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The impact of computer-based management information systems on employee's performance at Aqaba education directorate

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Abstract
The study aims to identify computer-based management information systems (CMIS) and their role in developing employee's performance at Aqaba education directorate. A questionnaire has been designed to achieve this goal and to collect data by distributing (100) questionnaires on study sample society represented in Aqaba education directorate employees who work directly at the computerized departments. 84% of the total distributed questionnaires returned, and were subject for data analysis by using the (SPSS) program. The study arrived to the result that there is an impact for implementation requisites of (CMIS), decision making, and years of experience on the employee's performance. The study reached a set of recommendations, the most important are: work on updating and developing (IT) infrastructure permanently and continuously to align with work nature, computerize link between the different management departments, and establish a collaborative environment between information systems users and information systems managers and employees at Aqaba education directorate through holding periodical meetings and forums.
Keywords: Computer- based management information systems (CMIS), computer, management, information technology (IT), quality and service, employees, performance, and statistical package for social sciences (SPSS), System, applications and products in data processing (SAP).

1- Introduction:

Today we live through different information revolution, where societies are divided and classified on the bases of their owned knowledge. Information becomes a strength that uses as a tool to impact individual behaviors in the society. (MIS) work to keep, index, classify, collect, and process data and information, therefore the increase dependency on (MIS) and (IT) will increase the efficiency and effectiveness of organization, and improve employee's culture and background in the firm towards performance efficiency. In alignment with the development policy which applies by Aqaba education directorate on all departments to lift up the aspects of advancement, it tried so hard to keep up with the new devices, techniques, and other developments to improve the provided services for all beneficiaries of this directorate.
The study aims to identify the (CMIS) and their role in developing employee's performance at Aqaba education directorate.

2- Study problem:

The problem of the study can be formulated by answering the following questions:
1- Is there any impact for the requisites of (CMIS) implementation on employee's performance at Aqaba education directorate?
2- Is there any impact of (CMIS) on employee's performance and on manager's decision making process?
3- Are there any statistical significant differences in the respondent answers between the requisites of (CMIS) implementation and managers decision making process, in relation to the demographical variables (sex, scientific experience and qualification, job title)?

3- Hypotheses:

The study hypotheses have been identified as the following:
1- There is no statistical significant impact for the requisites of (CMIS) implementation on employee's performance at Aqaba education directorate.
2- There is no statistical significant impact of (CMIS) on the performance of manager's decision making process.

3- There is no statistical significant impact between (CMIS) implementation requisites and managers decision making process, in relation to the demographical variables (sex, scientific experience and qualification, job title).

4- Study Goals:

The researcher through this study aims for the following goals:

1- Show the impact for the requisites availability of (CMIS) implementation on employee's performance at Aqaba education directorate.

2- Show the impact of (CMIS) on employees performance in the decision making process.

3- Show the impact of (CMIS) on the demographical variables (sex, scientific experience and qualification, and job title).

5- Study Importance:

The importance of the study reside in the topic of using the (CMIS) in Aqaba education directorate in several fields, such as administrative and finances duties, lack of specialists, secretarial duties, decisions making, workforce, and identifying problems and obstacles that limit the use of (CMIS). The largest importance of this study comes through addressing performance evaluation topic. The performance evaluation process was relatively neglected and distributed among the management functions until recently, despite the overwhelming importance of it.

6- Previous studies:

There is no doubt, that (CMIS) contributed significantly in bringing forward manifest movement in employees performance at different fields and organizations, where the study of (Mussawi, Mohamed, 2009) found that the use of information systems in insurance companies play an important role on their overall performance, but the actual use or unique investment of information systems at insurance companies in Algeria remain limited due to the existence of constraints and barriers, which are related to the managers, leaders, and available technical, informative, and material possibilities.

The study of both (gharabawi, 2014) and (Supattra, Boonmak, 2005) also found a positive relationship between hardware moderations , and software used, on one hand and information characteristics provided by information systems on the other hand on employees performance, as well as the existence of positive relationship between computer-base health information systems and job performance.

In the area of hospital managements, the study of (Dweik, 2010) reached that computer-base health information system used in Gaza European hospital has a good impact on workers medical and administrative fields, on medical and administrative decisions, and also there are differences in the impact on managerial decisions.

On the level of Palestinian business environment, the study of (Omari, 2009), arrived to a number of results and the most important of those are: there is statistical significant impact for managing the operational requirements of the computer-base management information systems (physical, human, organizational, software) on employee's performance at the company. The study also concluded that there were statistical significant differences between respondent's perceptions about computer-base management information systems impact on employee's performance, due to the demographical variables (scientific level, years of experience, workplace, and job level).

The study of Hashem (2013), about banks identified the impact of management information systems to improve the effectiveness of decision making process in the international bank of Yemen. The study used the descriptive and analytical approach, and used the questionnaire as a study tool, and to collect information. The study population consists of all classify users who are in the manager categories, and bank users of management information systems amount to (70) individuals. The study sample limited to all management employees and users, and the questionnaires under analysis formed 90% of the study population. The study arrived to several results and the most important are: respondents perception of information systems efficiency came high and the

existence of statistical significant impact of management information systems efficiency in the decision making effectiveness to varying degrees at all phases.

On the level of industrial business environment, a study by (Loukis, Euripides, Sapounas, 2005), targeted the impact of relationship from investing in management information systems on organizations performance in Greece. The study aimed to identify the impact of investment in management information systems on the performance of industrial organizations in Greece and used all of sales revenues, return on assets, and employee's productivity, as metrics to signify organizational performance. The study used the survey questionnaire method on the industrial organizations in association with the Greece industrial federation. The main results of the study were: the existence of significant positive impact of information systems on production criteria and measurements, and employees performance, but had less impact when it comes to return on assets. There is also integration between the investment in information systems and the factors of management information systems represented in the size of training, number of information systems employees, and other factors, which support the direction to increase production volume and the efficiency of employee's productivity in the organization.

In concern with the Jordanian environment, the study of (Gharaibeh, Malkawi, 2013) came up with the conclusion that there is no impact of hardware and software on the performance of government organizations; moreover, there is significant impact of networks, individuals, procedures, and management information system as a whole on the performance of government organizations.

The study of (Robert, David, and Lori, 2007) encounter to clarify the impact of information technology on the marketing performance of individuals and firms, a theoretical model has been presented linking organization and end user traits, information quality, system⁄service quality, industry traits and tasks performed using a system for the perception of organizational performance impact through ease of system use, perceived individual performance impact, attitudes toward using the system, and system use. The results indicate that measures of organizational traits, individual traits, information quality, system ⁄service quality, industry traits and tasks performed using the system impact perceived performance of the marketing organization mediated individual performance impact, attitudes toward using the system, and system use.

Research base study by (Peshawar, 2012) addressed the impact of (MIS) on the overall performance and efficiency of the workforce at the accountant (AG) general. The conclusions of the study stated in no doubt, that technology plays a very important role in development, and when it is used to improve employee's performance such as (MIS) and (SAP), it will definitely give the desirable results . As we have discussed in our paper above, most of the (AG) office sections now uses (SAP) and tremendous changes have been occurred, and there are consistent flow of work activities and functions have been observed since 2005. (SAP) has been proven to be advance software, which certainly will improve performance if the proper training and the motivation are provided.

7- Field study and statistical analysis:

This section deals with the study population and sample description; statistical methods used in analysis, and followed procedures for processing the study data tool (questionnaire):

7-1 Study population and sample:

a. Study population:

Study populations are represented in the employees of Aqaba education directorate.

b. Study sample:

An intentional sample from the employees of Aqaba education directorate in the Aqaba area have been selected, those who use the computerized system, where 100 questionnaires were distributed , and the following table shows the study sample statistics:

Table number (1)
Study sample

Study sample	overall	
	Number	Distributed percentage
Distributed questionnaires	100	100%
Returned questionnaires	90	90%
Unreturned questionnaires	10	10%
Questionnaires Invalid for analysis	6	6%
Questionnaires subject for analysis	84	84%

It shows from the table above, that the percentage of returned questionnaires amount to (90%), the percentage of invalid were only (6%), and the accepted ones (subject for analysis) stood up at (84%). The researcher sees this as a high percentage, and so it consider appropriate for the statistical analysis and to exit with actual results for this type of studies.

7-2 Data sources and collection methods:

7-2-1 Data sources:

a. Primary sources: represented in the questionnaire that was used as a major source for gathering information related to the impact of (CMIS) on employees performance.

b. Secondary sources: related to the preparation of the study theoretical framework by depending on the English and Arabic references and books, which addressed the study variables, and also the letters and periodicals that covered the topic.

7-2-2 Data collection methods:

The field study aimed to test the impact of (CMIS) on employee's performance in the district of Aqaba, therefore the study prepared two questionnaires in accordance with this goal, and each one consists of three sections:

1- First section: contains an explanatory introduction for the general goal from the special questionnaire of Aqaba education directorate employees.

2- Second section: designated for collecting data related to personal characteristics of the study sample population.

3- Third section: designated for questionnaire questions, where it was divided into two axes to get the opinions of the study sample population about the study topic.

The following table shows the questionnaire articles distribution, their total amount is (18) articles, and covers all the independent and dependent variables, according to the following:

Table number (2)
Questionnaire articles distribution

Number	Study variables	Articles	Variable nature
1	Implementation requisites of (CMIS)	1-8	(Independent variables)
2	Managers decision making process	9-18	(Independent variables)

Therefore, a questionnaire have been prepared, where the respondent will put a mark in front of each axis special articles, and in the opposite of each articles there are columns that reflect the five levels of response or approval from the disapproval. Each level represents a certain weight in ascending order (from 1 to 5), according to the Likert five scale, and the following table shows the answers and their weights:

Table number (3)
Response weights on the questionnaire questions

Item weight	Response (Opinion)
1	Strongly disagree
2	Disagree
3	Agree to a medium degree
4	Agree
5	Strongly agree

7-2-3 Used statistical methods: to test the study hypotheses, statistical analysis had been executed on the data that emerged from the survey questions by using the statistical software (SPSS), the results were as the following:

Table number (4)
Cronbach Alpha coefficient test results to verify the degree of credibility and reliability of the data contained in the questionnaire

Study variables	number of articles	Cronbach Alpha	The results
Implementation requisites of (CMIS)	8	91.94%	Acceptable
Managers decision making process	10	76.00%	Acceptable
Overall variables	18	84.00%	Acceptable

It shows from table number (4) that Cronbach alpha coefficient value for the sample members responds on the questionnaire articles, for each section separately, and for each hypothesis of the study, was greater than the acceptable lowest limit for the alpha coefficient at (60%). The coefficient value for the questionnaire articles combined was also greater than (60%). This refers to the existence for a large degree of credibility in the responses, and refers also to the existence of internal consistency between the questionnaire articles.

7-2-4 Study sample member's personal characteristics:
This section display a detail description of the study sample characteristics depending on their responses to the questions listed in the questionnaire as part of the article for general and personal data, and according to the following:

Table number (5)
Study sample members distribution according to the demographical variables

Variables	Variable categories	number	Percentage
Sex			
	Male	52	61.09%
	Female	32	38.01%
Age category			
	Less than 30 yrs	2	02.40%
	From 30 to less than 40 yrs	36	42.90%
	From 40 to less than 50 yrs	34	40.50%
	50 yrs or more	12	14.30%
Years of experience			
	5 yrs or less	4	04.80%
	From 6 to 10 yrs	24	28.60%
	From 11 to 15 yrs	20	23.80%
	16 yrs or more	36	42.90%
Qualification			
	General high school diploma or less	3	03.60%

	Two years diploma	18	21.70%
	Bachelor's degree	46	51.10%
	Higher education	20	23.80%

7-2-4-1 Personal variables analysis:

1- Sex:

Table number (5) explains that 52 of the sample members are males with percentage of (61.90), but the number of females amount to 32 at a percentage of (38.10%).

2- Age category:

Table number (5) explains that the ages (from 30 to less than 40 years) got the first place with (42.9%) and the ages (from 40 to less than 50 years) ranked second at (40.5%), but the ages (50 years and more) got the third place with (14.3%) and the ages (less than 30 years) got the last place with only (2.4%).

3- Years of experiences:

Table number (5) explains the distribution of sample members according to years of experiences, where the experience of (16 years or more) got the highest percentage of (42.9), experience of (6 years to10) got a percentage of (28.6), and the experience of (11 to 15 years) reached (23.8%), but the experience of (5 years or less) came in the last place with only (4.8%).

4- Qualification:

Table number (5) explains that bachelor degree reached the first place with (51.10%), higher education in the second place with a percentage of (23.80%), and two years diploma came third with (21.70%), but the high school diploma or less came last with only a percentage of (3.60). This indicates that sample members embrace a good educational level.

7-2-4-2 Data description and analysis:

The researcher relies on the arithmetic mean to process data as a criterion for the sample member's responses, and also the standard deviation to measure and show the dispersion range of the study sample member's responses around the arithmetic mean.

For the purpose of analyzing the responses results on the variables, which were addressed in the questionnaire by sample members, the responses were analyze to describe the impact of (CMIS) on employees performance, and the following is an explanation for that:

Table number (6)

Independent variables description

Variable	Arithmetic mean	STDEV	level
Implementation requisites for (CMIS)	3.3095	1.02353	Medium
Managers decision making process	3.1548	0.77993	Medium

First axis (variable): Implementation requisites for (CMIS)

It notices from table number (6) that arithmetic mean for the variable " implementation requisites for (CMIS)" amounted to (3.3095) from the total measurement area on the fifth Likert scale and a standard deviation of (1.02353), and this result indicate that the implementation requisites for (CMIS) level is medium compare with the standard mean of 3, according to the point view of the study sample member. The following showed after analyzing the sample opinion on the level of each article:

Table number (7)
Implementation requisites for (CMIS) description for the secondary articles

Number	Articles	Arithmetic mean	Standard deviation	Level
1	There are enough computers to accomplish the required work that helps in implementing (CMIS).	3.5714	1.20527	Medium
2	Hardware speed align with required work volume	3.3095	1.15097	Medium
3	Appropriate storing capabilities of used hardware	3.3810	1.18123	Medium
4	Available network align with organization work needs.	2.6429	1.11553	Medium
5	Higher management determines the appropriate level of hardware connected to (MIS).	3.1429	1.21380	Medium
6	Developed and modern software used in business system.	2.8333	1.13894	Medium
7	Higher management provides require financial support for utilizing (MIS).	2.6190	1.09660	Medium
8	Input units align with system user needs.	3.0476	1.09660	Medium
	Overall arithmetic mean & standard deviation	**3.3095**	**1.02353**	**Medium**

It shows from the table above that article (1): "There are enough computers to accomplish the required work that helps in implementing (CMIS)." achieved the highest mean of (3.5714) with standard deviation amount to (1.20527), but the article (7): "Higher management provide require financial support for utilizing (MIS)." got the lowest mean of (2.6190) and a standard deviation of (1.09660).

Second axis (variable): Managers decision making process
It notices from table number (6) that arithmetic mean for the variable " managers decision making process" amount to (3.1548) from the total measurement area on the fifth Likert scale and a standard deviation of (0.77993), and this result indicate that the managers decision making process level is medium compare with the standard mean of 3, according to the point view of the study sample member. The following showed after analyzing the sample opinion on the level of each article:

Table number (8)
Continuous quality improvement on the level of secondary articles

Number	Articles	Arithmetic mean	Standard deviation	Level
9	There is enough number of computer systems specialists.	2.7857	1.04214	Medium
10	There are evident resistance from some employees to the changes and the updates.	2.9524	1.09660	Medium
11	MIS helps to improve employee's performance.	3.7619	0.92644	High
12	The adaptation of comprehensive employee idea will raise employee's efficiency and contribute directly to their performance improvement.	3.6190	1.13970	Medium
13	It is possible to improve my job performance even in the weaknesses of available MIS.	3.8571	0.83800	High
14	(CMIS) participate in the decision making process	3.8571	0.89366	High
15	(MIS) helped to reduce centralization in the workplace and raises job performance level.	3.8333	0.90292	High
16	(MIS) helped to facilitate the storing, processing, and retrieving of	4.1429	0.71377	High

	data and information.			
17	(MIS) helped to discover work errors in old system and increase the efficiency of employee's job performances.	3.7381	0.87975	High
18	(CMIS) contribute to the advancement of Aqaba education directorate	3.5238	0.98759	Medium
	Overall arithmetic mean & standard deviation	**3.1548**	**0.77993**	**Medium**

It shows from table number (8) above that article (11): "MIS helps to improve employee's performance." achieved the highest mean of (4.1429) with standard deviation amount to (0.71377), but the article (15): "(MIS) helped to reduce centralization in the workplace and raises job performance level." got the lowest mean of (2.7857) and a standard deviation of (1.04214).

7-2-5 Statistical treatment and test study questions:

7-2-5-1 Statistical treatment (process):

This part of the study related to study hypotheses test, where one Sample T-test was used to test the hypothesis, arriving to the results associated with this test and the test results were as follows:

1- First Hypothesis test:

This paragraph donated to test the first hypothesis "There is no statistical significant impact of (CIMS) implementation requisites availability on employees performance at Aqaba education directorate".

To test this hypothesis, T-test value has been used, and the summarized results in table number (9) shows: "The existence of statistical significant impact of (CIMS) implementation requisites availability on employee's performance at Aqaba education directorate" through achieving a T-value greater than the indexed values at the degrees of freedom and moral shown in front of each hypothesis:

Table number (9)

T-value test results

Hypothesis	T-value	F	Seq.
Implementation requisites of (CMIS)	29.63	83	0.000

2- Second hypothesis test:

This paragraph donated to test the second hypothesis "There is no statistical significant impact of (CMIS) on the performance of managers decision making process. To test this hypothesis, T-test value has been used, and the summarized results in table number (10) shows: "The existence of statistical significant impact of (CIMS) on the performance of manager's decision making process" through achieving a T-value greater than the indexed values at the degrees of freedom and moral shown in front of each hypothesis:

Table number (10)

T-value test results

Hypothesis	T-value	F	Seq.
Mangers decision making process	37.07	83	0.000

2- Third hypothesis test:

This paragraph donated to test the third main hypothesis " Is there any statistical significant differences found, in the answers of respondents about (CMIS) implementation requisites and the demographical variables (sex, scientific experience and qualification, job title).To test this hypothesis, one- way ANOVA has been used to test the demographical variables.

Table number (11)
ANOVA analysis for (CMIS) implementation requisites

Demographical variable	Sig.	F
Sex	0.89	1.808
Age category	0.544	0.872
Years of experience	* 0.000	5.302
Scientific qualification	0.328	1.171
Job title	0.210	1.402

The summarized results in table number (11) shows: "The existence of statistical significant impact for the years of experience on (CIMS) implementation requisites", but there wasn't any impact for the remaining variables (sex, age category, qualification, and job title).

Table number (12)
ANOVA analysis for manager's decision making process

Demographical variable	Sig.	F
Sex	* 0.001	3.815
Age category	* 0.008	3.005
Years of experience	0.068	1.984
Scientific qualification	* 0.002	3.569
Job title	0.195	1.459

It shows through table number (12): "The existence of statistical significant impact for each of sex, age category, and qualification on manager's decision making process", but there wasn't any impact for the remaining variables (years of experience and job title).

8- Study results:

Referring back to the study data analysis and the study hypothesis test, it is possible to come out with the following results:

1- First main result: There is impact for the availability of the (CMIS) implementation requisites on employees performance at Aqaba education directorate with the significance level ($\alpha = 0.05$).

2- Second main result: There is impact of (CMIS) on employees performance in managers decision making process with significance level of ($\alpha = 0.05$).

3- Third main results: there are statistical significant differences for the years of experience on (CMIS) implementation requisites, but there wasn't any impact for the remaining variables (sex, age category, qualification, and job title).There are statistical significant differences for (sex, age category, and qualification) on managers decision making process", but there wasn't any impact for the remaining variables (years of experience and job title).

9- Recommendations:

According to the results that the study arrived to, the researcher recommends the following:

1- Work on updating and developing the IT infrastructure continuously, and in alignment with the business nature, and also the internal computerize linkage between business units, in order to achieve the speed in providing information and the integration in achieving services.
2- Establish a cooperation atmosphere between information systems users and information system managers at Aqaba education directorate, so employees can understand the administrative needs from information to all users of information systems, through gathering and periodic meetings aiming to provide users with all new technical aspects and talk to them about the administrative matters.
3- The high level managements at Aqaba education directorate must provide support for employees through encouraging them to use the system, and explore the point vies bout the problems they face whenever they use the system, in order to solve it.
4- Set up the appropriate training courses and seminars and perform workshops and programs for the various management levels, about the effective ways of dealing with information technology and automate their businesses to increase the speed and accuracy in completing tasks and duties.

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