable Modeling and Multivariariate Analysis for The Behavioral Sciences, CRC bress, Taylor & Francis, 6000, Broken, Sound Bark way NW, Suite 300, Boce RATON, USA, 211.

9.8. Factor analysis of the management information systems axis: The results of the factorial analysis of the sub-paragraphs of all the variables of the management information systems axis showed the most important factors affecting according to the respondents' opinion, which were classified into (26) factors arranged according to the order of the questions in the questionnaire and as shown in Table (8).

Table (8): Specific values and variance ratios explained by the factors of the MIS axis

Factors	Specific values	Contrast ratio	Cumulative Contrast Ratio
1	8.818	33.916	33.916
2	2.871	11.042	44.958
3	2.171	8.348	53.306
4	1.958	7.531	60.838
5	1.570	6.038	66.876
6	1.255	4.828	71.703
7	1.072	4.124	75.827
8	0.974	3.745	79.573
9	0.943	3.625	83.198

Doi: www.doi.org/10.25130/tjaes.18.58.2.7

Factors	Specific values	Contrast ratio	Cumulative Contrast Ratio
10	0.706	2.714	85.912
11	0.631	2.427	88.339
12	0.484	1.861	90.200
13	0.409	1.573	91.773
14	0.368	1.414	93.188
15	0.326	1.253	94.441
16	0.294	1.132	95.573
17	0.224	0.863	96.436
18	0.205	0.788	97.224
19	0.172	0.661	97.885
20	0.160	0.614	98.498
21	0.104	0.400	98.898
22	0.087	0.336	99.234
23	0.070	0.268	99.502
24	0.057	0.220	99.722
25	0.041	0.159	99.881
26	0.031	0.119	100.000

Sarce: Everitt, Brian S., (2010), Multivariable Modeling and Multivariariate Analysis for The Behavioral Sciences, CRC bress, Taylar & Francis, 6000, Broken, Sound Bark way NW, Suite 300, Boce RATON, USA, 211.

The results presented in Table (8) highlighted that the most influential MIS variables were identified in seven main factors using the basic components method, which states that (the potential root of the extracted factor is not less than the correct one). These factors together contributed to explaining the percentage of (75.827%) of the total variance, which is a very good explanatory rate that exceeded three quarters of the total variance.

10. Results:

1. The findings indicated that the equipment efficiency developed by the Ministry of Higher Education and the researched scientific research will contribute to improving performance, and thus the first sub-hypothesis, "there is a significant correlation relationship between equipment efficiency and performance, is accepted.
2. The results also showed that the more modern the software in the Ministry of Higher Education and Scientific Research, the better the performance of

employees in that ministry, and thus the second sub-hypothesis, which states that there is a significant correlation between software novelty and performance, is accepted.

3. The findings revealed that the value of Spearman's correlation coefficient between the dimension of human resources and the result is that the more human resources in the Ministry of Education, higher education, and scientific research, the more likely they will contribute to improving performance in that ministry, and thus the third sub-hypothesis, "there is a significant correlation relationship between human resources and performance, is accepted.
4. The results also revealed that the Spearman's correlation coefficient between the dimension of network development and performance is a positive directional value with significant significance at the levels of significance (0.05) and (0.01), and the interpretation of this result is that the more networks develop in the Ministry of Education, higher education, and scientific research, the better the performance of employees in that ministry, and thus the fourth
5. The findings showed that the correlation coefficient between the database efficiency dimension and the performance axis was 0.602, and the meaning of this result is that as database efficiency improves in the Ministry of Higher Education and Scientific Research, so will their performance. As a result, the fifth sub-hypothesis, there is a substantial correlation between how efficient databases are and how effectively they perform, is correct.
6. The findings indicated that the value of the correlation coefficient between the dimension of the flexibility of processes and systems and the axis of performance is acceptable, stating there is a considerable association between process and system flexibility and performance. Overall, since six of the six sub-hypotheses of the first major hypothesis (or 100 percent) were accepted.
7. The results revealed a significant effect at the level of significance for the dimension of the flexibility of procedures and systems in the performance variable, implying that the sixth sub-hypothesis, that there is a significant effect related to the dimension of the flexibility of procedures and systems in the performance variable, is accepted.

11. **Recommendations:** The following recommendations are based on the actual study findings, which were discovered by examining the data using

statistical analysis programmers (SPSS and AMOSS). Here are the most essential ideas that were made:

1. In the Iraqi Ministry of Education, emphasize the significance of the technical and technological sector. The more effective the equipment at the Ministry of Higher Education and Scientific Research evolves, the better its performance in numerous domains will be in the future.
2. The importance of focusing on special (MIS) roles in developing and modernizing the workforce, as well as knowing the most important programmes and techniques that lead to the success of career work, as more modern software in the Ministry of Higher Education and Scientific Research will contribute to improving the performance of employees in that ministry.
3. Work on building MIS networks in the Ministry of Higher Education and Scientific Research, as this will help to improve the performance of workers in that ministry in general, and specifically employees in the financial and administrative department, which represents the research issue.
4. Directing the relevant departments to focus on the unification and collection of databases and data that play a clear role in functional work, as the greater the efficiency of databases in the Ministry of Higher Education and Scientific Research, the more they will contribute to improving performance in them.
5. Urging decision-makers, senior management, and specialists to improve the quality of work systems and simplify procedures in the functional environment, because the more flexible the procedures and systems in the Ministry of Higher Education and Scientific Research are, the more likely they are to contribute to improving employee performance, which contributes to achieving the desired goals.

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