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The Impact of Management Information Systems on the Quality of Management Decisions.

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Abstract: The study aims to focus on the reality of the impact of the use of administrative information systems (operational, administrative, and decision support) in the quality of the administrative decision-making process in the Libyan Almadar Company and identification of the problems and difficulties that affect the decision-making process. As well as the study tries to determine the role of MIS in the quality of decision making in Almadar communication company. The research is based on the descriptive and quantitative type methodology. A simple random sample was selected from the study community of 700 employees in the Libyan Almadar company, based on the scientific foundations that have been developed from the sample size. One of the most prominent findings was the strong relationship between the Management Information Systems (MIS) and the quality of managerial decision-making and the highly significant impact of types of MIS on the quality of decision-making. This research will highlight the impact of the value of MIS on the quality/standard of management decisions in Almadar.

Keywords: MIS, Decision-making, Operational Information Systems (OIS), Decision Support Information System (DSS), Organizational performance

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INTRODUCTION

Information is the main source for any organization and business success, also information is a major resource for improving the success and productivity of different administrative business. It will make the organizations be able to perform their functions successfully and efficiently.

The importance of a decision is necessarily equal to the importance of the information on which it is based to decide it. Some researchers have based their findings on the contrast between productive firms and unsuccessful organizations (efficient administrations and inefficient administrations), the fundamental of their success in process of making decisions, the amount of inaccurate decisions have eliminated the hopes and aspirations of large organizations and vice versa. An administration equipped with the necessary information and the required characteristics achieves better results, and at the same time, the incompleteness and misleading information will lead to unsuccessful management. The success of organizations depends on the rate of their management efficiency in successful decision-making. Information is the main ingredient on which decisions are made with regards to the level of accuracy, comprehensiveness and good timing in the provision of information; these factors will increase the efficiency of those decisions (Asma, Larbi, & Samiha, 2017; Ghazi & Hu, 2015; Thanasripanitchai, 2017).

This study attempts to determine the impact of the use of MIS on the quality of decisions in Almadar Libya. By gaining knowledge on this result, the firm can recognize the disparity in the MIS and because of this will seek to restore it and thereafter will establish and enhance the productivity and the performance of its workers in this area. This study comes at a period when many firms at

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the international and national status are heading for a total dependence on MIS for taking decisive choice at distinct parts of administrative and attempts to prove the importance of providing appropriate information at the internal and external levels of management at all levels.

Considering the above discussion, the following research questions were developed:

i. Will the implementation of DSS influence the standard of decisions of Almadar administration?
ii. How can the quality of management decisions in Almadar Libyan Company be affected by the application of administrative information systems?
iii. How can the standard of management decisions be affected by the implementation of OIS in Almadar?
iv. What are the effects of the Management information system on the companys performance with regards to decision-making?
v. What aspect of MIS affects Managerial decision making considering the different level of management?
vi. What is the relationship between a quality decision making process and companys performance in the Almadar Company, Libya?

THEORETICAL FRAMEWORK AND RESEARCH DESIGN

This researched is based on three hypotheses and a model will be developed with regards to the relationship between a MIS, OIS, DSS and quality management decisions.

The dependent variable

What is administrative decisions quality?

The quality of the decision means the use of accurate, reliable and relevant information to reach a high level of good decision at various levels of management in the organization. Each decision involves a high level of risks, and avoids or limits the impact of these risks one must depend on comprehensive and relevant data of information to make the decision. The decision-maker has a vital influence on the quality of the decision. They play an important role as the even if the information given has the accepted quality, the final say depends on them.

A good decision depends mainly on two elements:

- The accuracy, comprehensiveness, completeness, reliability and relevance information.
- The qualified person (the decision-maker) has to be available to make the right decision and is able to analyze this information and exploit it in the decision making the process.

There are many types of Administrative decisions that are appropriate for different types of MIS. The structural decisions are best suited to information systems known as operational information systems. Semi-structural decisions are best suited to information systems known as MIS. And the non-structured decisions are best suited to information systems known as DSS.

This research will highlight the impact of the value of MIS on the quality/standard of management decisions in Almadar. After identifying the dependent variable, the quality of the administrative decisions and their components, we will identify the independent variables of the various types of administrative information systems and their relation to the quality of the administrative decision.

Independent variable

DSS

The concept of decision support systems was introduced in the early 1970s by Scott Morten under the name of departments support systems, but the decision support systems is a free term that does not agree on a uniform definition as it a new science and there are a large number of specialists who are interesting in it at the present time. It is defined as "an information system that makes use of computers to provides managers with easy and fast access to the internal and external information they need to perform their administrative activities"(Ghazi & Hu, 2015).

Decision support systems are defined as a complete set of software, ready-made packages, processing tools, interacting with data and information used to deliver proposed solutions. It can combine several models to form an integrated model to retrieve information useful in semi-structured and unstructured decision-making (Hussein, 2008).

The concept of decision support systems can be clarified through by these definitions:

- Systems: where the decision support system is built based on the needs of the actual beneficiaries while observing the environmental changes that it deals with.
- Support: The decision support systems support rather than replace the director in the decision-making the process. It provides the manager with appropriate analytical methods for the studied phenomenon and leaves the final decision of the manager.
- Decision: For effective decision making, a person must be able to forecast the outcome of each option as well, and based on all these items, determine which option is the best for that particular situation. Where decision support systems focus on supporting the transition from the operational levels to solving administrative problems with the manager's attention (Mahasneh, 2005).

It can be deduced from the above definitions that the primary purpose of decision support systems is to improve and support management decision-making at the senior management level and that decision support systems focus on supporting non-structured decisions in the Organization. They also serve senior management primarily in the long-term planning of all aspects of the organization and improve the quality of management decisions taken in senior management (Raymond & Bergeron, 2008)

MIS (Functional)

MIS is defined as as "unified system comprising of people, tools, processes, structure of information, so as to yield the segment of any organization with all the essential, correct and sufficient information about all tasks in the firm in order to accomplish administrative functions from planning, Leadership, and control, and to make structural and semi-structural decisions efficiently and effectively" (Wu & Wang, 2006). They can be defined as a group of individuals, data, and procedures associated with each other to provide useful information (Britannica, 2016).

It is also defined as a kind of information system designed to provide the management of the organization with the necessary information for planning, organization, leadership, and control of the organization's activities or to support decision-making.

It has been finalized from the clarification above that the fundamental purpose of MIS is to issue precise and detailed information that improves the productivity of the company's administrative procedures and enhances the quality of semi-structured management decisions as the most important in the implementation of the various functions and administrative activities. MIS are designed to supply instructions that reach the needs of middle level and supervisor level management, plus for brief period occasions and administrative tasks. MIS also help managers and decision-makers to make their decisions more accurately and better than they are nomads, although this information system does not provide all the required information. Therefore, decision support systems have been designed to be specialized in the process of decision-making (Petter, DeLone, & McLean, 2008).

OIS

OIS are the information that deals with the day-to-day operations where detailed, accurate, continuous and frequent information on all aspects of the organization's activity should be provided, e.g. information related to presence and departure of individuals, types and quantities of goods produced and sold. OIS are considered as computer processing systems aimed at supporting operational management (management in the first line) to implement their programmed activities and to support their decisions. It is also an indispensable starting point for the development and application of MIS in business organizations, economic, social and other institutions (Ragu-Nathan, Apigian, Ragu-Nathan, & Tu, 2004).

It is concluded from the previous definitions that the basic function of OIS at the minimum administrative levels is to obtain, analyze, classify, and categorize information accurately, as it is the direct front line for dealing with customers. Thus, OIS obtain real, accurate, and reliable information for administrative decisions at the lower administrative levels, in addition, it is considered an input to MIS (functional) (Laudon & Laudon, 2001). Thus, information obtained from operational information systems outstanding influence on the management decisions quality taken at lower administrative level and other administrative levels.

The system

As an organization operates in an external environment, as an open system it must know what is around it to be able to cope with all changes. Although the systems existed before the existence of the human, the use of this concept was not known in the fields of science. Since 1929, the concept of the system has become an important role in modern science, especially in the administration, where the method of the system is an essential and effective tool to overcome some of the problems and difficulties being faced by the administration of the organization (Trivellas, Reklitis, & Santouridis, 2006).

The system is defined as "a set of interrelated elements or parts that operate in full coordination and interaction, governed by relationships, and a specific mechanism of action within a specific range, to achieve common ends and a general objective". And Naranjo-Gil (2009) defined it as a "set of parts that interact and integrate with each other and with their environment to achieve a particular goal or objectives". Yasin (2006) defined system as "a Group of an orderly nature of interdependent and integrated components that rely on each other to achieve common goals". Also Edris (2005) defined it as a coherent and homogeneous group of resources and elements (individuals, equipment, machines, funds, records, etc.) that interact with each other within a certain framework (system boundaries) towards a goal, or a set of general objectives under environmental conditions or constraints.

The system includes several elements that can represent a subsystem within the system itself and interact with one another to achieve a goal or set of objectives that the system seeks to achieve under certain environmental parameters (Deng, Doll, & Cao, 2008).

1. Inputs: represent the resources required for the system to be able to do different activities to achieve the objectives. The inputs include many heterogeneous elements such as data and machines, and the inputs are outputs of other systems, whether they are in a system or subsystems within the system itself.
2. Process: Operations are intended to transform what is taken in (inputs) into final product (outputs) and the conversion could be a machine, a human or both (Bharati & Chaudhury, 2004).
3. Output: It is the result of the process of converting inputs into outputs, these outputs are a commodity, service or information. The output is the tool from which helps checks the system performance and its ability to achieve its objectives.
4. Feedback: The feedback tool is a corrective tool for any outputs to achieve the system performance control. The feedback can be divided into two types:
   - Corrective feedback is intended to return objects to their correct position.
   - The developmental feedback about working on the development of system performance or change of objectives.
5. Relations: Represents the process by how the structures are associated with one another, and the setup as a whole is linked to its environment.
6. Environment: The environment where the system operates.

Research design

The research is based on the descriptive and quantitative type methodology. This will analyse the important factors of the research and will perform the interrelationship and causal tests between independent and dependent variables. The characteristics of the demographic sample are measured by calculating the percentages and frequencies. Also, the response of the sample of the study variables (independent and dependent) will be measured validity of the questionnaire by calculating the mean and standard deviations.

A simple random sample was selected from the study community of 700 employees in the Libyan Almadar company, based on the scientific foundations that have been developed from the sample size; it is suitable for most researchers if it is more than 30 and less 500 items. The researcher conducted the validity of the questionnaire by handing out it to (6) reasonable members of the department with in marketing and business administration in Libya.

The stability value of the measuring instrument was determined by calculating the (reliability coefficient) for each area of the questionnaire, as well as determining the total degree of stability. This

was done by using the Alpha Cronbach test, and the value of this coefficient is between (0) to (1), Value is considered ($\alpha \leq 06.0$) an indication of the little measure of reliability of the interior scale. The alpha value for the research variables is as follows:

Table 1: Results of the value of the alpha stability coefficient

Variable	Cronbach alpha coefficient
The stable coefficient for all variables	81.3

Note: Table 1 shows that coefficient of stability for study variables is higher than the minimum acceptable level (60%)

Measurement of study variables

The information support systems, MIS, and OIS of Almadar were measured by using the Likert scale to select the correlation and causal relationships between these variables. The measurements were as follows: Strongly disagree = 1, disagree = 2, neutral = 3, agree = 4, strongly agree = 5.

The quality of administrative decisions is characterized by a set of characteristics: consistency and coherence of decision, integrity and transparency of the decision, comprehensiveness and integrity of the decision.

The operational information systems have a set of characteristics and they are as follows: a system of facilitation, representing a rapid response to diverse information needs, flexibility and adaptability, including models and can name new models, advanced technology.

MIS have a set of characteristics and they are as follows: summary and diverse reports, timeliness and reliability, simplified models with data infrastructure, technology are stable.

The DSS have a set of characteristics, as follows: detailed and report- driven information systems, modular information systems, good performance, reliability, and stable technology.

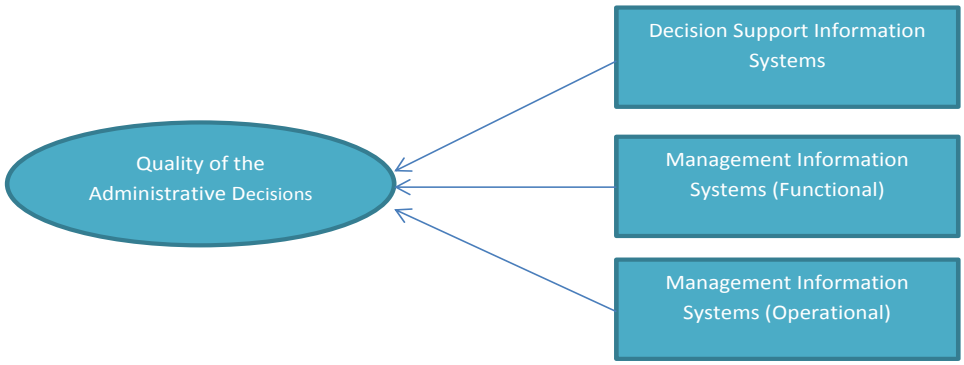

Figure 1. The conceptual model of the study

This model shows the extent to which the use of MIS will determine management decisions quality that is used by the Libyan almadar Company. The degree of relation between the IV (systems administrative information) and the DV (quality of administrative decisions) will also be examined. The study data were analysed by using several statistical and descriptive statistical methods based on the statistical analysis program. For this study a conceptual model is created presenting the relevance and impact of MIS in their departments on the QAD.

The correlation and causal relationships have been tested by using the linear regression model using the primary data. The hypotheses were tested by using (t-test) to test the effect of the independent variable on each dependent variable in the simple linear regression model, and the correlation coefficient (R) was used to determine the strength and the type of relationship between the dependent variable and the independent variable. And using the limiting factor (R^2) to discover the level at which independent variables impact to changing variance in the DV.

Also, the arithmetic mean and standard deviation will be calculate in order to determine the level of approval or disapproval of the respondents for the instrument.

ANALYSIS

Descriptive analysis of the data study

In this section, the sample characteristics are displayed according to the demographic characteristics.

Table 2: Results of respondents by gender

Gender	Number of Respondents	Percentage %
Male	33	55
Female	27	45
Total	60	100

Table 3: Result of the respondents by age

Age	Number of Respondents	Percentage %
Less than 25 years	32	53.3%
From 25 to 35 years	14	23.3%
From 36 to 45 years	9	15.1%
46 years and more	5	8.3%
Total	60	100%

Table 4: Result of respondents according to academic qualification

Qualification	Number of Respondents	Percentage %
Diploma	12	20
BA	38	63
Post Grad	10	16.7
Total	60	100

Table 5: Result of respondents by years of experience

Years of Experience	Number of Respondents	Percentage
Less than 3 years	18	30%
From 3 to 6 years	20	33.3%
From 7 to 10 years	16	26.7%
More than 10 years	6	10%
Total	60	100%

Table 6: Result of respondents by education level

Career Level	Number of Respondents	Percentage
Higher Management	7	11.7%
Central Management	27	45%
Minimum management	26	43.3%
Total	60	100%

Test of hypotheses

In this section, hypotheses are stated clearly. The result of the research hypotheses is presented in the tables which are shown below.

Table 7: Results of the first hypothesis test (Ho1), which states that there is no outstanding impact of the utilization of decision support information systems on the QAD of Almadar Libyan Company

t/Morality *Sig	t Calculated	t Table	R Engagement	R^2 The coefficient of determination	Statistical Resolution
0.002	3.259	1.96	0.393	0.155	Rejection of the Null hypothesis

The above table shows that the null hypothesis can be rejected according to the hypotheses rule. The calculated t value is greater than the t-table and the significance of the test is less than 5.0. It can thus be concluded that the efficiency of the DSS and the efforts of these systems at the senior management levels of Almadar Libyan Company significantly impact the QMD taken at this level. Despite the weakness of the ratio of R (0.393) and R^2 (0.155), theyre important in interpreting the relationship between the two variables. The influence of decision support information systems in providing accurate and detailed information, in the quality of administrative decisions, can explain this relationship through the adoption of a good decision-maker on such modern systems in obtaining the information for adoption as the basis for effective decision making in the firm.

Table 8: Results of the second hypothesis test Ho2, which states that there is no statistically significant effect of the use of functional MIS on the quality of management decisions in Almadar Libyan Company

t/Morality *Sig	t Calculated	t Table	R Engagement	R^2 The coefficient of determination	Statistical Resolution
0.223	1.232	1.96	0.160	0.025	Rejection of the Null hypothesis

The results of the simple linear regression analysis in Table 8 show no significant effect of the MIS on the quality of the administrative decisions in the middle management level of Almadar Company because the (Calculated $t = 1.232$) less than their tabular value, and at a level greater than (.05). And accordingly, to the statistical and explanatory rule, we accept the second Null hypothesis (Ho2), and we reject the alternative hypothesis. The value of correlation coefficient R between the variables is (0.16), and this indicates the weak effect of MIS (functional) on the quality of administrative decisions at the middle administrative level of the Libyan Almadar Company.

Table 9: Results of the choice of the third hypothesis (Ho3), which states that there is no statistically significant relationship to the effect of the use of operational information systems on the quality of administrative decisions in Almadar Libyan Company

t Calculated	t Table	R Engagement	R^2 The coefficient of determination	Statistical Resolution
4.070	1.96	0.471	0.222	Rejection of the Null hypothesis

The above table shows that the null hypothesis (Ho3) can be rejected. Where the value of (Calculated $t = 4.070$) is greater than the table t value and the significance of the test is less than (.05). We can find out that the operational information systems at the lower administrative levels of the Libyan Almadar company significantly affect the quality of the administrative decisions that taken at this level. The correlation coefficient R between the two variables reached (0.47). This indicates that there is a positive impact of operational information systems on the quality of management decisions of Libyan Almadar Company, and the explanatory power R^2 to the independent variable is (0.22) is low but important. This result can be explained by the fact that OIS try to make quality administrative decisions taken at that administrative level, as well as the low management level, make use of the information correctly to make effective administrative decisions.

Table 10: Outcome of the analysis of the effect of independent study variables (x3, x2, x1) in the dependent variable (Y), (Multiple linear regression analysis)

t/Morality *Sig	t Calculated	R Engagement	R^2 The coefficient of determination	Statistical Resolution
0.000	6.933	0.520	0.271	Rejection of the Null hypothesis

Based on what is shown in the previous table, we reject Ho and accept the alternative hypothesis, where it is noted that the significance of the test (sig) is equal (.000) which is less than α (.05). Also, the value of calculated F equal (6.933) which is greater than the tabular F, so there is a significant effect of (x3, x2, x1) in the dependent variable (Y). There is also a strong correlation between independent variables (MIS) types and variable (The quality of the administrative decision), the fact that R equals (.52), in addition to the explanatory power R^2 (271).

The results of descriptive statistical analysis of the response of the sample study to the variables of the study

This section will extract the arithmetic mean and standard deviation of the study questions (Independent variables and dependent variable).

Table 11: The results of descriptive statistical analysis of the independent and dependent variables

The subject of questions with reference to each variable	Arithmetic mean	Standard deviation	Corresponding degree
OIS	4.043	0.771	High
Provides detailed information	4.216	0.783	High
Be guided by reports	3.783	0.865	High
Typical operation	4.083	0.719	High
Affected by good performance	4.250	0.627	High
The technology used is stable	3.883	0.865	High
MIS	4.123	0.706	High
Whose reports are diverse	3.883	0.865	High
Effects of the appropriate timing	4.250	0.627	High
Simplified models are used	4.216	0.783	High
Use a data infrastructure	3.900	0.543	High
Technology is fairly stable	4.366	0.712	High
DSS	4.070	0.799	
The system supports the decisions of senior management	3.883	0.865	High
The system provides support for decision-making stages	4.250	0.627	High
The system supports a variety of decision- making processes	4.216	0.783	High
The technology used by the system is sophisticated	4.083	0.719	High
The decision support system is adaptable to user needs (flexible)	3.950	0.946	High
The system provides information in multiple forms and formats	3.783	0.865	High
Easy to understand and apply	4.033	.882	High
The decision support system is easy to use	4.366	0.712	High
Quality of administrative decisions	4.011	0.753	High
Consistent with the company's general policy	4.000	0.713	High
In line with the company's objectives	4.050	0.928	High
Can be easily pursued	4.033	0.636	High
You can always know who you are	3.583	0.961	High
Achievable	3.750	0.932	High
Contribute in its entirety to achieve the company's mission	4.250	0.571	High
Not confliction of objectives	4.416	0.530	High

(*)Average measurement tool= Total measurement weights ÷ 5= (1+2+3+4+5) ÷ 5 =3

The results of the descriptive statistical analysis of the study questions in Table 11, shows that the trends of the study sample were positive for all sections of the independent and dependent variables and their corresponding dimensions. For OIS, the mathematical averages for "Effects of good performance" dimension of the study samples are greater than the mean of the measurement instrument, and the standard deviation is less than the half of the arithmetic average. Note that there is a high approval of

the least independent variable, where the average response is (4.043) and the standard deviation (771.), Questions (6-10). This indicates that Almadar Company is using OIS at low management level. Finally, the use of OIS in this department affects the quality of the management decisions that are made in that company.

The results in the table also indicate that there is a high degree of approval for a second independent variable, the MIS. The average response to this variable was (4.123). This indicates the extent to which the use of MIS at Almadar middle management levels has affected the quality of management decisions (questions 11-15). It should be noted here that despite the high overall response levels of the sample on the first independent, the average overall response to this variable was greater than the total response on the first dimension.

For the third independent variable, the decision support information systems used by Almadar Libyan company, the results of the descriptive analysis indicates that the total response of individuals is high (questions 16-23). Where the average response to this independent variable is (4.070), and the standard deviation (.799), which means that the decision support information systems at Almadars senior management levels use this system effectively and efficiently. The average response to this variable is close to the average response of the first independent variable and the second. In addition, DSS have an effective impact on the quality of management decisions taken at this level of management. This means that Almadar Company benefits from the three types of management information systems in a very effective way with regards to the quality of management decisions at administrative levels but in varying degrees.

The results of the analysis, as shown in the table, indicate that there is high approval for the quality of the administrative decisions. The average response was (4.011) and the standard deviation (0.753). These values were for the dimensions of the dependent variable, (questions 24-30), which indicates that the quality of the administrative decisions taken in Almadar Libyan company at all levels of management is at a high level of quality. And the various types of MIS affect the QMD taken in this organization effectively.

CONCLUSION

The results of the study show a strong relationship and significant effect for the different form of MIS on the quality of administrative decisions in the Libyan Almadar. The value of correlation coefficient R between the independent variables and the dependent variable combined is 52%, and this indicates a positive and acceptable relationship between Management information systems and the quality of management decisions. The explanatory power of the R^2 independent variable reached amounted to (23.1%), which considered as limited but still important. The results of the test of the impact of the three types of MIS in the quality of the administrative decisions of Almadar Libyan Company by using the simple regression method were as follows:

- There is a statistically significant impact of decision support information systems on the quality of administrative decisions at the top level of management in Almadar Libyan Company. The value of correlation coefficient R is (39.3%) between the two variables in the top management, and the explanatory power of R^2 for the independent variable is (15%), it is weak but significant.

- There is no impact of administrative information systems (functional) on the quality of administrative decisions at the middle management level of Almadar Libyan Company. The correlation coefficient R between the two variables (16%) and this indicate to weak and unacceptable relationship between the (functional) MIS and the quality of managerial decisions taken at the middle management level in Almadar Libyan Company, and the explanatory power of the independent variable R^2 is (2.5%), which consider as a weak value but significant.

- There is a statistically significant impact of operational information systems on the quality of management decisions at Almadar Libyan Company. The value of the correlation coefficient R between the two variables is (47.1%) and that indicates to a positive and acceptable effect of OIS on the quality of management decisions in Almadar Libyan Company, and the value of R^2 of the independent variable (22.2%).

The results of the study showed that there is an important and significant effect of the different types of MIS on the quality of administrative decisions in the Almadar Libyan Company where the value of R reached about (52%), and R^2 about (23.1%).

Almadar Libyan Company is using OIS efficiently and effectively and has a positive effect on the management decisions at the lower level of the company and is characterized by diversity in terms of collecting the information resources.

Almadar Libyan Company does not make much effort in the use of administrative information systems (functional) in the middle management level of the company, and therefore the administrative information systems (functional) affect weakly on the quality of administrative decisions taken at this level of management.

Almadar Libyan Company is actually using the decision support systems at the top level of management at Almadar Libyan Company in effectively and efficiently way to influence the quality of decisions taken at the level of the organization.

The administrative decisions are taken by Almadar Libyan Company for their administrative levels (low and top) are on the high level of quality and efficiency, by relying on the information provided from the various kinds of MIS.

Recommendations and proposals

1. Despite the efficiency of administrative information systems in the Almadar Libyan Company, the company must increase the attention of administrative information systems (functional) at the middle-level management and also endeavor to improve the capability in influencing the quality of management decisions.
2. The necessity to improve the productivity of OIS at the lower management level, and also DSS at top management level, regardless of the positive influence of these systems on the quality of management decisions.
3. Work on the use of administrative information systems in a way that contributes to improving the quality of administrative decisions at all levels of management, and in a manner way that helps the company to achieve competitive advantage and sustainability.
4. The important to increase the interest Almadar Libyan Company, in the quality of information, obtained and relies on modern MIS to ensure the quality of this information.
5. The need to conduct more research in the field of modern administrative information systems and the quality of administrative decisions is essential by determining the relationship of modern information systems.
6. It is required to enhance the productivity of decision-makers in the Almadar Libyan Company, by utilizing the information stemming from the different MIS at entire levels of management in the firm.

REFERENCES

Asma, Y., Larbi, B. M., & Samiha, B. (2017). The role of the dashboard in improving marketing decisions in the Algerian economic firm. *International Journal of Business and Administrative Studies*, *3*(6), 209-216. doi:https://doi.org/10.20469/ijbas.3.10002-6

Bharati, P., & Chaudhury, A. (2004). An empirical investigation of decision-making satisfaction in web-based decision support systems. *Decision Support Systems*, *37*(2), 187-197. doi:https://doi.org/10.1016/s0167-9236(03)00006-x

Britannica, E. (2016). *Information system.* Retrieved from `https://bit.ly/33r0L8b`

Deng, X., Doll, W. J., & Cao, M. (2008). Exploring the absorptive capacity to innovation/productivity link for individual engineers engaged in IT enabled work. *Information & Management*, *45*(2), 75–87. doi:https://doi.org/10.1016/j.im.2007.12.001

Edris, T. A. R. (2005). *Management information systems in contemporary organizations* (Unpublished master's thesis). Menoufia University, Al Minufiyah, Egypt.

Ghazi, A. M., & Hu, W. (2015). Impact of individual decision-making styles on marketing information system based decision-making. *International Journal of Innovation and Economic Development*, *1*(2), 40–49. doi:https://doi.org/10.18775/ijied.1849-7551-7020.2015.12.2005

Hussein, A. (2008). *The theory of administrative decision-making a theoretical and quantitative approach.* Amman, Jordan: Dar Zahran Publishing and Distribution.

Laudon, K., & Laudon, J. P. (2001). *Essentials of management information systems* (4th ed.). Upper Saddle River, NJ: Prentice Hall.

Mahasneh, M. A. A.-R. (2005). Effect of the management information system efficiency on the effectiveness of decision making field study in the customs department. *Jordan Journal of Business Administration*, *1*(1), 78-100.

Naranjo-Gil, D. (2009). Management information systems and strategic performances: The role of top team composition. *International Journal of Information Management*, *29*(2), 104–110. doi:https://doi.org/10.1016/j.ijinfomgt.2008.05.009

Petter, S., DeLone, W., & McLean, E. (2008). Measuring information systems success: Models, dimensions, measures, and interrelationships. *European Journal of Information Systems*, *17*(3), 236–263. doi:https://doi.org/10.1057/ejis.2008.15

Ragu-Nathan, B. S., Apigian, C. H., Ragu-Nathan, T., & Tu, Q. (2004). A path analytic study of the effect of top management support for information systems performance. *Omega*, *32*(6), 459–471. doi:https://doi.org/10.1016/j.omega.2004.03.001

Raymond, L., & Bergeron, F. (2008). Project management information systems: An empirical study of their impact on project managers and project success. *International Journal of Project Management*, *26*(2), 213–220. doi:https://doi.org/10.1016/j.ijproman.2007.06.002

Thanasripanitchai, S. (2017). Daily activities management information system of Koglam-Sangaram village: The self-sufficiency economy village model of Pid-Thong-Lang-Pha project. *International Journal of Business and Economic Affairs*, *2*(1), 59-66. doi:https://doi.org/10.24088/ijbea-2017-21008

Trivellas, P., Reklitis, P., & Santouridis, I. (2006). Culture and MIS effectiveness patterns in a quality context: A case study in Greece. *The International Journal of Knowledge, Culture, and Change Management: Annual Review*, *6*(3), 129–144. doi:https://doi.org/10.18848/1447-9524/cgp/v06i03/49388

Wu, J.-H., & Wang, Y.-M. (2006). Measuring KMS success: A respecification of the DeLone and McLean's model. *Information & Management*, *43*(6), 728-739. doi:https://doi.org/10.1016/j.im.2006.05.002

Yasin, S. G. (2006). *Fundamentals of management information systems and information technology.* Amman, Jordan: Dar Al-Manahj for Publishing & Distribution.