

Moh'd Al-Sqour, Kamal Matouk

THE EFFECT OF A/MIS UPON THE EFFECTIVENESS OF DECISION MAKING – A PRELIMINARY STUDY

1. Introduction

In today's world of automation and intense competition, recent developments in information systems (ISs) technologies have resulted in computerizing many applications in various business areas, as a result of these automated systems, managers are able to make better, more informed decisions, therefore, the computer systems used to assist in decision making are becoming a more valued, shared resource within organizations. Organizations cannot be operated or managed effectively without ISs which its knowledge is essential for creating competitive firms ([Bocij et al. 1999; Laudon, Laudon 2004]). The availability of a wide range of timely, relevant information plays an important role in environmental decision making [Kauffman, Bin 2003]. Because of the advance in computer technologies. The need for organizations to incorporate existing and future technologies in order to remain competitive has become a more pressing issue over the last several years [Malhotra, Galletta 2005]. In modern organizations, most information systems make extensive use of IT, such as personal computers [Bocij et al. 1999]. The backbone of all these technologies consists of knowledge management and decision making strategy. Science-Based decision strategies integrated with Knowledge Bases can help the right people get the right information at the right time to do their jobs [Zhao 2003]. IT itself has made possible revolution in the way that organizations today operate throughout the world. But in many organizations despite the availability of powerful computers, large numbers of decision makers cannot get their hands on critical information that already exists in the organization [Al-Sqour 2003]. For many organizations this is a frustrating problem and many tactical efforts have been made unsuccessfully during the past two decades to address the problem. Data warehousing is a strategic attempt to tackle the problem and is the only effort, thus far, that has resulted in any real benefit [Kelly 1997].

A/MIS describes the use of computer technology to provide decision – oriented information to managers. A/MIS recognizes that managers within an organization use and require information in decision making, and those Computer Based Information System (CBIS) can assist in providing information to managers

[Bodnar, Hopwood 1998]. Computers have been used in business only since the early 1950s.yet, during that time, the computer has been a vital force in the production and distribution of goods and services. In the 1960s, computers became the basis for A/MISs [M84]. Using computers in Poland started in sixties of the twentieth century, several years after being used in the major industrialized countries. This time gap did not become smaller, but on the contrary it becomes more and more quickly because of the great speed of development in such field.

2. The Research Concept

An A/MIS processes data, transactions, and provides information about an organization’s activities to users and decision makers to plan, control, operate their business, and assists them with interpreting that information. The accounting / management system (A/MS) identifies, records, and measures business, financial, and economic activities and summarizes and reports information about those activities to decision makers internal and external to an organization. As illustrated in fig. 1.

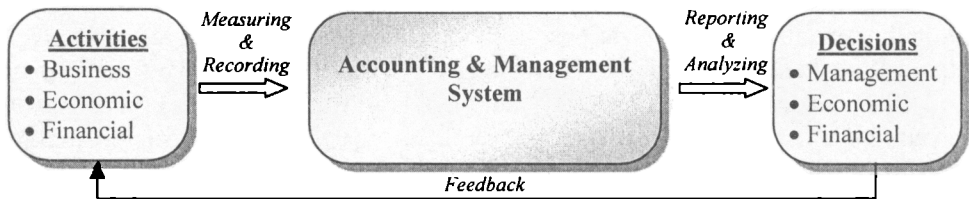


Fig.1. The A/MS is the link between activities and decisions

Modern A/MSs are highly integrated with an organization’s computer system. The computer system provides the physical devices for collect, process, and report information. Hence, the A/MSs are responsible for identifying, measuring, and reporting information that is processed in computer systems.

A/MIS studies the structuring and operation of planning and control processes which are aimed at providing information for decision making, it obtains data from an organization’s various divisions. It uses the organization’s computer system to store and process that data and to convert the data into useful information. Later the information is provided to decision makers in the organization.

3. Definitions

Data: collected facts – numbers, characters, images, or other method of recording, in a form which can be assessed by a human or input into a computer,

stored and processed there, or transmitted on some digital channel [Zhao 2003]. Facts that are captured and stored [Kelly 1997]. But which are not necessarily useful in making decisions or considered to have little or no value until they have been processed and transformed into information [Bocij et al. 1999], information organized for analysis or used to reason or make decisions.

Information: a collection of facts or data – statistical information [Zhao 2003]. Data that has been treated and processed so that they are meaningful [Bocij et al. 1999] and useful because it has a context which allows the analyst to draw some conclusions [Kelly 1997]. Data on its own has no meaning, only when interpreted by some kind of data processing system does it take on meaning and become information.

Knowledge: knowledge can be defined as the body of facts and principles accumulated by humankind or the act, fact, or state of knowing [Zhao 2003] language, procedures, rules, concepts, ideas, abstractions etc. To achieve some or other result, we need an ability to use these acts, facts, and notions effectively without this ability, the facts and concepts are meaningless. Knowledge is information – organized data. Which implies that the trends observed in the information are known and institutionalized by the enterprise and are embedded in the business process of the enterprise [Kelly 1997].

Wisdom: wisdom is the ability to make sound choices, and good decisions – the best decision. To Dietrich Bonhoeffer understand reality is not the same as to know about outward events. It is to perceive the essential nature of things. The best-informed man is not necessarily the wisest. Indeed there is a danger that precisely in the multiplicity of his knowledge he will lose sight of what is essential. But on the other hand, knowledge of an apparently trivial detail quite often makes it possible to see into the depth of things. And so the wise man will seek to acquire the best possible knowledge about events, but always without becoming dependent upon this knowledge. To recognize the significant in the factual is wisdom.

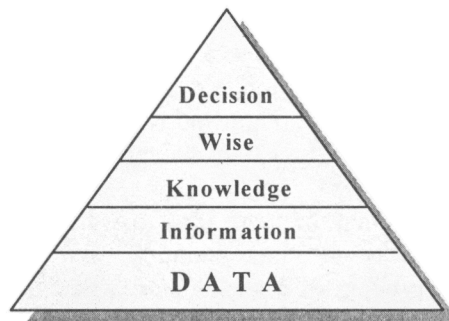


Fig. 2. Decision hierarchy requirement

Effective decision making depends on the appropriate data, information, and knowledge. However, each of these inputs has a different role in supporting the decision-making process. Recognizing the distinctions between data, information,

and knowledge – not always an easy task – is crucial to developing management approaches that leverage their relative values [Kauffman, Bib 2003]. Data are obtained by observing and documenting facts; information is obtained by analyzing and processing data; and knowledge requires cognition, experience, and understanding. This simplistic hierarchy is shown in the fig. 2.

Information is collection of facts or data, but data is not necessarily information. Also, wisdom is knowledge – knowledge is a process of piling up facts – wisdom lies in their simplification, which in turn is information, which in turn is data, but, for example, knowledge is not necessarily wisdom, it implies a mature integration of appropriate knowledge, and ability to filter the inessential from the essential – elimination of non-essentials. So wisdom is a subset of knowledge, which is a subset of information, which is a subset of data. The ultimate goal of research on data, knowledge and decision-making is: get the right data→information→knowledge – accuracy to the right person-suitability at the right time – good timing and that person can take appropriate action using proper decision-making strategy.

4. Study Problem and Importance

Recent developments in information systems technologies have resulted in computerizing many applications in various business areas [Thuraisingham 2003]. Computer systems aiding managers in decision making are rapidly changing. DSS refer to a collection of computer technologies of which the objective is to support managerial work and, in particular, decision making. Because of the advance in computer technologies, managers rely on computers to assist in evaluating larger amounts of data. As a result of these automated systems, managers are able to make better, more informed decisions. Therefore, the computer systems used to assist in decision making are becoming a more valued, shared resource within organizations. Using information technology has caused a great development in all life fields, financial, manufacturing, service, and information sectors depend on computer systems and ISs. Using computers in different sectors in Poland started several years after being used in the major industrialized countries. This time gap is broadened because of the great speed of development in such field. Using of computer in decision making:

1. Computer and best usage of them lead to solutions of many problems and hindrances that face process of decision making.

2. Main element of process of management is decision making, which needs availability of correct objective information, deduced from treatment of a lot of data. This can be achieved only through ISs that enable collect, gather, treat and store data, and then present them to decision making centers.

3. Accounting/Management data systems provide necessary information for making decisions, and avail using modern mathematical styles in making decisions.

Last, they make every stage of decision making more rational and reasonable.

4.1. The Aims of the Study

The aim of this study is to examine the actual usage of computers in the firms and recognize the role played by the computers in decision making, using Poland as the source of data. It was expected that the achievement of that aim would involve an investigation of the following matters:

- Computer's role in specifying the problem and its effect on process of decision making.
- Computer's role in providing alternatives and effect on process of decision making.
- Computer's role in choosing suitable alternative and its effect on process of decision making.
- Computer's role in collecting and analyzing data, and its effect on process of decision making.
- Presenting a group of recommendations that can develop process of decision making in the polish firms.

4.2. Study Problem

Because of researchers' belief and persistence of the great role played by the process of decision making in the success of the organization, and as the heart of administration, they have carried out many studies and researches about effective factors in process of decision making. Prior research in IS [O'Brien 2004] has explored a wide spectrum of topics including IT investments and strategic decision-making. A 1996 survey on the usefulness of A/MISs found that managers believed only operational activities could be supported by CBIS, while assistance for tactical or strategic decision-making can hardly be expected. Another study revealed that most organizations that had computerized their basic administrative operations have not been able to measure any productivity gains from IT investment. Several other studies have indicated that the size of an organization has a positive impact on the success of computer use [Spletstoesser 2000]. Therefore, we find those A/MISs an effective factor in process of decision making regarding amount, validity, and availability of information when needed, to activate their role in this field, computers are used as effective in storing and feedback of information. Hence, study of computer's role on the efficiency of process of decision making in financial, manufacturing, service, and information sectors in Poland, is important thus, this study tries to answer these questions:

1. Is there a relationship between using computers in polish firms and the process of decision making?
2. Does the computer effect specifying the problem in decision making?
3. Does the computer effect collecting and analyzing information?
4. Does the computer effect presenting of the alternatives?
5. Does the computer effect the choice of the suitable alternative?

5. Research Methods

This study will proceed in the following three stages.

5.1. Data Resources

This stage of the study will inform the knowledge base on materials from several disciplines to build its propositions. Two complete resources of data and information will be depended on:

1. primary research: involves field work and research gleaned from other researchers,
2. secondary research: this involves a literature review of books, journals, newspapers, magazines etc. to gather appropriate information about study community, the literature review will be continued throughout the project.

5.2. Collecting and Analyzing Data from Survey

As the population, comprising companies listed on the SEW that operate in all over Poland, is very large, a mail questionnaire survey is regarded as the appropriate method for gathering data and testing the propositions [Sekaran 2000]. The process through which we look for the data resources and obtaining as much data as possible then data are treated to become exact information that can be used. Quantitative data will be processed by using a SPSS program leading to descriptive and inferential statistical analysis, including means, standard deviation, T-test, Chi-square, and ANOVA tests.

Study Community – it involves financial, manufacturing, service, and information sectors in Poland, therefore, the sample was chosen from firms, listed in the SEW directed to managers and directors of all levels in administration. After a survey of the whole community, amounting to 231, a sample of 50%, about 115 questionnaires, will be taken, and distributed on the study community.

Method of data collection – collecting data can be conducted in a variety of ways and from various sources. Each data collection method has advantages and disadvantages. Sekaran states that although personal interviews have the advantages of flexibility in adapting and clarifying the questions, they have cost, time and geographical limitations. On the other hand, a mail questionnaire survey is best suited when those to be interviewed are too numerous or when they are scattered geographically, and a substantial amount of information at a reasonable cost. However, a disadvantage of the mail questionnaire is possible ambiguity in the questions. Furthermore, it is usually anticipated that a low response rate may occur, which is another potential problem. Sekaran suggests that sending follow-up letters, stamped return envelopes and keeping the questionnaire brief are useful ways to improve the rate of response to mail questionnaires. Questionnaires were distributed to decision-makers the sample is representative of the population. The results found

are also consistent with those of a number of similar studies undertaken within the same economic environment in the last few years.

Type of study – it is an analytical and field study:

1. field study: questionnaires will be distributed on the study community to collect initial data necessary,
2. analytical study: that aims to clarify relation between independent variables and related variables, depending on statistical methods used.

Definition of study variables

1. Independent variable – using the computer, which will be measured through the following variables:

- a. Existence of a special budget for the computer.
- b. Quality of the used systems.
- c. Qualification of employees, regarding chances of training and levels.
- d. Modernization and developing of the systems and programmes.
- e. A/MISs – which are systems use the organization's computer system to store and process data from various resources, and convert the data into useful information for decision making.

2. Middle variables (specifying the problem – and analyzing it): this means to specify the nature, size of the problem, and detecting cause, symptoms, effects and how much complex, and the best solution, needed. Besides, specifying the necessary data and information to solve it.

3. Following variable – process of decision making: scientists have given many definitions of decision making process, which is the process of choosing the most suitable alternative available to achieve the aim or aims, or to solve the problem waiting a suitable solution.

5.3. Presenting and Choosing the Most Suitable Alternative

This means making available of alternatives and possible solutions of the problem. Such solutions can be various and different, and must be relating to the decision problem and the stage of comparing between alternatives to choose the most suitable ones. Therefore, choosing the alternative with the least costing-regarding material, effort, and achieves the aim with effectiveness and capability. Process of choosing will be through giving a value to each alternative or a certain mark. The alternative that obtains the highest mark will be the best alternatives.

6. Conclusion

A 1996 survey found that managers believed only operational activities could be supported by CBIS, while assistance for tactical or strategic decision-making can hardly be expected. Another study revealed that most organizations that had computerized their basic administrative operations have not been able to measure

any productivity gains from IT investment. Several other studies have indicated that the size of an organization has a positive impact on the success of computer use [Spletstoeser 2000]. Therefore, we believe that A/MISs an effective factor in process of decision making regarding amount, validity, and availability of information when needed, to activate their role in this field, computers are used as effective in storing and feedback of information. Hence, study of computer's role on the efficiency of process of decision making in financial, manufacturing, service, and information sectors in Poland is important. We are currently in the process of analyzing the data obtained from questionnaires, the analysis will be completed shortly thus results, findings, and discussions will be treated in the authors next separate supplementary paper.

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WPLYW A/MIS NA SKUTECZNOŚĆ PODEJMOWANIA DECYZJI – BADANIE WSTĘPNE

Streszczenie

Rozwój systemów informatycznych doprowadził do pojawienia się nowych aplikacji wspomagających różne obszary biznesowe. Działalność firm jest coraz bardziej zależna od jakości informacji potrzebnej do podejmowania decyzji, a kierownicy w dużym stopniu zaczęli polegać na komputerach, aby przetwarzać ogromną ilość uzyskanych danych.

Celem artykułu jest badanie praktycznego wykorzystania komputerów w polskich firmach oraz podkreślenie ich roli w procesie podejmowania decyzji.

Słowa kluczowe: technologia informatyczna (IT), systemy informatyczne zarządzania/ rachunkowość (SIZ/R), wiedza, podejmowanie decyzji.

Moh'd Al-Sqour – mgr, doktorant studiów dziennych na Wydziale Zarządzania i Informatyki Akademii Ekonomicznej we Wrocławiu.

Kamal Matouk – dr inż., adiunkt w Katedrze Informatyki Ekonomicznej Akademii Ekonomicznej we Wrocławiu.