

THE INFORMATION SYSTEM IN THE LIGHT OF THE DECISION-MAKING PROCESS AT THE LEVEL OF THE ORGANIZATION IN THE CONTEXT OF DIGITALISATION

*Elisabeta Andreea Budacia
Lucian C-tin Gabriel Budacia
Marian Florin Busuioc**

Abstract

The activity of research, analysis and use of information is the expression of the decision-maker's need to adopt appropriate decisions. For a decision-maker information represents the vital "raw material" which sets in motion the entire process of approaching the respective decision.

On the basis of the organization's information system the knowledge of its realities is ensured, creating the proper conditions for the elaboration and achievement of managerial goals, as the information system allows the obtaining of the necessary information in order to substantiate the decision. The information systems' utility should become apparent before, during and after making a decision.

We believe that the elaboration of competent computerised systems with a view to assisting decision-making emerges as a priority for the new wave of managers.

Change is part of the evolution of the local and global business environment. Thus, economic cycles lead to the appearance and disappearance of companies, and the period of the pandemic emphasized this aspect. For this reason, one of the methods through which companies can create resilience when faced with certain crises is digitalisation.

Keywords: *information system, decision-making system, digitalisation, information*

JEL Classification: M20

Introduction

The activity of research, analysis and use of information is the expression of the decision-maker's need to adopt appropriate decisions. For a decision-maker information represents the vital "raw material" which sets in motion the entire process of approaching the respective decision. However, the decision-maker's capacity to obtain sufficient information is limited by certain restrictions, of which some are more relevant, namely: the costs associated with procuring information, the decision-maker's analysis possibilities, the characteristics of the relations between the decision-maker and his/her environment. In the decision-making process, information represents the basis for success for any organization and is essential for solving a multitude of problems which are generated by its activity. Organizations need numerous decisions

* Elisabeta Andreea Budacia, Lucian C-tin Gabriel Budacia and Marian Florin Busuioc are at the Romanian American University in Bucharest. e-mail: andreea.budacia@gmail.com.

in order to function, adapt, progress, use the advantages of certain opportunities and overcome periods of crisis. There is a wide variety of problems with which an organization is confronted: many decisions are repeated throughout a working day, while others appear rarely, even once in a few years.

The role of the information system in substantiating the decision

In the literature, there are many definitions for the information system. Thus, for Hirschheim it represents a social system of different meanings, which refers to interpersonal exchanges. It is considered that the exchange of information is made through different information technologies which do not question its meaning; the actors are always components of the information system (through the fact that they interpret the information) and of the organizational system (through their roles in the processes of the organization). In his turn, Alter defines the information system as a combination of information, individuals and information technologies with a view to achieving a certain goal. Reix considers that the information system is an organized set of resources (materials, individuals, programmers, databases, procedures) which allows gaining, processing, storing and communicating information in its different forms, within an organization.

To sum up, we consider that an information system is an organized and integrated set of models, procedures, human resources and technical means of gathering, recording, processing, transmitting and storing data and information relating to the activity of the management system and the environment in which it functions.

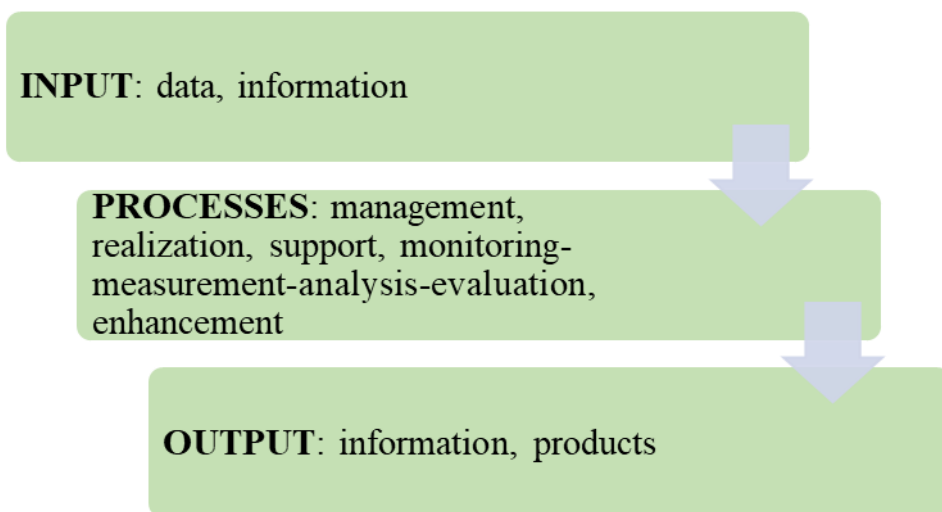


Figure 1: The simple chart of the elements of the organization's information system

Typical of the information systems is the fact that they should not be mistaken for the accounting system of an organization, accounting being just one of the processing methods, or the computerised systems, which are merely a technical support. Nonetheless, the accounting information system constitutes the basis of the information system for the majority of companies and their information systems are mostly

computerised, which often leads to the confusion between the core preoccupations of processing and the unessential ones.

On the basis of the organization's information system the knowledge of its realities is ensured, creating the proper conditions for the elaboration and achievement of managerial goals, as the information system allows the obtaining of the necessary information in order to substantiate the strategic decision, through the provision of the database necessary for the elaboration of development methods, for the processing and transmission of information regarding the degree of decision accomplishment, the measurement of the intensity of the managerial system's connections, the determination of irregularities and their nature and causes.

An organization's information systems can be more or less global and complete, more or less automated and permanent. They are omnipresent, multiform and more and more complex.

The information systems' utility should become apparent before, during and after making a decision:

- before: in order to prepare the decision;
- during the decision-making process: on the occasion of the simulation of decisional options and communication;
- after: the communication of the decision to those who carry it out (highlighting the information system's role as a coordinator) and exercising the control function in conducting it (on the basis of the return of information concerning the means actually used and the obtained results).

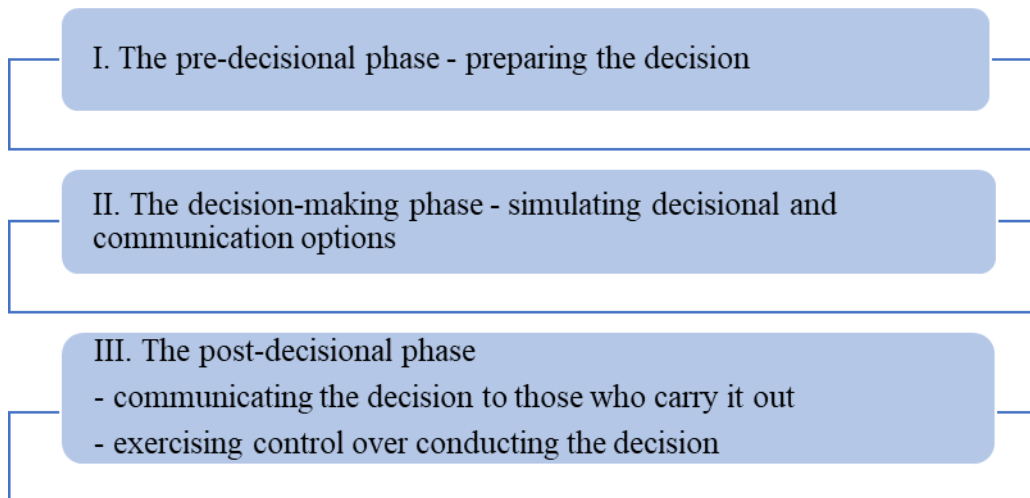


Figure 2: The phases of the information systems' utility with a view to adopting decisions

We believe that the elaboration of competent computerised systems with a view to assisting decision-making emerges as a priority for the new wave of managers. Even if, at the moment, information is no longer underevaluated, underused and underestimated as it was in the past, there still is a series of problems regarding its use within the decision-making process.

The quality of information and the characteristics of the information which is relevant in the decision-making context

The quality and value of information impose the meeting of a double requirement: managers should be able to define the type of information they need and the computerised management system should be able to provide it. In order to make the best decision, managers should have at their disposal relevant information which leads to a richer knowledge, thus reducing uncertainty and being useful for established goals. Under these circumstances, the value of information as developed from the changes which intervened in the decision-making behaviour is of major importance, changes which were determined by the availability of information. Therefore, we consider that **good quality information is information that creates value through its use**, being characterised by the following elements: it is relevant for its purpose, it is sufficiently exact, it is quite complete in relation to the problem to which it refers, it comes from a source that the user trusts, it is communicated in a timely manner for its purpose, it is appropriately detailed, the communication was realized through a proper channel and it is well understood by the user.

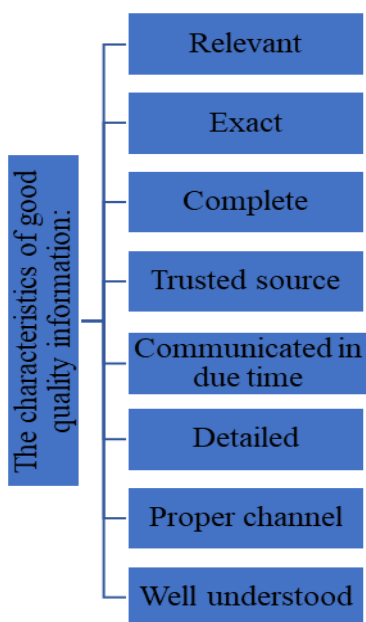


Figure 3: The characteristics of good quality information – a basis for the decision-making system

The volume and periodicity of information are very important, in the sense that a volume which is too high prevents managers from accomplishing their tasks. Good planning and a proper control of operations based on decisions should be centered around a constant flow of information, appropriately qualitative and in real-time.

Obtaining certain competitive advantages is represented by the reorientation of information technology¹ so that a dynamic view of the organization is ensured, a view

¹ Information technology strongly manifests itself as a competitive weapon which is extremely efficient in achieving set goals.

which facilitates the organization's adaptation to environment changes and thus its competitiveness. Competition is a current and difficult problem for any organization.

Improving the management's productivity represents a problem which was not taken into account until recently. And this was because the manager, through the decisions that he/she makes, does not realize a product in its own right and measuring his/her productivity through classic methods is quite difficult. We consider that the most efficient instruments for measuring the management's productivity are the quality of the decision and the time necessary for making the respective decision, instruments which are in a close relation of dependence with the quality and periodicity of information.

The harmonization of the objectives of a system with the already existing resources, in order to obtain a maximum efficiency, is realized through the impact of decision, as an essential trait of the management process which highlights the shift from thought to action. "The decision is made according to the information; the most important thing is to improve the information given to the decision-maker."² It is unanimously accepted that the hypothesis of a perfect knowledge is an illusion for technical and economic reasons. In the majority of situations, it is impossible to accumulate, process and master all the information necessary for a comprehensive knowing of a problem: knowledge will never be complete and perfect. Under these circumstances, we can state that the high qualitative level of the decision can be obtained not necessarily according to the "richness" of the information elements, but as a result of a good interpretation of these elements together with the level of preparedness of the decision-makers and the processing methods in use. "To run well a company means to be the master of its future; and in order to master the future, one must know how to work with information."³ The success of a company will depend more and more on the manner in which the management gathers information, on the quality of the gathered information, the speed with which it is processed in order to identify solutions and on the actions taken accordingly.

Characteristic of information systems is the fact they need different attributes, depending on the decision that is to be made.

² Löning H., Pesqueux Y. and collaborators, "Le contrôle de gestion", Dunod, Paris, 1998, p. 207.

³ Harper M.Jr., "A New Profession to Aid Management", Journal of Marketing, no. 3, 1981.

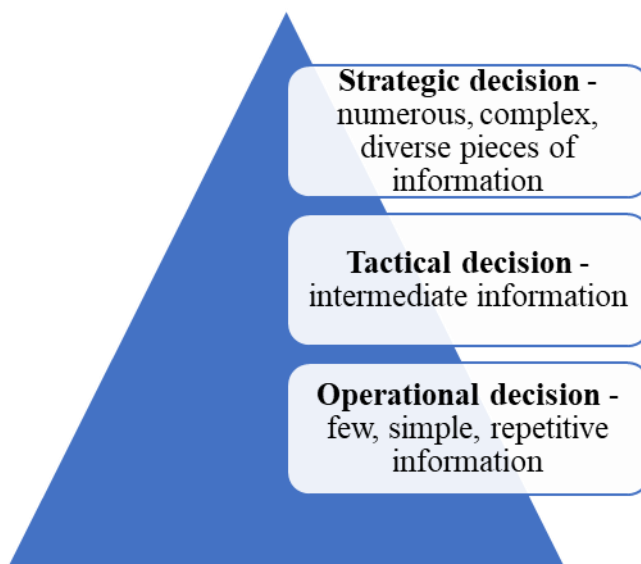


Figure 4: The levels of decision and information typology

In the analysis of current organizations, Marchand⁴ identifies four different modalities to contrive and use information, grouped under the umbrella term of “information cultures” as follows:

Table 1
Defining information cultures

The functional culture	Managers use information as an influence vector, as well as with a view to foreseeing.
The culture of distribution/separation	The manager and the employees estimate that the information is useful for the improvement of their activities.
The culture of questioning	The manager and the personnel view information as a means for a better understanding of the future and for identifying solutions in order to adapt to future trends/ orientations.
The culture of discovery	The manager and the employees are open regarding new ideas, in order to overcome crises and face changes, as well as to modify the methods of keeping competitors at a distance.

The desideratum of establishing a certain harmony between the set objectives and the existing resources, with a view to obtaining a maximum efficiency, is realized when the information system meets the conditions which concern:

⁴Marchand D.A., “La culture de l’information “, in L’art du management, Les Echos, March 1, 1997.

- **information determinism**, according to which information systems prove their utility regarding the determination and explanation of the decision;
- **adequacy** in relation to reality;
- **decision precedence** (before making a decision, all the conditions which impose it will be studied).

Thus, those who manage information systems must be vigilant when the imperative of the information systems' adequacy (regarding their conception and use) in relation to decision-making necessities constitutes a strategy. Processing information and, in a broader sense, all knowledge and competencies at the level of the organization, becomes a strategic variable for the organization: it can identify the important advantages and differences with respect to its competitors.

Change is part of the evolution of the local and global business environment. Thus, economic cycles lead to the appearance and disappearance of companies, and the period of the pandemic emphasized this aspect. For this reason, one of the methods through which companies can create resilience when faced with certain crises is digitalisation. Specialists from all over the world state that companies should build digital resilience. It may seem complicated, but it is, in fact, an aspect that regards the manner in which companies invest in technology.

Conclusions:

In conclusion, we consider that **managers of computerised systems should find answers to the following questions:**

- What information and knowledge is really useful for the organization and through which the organization can create the possibility to differentiate itself from its competitors?
- In what way does the functioning and practice of the organization modify the behaviour regarding information and knowledge?
- In what way can the organization use information in order to sustain changes?
- How can the organization evaluate and adapt the management of information in order to sustain the evolution of its strategies?

Furthermore, the reliability and utility of information systems represent relative and limitative characteristics of each organization. The pertinent character of information systems evolves in relation to their users and in relation to the modification of internal and external parameters; information systems are not effective and pertinent in an intrinsic manner, they have to include a "vigilance system" in order to make possible the anticipation of modifications and the detection of signals which announce important variations in the environment or in the organization.

In more practical terms, companies can invest in the Cloud infrastructure, in order to have all their operations in one place or they can invest in laptops, in order to facilitate telework. Another essential investment in digital resilience and in overcoming crises is in cyber security. While before the pandemic a company could work on a single secured network, today it works on several networks, which more often than not

are not secured, in the context of teleworking. This fact leads to cyber attacks and data breaches. For this reason, companies should invest in this field as well, in order to protect their employees with digital tools.

Bibliography:

1. Albu N., Albu C., (2003), *Instrumente de management al performanței*, Editura Economică, București.
2. Alter S., (1995), *Information Systems: A Management Perspective*, Benjamin - Cummings Publishing Co., Inc.Redwood City, USA.
3. Baker R., (2017), *E-commerce and Digital Trade: A Policy Guide for Least Developed Countries, Small States and Sub Saharan Africa*, The Commonwealth.
4. Hirschheim R., Klein H., Lyytinen K., (1995), *Information Systems Development and Data Modeling: conceptual and Philosophical Foundation*, Cambridge University Press.
5. Noam E., (2018), *Media and Digital Management*, Springer International Publishing.
6. Puchiu R., Stoian M., Foca M., (2018), *România digitală: concept și instrumente operaționale*, Editura Club România.
7. Reix R., (2004), *Systemes d'information et management des organisations*, 5^e edition, Vuibert.
8. Țurlea E., (2003), „Aprecierea controlului intern”, *Revista de audit financiar*, București, No. 2.