
The Impact of Management Information Systems on Managerial Decision-Making: A Case Study of the Directorate of Treasury, Herat Province

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ABSTRACT

In the age of technology and the need for speed and precision in making timely decisions, Management Information Systems (MIS) have become a must have for managers. Despite the importance of decision-making in the success of the organization, problems like poor data integrity, tardiness in access to information and problems with data processing ability can affect the quality of management decisions. This study aimed to investigate the impact of the components of MIS on improving managerial decision making in the Directorate of Treasury of Herat province, namely information collection, information storage and information retrieval. The study was an applied research using quantitative descriptive-correlational method. This was done because the statistical population was 247 employees and 130 employees were selected by stratified sampling. The data was collected using a standardized Management Information Systems (MIS) questionnaire, and a Likert scale decision making questionnaire. Descriptive and inferential statistics were used for analysing the data in SPSS. The results showed that MIS had a positive and significant influence on managerial decision making ($\beta = 0.566$, $p < .001$). In addition, information collection ($\beta = 0.487$), information storage ($\beta = 0.427$) and information retrieval ($\beta = 0.484$) all had positive and significant relationships with improved decision-making. To summarize, it has been shown that a well-structured MIS can help managers to make better decisions and in addition enhance the efficiency of the organization by giving it the relevant, timely and reliable information.

KEYWORDS: Management Information System (MIS), Information Collection, Information Storage, Information Retrieval, Managerial Decision-Making

1. INTRODUCTION

In today's world, organizations work in settings where decisions are increasingly made in a more complex manner than before. Managers need accurate information that is complete and timely to plan, organize, direct

and control activities. In many institutions, however, information exists in disorganized, non-centralized and fragmented ways. Therefore, the manager is faced with lots of data which are not very useful for processing the decision-making process, and may even diminish the quality of the decision. This is why the concept of Management Information Systems (MIS) has been growing in importance over the past few years as it enables organizations to gather, process, store and deliver information as and when needed by the managers (Singh & Sharma, 2018). A Management Information System (MIS) is a combination of people, procedures, databases and technology that supports managers and decision makers in obtaining information to accomplish organizational objectives (Stair & Reynolds, 2021).

The information is constantly needed by the Directorate of Treasury of Herat Province, which does financial administration and prepares financial reports, to have accurate and reliable information. Financial and organizational information is an important input to decisions in this institution. Hence, the quality and availability of information is critical for managerial decisions (Ardaningsi et al., 2023). The lack of standardized MIS in the Treasury has created several difficulties such as: low efficiency, poor quality of work, time is wasted on collecting information, high costs of gathering data on time and of good quality, and poor efficiency (Yamoah et al., 2024).

Based on the above, the general objective of this study is to explore the effect of Management Information Systems on the enhancement of managerial decision-making at the Directorate of Treasury in Herat Province. This study also explores the impact of information collection, information storage, and information retrieval on managerial decision-making.

The main research question formulated in the study is: What are the effects of Management Information Systems on managerial decision-making in the Directorate of Treasury of Herat Province? The sub. Questions are: What impact does information collection have on managerial decision-making, what impact does information storage have on managerial decision-making? What impact does information retrieval have on managerial decision-making?

The overall hypothesis of the study is: Management Information Systems positively and significantly affect managerial decision-making. Moreover, there is a positive and significant impact of each of the three components, information collection, information storage and information retrieval, on managerial decision-making expected. Thus, this study is done under the premise that Management Information Systems are very useful for improving the quality of managerial decisions and that the purpose of this study is to explore the role

of Management Information Systems in improving the managerial decision in Directorate of Treasury of Herat Province.

1.1 Research Problem

Managerial decision-making is dependent on accurate, timely, complete and reliable information. A Management Information Systems (MIS) helps managers gather, store, process and retrieve information needed for activities in the organization. However, weaknesses in information management can cause delays, information gaps, increased costs, and reduced decision-making effectiveness (Biswas et al., 2024; Souza et al., 2024).

The Directorate of Treasury of Herat Province needs to continuously access accurate and up-to-date administrative and financial information. However, problems associated with information collection, storage, and retrieval can impact efficiency, timely and quality management decisions.

While some studies have investigated MIS and decision-making, little research has been conducted on the individual impacts of information collection, information storage and information retrieval in the Public Financial Institutions (PFIs) in Afghanistan. Thus, the present study focuses on the effect of MIS and its three main elements on managerial decision-making in the Directorate of Treasury of Herat Province.

1.2 Research Questions

1.2.1 Main Research Question

- What contribution can the Management Information Systems make to the management decision-making at the Directorate of Treasury of Herat Province?

1.2.2 Sub-Research Questions

1. How information collection affects managerial decision-making of the Directorate of Treasury of Herat Province?
2. How does the storage of information affect the managerial decision-making in the Directorate of Treasury of Herat Province?
3. How information retrieval affects managerial decision-making in the Directorate of Treasury of Herat Province?

1.3 Research Objectives**1.3.1 General Objective**

The overall aim of this study is to analyze the effect of Management Information Systems to support managerial decision-making at the Directorate of Treasury of Herat Province.

1.3.2 Specific Objectives

- To investigate the effects of Management Information Systems on managerial decision making in the Directorate of Treasury of Herat Province.
- To find the impact of gathering information on managerial decision-making.
- To assess the effect of information storage on managerial decision-making.
- To investigate the impact of information retrieval on managerial decision-making.
- Identify the importance of proper and timely information with regard to supportive managerial decision-making in the Directorate of Treasury of Herat Province.

1.4 Research Hypotheses**1.4.1 Main Hypothesis**

H1: Management Information Systems positively and significantly influence Managerial Decision-Making at the Directorate of Treasury of Herat Province.

1.4.2 Sub-Hypotheses

H1a: Collection of information positively and significantly influences managerial decision-making.

H2b: Information storage is positively correlated with managers' decision-making.

H1c: There is a positive statistically significant impact of information retrieval on managerial decision-making.

1.5 Significance of the Research

The contribution of this research is that the role of Management Information Systems in enhancing managerial decision-making in public financial institutions in Afghanistan has been studied. The Directorate of Treasury of Herat Province is in charge of many financial and administrative functions and for this reason it is very important to have accurate, timely and reliable information to make quality decisions.

In practice, this study's results can help the Directorate of Treasury to determine the value of enhancing its Management Information Systems. Improvements in information collection, in developing organized and secure information storage systems and in strengthening electronic information retrieval can help managers to have access to relevant information faster and take better decisions.

In terms of organizational structure, successful MIS can help enhance the quality and timeliness of decision-making, the reduction of time spent seeking information, error reduction, and administrative efficiency. The results of the study indicated that MIS has a positive and statistically significant impact on managerial decision-making and information collection, storage and retrieval also have positive and significant impacts.

Academically, the study makes a contribution to the little existing research on Management Information Systems and managerial decision-making in public-sector institutions in Afghanistan. It also fills a gap in the research by investigating how the three aspects of MIS (information collection, information storage, and information retrieval) are related to managerial decision-making in a public financial institution.

Finally, the study can serve as a reference for future researchers, public sector managers and policymakers in an effort to enhance information management, administrative efficiency and evidence-based decision-making in public institutions in Afghanistan.

2. LITERATURE REVIEW

The contribution of Management Information Systems (MIS) to the enhancement of organizational performance has been broadly studied, and the results have been quite consistent: MIS is important in improving the efficiency and effectiveness in the organization. In fact, Abdullah Kiani's study titled "Investigating the Barriers to the Implementation of Management Information Systems in the Directorate of Treasury of Herat Province," determined the highest barriers to be environmental, economic, structural, technical and managerial and revealed that the obstacles can significantly impact the effectiveness of the system. Similarly, in his research, entitled "Examining the Relationship between Management Information Systems and Employee Efficiency at Herat University," Basir Ahmad Walizadah (2017) found that there is a positive and relatively strong relationship between MIS and employee efficiency at Herat University. The main hypothesis of the researcher was confirmed from the results obtained. Internationally, there are also some studies that highlight the role of MIS in decision-making. Al-Mamary et al. (2014) showed that the MIS enhances information quality, faster information accessibility and better managerial decisions. In the study carried out at the Faculty of Nursing, University of Maysan, Kadim (2022), it found that MIS has a significant effect on administrative

decision-making, and the effectiveness of information provided by the system affects the performance of managerial activities. Similarly, Bhandari (2023) highlighted the importance of MIS in educational institutions, stressing its role in supporting decision-making and providing managers with the necessary information. In a more recent study, Souza et al. (2024) have concluded that MIS can contribute to the decision-making process in organizations through data-driven decisions and facilitate communication and collaboration between the members of an organization. Moreover, Laudon and Laudon (2020) claimed that MIS enables gathering, processing, storing and retrieving of information, which improves managerial decision-making in accuracy and speed.

The overall findings of these studies are very similar and indicate the positive impact of MIS on organizational performance, efficiency of the employees and managers' decision-making, but they vary in terms of the organizational context. The barriers to implementation in the Directorate of Treasury of Herat Province were studied by Kiani, and Walizadah focused on the effect of MIS on employee efficiency in the Herat University. On the other hand, the international studies carried out by Al-Mamary, Kadim, Bhandari and Souza were more direct studies related to the relationship between MIS and decision-making. But most of these studies were conducted in universities or other organizational environments and no study has been specifically conducted on the effect of information collection, storage and retrieval components of MIS on the managerial decision-making in public financial institutions in Afghanistan.

The present study aims to fill this gap and analyses the role of MIS as well as the principal components of MIS, including information collection, information storage and information retrieval, in the context of managing decision-making at the Directorate of Treasury of Herat Province.

2.1 Definition and Concept of Management Information Systems

A Management Information System (MIS) or simply MIS is a collection of interrelated components that are used to gather, process, store, and distribute information to facilitate decision-making and control in an organization (Laudon & Laudon, 2020).

Also, O'Brien & Marakas (2011) defined a Management Information System as "an organized combination of people, hardware, software, communication networks, and databases that is used for collecting, processing and distributing information within an organization."

Information Collection the Management Information System supplies managers of organizations with accurate and timely information and also helps the organization to collect and analyze information correctly within a short time (Sarлак & Farati, 2013).

Information Storage: Management Information System provides information storage and thus information is made accessible to the managers of an organization in the shortest possible time. This helps to avoid organizational confusion, while also helping managers to locate information as fast as they can (Sarлак & Farati, 2013).

The Management Information System (MIS) is an informational tool that helps managers in organizations to access relevant and timely information accurately (Sarлак & Farati, 2013).

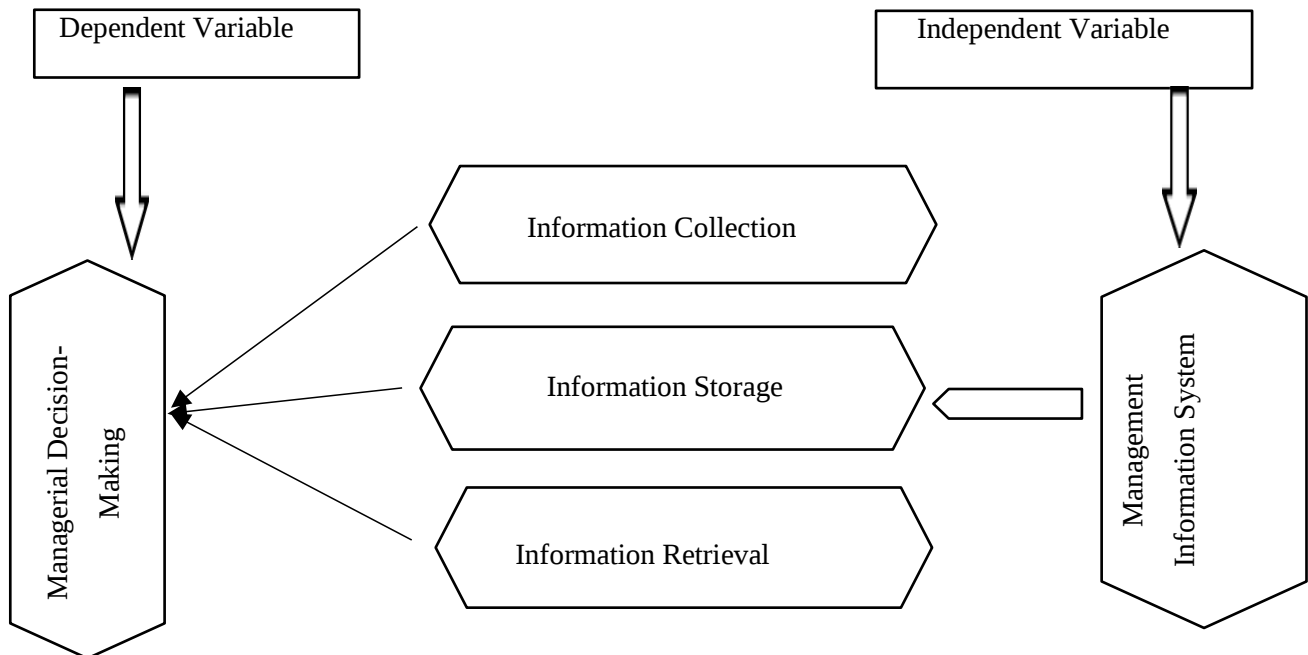
2.2 Definition and Concept of Decision-Making

Decision-making is the activity by which the manager identifies a problem, evaluates alternative solutions and chooses the best solution for implementation (Daft, 2022; Elgendy et al., 2023; Powell et al., 2022).

It is also described as a cognitive and social process which involves consideration of alternatives, individuals' preferences, and environmental factors and which affects the success or failure rate of organizations (Thakkar, 2021).

2.3 Conceptual Framework of the Study

Theoretical or conceptual framework for research is conceptual models. They help to structure and communicate research results and are a vital part of the theoretical framework of a study. Typically, theoretical frameworks are created around a series of interrelated concepts and constructs. Thus, the conceptual framework in the present study is composed of two variables: an independent variable and a dependent variable. The independent variable is the Management Information System (MIS) that includes three components: information collection, information storage, and information retrieval. Managerial decision-making is the dependent variable. The components of a Management Information System affect and impact managerial decision-making in the organization and thus aid in its improvement.



Source: Sarlak & Forati, 2013

3. RESEARCH METHODOLOGY

3.1 Research Method

This study was applied research using a quantitative, descriptive-correlational method. It explored the impact of Management Information Systems on managerial decision-making.

3.2 Population

The study employed a total population of 247 employees at administrative level (3, 4 and 5) of the Directorate of Treasury in Herat province.

3.3 Sample and Sampling Method

Stratified sampling was used to select a sample of 130 employees from the population. Administrative grades of employees were used to classify the employees and the required number of participants were taken from each class.

3.4 Research Instruments

Structured questionnaires were used in collecting data. The questionnaire for the independent variable, Management Information Systems, was taken from Brown et al. (2005). The questionnaire developed for the

dependent variable (managerial decision-making) was adapted from Ohana et al. (2013). A Likert scale was used for the questionnaires.

3.5 Validity and Reliability

Several senior professors of the University of Herat gave their approval to the questionnaires to validate the same. Cronbach alpha was used to test their reliability and was found to be 0.907. This result shows that the questionnaires had good reliability.

3.6 Data Collection Procedure

Questionnaires were sent to those who were chosen. The questionnaires were then retrieved, coded and ready for statistical analysis once completed.

3.7 Data Analysis

In this study, the data were analyzed using SPSS version 27. The data were summarized using descriptive statistics and regression analysis was used to investigate the influence of Management Information Systems on managerial decision-making.

3.8 Ethical Considerations

The information gathered was for academic purposes only and the confidentiality of the information was respected. Participants' information and responses were maintained.

3.9 Reliability of the Questionnaires

Table 1: Cronbach's Alpha Reliability Test

Cronbach's Alpha	N of Items
0.907	24

Table 1 presents the Cronbach's Alpha reliability coefficient of the questionnaires. The results indicate that the questionnaires demonstrated strong and acceptable reliability, with a Cronbach's Alpha coefficient of 0.907.

4. RESULT AND DISCUSSION

Table 2: Demographic Characteristics of the Respondents

Total	More than 40 years		31–40 Years	21–30 Years	Less than 20 Years	Age
100%	11%		40%	44 %	5%	Percentage
130	14		52	57	7	Frequency
Total	Doctoral Degree	Master's Degree	Bachelor's Degree	Religious Education	High School Diploma	Education
% 100	0%	16%	75%	0%	9%	Percentage
130	0	21	98	0	11	Frequency
Total	More than 20 Years	16–20 Years	11–15 Years	6–10 Years	Less than 5 Years	Work Experience
100%	2%	15%	34%	31%	18%	Percentage
130	3	19	44	40	24	Frequency
Third Position Grade		Fourth Position Grade		Fifth Position Grade		Job Grade
3 %		22 %		75 %		Percentage
4		28		98		Frequency

The total number of respondents, according to the demographic data presented, was 130 as shown in Table 2. When it came to age, the highest percentage were from the 21–30-year-old group with 44% (57 respondents) making up the largest proportion of the sample. The age group, 31 to 40 years, was the next highest with 40% (52 respondents) of the participants. In addition, 11 percent (14 respondents) were over 40 years old, and just 5 percent (7 respondents) were under 20 years old. In terms of educational level, the study results showed that the majority of respondents were those who obtained their Bachelor's degree (98 respondents or 75%). Also, 16% (21 respondents) held a Master's degree and 9% (11 respondents) had a High School Diploma. None of the respondents had religious education qualifications or any other academic qualifications. In terms of work

experience, 34% (44 respondents) of the total sample had between 11 and 15 years of experience, making it their highest number. Employees who had 6–10 years' experience made up the next largest group at 31% (40 respondents). Moreover, 18% (24 respondents) had less than 5 years of work experience, while 15% (19 respondents) had between 16 and 20 years of service. 3 respondents had over 20 years' experience, making up only 2%. As for job grade, the highest percentage of respondents were in Grade 5 Positions with a percentage of 75%. This was followed by Grade 4 Positions (22%) and Grade 3 Positions (3%) of the total sample. The overall demographic data suggest that the majority of respondents were relatively young workers with Bachelor's degrees, and with moderate working experience within the organization, primarily working at Grade 5 and Grade 4 levels within the organization.

4.1 Hypothesis Testing

Table 3: Main Hypothesis

	Independent Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	Management	12.571	1.998		6.290	.000
	Information					
	System	.262	.034	.566	7.712	.000

Dependent Variable: Managerial Decision-Making

The statistical analysis of the effect of Management Information Systems on managerial decision-making was carried out using linear regression analysis in SPSS software. The results showed that the regression coefficient is positive and the standardized regression coefficient (β) value is 0.566 (56.6%). Thus, at a statistical level, Management Information Systems positively, significantly and directly influence managerial decision-making. In addition, the calculated significance level was 0.000, which is less than 0.01. Based on this, it can be concluded that with 99% confidence that Management Information Systems have a positive statistically significant, moderately strong effect on managerial decision-making. Therefore, the main hypothesis of the study is supported.

Table 4: First Sub-Hypothesis

Interpretation of the First Sub-Hypothesis		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	Information Collection	15.116	2.051		7.369	0.000
		0.635	0.101	0.487	6.263	0.000

Dependent Variable: Managerial Decision-Making

In order to analyze the effect of information collection on information managerial decision-making, a linear regression analysis was performed using SPSS software. The findings showed that the variables Information Collection and managerial decision-making had a positive regression coefficient, beta coefficient or standardized coefficient ($\beta = 0.487$), which suggested a direct relationship between the two variables. Thus, based on statistical considerations, Information Collection has a positive, significant, and direct influence on managerial decision-making. In addition, the significance value was determined to be 0.000, which is below the significance value of 0.01. Hence, it is concluded with a high level of certainty that Information Collection has a positive and statistically significant moderately high impact on managerial decision making with a 99% confidence level. Based on this, the first sub-hypothesis of the study is accepted.

Table 5: Second Sub-Hypothesis

Interpretation of the Second Sub-Hypothesis		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	Information Storage	20.021	1.506		13.292	0.000
		0.475	0.090	0.427	5.299	0.000

Dependent Variable: Managerial Decision-Making

For the analysis of the effect of Information Storage on managerial decision-making, a linear regression analysis has been carried out in SPSS software. The results showed a positive regression coefficient and standardized regression coefficient (β) of 0.427, which means there is a positive relationship between Information Storage and managerial decision-making. Thus, there is a positive, significant and direct relationship between

Information Storage and managerial decision-making statistically. Besides this, the significance value was determined to be 0.000, which was less than the significance level (0.01). Based on this, it can be concluded that, with 99% confidence, Information Storage is positively and statistically significant and also moderately strong in affecting managerial decision-making. Thus, the second sub-hypothesis of the study is confirmed.

Table 6: Third Sub-Hypothesis

Interpretation of the Third Sub-Hypothesis		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	Information	17.025	1.767		9.635	0.000
	Retrieval	0.670	0.108	0.484	6.204	0.000

Dependent Variable: Managerial Decision-Making

The impact of Information Retrieval on managerial decisions was analyzed by using SPSS software in the form of linear regression analysis. The results showed that when the Information Retrieval variable is increased, the managerial decision-making variable is also increased and the standardized coefficient (β) was 0.484. Thus, based on the statistical perspective, Information Retrieval has a positive, significant and direct effect on managerial decision-making. In addition, the value of significance was obtained to be 0.000, which is less than the 0.01 significance level. Thus, it may be inferred from the results with 99% confidence that Information Retrieval has a positive, statistically significant and moderately strong effect on managerial decision-making. Thus, the third sub-hypothesis of the study is accepted.

4.2 DISCUSSION

Based on the findings of the present study, Management Information Systems (MIS) have a positive and statistically significant effect on managerial decision-making at the Directorate of Treasury of Herat Province. The statistical results showed that the regression coefficient was 0.566 and the p-value was 0.000, which means the regression model had a direct, positive and significant relationship between the variables of Management Information Systems and managerial decision-making. These results indicate that the application of MIS can actually contribute to better quality managerial decision-making if it can present the information needed in managerial decision-making, and provide it in a timely and reliable manner. The results of this study are in line with the previous study. For instance, Kiani has shown that the implementation of Management Information Systems is affected by technical, managerial and structural factors and the use of MIS can improve

organizational efficiency. Likewise, the present study results corroborate the findings of Walizada who found that there was a positive and significant relationship between the use of Management Information Systems and employee efficiency, which indicates that Management Information Systems usage can enhance employee efficiency and, in turn, increase employee productivity. Besides, the results corroborate the result of Al-Mamary et al. which stated that MIS has contributed substantially to improving the quality of managerial decisions by improving information quality, increasing speed of information accessibility and giving the manager the information needed for managerial decisions. Furthermore, the findings of the present study are supportive of those of Loudon and Laudon, who had mentioned that Management Information Systems are useful in collecting, processing, storing and retrieving data.

Provide information which allows managers to access information quickly and easily, and therefore make their decisions more accurate and timely. Thus, it is concluded that the results of this study are in line with the previous empirical studies and reveal the positive and significant effect of the use of Management Information Systems on improving managerial decision-making in the Directorate of Treasury of Herat Province. The findings show that Management Information Systems development and strengthening can contribute significantly to the improvement of decision quality, organizational efficiency and managerial performance in public sector institutions.

5. CONCLUSION

The result of the present study showed that Management Information Systems (MIS) have a positive, direct and statistically significant contribution to the improvement of managerial decision-making at the Directorate of Treasury of Herat Province. It can be seen from the results of the linear regression analysis that the independent variable (Management Information Systems) could explain a significant portion of the variation in the dependent variable (managerial decision-making). The regression coefficient ($\beta = 0.566$) and significance level (Sig = 0.000) indicate that the quality and effectiveness of Managerial Decision-Making have been significantly improved by the improvements in and the development of Management Information Systems. Information Collection was most strongly associated with managerial decision-making of the components of Management Information Systems with the regression coefficient ($\beta = 0.487$). This is a discovery that indicates when information is accurate, complete and timely, the manager can make the right and informed decision. Information Retrieval $\beta = 0.484$ was also found to be of significant importance to give the managers quick access to the information they need and improve the speed of decision-making. The results further show that Information Storage is significantly and positively related to managerial decision-making with a regression

coefficient of $\beta = 0.427$. This outcome means that information can be stored in a logical, ordered and secure manner, which allows for efficient use when required and avoids squandering time and managerial mistakes. In general, it can be concluded that the use of Management Information Systems (MIS) affects the quality of managerial decision-making in a good and positive way in the Directorate of Treasury of Herat Province. The results indicate that these systems enable more rational, timely and effective decisions based on the collection, storage and retrieval of accurate and up-to-date information. The statistical analysis carried out revealed that all the components of Management Information Systems, namely Information Collection, Information Storage and Information Retrieval, showed a positive and significant relationship with good managerial decision-making. Of these, IC and IR had the largest effect on explaining improvements in managerial decision-making, underscoring the critical role of access to accurate and timely information to managerial and administrative processes.

5.1 Recommendations

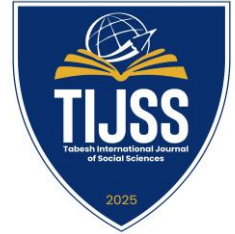
- The Directorate of Treasury of Herat Province is urged to devise and consolidate Management Information Systems in all the administrative units of the province to improve the managerial decision-making process.
- Effective mechanisms should be put in place and strengthened to ensure information is collected accurately, comprehensively and on time at all levels of the organization to facilitate good decision-making.
- Administrative and financial information should be consolidated into well-organized and centralized databases to enable quick and accurate retrieval of information as needed.
- Further development of electronic information retrieval systems is necessary to provide managers with the information they need in the shortest possible time frame and to make the appropriate decisions.
- Managers and employees should have training programs regularly, focusing on the effective use of information systems, to improve the effectiveness of Management Information Systems.
- Information technology infrastructure (hardware equipment, management software and communication networks) should be enhanced in order to increase the performance of Management Information Systems.
- Quality information criteria should be set up and monitored for evaluating information quality in relation to accuracy, timeliness, completeness and reliability.
- In considering information generated by Management Information Systems, managers should make it the main source of information for planning, organizing and controlling administrative activities.
- Information-processing and reporting procedures should be integrated and automated as far as possible, in order to minimize human errors and accelerate information access.

- In other institutions in the public sector in Afghanistan, more studies are recommended in order to evaluate the role of Management Information Systems in enhancing the managerial decision-making process, efficiency of organizations and managerial performance.

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