

### Article

# The Role of Management Information Systems in Supporting Rapid Decision – Making

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**Abstract:** The current study aims to adopt the role and dimensions of (management information systems), as an independent variable that includes aspects (technical dimensions: operational and functional dimensions : strategic and administrative dimensions), and the extent of its contribution to supporting the process of "speed of decision - making", as a dependent variable with its dimensions (strategic decisions: Tactical decisions: executive decisions). The main objective of the research is to measure the nature of the relationship and its mutual influence between the two variables. To achieve this objective, a set of main hypotheses were formulated, and the sugar factory of Al-Etihad Food Industries Company Limited in the governorate of/ Babel, the study sample included (120), employees working in the organization, and the questionnaire was adopted as the main tool for collecting data, and it was analyzed using a number of appropriate statistical methods using (SPSS statistical program), and the results showed the existence of a correlation and effect relationship between "systems Management information and speed of decision - making. Accordingly, the study recommended the need to increase interest in the "management information system, " especially since the organization under study operates in a dynamic and accelerating environment that requires high levels of knowledge and awareness, the development of individual skills, and modernization Technological infrastructure, therefore, requires building a solid intellectual foundation, setting high standards for rapid decision - making, raising human resources, assigning difficult tasks, and developing proactive plans and future plans to confront the surrounding environmental challenges and changes.

**Keywords:** Management information systems: supporting speed of decision – making.



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## 1. Introduction

"MAS" is a modern concept that emerged in the last decade of the last century, as contemporary organizations realized that its real advantage is closely related to the speed of their response and decision - making, which is the essential role that these systems play today, as they constitute One of the most important elements of the success of organizations, they derive their strength from the accumulated knowledge and experience of employees, in addition to the prevailing organizational culture. Therefore, organizations must enhance the efficiency of their information systems, which contributes to the speed of decision - making and encourages employees to present creative visions and ideas that support growth The organization, to consolidate administrative responsibility, develop the work environment to confront competitive pressures, protect organizational excellence, increase interest in the era of administrative and technological systems, and

reduce routine work Daily, which reflects positively on achieving competitive capabilities and providing administrative levels with appropriate and rapid information and taking the correct measures at the appropriate time.

## **2. Research methodology**

### **The research problem**

The interconnection between "management information systems and decision –making speed" is one of the most important and vital topics for modern organizations that aim to survive and grow in a changing and difficult –to predict environment, and monitoring Developing available opportunities requires strategic flexibility and precise planning, which prompts departments to improve their information system and accelerate decision – making processes. Based on the need to adopt a solid, integrated intellectual base for the administrative information system, the research problem lies in raising the following questions:

- 1- What is the opinion of the individuals surveyed (study sample), in the organization regarding the concepts of management information theory and speed of decision - making?
- 2- What is the level of application of the dimensions of management information systems within the researched organization and their role in speeding up decision – making and to what extent?
- 3- The nature of the statistical (correlation and influence relationship), between the MIS variable and the dependent variable in decision – making speed?
- 4- To what extent do management information systems contribute to enhancing the speed of decision – making response in the environment of the organization under study?

### **The importance of the research**

The current study contributes, through adopting, "management information systems, to supporting the speed of decision - making," through the following points:

- 1- Providing academic libraries with a research effort that keeps pace with administrative developments and updates.
- 2- Deepening intellectual and cognitive enrichment through a theoretical framework that explains the role of (management information systems and supporting the speed of decision - making), and linking it to previous relevant literature and studies.
- 3- The current study addresses an important and vital industrial sector that has an Iraqi productive work environment and has an important and effective role in the process of economic progress and development.
- 4- A guide, mentor, and scientific framework that serves the administrative levels researched to serve as a database that supports organized work.

### **Research objectives**

It seeks to achieve a number of main objectives represented by the following:

- 1- Building an integrated conceptual framework for the study's variables and clarifying their concepts as they appear in Arabic and foreign references.
- 2- The extent to which the researched organization applies and adopts management information systems and supports speed of decision - making.
- 3- Measuring the degree of impact and diagnosing the impact of management information systems and their effectiveness in raising the efficiency and supporting the speed of decision – making
- 4- Analyze and measure the dimensions of "correlation and influence relationships" between the two study variables.

### **Research hypotheses**

In order to answer the study's questions and achieve its objectives, the current study adopts the following hypotheses:

- 1- The first main hypothesis (H1), is that there is a positive, statistically significant correlation between management information systems and their dimensions and the speed of decision - making in their dimensions.

- 2- The second main hypothesis (H2), is that there is a statistically significant impact relationship for management information systems in supporting the speed of decision – making within the researched organization.

#### **Research community and its sample**

The current study focuses on the "descriptive analytical approach", using the questionnaire as the basic tool for collecting data. An intentional sample of (120), employees from the employees of the Union Food Industries Company Limited / Sugar Factory in Babylon was used.

#### **Conceptual Framework for the Management Information System**

First - The concept of the management information system: The opinions of writers and researchers varied in defining a specific concept of "management information systems", as [1] believes that it is a system that is compatible with the mechanisms of computer data processing through the processes of analyzing and designing digital files, while [2] believes that Coordinating integrated procedures that work to inventory and retrieve information, as well as process, preserve and disseminate it to support decision – making and achieve coordination and design control . In the same context, [3] explains that systems collect data, information and good experience to understand and comprehend Accelerating environmental variables and accurately determining their trends. Based on the above, the procedural concept of the "management information system", can be derived from the fact that it is an integrated organizational interaction that links "automated technologies and the human element, " which allows the employment of material and human resources to adapt to external variables, confront competing organizations, and achieve the organization's strategic goals.

#### **Dimensions of the management information system**

The current study focused on the following dimensions:

- 1- Technical and technological dimensions: This means enhancing organizational knowledge management and defining mechanisms for searching for and accessing it flexibly, in addition to opening innovative horizons and creating new markets to develop diverse relationships through advanced, highly efficient and effective software applications [4]. There is a direct and positive correlation between the quality of IT infrastructure and support for organizational decision – making speed [5].
- 2- Operational and functional dimensions: This is the organizational way of thinking and the nature, roles and vital responsibilities necessary to support and assist development initiatives and create compatibility between the various structural departments Ensuring the motivation and desire of individuals to train, achieve job support, formulate the organization's strategic objectives, and enhance the cognitive and practical experiences of human cadres [6].
- 3- Strategic and administrative dimensions : [7] defined it as representing the ideal vision of administrative leadership and its accumulated experience in order to enhance, motivate and guide employees to achieve organizational goals. In the same context, [8] focused on the ability to Discovering and envisioning alternative future prospects, preparing and equipping administrative and functional requirements, formulating, developing and implementing plans, and activating channels of organizational coordination and integration.

#### **The concept of supporting the speed of decision – making**

Indicated that the scientific [9], methodological and analytical methods used are employed to choose the optimal alternative from among several alternatives, provided that this alternative ensures achieving the maximum benefit for individuals and administrative organizations alike, on the other hand [10]. That the speed of decision – making lies in the ability to transfer experiences and skills and transform them to others in conjunction with the emergence of new duties and tasks at work. Based on this, a procedural concept can be deduced: "decision –making speed, " the process of collecting information and knowledge available in the environment Externalism enables the decision maker to discover, predict and plan for the future, so that it can adapt to the environmental variables surrounding the organization, and provides administrative leadership with the ability to identify organizational strengths and weaknesses to ensure the survival and continuity of the organization operating in the business world. By making data available Timely information of the size, quantity,

quality and quality required to ensure that decision makers are guided to make more informed and mature decisions that meet the strategic requirements of the organization.

#### **Dimensions of supporting speed of decision – making**

The book [11], and [12], specified the dimensions as follows:

- 1- Strategic decisions: These are the organizational decisions and directives taken by senior management regarding the organizational structure and drawing up future visions for the organization to adapt to the changes in the external environment surrounding it [13].
- 2- Tactical decisions: These are decisions that fall within the responsibility of middle management, providing and selecting appropriate means and mechanisms to achieve the organization's goals, determining its plans, and building its organizational structure and functional powers for each department [14].
- 3- Executive decisions: These are decisions taken by the executive management and are directly related to addressing urgent daily problems and following up on the implementation and progress of specific activities in the organization [15].

### **3. Results and Discussion**

The current study used the five – point scale (Likrt), to process and analyze data extracted from questionnaire forms and the responses of sample members that were distributed to the research sample, to test the nature of The correlation and effect of the independent variable "Management Information Systems", and the dependent variable "Decision Making Speed", using a package of statistical programs (SPSS), in analyzing the data as follows:

#### **Analysis of the opinions and responses of sample members regarding the management information systems variable**

**Table 1.** Descriptive statistics for management information systems and their dimensions, (independent variable)

| <b>Dimensions</b>                                  |    | <b>arithmeti<br/>c mean</b> | <b>standar<br/>d deviatio<br/>n</b> | <b>Contrast</b> | <b>Percentag<br/>e weight<br/>%</b> | <b>Coefficien<br/>t of<br/>variation<br/>%</b> | <b>Ranking</b> |
|----------------------------------------------------|----|-----------------------------|-------------------------------------|-----------------|-------------------------------------|------------------------------------------------|----------------|
| Technical and technological dimensions             | X1 | 4.21                        | 0.88                                | 2.44            | 88.10                               | 62.13                                          | First          |
|                                                    | X2 | 4.32                        | 0.39                                | 2.21            | 82.22                               | 60.14                                          |                |
|                                                    | X3 | 3.50                        | 0.56                                | 2.62            | 89.51                               | 59.19                                          |                |
| Overall index                                      |    | 4.01                        | 0.61                                | 2.42            | 86.61                               | 56.18                                          | Third          |
| Operational and functional dimensions              | X4 | 3.26                        | 0.71                                | 2.33            | 80.12                               | 65.18                                          |                |
|                                                    | X5 | 3.55                        | 0.13                                | 2.50            | 79.23                               | 69.77                                          |                |
|                                                    | X6 | 3.15                        | 0.11                                | 2.61            | 82.11                               | 67.16                                          |                |
| Overall index                                      |    | 3.32                        | 0.31                                | 2.48            | 80.49                               | 64.37                                          | Second         |
| Strategic and administrative dimensions            | X7 | 3.04                        | 0.22                                | 2.22            | 80.55                               | 89.60                                          |                |
|                                                    | X8 | 3.48                        | 0.57                                | 2.32            | 85.66                               | 68.15                                          |                |
|                                                    | X9 | 4.33                        | 0.26                                | 2.11            | 84.33                               | 55.17                                          |                |
| Overall index                                      |    | 3.62                        | 0.35                                | 2.22            | 81.51                               | 61.40                                          |                |
| Overall index of the management information system |    | 3.65                        | 0.42                                | 2.37            | 83.54                               | 62.09                                          |                |

### Results computer

The statistical indicators contained in the table above reflect that, after technology and technology, a high rating record appeared that reflects a (very good), level, as its general weighted arithmetic mean reached (4.01), with an agreement rate of (86.61%), and a standard deviation of (0.61), while the variance reached (2.42), The coefficient of variation (60.49%), which makes it in the lead in first place, and in second place, it came " after strategy and management ", with an arithmetic mean of (3.62), and a percentage of support and agreement among the sample members of (81.51%), with a standard deviation of (0.35), while the coefficient of variation (61.40%), was recorded, followed by in Third place "after operational and functional", which achieved an arithmetic mean value of (3.32), an agreement rate of (80.49%), a standard deviation of (0.31), and a coefficient of variation of (64.37%) . And Tessa Based on these results, the overall index of the management information system is shown with an arithmetic mean of (3.65), sample agreement of (83.54%), standard deviation of (0.42), and variance of (2.37), with a coefficient of Difference (62.09%), and this result is due to the extent of the researched organization's awareness of the importance of systems and their role in providing decision – makers and trying to improve them in the future.

**Analyzing the opinions and responses of sample members regarding the variable supporting decision – making speed:**

**Table 2.** Descriptive statistics to support the speed and dimensions of decision - making (dependent variable)

| Dimensions                      |    | arithmet<br>ic mean | standar<br>d devatio<br>n | Percentag<br>e weight% | Contrast | Coefficien<br>t of %<br>variation | Ranking |
|---------------------------------|----|---------------------|---------------------------|------------------------|----------|-----------------------------------|---------|
| Strategic decisions             | X1 | 3.86                | 1.72                      | 85.83                  | 2.33     | 53.80                             | First   |
|                                 | X2 | 3.76                | 1.13                      | 83.95                  | 2.15     | 54.49                             |         |
|                                 | X3 | 3.59                | 1.51                      | 88.33                  | 2.91     | 57.14                             |         |
| Overall index                   |    | 3.74                | 1.45                      | 86.04                  | 2.46     | 57.75                             | Second  |
| tactical decisions              | X4 | 3.61                | 1.72                      | 75.68                  | 2.42     | 58.66                             |         |
|                                 | X5 | 3.18                | 1.52                      | 73.95                  | 2.21     | 52.79                             |         |
|                                 | X6 | 3.57                | 1.91                      | 78.33                  | 2.17     | 67.56                             | Third   |
| Overall index                   |    | 3.45                | 1.72                      | 75.99                  | 2.27     | 59.67                             |         |
| executive decisions             | X7 | 3.69                | 1.81                      | 68.24                  | 2.12     | 57.18                             |         |
|                                 | X8 | 3.24                | 1.32                      | 71.73                  | 2.14     | 67.69                             | Third   |
|                                 | X9 | 3.25                | 1.91                      | 72.53                  | 2.15     | 55.22                             |         |
| Overall index                   |    | 3.39                | 1.68                      | 70.83                  | 2.14     | 60.03                             |         |
| Overall index of decision speed |    | 3.53                | 1.62                      | 77.62                  | 2.29     | 59.15                             |         |

### Results compute

Data from Table (2), related to the variable supporting decision making speed (the dependent variable), indicate that the overall indicator has achieved a good level recorded by an arithmetic mean (3.53), which is a mean that exceeds the hypothetical mean. This result is reinforced by a standard deviation (1.62), a variance (2.29), and a percentage Positive agreement between Sample individuals, which is a good percentage and acceptable for statistical analysis (77.62%), and a coefficient of variation (59.15%), and according to the sub – indicators of the dimension of strategic decisions in first place with an arithmetic mean (3.74), a coefficient of variation (57.57%), a standard deviation (1.45), and a variance (2.46), and in The second place went to the "Tactical Decisions" section: with an arithmetic mean of (3.45), standard deviation (1.62), variance (2.27), and coefficient of variation (59.56%). As for the third place, "Executive Decisions, " it achieved an arithmetic mean of

(3.39), standard deviation (1.62), variance (2.14), and coefficient of variation (60.03%), and based on the above results, it needs the care and attention of the research organization to enhance and continuously develop this variable.

### Testing the first main hypothesis

This paragraph is concerned with measuring the correlation between the independent and dependent variables adopted in the current study, which states there is a significant correlation relationship: Statistics between management information systems and decision - making speed support):

**Table 3.** The overall and detailed relationship between the management information system and supporting the speed of decision - making

| independent variable                    | speed of decision making                                              |                     |                       |                   |                      |
|-----------------------------------------|-----------------------------------------------------------------------|---------------------|-----------------------|-------------------|----------------------|
|                                         | Dependent Variable                                                    | Calculate d value R | Calculate d (T) value | tabular (T) value | Degree of confidence |
|                                         |                                                                       |                     |                       | 5% 1% 5%          |                      |
| Technical and technological dimensions  |                                                                       | 0.89                | 21.17                 |                   |                      |
| Operational and functional dimensions   |                                                                       | 0.90                | 24.08                 | 4.541             |                      |
| Strategic and administrative dimensions |                                                                       | 0.91                | 27.25                 | 2.353             | 99% %1 %95 %5        |
| management information system           |                                                                       | 0.90                | 24.17                 |                   |                      |
| Decision (result)                       | The correlation between variables is positive, strong and significant |                     |                       |                   |                      |

### Results compute

The data of the results of Table (3), indicate that there is a positive, direct, positive and strong correlation relationship between the variables of "management information systems and supporting the speed of decision - making", as the relationship indicates statistical significance at a significant level (5%), as the simple correlation coefficient between them was recorded (0.90%), The calculated value of (T), is (24.17), which is greater than the tabular value of (T), which is (2.353), with a confidence level of (95%). This correlation emerges through the detailed outputs of the analysis of the subcomponents of both variables . Based on the above results, the first main hypothesis is accepted, which is (there is A statistically significant correlation between the management information system and supporting the speed of decision - making), which proves the existence of causal relationships : the more the organization directs the information system, the more it reflects positively on supporting the speed of management decision - making in a faster and more efficient manner.

### Testing the second main hypothesis

It is concerned with measuring the influence relationships between the two research variables, which were included in the second main hypothesis, which states (There is a statistically significant moral influence relationship between information systems that support the speed of decision - making):-

**Table 4.** Results of estimating the simple linear regression model (in general and in detail) between the management information system and supporting decision – making speed

| independent<br>Variable                 | speed of decision making                                   |                            |                      |                            |  |
|-----------------------------------------|------------------------------------------------------------|----------------------------|----------------------|----------------------------|--|
| Dependent<br>Variable                   | (R2)<br>Coefficient<br>interpretation<br>%                 | (F)<br>Calculated<br>value | (F)<br>Tabular value | Degree<br>of<br>confidence |  |
| Technical and technological dimensions  | 82.05                                                      | 11.23                      |                      |                            |  |
| Operational and functional dimensions   | 83.30                                                      | 14.92                      | 10.1 %5              | %99 %5                     |  |
| Strategic and administrative dimensions | 85.41                                                      | 16.71                      | 4.541 %1             | %95 %1                     |  |
| management information system           | 83.59                                                      | 14.29                      |                      |                            |  |
| Decision (result)                       | The effect between variables is positive, strong and moral |                            |                      |                            |  |

### Results computer

The final results data in Table (4), indicate that the total value of the interpretation coefficient (calculated R2), reached (83.59%), and that the value of (calculated F), reached (14.29), which is greater than the value of (tabular F), which is (10.1), at a significant level of (5%), meaning the presence of a statistically significant effect of the systems Management information and decision – making speed support with a degree of confidence (95%), as it is clear that the management information system is able to explain (83.59%), of the changes that occur in "decision – making speed support", and the remaining percentage (16.41%), is attributed to the contribution of other non - internal variables In the current study, and based on these data, the second main hypothesis is accepted, which is that there is a statistically significant impact relationship between management information systems and supporting the speed of decision – making in the researched organization.

### Conclusions and Recommendations

#### Conclusions

- 1- The researched organization has an administrative information system that contributes effectively to the completion of its daily work using administrative systems capable of processing data quickly and providing information that It needs it at the right time and quantity to make the right decision in the way the organization seeks to meet its strategic aspirations and to determine and know its current and future needs.
- 2- The management information system serves decision makers at all administrative levels in the organization.
- 3- The need to increase the organization's interest in the management information system, as it represents a qualitative leap in the speed of decision – making in a way that serves the organization to achieve the required accomplishment.
- 4- The organization has a good database that needs to be constantly updated to exchange it with other departments and divisions within the organization and to encourage individuals to follow modern methods to adopt new ideas.

### Recommendations

- 1- Further strengthening and consolidating the intellectual and cognitive foundation within the organization regarding management information systems and developing and updating the devices and programs used to keep pace with modern and accelerating technological breakthroughs.
- 2- Developing and enhancing the competencies of human resources by assigning them difficult tasks and involving them in training courses that enable them to use smart programs and information systems in a way that meets the ambitions and future needs of the organization.
- 3- Supporting organizational innovation, allowing employees to express their opinions and suggestions, activating and encouraging constructive joint dialogue between all administrative levels, and maturing creative ideas through Meetings and encounters between them to advance organizational performance and achieve future and strategic goals.
- 4- Adopting the spread of a culture of digital transformation instead of routine work and educating working individuals about the necessity of using it as a means to support administrative decisions.

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