THE IMPACT OF TRANSACTION PROCESSING SYSTEMS IN MAKING OPERATIONAL DECISIONS: A CASE STUDY OF COMPUTERIZING THE EMPLOYEES AFFAIRS DEPARTMENT OF AL-BALQA APPLIED UNIVERSITY, AL-KARAK

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Abstract

The aim of this study is to determine the impact of using information system in improving and managing the decision making process of the Employees Affairs Department of Al-Balqa Applied University at Al-Karak. To achieve the goal of this study, data were obtained through an interview with the department manager. A 24 items questionnaire with five response (Likert Scale) was developed and distributed to 20 participants, representing the Employees Affairs Department. Also, I used the SPSS Package to analyze the questionnaire study data which include the means and standard deviations of the study. In addition, I used Regression analysis to test the hypotheses.

Keywords: Transaction Processing System(TPS), Information , Decision making, Decision Support System(DSS), Al-Balqa Applied University, Jordan

Introduction

Background of Study

Today, organizations are functioning in a highly competitive and rapidly changing environment. Many alternatives are open to management, and many questions must be answered for a group of people to formulate and attain their objectives. Thus, information has become the source of power in organizations today. This is because the advent of recent technologies has made information system play an important role in the management and accounting processes in any organization. However, this is possible through the use of a computer system.

Consequently, we need to manage and use data and information in an efficient way regardless of the type and size of any organizations. For an organization to keep striving, the managers should be able to quickly access and analyze critical data or information to make sound and appropriate strategic and operational decisions. This should be done in a fast and accurate manner without much time and effort. Hence, this will enable the organization to gain a competitive advantage.

In any organization, the employee issue unit is the most important part of the organization. This is because this unit have the most important information required for different activities and functions, especially on decision making process. This unit is responsible for recruiting, compensation, training, insurance, vacation, health and evaluation of employees in different management levels inside the organization.

Nevertheless, all the data must be manipulated in a good way to help the managers in the decision making process. Furthermore, this can be attained using a computerized system to store, read, update, search, sort, and query data to obtain reports that are useful, accurate, up-to-date, and timeless. Thus, this information will help to foster good and correct decisions.

Statement of the Problem

The employee issue unit of any organization is considered a very important and necessary department. Therefore, the application of information technology inside this department is very crucial, because of its impact on the speed and accuracy of the function implementation and decision making process.

However, the aim of this research is to illustrate the impact of using computerized system and information technology inside the Employees Affairs Department in Al-Balqa Applied University- Al-Karak College, and to recognize the benefits and limitations that affect this department.

Significance of the Study

Management information and its application is considered as an important goal inside employee issue unit in an organization. So, this study analyzes the following goals and its importance:

- To tell us the extent of use of computerized system inside employee issue unit, and to ascertain the strengths and weakens points in this system. This would enable us reward the strengthen aspects and abandon the weak points.
- To determine the impact of using good information system in improving decision making process.

- To know the important limitations on the application of information systems on employee issue unit.
- To know the important benefits we can gain by applying information systems on employee issue unit.
- At the end of this study, essential recommendation will be provided by applying information systems on employee issue unit in improving the current system.

Research Instruments

By reviewing literatures and previous studies about this subject, the researcher uses three instruments. They are:

First: **This** instrument was used to interview the manager of the employee issue unit on Al-Balqa Applied University. The interview was to obtain information about his department, and to ascertain how it works. However, he stated that they have a manual which is the system for this department. Also, he pointed out that the work process is done on a miserable and tediously way. It is time consuming, data and files always get missing, and any information requires time to search between papers. In addition, the information needed for the decision making process is not available on-time.

Second: This instrument uses engineering software and system analysis courses to develop a prototype database system for the Employee's Affairs Department of Al-Balqa Applied University. For instance, the Oracle software is a very good database management software which can serve this purpose (Pressman R., 2000).

Third: This instrument is used for obtaining more information from the employee in this department. We designed a questionnaire to achieve the stated objectives, and to encourage high response rate. This questionnaire was based on the questionnaire presented in international journals found on websites.

However, to understand how they handle large information in this department, a questionnaire was divided into two categories as shown below.

The First Category: The personality characteristics of the study sample [sex, race, expertise, and qualification].

The Second Category: The second category include the following sections:-

- *The domains of using computerized system on employee issue unit. Questions (1-13).*
- *The benefits of using computerized system on employee issue unit. Questions (14-20).*
- *The limitations of using computerized system on employee issue unit. Questions (21-24).*

However, for the purpose of discussing the results, we will be using Likert Scale as shown in table (1):

Table (1): Likert Scale

Strongly agree	Agree	Neutral	Strongly disagree	Disagree
5	4	3	2	1

Statistical Methods for Data Analysis.

The researcher used a number of statistical methods to analyze the gathered data. These statistical methods include descriptive statistics and percentage proportion. Hence, this would enable us ascertain the employee's trend in the employee issue unit in Al-Balqa Applied University / Al-Karak towards using computerized system. Furthermore, correlation coefficient is used to know the nature of correlation relationship, while regression analysis is used to test the hypotheses, the means, and the standard deviations (SYDEV). In this study, the SPSS (Statistical Package for Social Sciences) software was used because it is easily, available and is easy to learn and understand.

Hypotheses

According to this study and review of the literature subject, the researcher puts up the following hypotheses:

First:- The employees affairs department in Al-Balqa Applied University / Al-Karak do not apply the computerized system in handling employee's issues or information.

Second:- There are no differences with statistics signals between the demographics factors (sex, race, expertise, qualification) with an exact application to the computerize system on employee issue units.

Third:- There are no limitations which applies to computerize system on employees affairs department in Al-Balqa Applied University / Al-Karak

Fourth:- There are benefits that exists by applying computerize system on employees affairs department in Al-Balqa Applied University / Al-Karak

Review of Related Literature

Meinert and Davis (1989): This paper describes a human resource decision support system (HRDSS) which integrates DSS capabilities with those of HRIS. Therefore, it overcomes the limitations inherent in the design of HRIS.

Koutsoukis, Mitra and Lucas (1999)

In this paper, they illustrated the natural coupling, which exists between data modeling, symbolic modeling and 'What if' analysis phases of a decision support system (DSS). In particular, they explore the power of roll-up and drill-down features of OLAP. Also, they show how these translate into the aggregation and disaggregation of the underlying decision models.

Shim, Warkentin, Courtney, Power, Sharda and Carlsson (2002)

This paper discusses the evolution of DSS technologies, and the issues related to DSS definition, application, and impact. It then presents four powerful decision support tools, including data warehouses, OLAP, data mining, and Web-based DSS. Issues in the field of collaborative support systems and virtual teams were also presented. This paper also describes the state of the art of optimization-based decision support and active decision support for the next millennium. Finally, some implications for the future of the field were discussed.

Pilepić and Šimunić (2009)

This paper focuses on Decision Support Systems. This is because their purpose is to provide assistance to managers in making the appropriate decisions to non-structured problems in decision-making. These systems enable the interactive application of decision making rules, models and model bases together with databases and the individual approach of the business-decision maker. The survey was conducted on a representative sample comprising of 124 hotels in the Primorsko-Goranska County, and the Istria County of the Republic of Croatia. Thus, results show that, in Croatian hotel practices, information technology continues to represent an operational tool used primarily to support operational management levels. Nevertheless, top management levels often fail to recognize it. Consequently, they failed to apply it to any significant extent the advantages of information technology offers in improving the management of their facility.

Fergal and Frederic (2010)

This paper reports on two in-depth studies of mature ERP applications in two organizations, from the point of view of managers in charge of managing key business processes. The key objective was to construct a framework to represent the impact of ERP on the ability of firms to make good decisions rapidly. They found that, although ERPs are sold as tools to increase speed of transactions and visibility of operations, they do not always deliver such benefits. Hence, they can distort the reality they seek to represent. Their cross case analysis showed that much of the benefit

associated with the live access to key operational data was compromised by the use of other technologies, such as off-line data warehouses, business intelligence tools and spreadsheets that are required to correct the distorted reality represented in highly integrated applications. Thus, for decision making purposes, managers still manually combine data from a variety of information systems. Thus, this makes them lose out on the integration promised by ERP technology.

Asemi, Safari and Zavareh (2011)

In this article, the authors have selected two main information systems, namely, MIS and DSS. After discussing the decision making process based on each concept, its characteristics, and its relations, the connections of each concept to the decision-making process have been determined. At the same time, different models and figures are presented to enrich the discussion, and to highlight precisely the status of each MIS and DSS information system in organizational decision making.

Abu-Naser, Al-Masri, Abu Sultan and Zaqout (2011)

In this paper, a prototype of a Decision Support System (DSS) is proposed for providing the knowledge for optimizing the newly adopted e-learning education strategy in educational institutions. If an educational institution adopts e-learning as a new strategy, it should undertake a preliminary evaluation to determine the percentage of success and areas of weakness of this strategy. If this evaluation is done manually, it would not be an easy task to do, and would not provide knowledge about all pitfall symptoms. The proposed DSS is based on exploration (mining) of knowledge from large amounts of data yielded from operating the institution to its business. This knowledge can be used to guide and optimize any new business strategy implemented by the institution. The proposed DSS involves Database engine, Data Mining engine, and Artificial Intelligence engine. Therefore, all these engines work together in order to extract the knowledge necessary to improve the effectiveness of any strategy, including e-learning.

Srinivas Nowduri (2011)

The study shows that the role of Management Information Systems is described and analyzed in light of its capability for decision making. Good management of information systems leads to good decision making in business. In the same way, poor management leads to poor decision making. It is based on this foundational concept that this paper is going to circumspectly analyze the roles of management systems in decision making. The study will begin by giving a brief overview on the decision making

process in businesses while establishing the point in which it links with MIS. From here, an expansive analysis and review will be done on the roles of MIS in improving decision making. Then, it will be followed by mentioning the questionable areas associated with MIS and decision making. After that, recommendations will be given to solve the underlying issues that result from the paper. Finally, a conclusion will be given to summarize the contents of the paper.

Pick and Weatherholt (2013)

This review paper identifies benefits from various Decision Support Systems (DSS), and introduces a range of examples from the literature. These examples are organized according to the driving technological architecture of the DSS. Benefits may impact a decision or the decision making process. Some techniques for assessing the benefits of a particular DSS were also surveyed.

The Methodology of the Study

This section illustrates the methods and procedures used in this study. This section contains the following: -
Style of the study, Population of the Study, Sample of the Study, and Analysis of the results of the study.

Style of the Study

This study was accomplished using two styles of research which are:

Official Style

This depends on reviewing the literature from books, journals, newspaper, previous researches about the subject of Information Technology, Management Information System and its special applications on employee issue unit. Some articles case studies taken from the internet provided by search engines (Google, Yahoo, Ask, Ebseco etc.), and some information obtained from the employee issue unit on the Website of Mu'tah University.

Analytical Style

This was done using questionnaire for data collection from the population of the study to answer the hypothesis of the study.

Population and Sample of the Study

The populations of this study include 20 employees. However, these employees work at the Al-Balqa Applied University / Al-Karak. Consequently, since the researcher has a small volume of sample in the

study, I used all the population of this study through the analysis of the first part of the questionnaire (gender, age, experience, qualification). Thus, we find the following distribution:

Table (2): Description of the Characteristics of the Sample of Study

Gender	**Gender**	**Frequency**	**Percent**
	Male	**11**	**55.0**
	Female	9	45.0
	Total	**20**	**100.0**
Age	**Class**	**Frequency**	**Percent**
	20-25	8	40.0
	26-30	10	50.0
	30-35	2	10.0
	Total	**20**	**100.0**
Experience	**Class**	**Frequency**	**Percent**
	1-5	7	35.0
	6-10	12	60.0
	11-15	1	5.0
	Total	**20**	**100.0**
Qualification	**Class**	**Frequency**	**Percent**
	Under b	9	45.0
	B	11	55.0
	Total	**20**	**100.0**

Analysis of the Results of the Study

First: - The Description of the Characteristics of the Sample of Study

Table (3): Description of the Characteristics of the Sample of Study

Gender	**Gender**	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
	Meal	11	55.0	55.0	55.0
	Female	9	45.0	45.0	100.0
	Total	**20**	**100.0**	**100.0**	
Age	**Class**	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
	20-25	8	40.0	40.0	40.0
	26-30	10	50.0	50.0	90.0
	30-35	2	10.0	10.0	100.0
	Total	**20**	**100.0**	**100.0**	
Experience	**Class**	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
	1-5	7	35.0	35.0	35.0
	6-10	12	60.0	60.0	95.0
	11-15	1	5.0	5.0	100.0
	Total	**20**	**100.0**	**100.0**	
Qualification	**Class**	**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
	Under b	9	45.0	45.0	45.0
	B	11	55.0	55.0	100.0
	Total	**20**	**100.0**	**100.0**	

As noted from the last table number (3), we noticed that the number of male from the sample of the study equal (11) person with percentage equal (55%), and that of females (45%).

To know the distribution of the sample of the study on the age consideration, we noticed that the age class (26-30) years is the first class with (50%) percent. Also, the next age class is (20-25) years with (40%) percent, and the last age class (31-35) years with (10%) percent.

Nevertheless, the distributions of the sample of the study on the number of experience years are in the order of percentage as follows: -

- (6-10) Years with percentage (60%)
- (1-5) Years with percentage (35%)
- (11-15) Years with percentage (5%)

The number of First University Degree on the sample of the study are (11) persons with (55%) percent. Similarly, the number of the class of below First University Degree are (9) persons with (45%) percent.

Second: - The Mean and The Standard Deviation

To determine the trends of employee, the means was calculated as shown in table (2) above. So, if the mean is less than 3, it indicates a negative response, and if it is greater than 3, it indicates a positive response for that factor.

Table (4): Mean and Standard Deviation of the paragraphs of the Employees Affairs System

Seq.	Paragraph	Num	Minimum	Maximum	Mean	Std. Deviation
2	Vacation system computerized	20	1.00	5.00	3.2000	1.4364
3	Performance appraisal and productivity are applied by computerized system	20	2.00	5.00	3.0500	1.0990
4	All information about employees are computerized and available	20	1.00	5.00	2.8500	1.3485
5	Job description are computerized and available to decision makers	20	2.00	5.00	3.3000	1.2607
6	Computerized information helped in incentives and compensation decisions	20	1.00	5.00	3.2500	1.3328
7	Computerized information helped in yearly increased decisions	20	2.00	5.00	3.3000	1.2607
8	Computerized information helped in employees training programs	20	2.00	5.00	3.1500	1.2258
9	Computerized information helped to determine on	20	2.00	5.00	3.6000	1.2732

	time, the academic staff needed					
10	Computerized information helped in selecting and recruiting decisions	20	2.00	5.00	3.2500	1.2085
11	Computerized and available information helped to attract the competence needed easily	20	2.00	5.00	3.3000	1.1286
12	Information introduced on time to decision makers.	20	2.00	5.00	4.1000	.8522
13	Information introduced (specific) speedily to decision makers	20	2.00	5.00	4.2000	.8944

We notice from the table number (4) that the attendance of the workers on the employees affairs system becomes positive, because the mean is larger than (3), except the paragraph number (4) which illustrate that the information that refers to the employees is computerized. Hence, great attention is needed on this subject. Also, all the employees data is inputted so as to obtain it, when it is needed in the decision making process.

Table (5): The Mean and the Standard deviation to Some Benefits of Applied Computerized System on Employees Affairs Department.

Seq.	Paragraph	Num	Minimum	Maximum	Mean	Std. Deviation
14	The benefit of computerizing employee's affairs system is to reduce the cost of the decision makers.	20	2.00	5.00	3.2000	1.1517
15	The benefit of computerizing employee's affairs system is to minimize errors by the decision makers.	20	2.00	5.00	3.2500	1.2085
16	The benefit of computerizing employee's affairs system is to assist the decision maker to ensure accuracy at work.	20	2.00	5.00	3.6500	1.1821
17	The benefit of computerizing employee's affairs system is	20	2.00	5.00	3.8500	1.1821

	to reduce the procedures required for the decision maker to accomplish the task.					
18	The benefit of computerizing employee's affairs system is to enable the decision makers accomplish the work speedily.	20	2.00	5.00	3.2500	1.2085
19	The benefit of computerizing employee's affairs system is to enable the decision maker organize and coordinate the work easily.	20	2.00	5.00	3.7000	1.2607
20	The benefit of computerizing employee's affairs system is to save the time and efforts of the decision maker.	20	2.00	5.00	3.0000	1.1698

By looking at table number (5), we notice that by viewing the employees on the Employees Affairs Department of Al-balqa Applied University, the use of computerize system inside the department was very beneficial. As noted, the mean to the paragraph number (17) have the highest value (3.8500). Thus, this demonstrates a greater value using computerized system to work in this department.

Table (6): The Mean and the Standard deviation to Some Drawbacks of Applied Computerized System on Employees Affairs Department.

Seq.	Paragraph	Num	Minimum	Maximum	Mean	Std. Deviation
21	The cost of computerizing the employee's affairs system is high.	20	2.00	5.00	3.4000	1.1877
22	Decision maker at the Employees Affairs Departments lack the experiences needed to	20	2.00	5.00	4.0500	0.9987

	computerized the system.					
23	A drawback of computerizing the employees affairs system is that decision maker are short of infrastructures.	20	2.00	5.00	2.9500	1.0990
24	organizational struggle made it impossible for decision maker to computerize the Employees Affairs Department	20	2.00	5.00	3.5500	1.2344

Table number (5) shows the limitations that faces the application of computerized system on Employees Affairs Department. Therefore, the limitations to the application of this system include: -

- Lack of experience in computer science.
- The high cost required to apply this system.
- Lack of infrastructures needed to apply this system.

Hypotheses Test

First Hypothesis

" The Employees Affairs Department at Al-Balqa Applied University / Al-Karak, do not apply the computerized system in handling employee's issue information. "

To test this hypothesis, the researcher used the Regression Coefficient. Thus, the results found are:

The Followed Variable*:* The computerized system applied on the Employees Affairs Department.

The Dependent Variables: The paragraphs (2-13) from the questionnaire.

Table (7): The Result of the ANOVA Test for the First Hypothesis Test

Model	Sum of Squares	DF	Mean Square	F	Sig.
Regression 1	21.572	12	1.798	2.528	0.113
Residual	4.978	7	0711		
Total	26.550	19			

By looking at table number (7) ,we notice the agreement of this first hypothesis. This is because the value computed F, is less than the value of F on the table, and the statistical level equal (0.113).

Second Hypothesis

" There are no differences with statistics signals between the demographics factors (sex, age, expertise, qualification) with an exact application to the computerize system on employee issue units".

Thus, the Regression Coefficient was used to test this hypothesis, and the results found are:

Table (8): The Results of the ANOVA Test for the Second Hypothesis Test

Model	**Sum of Squares**	**DF**	**Mean Square**	**F**	**Sig.**
Between Groups	4.752	1	4.752	3.924	0.63
Within Groups	21.798	18	1.211		
Total	**26.550**	**19**			
Model	**Sum of Squares**	**DF**	**Mean Square**	**F**	**Sig.**
Between Groups	33.675	2	1.838	1.366	.282
Within Groups	22.875	17	1.346		
Total	**26.550**	**19**			
Model	**Sum of Squares**	**DF**	**Mean Square**	**F**	**Sig.**
Between Groups	.776	2	.388	.256	.777
Within Groups	25.774	17	1.516		
Total	**26.550**	**19**			
Model	**Sum of Squares**	**DF**	**Mean Square**	**F**	**Sig.**
Between Groups	4.545E-03	1	4.545E-03	.003	0956
Within Groups	26.545	18	1.475		
Total	**26.550**	**19**			

By looking at table number (8), we notice the agreement of this hypothesis. This is because the value of computed F, is less than the value of F from the table, and the statistical level is greater than (0.005). Thus, we can say that there are no differences with statistics signals between the demographics factors (sex, age, expertise, qualification) with an exact application to the computerize system on employee issue units.

Third Hypothesis

" There are no limitations found in applying computerize system on the Employees Affairs Department at Al-Balqa Applied University / Al-Karak".

To test this hypothesis, we used the Regression Coefficient. However, the results found are:

The followed variable: The computerized system applied on the Employees Affairs Department.

The dependent variables: The paragraphs (21-24) from the questionnaire.

Table (9): The Result of the ANOVA Test for the Third Hypothesis Test

Model	Sum of Squares	DF	Mean Square	F	Sig.
Regression 1	5.743	4	1.436	1.035	0.422
Residual	20.807	15	1.387		
Total	**26.550**	**19**			

By looking at table number (9), we notice the agreement of this third hypothesis on the statistical level equal (0.422). This is because of the value of computed F (1.035).So we can say that there are numbers of benefits we can gain through the application of computerize system on Employees Affairs Department.

Fourth Hypothesis

" There are benefits exist by applying computerize system on Employees Affairs Department at Al-Balqa Applied University / Al-Karak "

To test this hypothesis, we used the Regression Coefficient. However, the results found are:

The followed variable: The computerized system applied on the Employees Affairs Department.

The dependent variables: The paragraphs (14-20) from the questionnaire.

Table (10): The Result of the ANOVA Test for the Fourth Hypothesis Test

Model	Sum of Squares	DF	Mean Square	F	Sig.
Regression 1	9.347	7	1.335	0.931	0.517
Residual	17.203	12	1.434		
Total	26.550	19			

By looking at table number (10), we notice the disagreement of this second hypothesis on the statistical level equal (0.517). This is because of the value of computed F (0.931). So, we can say that there are numbers of benefits we can gain through the application of computerize system on Employees Affairs Department.

Discussion of the Results

By interviewing the related people, analyzing the questionnaire results and handling it, it was observed that the employees affairs department at Al-Balqa Applied University uses a manual system in handling employee's information. However, this system can result to loss of information because they are paper document.There is no integrity, no security, and no adequate and precise information. However, this affects the decision-makers as well as the decision making process.

Conclusion

This final part of this study summarizes the research carried out, including the key finding and their implications. Thus, there are lots of recommendations which must be taken into considerations. These recommendation includes; developing the old system procedures, changing the old manual system into a computerized system, organizing training workshops for employees to develop and improve their skills, and giving privilege to employee. Furthermore, other recommendations include the protection of the infrastructure needed for the new system (Hardware, Software, Users, Servers, Network protocol etc.), and ensuring periodic maintenance of the system, keeping backups of the data in case of unforseen circumstances.

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