

THE IMPACT OF MANAGEMENT INFORMATION SYSTEMS ON DECISION MAKING PROCESSES FOR SMALL AND MEDIUM ENTERPRISES

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Abstract

This article focuses on preliminary stage research on how Management Information Systems (MIS) constitute a basis for decision making processes in the Small and Medium Enterprise (SME) sector in order to achieve corporate advantage. This paper contains academic research, theoretical background and brief characteristics of the current state of SME sector in Poland. Moreover the author presents market offers of MIS for SME from key players available in the Polish market. The paper presents the main objectives of the research and hypothesis as well as the research methodology.

Keywords: *management information systems, MIS, information systems, IS, small and medium enterprises, SME, modern technology*

1. Introduction

This paper contains the research concept on how Management Information Systems (MIS) impact on decision making process for Small and Medium Enterprises (SME) in order to achieve corporate advantage. The paper aims at providing a brief introduction into the research topic and presents a theoretical framework as well as focusing on the current state of the Small and Medium Enterprises sector in Poland. Moreover, the paper characterizes the current market offer of MIS for this sector. The article contains the main research objectives and hypothesis as well as the methodology that will be used during the future stages.

2. The role of information technology in modern management

In the last decade it has become widely known and accepted that the use of computers and new technologies provide the primary means for all types of business. Information Technology has become a critical factor in business development.

One thing characteristic, as opposed to former years, is the fact that there has been a noticeable expansion of new techniques for information generation

while the collection and sharing of information is still evolving. Information is the main source of knowledge and knowledge depends on the flow of information in society. The development of modern technologies, the desire for more information, the fast pace of life and the quality of life have led to information chaos. Yet, it is important to be able to live and operate in such chaos (Tadeusiewicz, 2003).

In the second half of the twentieth century it could be seen that a new social era called the Information Society was evolving. One of the major traits of that formation was the rapid development of Information Technology and Telecommunications. In fact, it can be said that the world was entering a phase where the most valuable asset would be information. Technological improvements were being pushed thereby enabling information acquisition, transfer and analysis (Nowak, 2003).

Information is defined as data that has been organized and is understandable for human beings. Data is understood as raw facts representing an event before it has been organized and arranged into an understandable form (Laudon and Laudon, 2012). The role of information is emerging. The most important factor that influence information are: globalization, world market development, local economic factors integration and technology development.

The economies of the most developed countries rely on the continually increasing mutual dependence between information and knowledge. Nowadays it is commonly known that knowledge management is the motor for proper economic and social development (Grudziewski and Hejduk, 2010).

Thus, data, information and knowledge constitute the Information Society era. Up to now the approved definition of an Information Society has not been confirmed. Therefore, the author would like to refer to the following definitions, which illustrate the most practical meanings of an Information Society.

In 1994 during the I congress of Polish knowledge the following definition of Information Society was identified: “*an Information Society is a fully computerized society, being able to use information systems and telecommunication services in order share information remotely*” (Nowak, 1994, pp.1).

The European Integration Committee provided its definition of an Information Society: “*An Information Society, as a new type of society that has been evolving in countries where substantial growth of information technology has occurred*”. Moreover, it is expected that an Information Society should meet the following requirements:

- Telecommunication technology should cover all citizens,
- Information resources should be available to the public,
- Society should head toward future development (Nowak, 1994, pp5).

3. Theoretical background of Management Information Systems

It has been confirmed that the genesis of the Management Information System (MIS) definition is the Information System (IS). The basis of the IS definition can be found in the 70's of the twentieth century. This IS terminology, has been diversified over the years, as currently it touches two independent fields: Management and Information Technology. However, the subject of interest still remains the same. For this reason it is important to clearly state the definitions in order to have a better understanding of the field.

Stabryła (1996) defines Management Information System *“as a system which on one side creates information resources and the its needs, while on the other a communication subsystem for an organization”* (Stabryła, 1996, pp.172). While Kisielnicki and Sroka (2003) provide the most practical definition of MIS: *“Management Information System is the nervous system of an organization that links together all elements of a management system”* (Kisielnicki and Sroka, 2003, pp. 19).

According to Laudon and Ladon (2012) an Information System includes computer equipment and the necessary programing for running an organization with the aim of achieving certain goals. Technically SI may be defined as a set of interrelated components that collect (retrieve), process, store and distribute information to support decision making process in an organization. In addition to supporting decision making, coordination, and control, information systems may also help managers and workers to analyze problems, visualize complex subjects, and create new products” (Laudon and Laudon, 2012, pp.15)

According to Ozz (2009) an Information System *“consist of all the components that work together to process data and produce information”* (Ozz, 2009, pp.13)

The major components of an Information System include:

- data, which is understood as input needed in order to produce information,
- hardware, which is a computer and its peripheral needed to store data and communication equipment,
- software, a set of instruction telling the hardware how data should be processed, how information should be stored and displayed,
- telecommunications, translated as hardware and software enabling fast transmission,
- people, information system professionals and users,
- procedures, all rules around information system usage, information storage, display, data processing (Ozz, 2009, pp.15).

It is important to define integrated Information Systems, those are known as Enterprise Resource Systems (ERP). The main characteristic of ERP is that it provides information that is used by multiple enterprise components.

In Table 1 the author would like to show major business functions that are supported by ERP systems:

Table 1. Major business functions supported by ERP systems

Function	Purpose
Manufacturing and production	Production planning, management and delivery (orders optimization), managing manufacturing and logistics
Sales and Marketing	Selling organization products and services, Customer Relation Management
Finance and Accounting	Managing organization's financial assets, (planning, control, business analysis, cash-flow, earnings, spending, payments)
Human Resources	Managing employee records, managing labor force, trainings

Source: author's calculation and adapted from Laudon and Laudon (2012), *Management Information Systems – Making Digital First* pp.19 Pretience Hall 2012.

Mazur (2000) states that MIS constitutes an integrated part of the enterprise. The enterprise development is driven by management methods, investments, corporate advantage achievements, infrastructure development and modern technology growth.

4. The Small and Medium Enterprises sector as a research concept – main characteristics

4.1 The main characteristics of the SME sector in Poland

The Small and Medium Enterprises sector constitutes a primary role in the basis for economy and social-economic politics for many countries. Moreover, the sector development is seen as a base of proper functions for market economies (Nogalski, Karpach and Wójcik-Karpacz, 2004).

The specific character of managing this sector is complex; therefore in terms of existing dependencies the subjective categories were identified.

Existing SME sector classification relies on two major criteria:

- Qualitative criteria (not measurable, describe specific structure and management manners of enterprises),
- Quantitative criteria (measurable by specific parameters, enables enterprise assignment to particular criteria class).

Bednarczyk (2004) advises that according to quantitative criteria, enterprises can be grouped by: number of employees, time the company has been operating in the market, the balance sheet sum, property wealth and net annual income (Bednarczyk, 2004).

Following the global development trend, enterprises representing SME in Poland need to focus on increasing effectiveness in order to achieve a competitive advantage, to be more attractive and reach set goals and objectives.

In advantageous economic conditions, macro-economic effects take place which affect the implementation and development of modern technology. Thus, new products with better quality are constantly being launched, demand barriers are decreasing and new raw materials are being used in manufacturing processes (Bendyka and Kisielnicki, 2012).

During the 4 years of recession Poland has become the leader of development of OECD (*Organization for Economic Co-Operation and Development*) countries. Polish entrepreneurs have been able to adapt their operations to the crisis external environment, be flexible for external threats, and determine an efficient strategy in order to adjust to hard global conditions. Moreover, the relatively weak level of Polish zloty, a relatively low level of exports and the fact that the domestic market is quite spacious has affected positively the growth of SME (Tarnawa and Zadura-Lichota, 2012).

Tarnawa and Zadura-Lichota established the following conditions affecting the present situation of SME:

- financial stability in Poland,
- lower percentage rates for loans,
- European Union Membership, which has significantly increased the number of public investments (Tarnawa and Zadura-Lichota, 2012).

4.2 Management Information Systems Currently Available for Small and Medium Enterprises in Poland

The selection of current Information Systems available for SME is highly diverse. System providers offer general ERP modules or focus on strictly tailored solutions for particular needs presented by individual entrepreneurs.

After reviewing current market offerings the author has presented the most competitive proposals in Table 2.

Table 2. Information systems market for SME (May 2013)

Provider name and specification	Product name
Comarch (trade and distribution, retails, manufacturing, services)	Comarch ERP Altum, Comarch ERP XL, Comarch ERP Retail, Comarch ERP XL,
IISS (dedicated solutions, outsourcing, Business Intelligence)	Desk Center Management Suite
Rekord Systemy Informatyczne (production, logistics, trade, finance, HR& administration, business analysis)	Production (TPP, SPP, RP, PP), logistics (ZW, SKJ, RM, ZA), Trade (ZO, MF, ZD, ES), Finance (FK, KA, PE, ST, SN), HR (eHR, PL, KD, PE, RCP), Business Analysis (LD, AT, PI).

Streamsoft (production, trade, services, separate offer for micro and small enterprises, separate offer for small and large enterprises)	Streamsoft PCBiznes, Streamsoft Pro, Streamsoft Prestiž
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5. The concept of empirical research on MIS in SME

Research's objectives and hypothesis have been set out and this paper will provide details of future research plans including research objectives and hypothesis.

The main objective of the research is *to establish the research concept enabling verification if and how Management Information Systems impact the decision making process in Small and Medium Enterprises sector in order to achieve a corporate advantage.*

Following the main objective, the main hypothesis is:

MIS does not provide enough support in the decision making process.

In order to conduct the research, the author has identified partial objectives and hypothesis, enabling more detailed investigations for purpose of the study. Below partial objectives and hypothesis are listed:

Partial objectives:

- To analyze the sector information needs,
- To identify details how MIS are used within the companies,
- To classify internal and external factors that impact on MIS practice,
- To identify education needs within the sector,
- To categorize which systems are commonly used by entrepreneurs in the sector,
- To create a database with results,
- To identify how global trends in the practical use of MIS are followed by entrepreneurs.

Partial hypothesis:

- Lack of information impacts the decision making process,
- Entrepreneurs use standard systems more often than tailored systems.
- Service providers can implement MIS faster than manufacturers,
- Entrepreneurs take part in free trainings only,
- As companies grow, they use more complicated systems solutions.

6. Methodology

It has been established that the research will be of a theoretical and analytical character. In order to fulfill the established objectives by hypothesis verification, it is necessary to perform qualitative and quantitative research in the specific area based on the origin and secondary sources of the empirical research.

There are plans to conduct the following research:

- Extensive literature research,
- Establishment of the methodology of how MIS impact the decision making process for SME in order to reach a competitive advantage,
- Established methodology verification,
- Conclusion.

The primary stage of the research is to analyze literature, putting emphasize on foreign works; sources from academics, conferences materials, publications, books, theme books, periodicals and Internet resources. The statistical data will be sourced from Polish National Statistical Office, Eurostat, other resources and own research. The primary stage will include mostly the literary background and a synthesis of existing research achievements in existing literature.

The second stage of the research is the methodology set up on how MIS affect SME in the decision making process in order to achieve a corporate advantage. The scope of the research is planned to encompass the District of Lesser Poland. Empirical research is planned to be conducted on the following groups:

- the general community: all SME enterprises from the District of Lesser Poland,
- a sample of randomly selected enterprises,
- entrepreneurs employing more than 10 employees,
- over the area of the District of Lesser Poland.

For the second stage a sample will be selected. Zeliaś (2002) defines two methods of sample selection: purposeful and random. In the purposeful selection method the decision about sample selection is made by the author based on substantial knowledge, while the random method enables the use of mathematical statistics for interference.

The following methods will be used for data collection:

- questionnaires,
- direct interviews,
- results of categorized method,
- descriptive statistics.

According to Zieliński (2011) the collected information should be elaborated based on the following stages:

- to accumulate collected data,
- to verify collected data in order to avoid repetition,
- to apply suitable statistical methods in order to describe the statistical population.

The third stage will be an elaboration about the selected method. Methods of descriptive and mathematical statistics interference will be used.

The following, stage four, is the drawing of conclusions.

7. Conclusion

The paper constitutes the initial framework for the author's future research. It briefly summarizes the practical use of Information Technology in modern business, provides the theoretical background of the study, focuses on the introduction to MIS in SME sector in Poland and shows current market offerings for the sector. The article provides also the main objectives set by the author as well as the hypothesis and the selected methodology.

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