Management Information Systems Role in Decision-Making During Crises: Case Study

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Abstract: Problem statement: This study investigated and identified the importance role of MIS in decision-making process during crises at the Directorate General of Border Guard in Saud Arabia. In addition, it examines obstacles that limit the role of MIS in decision-making during crises. **Approach:** The study used the descriptive research design of the survey type. Data were collected from a sample of all officers in the Directorate General of Border Guard (DGBG) in Saud Arabia. Respondents consisting of officers holding administrative positions and senior heading units using stratified random sampling technique. **Results:** Data collected were analyzed using frequency counts, percentages, means, standard deviation and Chi square test statistics. The study revealed that MIS was adequately used in decision-making during crises. **Conclusion:** The study confirmed that the MIS should be used more heavily in the decision process during crises. It was recommended that the MIS units should be maintained to ensure a free flow of information and adequate use of MIS in decision-making.

Key words: Management Information Systems (MIS), decision-making, Chi square test

INTRODUCTION

A Management Information System (MIS) is generally thought of as an integrated system providing information to support operations, management and decision-making functions in an organization (Ajayi and Omirin, 2007). The increasing interest in MIS had led to much activity in developing techniques and software for data management. MIS is basically concerned with the process of collecting, processing, storing and transmitting relevant information to support the management operations in any organizations (Laudon and Laudon, 2009). Thus, the success of decision-making is highly dependent on available information and partly on the functions that are the components of the process. For effective decisions to evolve in any organization, therefore, receiving information from and supplying information to, people within the system are a necessity.

Ajayi and Omirin (2007) stressed the need for MIS in decision-making as it provides information that is needed for better decision-making on the issues affecting the organization regarding human and material resources. MIS is useful in the area of decision-making as it can monitor by itself disturbances in a system, determine a course of action and take action to get the system in control According to Bush (2002).

Statement of the problem: In the last decade, there are significant advances in computer hardware and software, human-computer interfaces, communications and scientific tools and techniques. It is fair to say that the advances in these areas should help in reducing the vulnerability of humans and the environment to disasters. Moreover, there is no doubt that Information and Communications Technology (ICT) is becoming increasingly important in every sector. In the context of disaster management, the revolution in (ICT) is changing the nature of economies and societies around the world. Currently, information networks play a major role in controlling and directing the flow of huge amounts of information among organizations. Many countries (developed and developing) have now established a series of national computer networks system, which link different sectors with the aim of sharing and exchanging information. Some organizations in Saudi Arabia, have adopted (ICT) to take full advantage of these new technologies (Al-Zahrani, 2006). The Directorate General of Border Guard in Saud Arabia is one of the most important government organizations that adopted (ICT) and directly involved in crisis. In fact, MIS aimed at assisting managers and operating personnel, to produce timely, accurate information and up-to-date data and information required for efficient and effective process. MIS was used to make decisions during crisis in the

General Directorate of Border Guard for long time and was always used in making decisions on different activates. The preparation and deal with crisis requires the use of accurate information in the correct time. Directorate General of Border Guard as security organization should have a high quality MIS with a high quality that will help decision-making during the crisis to provide right information to the right person in the right time. MIS provide information and feedback to prepare necessary reports. Decision makers need to ensure that MIS play essential role during crisis. Therefore, the problem of the study is to investigate and identify the importance role of MIS in decision-making process during crises in the Directorate General of Border Guard in Saud Arabia.

Purpose of the study: The purpose of this study is to investigate the extent to which MIS is being used to take decisions. It's also, exams and identifies constraints and obstacles limiting the role of MIS in decision making during crises in the GDBG in Saudi Arabia.

MATERIALS AND METHODS

The study used the descriptive research of the survey type in form of questionnaire and interview. The population for the study was all officers in the General Directorate of Border Guard in Saudi Arabia. Stratified random sampling technique was used to cover 350 officers holding administrative positions and senior administrative staff heading departments. The questionnaire contained three parts. Part A sought personal information of the respondents, while part B contained 10 items on the use of MIS for decision-making during crisis. The third part contained 5 items on problems and obstacles that limit the role of MIS in decision-making during crises. Altogether, (350) questionnaires were distributed. Of these (250) questionnaires were returned. However, (29) questionnaire were not suitable for analysis.

Data analysis: The data collected were coded and processed into a Statistical Software Package (SPSS). (350) questionnaires were distributed in May 2010. Of these (229) questionnaires were returned giving a response rate of (71.4%). Descriptive statistics were used to characterize the response to each question in the questionnaire. Each question was tested at 0.05 level of significance.

Demographic data: The participants were asked to specify their military ranks. The results in Table 1 show that most of respondents were captain (91 = 39.7%) followed by major (44 = 19.2%) and (38 = 16.6%) lieutenant colonel. There was (33 = 14.4%) first lieutenant and (10 = 4.3%) were brigadier general. It's clear that there is diversity in the military ranks of the population of the study, which reflects their views and benefit from their experience and knowledge in taking advantage of MIS in decision-making during crises.

Participants were asked about their highest academic qualification. The responses were grouped into four classes. Table 2 shows that the majority of respondents (192 = 83.8%) possess bachelor degree, followed by other degree (25 = 11%) and (10 = 3.1%) had obtained a master's degree. Only (5 = 2.2%) of respondents had a Ph.D. degree.

For the purpose of this study the respondents were grouped according to their age into three classes. They were asked to specify their age group. Most respondents (126 = 55%) were aged between 30-less than 40 years old, followed by (64 = 27.9%) aged from 40 and above. Table 3 shows that majority of respondents have good experience which could be utilized to improve MIS role for making decision during crisis. Those who have bachelor degree need more training courses in the field of information systems. As result of training, they will play an active role in decision-making during crises.

Table 1: Respondents by the military ranks

Age	Frequency	Percent (%)
Lieutenant	4	1.7
Lieutenant first	33	14.4
Captain	91	39.7
Major	44	19.2
Lieutenant colonel	38	16.6
Colonel	9	3.9
Brigadier General or above	10	4.3
Total	100	100.0

Table 2: Respondents by qualifications

Qualification	Frequency	Percent (%)
Bachelor degree	192	83.8
Master degree	25	11.0
Ph.D.	5	2.2
Other	7	3.1
Total	100	100.0

Table 3: Respondents by age

Age	Frequency	Percent (%)
From 25 to less than 30 years	39	17.0
From 30 to less than 40 years	126	55.0
From 40 and above	64	27.9
Total	229	100.0

Importance of MIS in taking decision during crises:
To achieve the main goal of this study, target audiences were asked to identify the importance of MIS in taking decision during crises. As a result, it was clear that the audiences agreed on the importance of MIS in decision-making during crises. Also, statistical results indicate that Chi square was statistically significant at level of 0.01 or less, which shows the different views of the respondents.

To meet the first objective of this study, audiences were asked to rank up importance of MIS in taking decisions. Large proportion of respondents (177 = 77%) rated MIS provides historical information about what decision makers needs during crises. We believe that MIS contain sufficient information for work and that it contributes to the provision of historical information about what work and people needs. The survey results shows that the use of MIS to set up periodic reports by the General Directorate of Border Guard ranked as second item (75%). This is because MIS contain complete information on the work which allows the use of MIS in the preparation of periodic reports.

In addition, systems prevent redundancy and provides up to-date information on the crisis obtained the third position (76.4%) while 16% were nature. Moreover, (166 = 72.5%) respondent arranged the speed of extracting information from the system does not affect the accuracy and validity of information. The researcher believes this is because MIS at the Directorate General of Border Guard has high technical ability. Therefore, speed of extracting information from the system does not affect information accuracy. Chi square test was statistically significant at level of 0.01 or less.

Furthermore, 164 of respondents = 71.6%) indicted MIS use to improve the performance of employees to raise the efficiency of decision-making process. MIS contain information on the performance of employees at the Directorate General of Border Guard, which allows use of MIS to improve the performance of employees to raise the efficiency of decision-making process. This finding showed that the use of MIS is of great importance to obtain information on the personnel and leadership side.

Also, 150 of respondents (65.5%) confirm that a system provides speed in decision-making process obtained due to the fact that MIS at the Directorate General of Border Guard provides enough information for decision-makers about the reality of study, which provides speed in decision-making. This result agrees with Stephenson and DuFrance (2002).

Finally, (161 = 70%) ranked system provides correct information and free of error and arranged information in easy way to be understand as lees impotent, while 22% were natural and 1.7% not agree. The author believes that due to the fact that MIS relies on actively IT systems to organize and arrange information on the work place. Chi square test was statistically significant at level of 0.01 or less, which shows the different views of the audiences

Obstacles for the role of MIS in decision-making during crises: The responses asked to identify the obstacles that limit the role of MIS in decision-making during crises. It is clear that the sample of the study agree that there are constraints limiting the role of MIS in decision-making during crises. Those obstacles were arranged as follows.

Large proportion of respondents (181 = 79%) rated poor planning, coordination and control activities relating to the use of MIS as the most important obstacle. Lack of coordination and control activities on the use of technology does not allow us to take full advantage of MIS. It is clear from the results that the values of Chi square were statistically significant at level of 0.01 or less.

Moreover, (182 = 79.5) of respondent have seen lack of a common policy between the administrations to implement the exchange of information as the second reason to limits the role of MIS in decision-making during crises where 10% were nature. Additionally, (170 = 74%) have seen weakness of end users involvement as third limitation. This leads to reduce the degree of application and decreases the effectiveness of MIS in decision-making during crises.

We found that lack of uniform standards as fourth obstacle (178 = 77%). While 8% did not see that as problem. Additionally, (171 = 75%) ranked technical issues and problems concerning computer and network operation as fifth obstacle. The researcher believes such problems reduce work speed, which reduces the usefulness of the use of technology at study.

Finally, (156 = 68%) of respondents ranked organizational issues as the less obstacle. lack of clear organizational structure and procedures problems reduces staff ability to identify work assignments and plan for future activities. Such issues limit the role of MIS in decision-making during crises. This result agrees with (Al-Zahrani and Al-Ghatani, 2006; Al-Zahrani, 2003), which showed that organizational structures issues are of the most important constraints in Saudi organizational environment. It is clear from the results that the values of Chi square was statistically significant at level of 0.01 or less, which shows the differing views of members of the community study on these statements.

RESULTS

The importance of MIS in decision-making can be realized from its aim which is to develop a good system to maximize the effective use of data to management practices. It is also, aimed at assisting managers and operating personnel, to produce accurate information in the right time. The study confirmed that MIS was adequately used to make decisions during crisis in the GDBG. The majority of the respondents indicated that MIS was always used in making decisions on different activates. The study shows that the level of utilization of MIS for decision-making up to end users e expectation. It was also; found out that information from MIS was excellent and adequately used for administrative decisions. Preparation and deal with crisis requires the use of accurate and timely information which MIS can readily provide. Use of IS in decision-making during crisis facilitate accurate and up-to-date data and information required for efficient and effective planning in the GDBG. Interview with IT mangers revealed that adequate use of MIS enhance accurate and timely information which are needed for effective decisions on issues related to staff promotion, staff training and development, appointment of staff to duty posts, allocation of resources among others. MIS used as tool to improve staffs performance and productivity. We believe that the first task of the manager is to design and manage the flow of information in an organization in order to improve productivity and decision-making. Information must be collected, stored and synthesized in such a way that it will answer important operating and strategic questions. The computer center and organizational support play an important role in encouraging mangers and staffs to use MIS. The benefits of this support include increased motivation and improved productivity. Generally all officers were satisfied when using MIS which increased productivity, effectiveness, sharing information with others and the speedup of management operations. MIS have improved effectiveness of decision-making of a range of different tasks. The efficiency and effectiveness of decision-making is corrected with improved use of MIS. The results of this study confirm with Kuoa and Ye (2010) results. Their study discovers that adequate IT investment and acceptance will improve employee's capacity and employees' knowledge can better predict organizational outcomes.

The Study found out that the Directorate General of Border Guard suffers from several problems. Poor planning, coordination and control activities relating to the use of MIS, lack of a common policy and organizational issues were come up as critical obstacles.

This study agrees with Fabunmi (2003) who claimed that MIS is useful in making decisions to solve many of the problems facing organizations. Such problems include poor planning, scheduling, poor estimate of staff requirements and lack of accurate information on staff. Finally, we can conclude that study indicated that MIS was always used in making decisions during crisis effectively and efficiently.

CONCLUSION

Based on the findings of this study, MIS was used for decision-making for planning to face crisis in the GDBG in Saudi Arabia. The study indicated that the officers agreed that there are several crises facing them every day. The study showed that the individuals of the sample strongly agreed on the informational requirements to manage a crisis that may face. The findings of this study confirm that there is a strong agreement on the importance of MIS to correct the decision process during crises. Some interfered obstacles limiting the role of MIS in taking decision during crises were identified. Therefore, it is recommended that the MIS units should ensure free flow of information and adequate use of MIS in decision-making.

We could recommend that proper orientation should be given to managers at all levels. Also, training programs should be organized to ensure proper and adequate use of MIS facilities in generating and disseminating information for better decisions. However, working to make efficient and good level of planning, coordination and control on the activities related to the usage of technology at the GDBG is needed. The researcher recommends that the ministry of interior should set unified information technology policy to enables all security sectors associated with the ministry to obtain information during crises within specific standards and criteria.

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