
Improving the Management of Romanian Smes Through the Use of Informatic Systems

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This paper tries to analyse the ways of perfecting management at SMEs level by an intensive use of informatics technologies, in the context of implementing the information society and the 2020 digital agenda.

Large volumes of data, the complexity of its administration and processing procedures, the high demands related to the computer system providing in timely manner valid and relevant information needed to conduct, are defining characteristics when discussing the issue of computerizing SMEs' activities.

This requires a dynamic and creative attitude of the users in relation to the development of a specific informatics system.

In this respect, the new informatics technologies are an indispensable support for the redesign of management systems, the application of advanced management methods and technique and advanced decision assisting.

Keywords: *management organization efficiency, IT strategies, Small and Medium Enterprises, implementing information systems.*

JEL classification: *M15*

Introduction

Romania has entered a new world, a world in which communication and information technology accelerate the expansion of a dematerialized economy, changing the components of competitiveness and generating new sources of economic growth.

Technological progress must bring about a more transparent society, bring citizens closer to public services, develop new tools for teachers, facilitate job search and allow the efficient use of information.

Implementing adequate ICT (Information and Communication Technology) strategies is essential for increasing activity and management efficiency within organizations¹.

The concept of "information society" is now widely accepted, showing some typical applications: e-Business including services and integrated systems for SMEs, e-Learning; e-Governance etc.. They share platforms based on advanced databases and the Internet, actually one of the strategic directions of large corporations in the field.

The development of the information systems market (IS) depends largely on the economy and the possibilities of the state to make public acquisitions in this area. However, the state is primarily a system for collecting, processing and distributing information and financial means. Consequently, there are great opportunities for the realization and implementation of IS, which can decisively contribute to solving many problems by improving the technologies of state management at central and local level. It involves rigorous planning actions; by taking into account all conditionings involved especially by constraints of allocated resources.

A privileged field of application of information technologies is the SMEs, taking into consideration the launch in October 2011 of a call for proposals for Operation 3.3.1 "Support for integrated ICT systems and other business electronic applications" in the context of DMI 3.3 "Supporting e-economy" POSCCE.

The specific objectives of this operation are:

¹ Alina Andreica, Iustin Pop., ICT Strategies for Increasing Efficiency in Businesses and Organizations. Case study on some Romanian Small and Medium Enterprises, in Global Information Technology, Innovation and Entrepreneurship, Panagiotis Petratos editor, ATINER, Athens, 2004, p. 3-10

- Increase companies' efficiency by reorganizing all processes on a computer system basis;
- Introduction of modern ICT systems that encourage innovation and provide support for management decisions.

The economic and social impact of the development and implementation of informatics systems (IS) at SMEs level

The considerable social and economic impact of the development and implementation of IS is somehow hinted by the movement of employed population towards the informational infrastructure within the general movement from the primary and, to a lesser extent, secondary sectors to the tertiary sector (services) of the national economy.

Of course, achieving economic efficiency is not automatic. The technology improvement alone, without the development of competent human resources and reengineering business processes can only generate increased costs. Therefore, it is important to liaise with SI suppliers and consultants.

Today opens a new perspective for each organization which, in terms of management, has a complex structure consisting of many elements of various natures in multiple relationships restrictions.

For the design and implementation of informatics systems one must consider the specific elements of each organization, particularly efficiency, size and structure of human, material and financial resources, staff potential and mentality, position in the national and international economic context.

Regardless of the organization's characteristics, the strategy of developing informatics systems will be marked by the organization's management system, which comprises several components that differ according to the nature and characteristics of the tool used².

This requires the use of modern methods, techniques and means of information, analysis and decision within work management. In this assembly, a central place is held by mathematical methods and statistics for analysing and raising economic efficiency through forecasting, as well as the intensive use of specific IT systems.

² Vătuiu T., Toader C.- "Are computers essential for management information systems?", Proceedings of Conference, Editura EDIS, ZILINA, 2001, pag. 121

In the process of managing economic and social activities, of underlying and formulating decisions, the economic information aims at reducing uncertainty and therefore must possess the following qualities³:

- Accuracy, which expresses the value of information and concerns accurate reflection of reality;
- Opportunity, which relates to the information's quality of being available at the time when it is required and is measured by the time parameter. Regarding this quality, one must emphasize the process of information „aging”. In order to minimize this process and its effects, management must ensure conditions for shortening the cycle: production - processing - transmission - reception - use of information;
- Value must be viewed through the informational content of the information and its effects on the process of leadership.

An important effect of IT development, but also of the awareness of the information's value is the generalization of informatics systems in organizations. Informatics systems and technology are closely related to each other. Therefore, informatics systems constitute the premises for the penetration and application of IT in organizations and IT, in turn, influence the evolution, planning and development of informatics systems at enterprise level⁴.

One must then consider the problem of improving the management system, while improving the informatics system by applying the principles and methods provided by the management, cybernetics, operational research, statistics and econometrics on the one hand, and on the other hand, informatics with its most efficient methods and procedures for data collecting, verifying, transmitting, storing and processing.

Therefore, one must design and implement informatics systems which are based on a refined technique of data organization, and which include a series of mathematical models, methods and management techniques that ultimately can bring about enhanced performance for the informatics system and its core activities. This concept revolutionizes the entire informatics system, transforming it from a passive instrument of

³ Purcarea, A., Niculescu, C., Constantinescu, D. - Management. Curs pentru studenții anului I, la <http://www.unibuc.ro/eBooks/StiinteADM/management/7.htm>

⁴ Dumitriu, Fl., Sistemul informațional contabil în întreprinderea modernă, Ed. Junimea, Iași, 2001, pp 25, 26;

observation, recollection and analysis of economic phenomena and processes which already occurred in an active instrument of forecasting, commanding and controlling these phenomena.

The term "computerization strategy" at organization level is used to refer to that document that describes the objectives, strategic directions and programs regarding the present and future use of informatics technology in the organization's activities so as to increase the efficiency and effectiveness of the informatics system and to improve performance and a better market positioning.

The advantages of computer technology are not self-imposed, but are based on the user's ability to showcase them at a time.

A computerized system work implies to some extent availability of the human factor, certain skills, adherence to specific ethics. All these elements are formed in a progressive and cumulative way, either by the users' gaining of informatics knowledge or by the practice of current use and through the interpersonal transfer of experience when it comes to problems created by the use of new technologies.

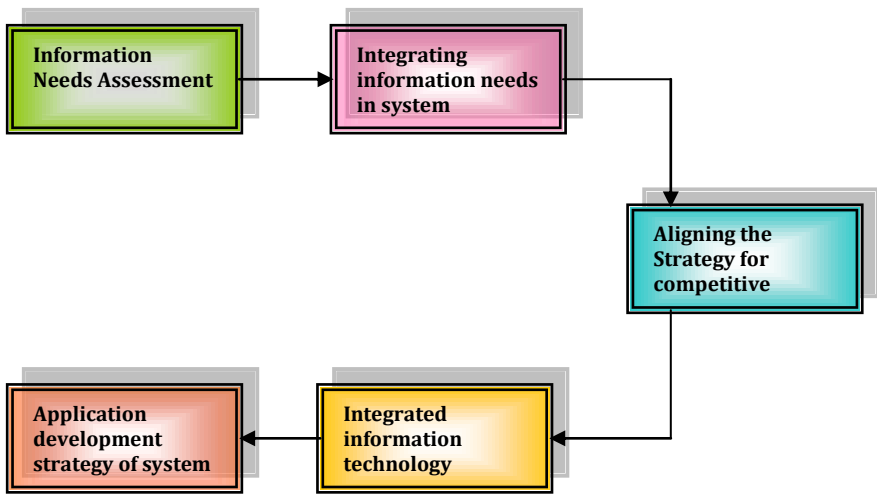


Figure 1: Informatics strategy chain

In addition to promotion and assimilation-type reactions, however, there might also arise some rejection or blocking ones; they are, in essence,

the result of resistance to deep change which is inevitably generated by the new technologies.

Obviously, the ratio of the two types of reactions has a significant influence on the contextual variables related to the implementation of an information system within an organization.

In order to be synergistic, this conjugation of profiles and actions needs to be placed under the direct authority of the organization's top management which must take responsibility for coordinating the computerization action. This managerial personnel will be able to successfully manage the development of the accomplishment and implementation strategy of any project, regardless of its scale and so the more of a current project, namely the one regarding the development and implementation of informatics systems⁵.

The main correlations between these stages and the quality of the management strategy for achieving informatics systems, as well as between the strategy and the managerial reshaping itself facilitates a more operational future projection of the organization in the coming years, opting for efficiency through computerization.

In the context of the current management practice, adopting a strategic approach in using SI, and concepts of decision assisting together with raising interest in the prospective vision constitute favorable opportunities for the development and implementation of successful informatics systems.

The development of organization-specific IT systems through gradually implemented applications was able to ensure automation of data processing; however, it has not brought yet a fully integration at conceptual and rational level of the information resources available within organizations.

It has been often noticed in practice that a sequential approach to computerization without the proper correlation to the needs of the organization's informatics system has generated a decrease in the organization's effectiveness and efficiency because it only managed to produce redundant informatics circuits, supports and processes.

⁵ Vătuiu Teodora, „Realizarea și implementarea sistemelor informatice-cerință majoră a societății informaționale”, Conferința Națională de învățământ virtual CNIV-2004, Ediția AII-A, Editura Universității din București, 2004;

Considerations of economic efficiency and managerial performance gradually authorized information resources management as a problem related to the operation of the organization as a whole, placing themselves at the level of responsibility and decision-making authority of management.

The organization's information resources management is based on the following principles:

- information is a rare source and in order to use it efficiently one must first identify and index it;
- once the existence of information is highlighted, it should be valued in terms of multiple use opportunities in order to meet the information needs within the organization;
- the dictionary of available information, its resources and the range of their intended use must be regularly updated;
- the process of generation and use of information resources of an organization must be subject to continuous monitoring.

In terms of its implementation in practice, the concept of information resource management involves systematically carrying out the following specific activities:

- developing and updating strategic plans in the area of information resources;
- application of logically, coherent structured solutions of the existing databases systems;
- developing and updating the information dictionary;
- assisting end users of the computer system;
- defining and implementing standards for the collection, transmission, processing and storage of data;
- Promoting the application within organizations of policies and procedures established in the domain of information resources management.

These procedures, perfectly legitimate in relation to the specifics of a competitive economy, must also be harmonized with the socio-cultural imperatives aimed at informational integration at a national and international scale and promotion of social communication transparency, as attributes of contemporary civilization, based on information. This context determines organizations to refer themselves to the national and international institutionalized regime regarding the protection of the rights of intellectual assets creators.

Fundamentals of elaborating the managerial strategy for the development and implementation of informatics systems at SMEs level

The direct links between diagnosis and the set up of the managerial strategy for the development and implementation of informatics systems are outlined in Fig. 2.

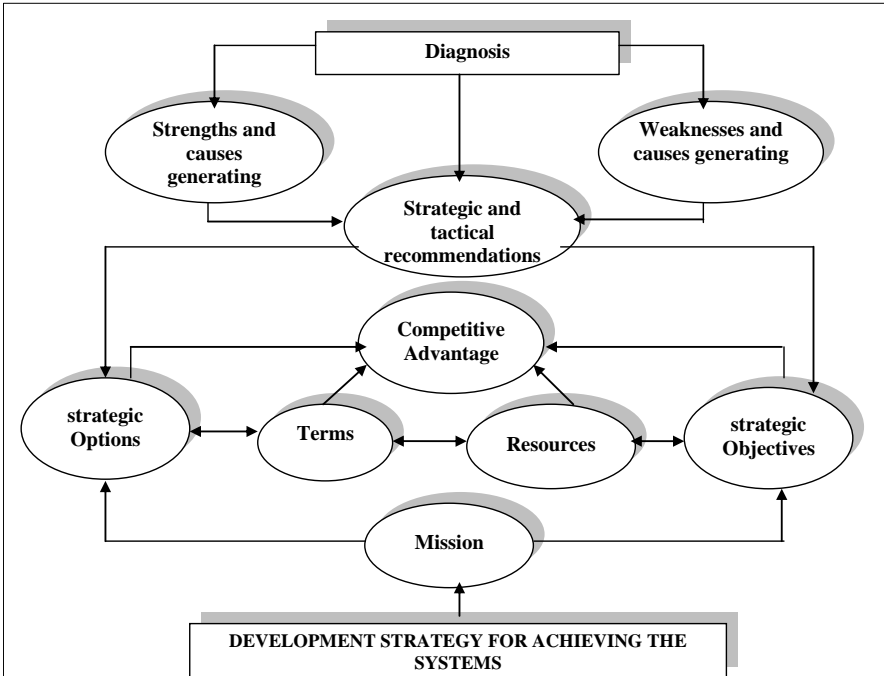


Figure 2: The link between diagnosis and the strategy of accomplishing IS

The development of the strategy for accomplishing informatics systems has as its starting point the diagnosis, which is used to identify strengths and weaknesses and the causes that generated them.

Based on this, one makes strategic and tactical recommendations which are the foundation for establishing strategic objectives and options regarding the strategy for the development and implementation of informatics systems.

The second important foundation is the opportunity study, which provides relevant information on the absolute and relative market share held by the informatics system subject to process redesign starting from its main weaknesses. (fig. 3.)

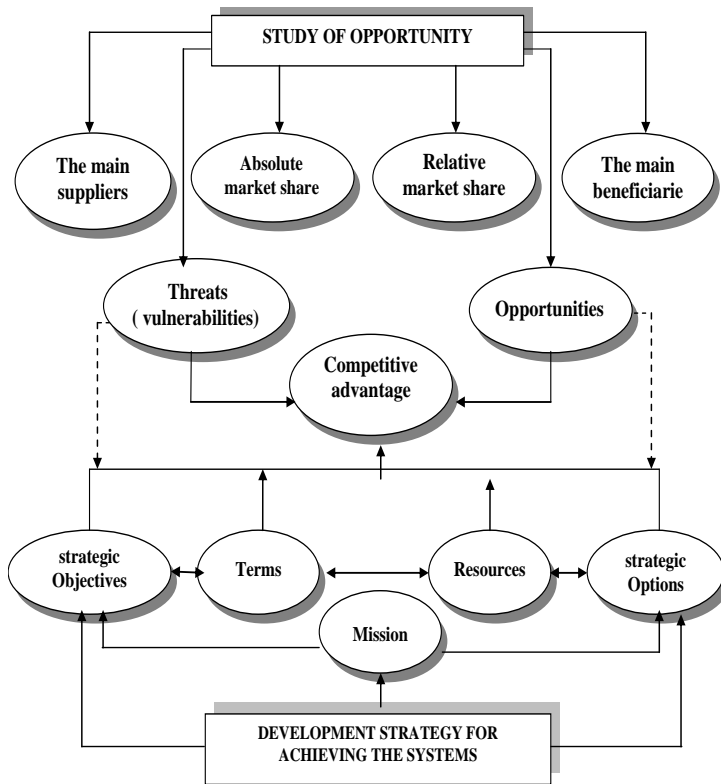


Figure3: The link between the opportunity study and the strategy for developing IS

The strengths, weaknesses, vulnerabilities and opportunities identified constitute an extension of the diagnosis, namely the SWOT analysis, extremely helpful in substantiating complex strategic scenarios.

In this context, the strategy is the overall mission of the organization and the various profile means that exhaust resources to accomplish this mission. The strategy for developing IS appears as "a way" to

achieve the goal of the organization, which should be the maximization of profit or a growing efficiency of the activity through computerization.

The IT strategy of the company is an expression of the image related to the company's objectives in terms of the implementation of information technology for a specific time period (normally 3-5 years), and the way to achieving these objectives.

It should also express the way in which information technology is combined with the organization's needs and how it can support the objectives set. The strategy will be the standard to which reference will be made whenever one will need to decide the fate of an investment in the area and it will represent the framework for all decisions related to these issues.

In the case of the IT strategy not correlating its sought objective with the general objectives of the organization and it will solely propose computerization for the sake of computerization, led by fashion and the latest technical achievements in the field, the company resources will be wasted, because instead of energies uniting and creating a synergy effect while cooperating to achieve a common goal, they will be disjointed and will head towards different, if not opposite directions.

After stating the strategy, the process starts with a thorough internal and external analysis of the project using the "SWOT analysis". Informatics systems together with information technology are a major consumer of resources. Strengths and weaknesses of current systems and of other uses of information technology have to be objectively highlighted.

Through the opportunities and threats, attention is paid to the organization's competitive position in regards to informatics systems and IT and how they affect competing organizations. Developing a strategy will be accompanied by a description of control procedures, of a set of indicators which will allow measuring performances and comparing them to the levels originally proposed.

At all times, this strategy will be confronted with the overall strategy of the organization and environmental conditions in order to make sure that it can cope with any changes brought about by adjustments in the IT strategy.

Through the chosen strategy the organization must overcome weaknesses in the IT field by leveraging existing opportunities. Threats are those items that could be reduced by increasing and strengthening "strengths" and choosing an appropriate management strategy.

In conclusion, the starting point and at the same time, a first sequence of grounding the strategy is the diagnosis of the economic and managerial viability of the organization, which aims to highlight the main dysfunctions and strengths and, based on this, make recommendations focused on the causes of the positive and negative effects, depending on the benefits that the implementation of IS could bring to the organization.

Conclusions

Computerization involves explicit and firm options translated into coherent and systematic, long-term oriented actions. It requires par excellence, a strategic approach. Interaction with computer scientists, through the formulation of problems and validation of solutions that arose during the design and implementation of the IS are necessary determinations of the cooperative and participatory behavior, recommended to be followed by users. Computerization is an interdisciplinary process in its content, and a cooperative one when it comes to its use. End users participate in this process, together with computer specialists and suppliers of equipment, software and IT services.

Operationalization of modern management concepts and tools depends decisively on the adoption by the organization of the adequate informatics and telecommunication support. This implies the production of a major technological change which needs to be articulated in the overall strategy aimed at reconstructing the management system of each organization.

The transition to professionalism in the management system is marked by the establishment of a body of knowledge and of computerized management methods, the application of which requires specially trained managers able to determine how to obtain a high competitiveness in their domain.

Computerization is a priority assigned to the complex and comprehensive approach of management strategy implemented at the level of SMEs.

The last year investments in ICT for small and medium enterprises are further discussed (see figure 4): 18% declared total ICT investments higher than 75%, 14% in the interval (50%, 75%], 9% in the interval (30%,

50%] and 31% - investments lower than 30%. 28% declared no investments in ICT for the last year or had blank fields.

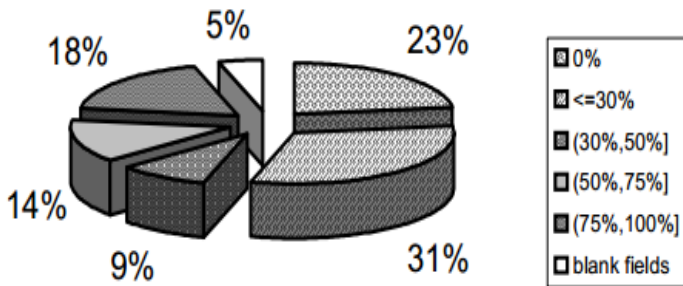


Figure 4: Investments in ICT for small and medium enterprises

It is imperative that management organizations to be aware of the advantages that adequate information systems can bring to the organization and the importance of adopting and implementing effective strategies in choosing and operating efficiency.

The organization's strategic options are based on these elements, defined as "major approaches, with implications on the content of a considerable part of the organization's activities on the basis of which one determines the possibility of attaining the strategic objectives"⁶.

There are a number of optional strategic possibilities: development, upgrading, diversification, specialization, etc., which defines the way forward in the long run.

In perspective, to highlight and assess the potential of these options, and to evaluate the effectiveness of implementing information systems at organizational level, the authors will implement a questionnaire, structured in accordance with the objectives tracked:

- Questions about the identification data of the organization (number of employees, activity domains, territorial distribution, etc.);
- Questions about specific technical features;
- Questions about software used;

⁶ Nicolescu Ovidiu (coordonator) – Strategii manageriale de firmă, Ed. Economică, București, 1996, pag. 46.

- Questions about procedures and standards meant to highlight the scale of the informatics system (at the entire firm level or applied only to a number of departments);
- Staff training questions;
- Questions about the impact of IS on company performance.

The results obtained through an analysis at SME level can be extrapolated at the level of the entire organizational system of this economic sector.

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