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## **Evaluating the Role of Management Information System Characteristics in Managerial Decision-Making: A Study of Mutah University**

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### **Abstract**

The study aims at identifying the impact of Management Information System (MIS) on the managerial decision-making process in Mu'tah University. The study uses the descriptive analytical approach to data collection and analysis purpose. The study sample included (69) employees at Mutah University from different administrative levels. The data were collected through a questionnaire prepared based on previous studies. The results showed a statistically significant impact of Management Information System characteristics (quality, flexibility, timely, accessibility) on the decision-making process. The results indicated that the timely is the most important characteristics that leads to good decisions.

### **Introduction**

Integrated management Information Systems (MIS) supports the process of providing information to handle managerial operations and decision-making process in an organization (Ajayi and Omirin, 2007). The continuous demand of organizations for MIS, includes universities, has led organizations to pay much attention in the characteristics of good quality software. MIS functions care in the process of collecting, processing, storing and producing relevant information to support the managerial operations in any organizations (Laudon and Laudon, 2009). Therefore, the process of decision-making extremely based on timeliness, relevant, accurate and accessible information. Researchers depicted the importance of MIS in decision-making as the concrete step for better decision-making (Ajayi and Omirin, 2007).

In Mutah University, the managerial units need to make decisions based on the connections of its different resources and information. Their decisions must completely agree to the educational environment. Thus, the good quality MIS provides is challenge to the process of decision-making. There are four basic characteristics of MIS to be good quality to Mutah University (MU): Quality, Flexibility, timely, and accessibility of the information used.

### **Problem Statement**

Mutah University employs different information system in their managerial departments. These kinds of systems need to be continuously modified in the light of the continuous changes in the university's progress. Many studies have pointed to the need for these systems to be more adaptive and compatible with the aspirations of decision-makers (Ajayi and Omirin, 2007). In view of the importance of the decision-making process, this study is intended to examine the shortcomings of existing systems so that they can be developed and improved. It is remarkable that students or employee needs to do many paper work and wait days for certain decision. In this context, this stimulate us to conduct a research for decision maker to evaluate the effectiveness of their operating MIS.

### **Research Questions**

This study aims to answer the following main question: what is the value and the role of MIS in managerial decision-making process at Mutah University?

The sub-questions are as follows:

1. To what extent, as managerial unit, do you trust information provided by Mutah MIS?
2. Does the higher administrative unit pay attention to improve the current management information?
3. Do the current integrated systems satisfy the increasing demand on effective managerial decision-making?

### **Objectives of the Study**

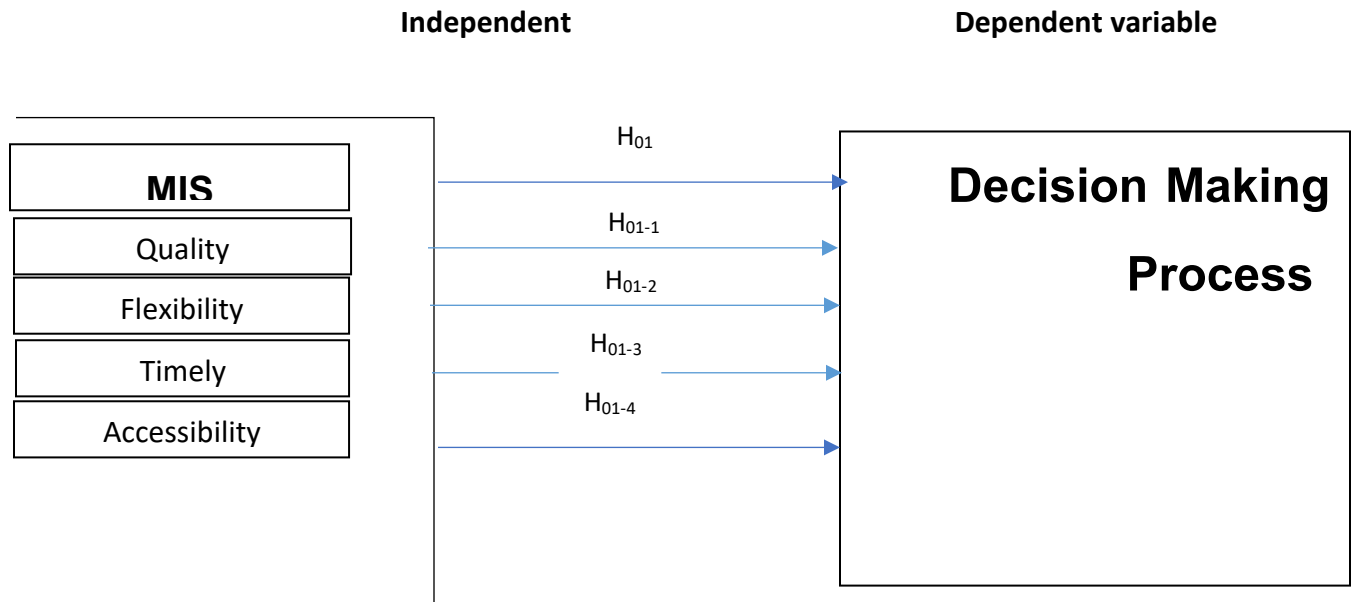
The context of this study aims at revealing the role of the current MIS adopted by Mutah University in the managerial decision-making process.

### **Significance of the Research**

There has been very little attention paid to evaluate MIS used in our governmental or private organization includes universities. It is so hoped that the study will provide a basis for recommendation design for the University administration to adopt competitive MIS.

### **Research Model and Hypothesis**

This study aims to evaluate the role of MIS in the decision-making process at Mutah University. The study defines the following model to answer the main and secondary questions.



### Research Hypotheses

The research theorizes the following main hypothesis:

H<sub>01</sub>: There is no significant impact of MIS on the process of decision-making at significant level ( $\alpha \leq 0.05$ ).

The sub-hypotheses are as follows:

H<sub>01-1</sub>: Quality of information has no significant impact on the decision-making process.

H<sub>01-2</sub>: The Flexibility of information has no significant impact on the decision-making process.

H<sub>01-3</sub>: Timely information has no significant impact on the decision-making process.

H<sub>01-4</sub>: The accessibility of information has no significant impact on the decision-making process.

### Literature Review

Numerous number of studies examined the role of management information system in different organization and the association with decision-making process. However, a few of them have investigated the role of management information system and the association with decision-making process in universities context.

A Management Information System (MIS) is an effective tool to achieve the objectives the business organizations covering the application of people, documents, technologies, and procedures by management accountants to solve business problems such as decision-making, costing a product, service or a business-wide strategy. Information technology and information system are two coupled concepts, but they are different. Information technology (IT) refer to the hardware, products, methods, inventions, and protocols that are used for the purpose of producing and processing information. IT refers to the hardware, software, and data components, whereas information system (IS) is an umbrella of hardware, software, data, procedures, and people that produces information (AL-Gharaibeh & Malkawi, 2013). Effectiveness is a systematic process for improving organizational performance by developing the performance of individuals and teams. It is a means of getting better results by understanding and managing performance

within an agreed framework of well-structured decision-making process, planned goals, standard and competency requirements.

The objective of management information system (MIS) is to manipulate data, processing, organizing and retrieving of the information that assist the organization to enhance its competitive advantages. (AL-Gharaibeh & Malkawi, 2013). The revolution in information technology has significantly affect the concept of business and created competitive advantages for those who are eager to counter business challenges. The exploitation of IT has affected the value and substance of information, decision making no exception. The emergence of global markets and extended market has made possible voluminous and cross-border transactions being carried out. This development encouraged a firm to employee intelligent and expert systems to ensure that efficacy of decision-making process.

Decision Support Systems are Information system that assist managers to perform decision-making activities. It is a software-based system designed to help decision makers with providing easy data flow and useful information from raw data, documents, personal knowledge, and/or business models to identify and solve problems and make decisions.

The relationship between information system and decision-making is a major subject in the employment of information system (IS). The main objective of information systems is assisting decision makers by providing accurate and timely information helping them in making the right decisions in turbulent environment. A successful organization nowadays depends heavily on information systems to improve its business. On the other hand, achieving its goals and benefits. Management Information Systems supports the decision-making process in both structured and unstructured problem environments. IS consisted of computers, People, procedures, databases, interactive query facilities ...etc.

Nowadays, Information is considered as a most important ingredient for success decision-making. Due to the importance of information in decision making, a developed system has emerged to serve the appropriate information's to managers for good decision-making process; called information system. Such systems as DSS, MIS, TPS.

### **Management Information Roles**

Management Information Systems (SISs) are Information Systems that are aligned with business strategy and structure. The alignment increases the capability to respond faster to environmental changes and thus creates a competitive advantage. Laudon asserts that SISs often change the organization as well as its products, services and operating procedures, driving the organization into new behavioral patterns. Successfully using Information systems (ISs) to achieve competitive advantage is challenging and requires precise coordination of technology, organization and management. An early example was the favorable position afforded by American and United Airlines by their reservation systems, Sabre and Apollo. For many years, these two systems ensured that the two carriers' flights appeared on the first screens observed by travel agents, thus increasing their bookings relative to competitors. A major source of controversy surrounding SISs is their sustainability.

The competitive advantages SISs confer do not necessarily last long enough to ensure long-term profitability. Because competitors can retaliate and copy strategic systems, competitive advantage is not always sustainable. Markets, customer expectations and technology change; globalization has made these changes even more rapid and unpredictable.

The Internet can make competitive advantage disappear very quickly because virtually all companies can use this technology. (Laudon & Laudon, 2007). Management Information Systems (SISs) are systems used to manage information and assist in strategic decision-making. A Management Information system has been defined as, "The information system to support or change enterprise's strategy." (Wiseman, 1985). Porter (1985) devotes a significant part of his competitive advantage: creating and sustaining superior performance, to the ways in which technology in general, and information technology in particular, can have an impact upon competitive advantage.

Al-Dhmour, Yousef (2010) "*Evaluation of the Role of Management Information System in Administrative Decision-Making at the University of Jordan* Evaluation of the Role of Management Information System in Administrative Decision-Making at the University of Jordan". The study aimed to explore the subject of management information system in general, and assess the role of the employed information systems in administrative decision making at the University of Jordan. In addition, the study investigated the relationship between MIS and quality of information to administrative decision making. The study found that the relationship between MIS and quality of information contribute was positive. Which means that good quality management information system leads to good decision.

Study by Alkhaffaf (2012) "The Role of Information Systems in Decision Making: The case of Jordan Bank" identified the types of computer based information systems that is used in the Bank. The study used empirical study and a structured questionnaire. The study found a positive correlation between information systems and the process of decision-making. In addition, the result showed that the Jordan bank relies heavily on a number of technologies used by IS to implement their key activities.

Another study by Khresat (2015)" The Effect of Management Information System on Organizational Performance: Applied Study on Jordanian Telecommunication Companies ". The study examined the reality of management information system and organizational performance, and investigated the relationship between management information system and organizational performance in Jordan. The study applied on all telecommunication companies located in Amman city, a sample of (100) employees from (10) branches of telecommunication companies was selected randomly for this study. The study revealed that employees in Jordanian telecommunication companies have positive attitudes towards management information system (MIS). In addition, the study result found that there is a statistical significant association between management information system and organizational performance in telecommunication companies in Jordan.

Ait Yassine (2017) conducted a study "The Role of Management Information Systems in the Effectiveness of Managerial Decision Making in Greater Irbid Municipality" to identify the effectiveness of using management information systems in managerial decision making in greater Irbid Municipality. The analysis of the study instruments and its hypotheses revealed a set of results, most importantly the followings:

- Management information systems have a medium to high effectiveness role in greater Irbid municipality.

- Management information systems have a role in providing the required information to make managerial decision that their degree of convenience range from moderate to high.
- There is a relationship between the uses of management information systems and the effectiveness of managerial decision making.
- Improving management information systems influences the effectiveness of managerial decision-making.

AL-Gharaibeh & Malkawi (2013) examined “The impact of management information systems (MIS) on the performance of governmental organizations, Jordanian Ministry of Planning – case study”. The study sample included (77) employees in the ministry, the study presented that, first, there is no association between software and hardware and the performance of governmental organizations, second, there is a significant association between networks, individuals and procedures, and management information system as a whole and the performance of governmental organizations.

Boonmak Study (2007) “The Influence of Management Information System and Information Technology on Management Performance and Satisfaction”. The study aimed to investigate the relationship between management information systems and the firm of performance and business strategy. A sample of (170) executive managers, who work in various business firms, were examined. Questionnaire instrument was used to evaluate firm performance and business strategy. The analysis found that Management information systems and IT enhance firm performance and business strategy. Furthermore, the study induced that the more volume of information (MIS) needed, the more advanced the MIS should be provided. In addition, business strategy will be more effective if organizations have enough and more reliable IT. The more employed of reliable IT and information (MIS) provided, the more successful firm performance is. IT can enhance and help increasing the efficiency and effectiveness of firm performance.

Asemi (2011) “The Role of Management Information System (MIS) and Decision Support System (DSS) for Manager’s Decision-Making Process.” The study aimed to explore the different trends of information systems such as TPS, DAS, KWS, MIS, DSS, ES, CSCWS, GDSS and ESS and it’s in the decision-making process. In this study, the authors selected two main information systems, namely, MIS and DSS. Afterward, the study discussed the decision-making process based on each concept, its characteristics, relations, connections of each concept to decision-making process have been determined.

It was found that MIS is best suited to identify problems and help management to understand them to make suitable decisions. On the other hand, DSS are tailored to the specific need of individual and group managers. Therefore, result showed that DSS can extend its support to the same steps of decision-making process and has more roles in decision-making and problem solving than MIS.

## Methodology

This study used the descriptive research based on the method of collecting the data from the targeted participants. The study employs a questionnaire with (69) closed-end questions based on Likart multiple-item measurement scales. Management Information System variable covered by (20) questions designed to evaluate Management information system Quality, flexibility, accessibility and timely as well as) 10) questions are designed to evaluate decision -

making process. The (30) items were measured by a five-point Likert scale, strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly disagree (5). The study used SPSS 20 for analyzing the data and several tests have been applied to test research hypotheses.

### Participants

The data was collected from Mutah University employees at different management level. The researchers administrated (100) questionnaires to employees that they were selected from different managerial levels. The respondents returned back only (69) questionnaires that were proper for analysis. The overall response rate was (69%) that represents the sample size of the present study.

### Study Instruments

The study instruments consisted of five parts with (30) items. First, (8) items to evaluate the conceptual response of participants to the importance and contribution of information quality. Second, (7) items to measure the importance and impact of flexible information system on decision-making process. Third, (5) items to measure the effect of timely characteristic on the decision-making process. Finally, (10) items to measure the decision-making process rating and its procedures.

To be more accurate and to ensure the correctness of responses, the researcher translated the study instruments to Arabic, as the participant's mother language is not English. See appendix.

### Reliability of the Study

For ensuring the reliability of the study instrument; the researchers applied Cronbach's Alpha test. The coefficient alpha ranges in values from zero (no reliability) to one (perfect reliability). Table (1) shows the retrieved coefficients.

Table (1). Cronbach's alpha for reliability

Variable	Cronbach's alpha
Information System	0.81
Decision Making Process	0.89
Whole Instruments	0.84

Table (1) shows the Cronbach's alpha coefficients. The results indicate that the used instrument is reliable to measure the variables under investigation. Cronbach's alpha level at (0.81), (0.89) and (0.84) for information system, decision-making and the whole instruments respectively proved the reliability of study instrument.

### Descriptive Statistics Analysis

The descriptive analysis includes the mean, standard deviation, t value, sig and the rank for priority order of the study variables. Tables below shows the result of descriptive analysis for independent and dependent variables.



Table (2) Management Information System Descriptive Statistics

Variable	Mean	Std. Deviation	t	Sig	Rank
Quality	4.10	0.78	7.23	0.000	2
Flexibility	3.96	0.75	6.23	0.000	3
Timely	2.99	0.85	4.21	0.000	4
Accessibility	4.20	0.84	4.25	0.002	1
MIS	4.13	0.23	5.32	0.000	

Table (2) shows the descriptive analysis of Management Information system attributes. The results reveal that the respondents assured an overall mean level at (4.13) in rating MIS, Quality (4.10), flexibility (3.96) timely (2.99) and accessibility (4.20). The overall mean average of Management Information System evaluation is (4.13). The results show that Mu'tah University attaches a great importance to deploy an effective MIS.

The significance value of the Four dimensions of independent variable dimension is less than (0.05), thus the independent variable, MIS is statistically significance in predicting how the Quality of information, flexible, timely and accessible affect decision -making process effectiveness.

Table (3) Decision -making process

Variable	Mean	Std.Deviation	t	Sig
Decision making process	4.23	0.85	6.36	0.000

Table (3) presents the descriptive analysis of decision -making implementation. The results revealed that respondents have a mean level at (4.23) in rating the decision-making process procedures. This indicates that Mutah University has a high degree of consecration to make good and successful decisions.

### Analysis of Study Hypotheses

To test the significance of the first main hypothesis, which states that "there is no statistically significant impact at the level of significance (0.05) of Management Information System dimensions (Quality, Flexibility, Timely and accessibility) on Decision-making effectiveness"; the researchers conducted multiple regression analysis as shown in Table (3).

Table (4). Result of multiple regression analysis of the impact of MIS on Decision-Making process

Variable	R	R <sup>2</sup>	Sig	F	B	Beta	T	Sig
Quality	0.803	0.77	0.001	13.78	0.237	0.224	2.501	0.014
Flexibility					0.307	0.266	2.778	0.006
Timely					0.208	0.208	2.452	0.016
Accessibility					0.236	0.325	2.36	0.012

Table (3) shows that the employment of management information system explains (77%) of the variance of decision -making process effectiveness as characterized by (R<sup>2</sup>). This implies

that there are other elements contribute (23%) in the decision -making process effectiveness. At (5%) level of significance, the calculated F is (13.78), which explains that the overall model is significant. Consequently, the null hypothesis is rejected and the alternative is accepted, which states “there is a statistically significant impact of Management information system on decision -making process effectiveness”.

For in depth analysis and to test the sub –hypothesis, the Least Significant Difference (LSD) was used as post hoc test. Table (3) shows the result of LSD test.

Table (5) Post Hoc LSD test.

Sig priority	Dimension	Mean Difference	Sig
Timely	Quality	5.32	0.001
	Flexibility	3.59	0.01
	Timely	0.00	0.000
	Accessibility	3.25	0.003

Table (4) indicates that the mean differences is (5.32, 3.89 and 3.25) between responses to quality, flexibility and accessibility attributes and between timely respectively. The differences are significant at the level ( $p \leq 0.05$ ) in favor to timely attribute. This indicates that timely attribute of MIS is the most important characteristics of effective decision-making process.

Furthermore, table (2) shows that there is a statically significant impact of quality of information on decision-making procedures at a level less than (0.05). This leads to reject the first sup-hypothesis and accept the alternative one which states, “There is significant impact of quality of information on decision making process”. In addition, table (2) shows that there is a statically significant impact of flexibility on decision-making process at a level less than (0.05). This implies to reject the second sup-hypothesis and accept the alternative one that states, “There is significant impact of flexibility on decision making effectiveness. As for timely, table (2) shows that there is a statically significant impact of timely MIS on decision-making process at a level less than (0.05). This implies to reject the third sup-hypothesis and accept the alternative one that states, “There is significant impact of timely information on decision making effectiveness. Finally, table (2) shows that there is a statically significant impact of MIS accessibility on decision-making process at a level less than (0.05). Thus, the third sup-hypothesis is rejected and accept the alternative one that states, “There is significant impact of the accessibility of information on decision making effectiveness.

## Conclusion

The results found that there is a positive correlation along with a statistically significant impact of Management information system on decision -making process effectiveness. The results concluded that timely attribute was the most important factor supporting the procedures of decision -making process. On the other hand, the attribute of quality, flexibility and accessibility had a significant impact on the process of decision making, however less than timely.

Therefore, Mutah University needs for investing more in MIS to improve the decision-making effectiveness. The effective decision-making process is a significant objective of all

management activities as well as it has been a central concept in overcoming education changes and demands.

### Recommendations

- 1- It is essential for Mutah University to keep in line with developments in technology, information, and communications in order to improve their MIS and consequently the decision-making process.
- 2- The need to employ high quality, flexible, timely and accessible MIS which is integrated with variety of information systems to increase the effectiveness of the decision-making process.
- 3- Conduct similar studies on integrated MIS systems for enhancing both strategic and tactical decisions.

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