

## INFORMATION TECHNOLOGIES – A VITAL FACTOR OF THE MODERN MANAGEMENT SYSTEM IN THE FRAMEWORK OF SME

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**Abstract:** *This paper represents a theoretical-methodological foray into elucidating the contribution of IT technologies to the efficiency of the modern management system. Currently, in the context of the multiple innovative changes affecting the activity of SME enterprises, there is a need to identify the most effective competitive advantages that will help companies ensure an efficient route to the market, as well as gain the trust of its customers. The purpose of the study is to develop a model of the modern management system focused on the use of modern information technologies. At the same time, among the objectives of the research we can note: a. the elucidation of the role of information technologies in the remodelling of the modern SME management system; b. Identification of changes in the management system as a result of the implementation of information technologies; c. Elucidation of the influence of the factors of the modern management system characteristic of SME. As a result, along with the progress in the methodological research approach, we used several methods such as: analysis, synthesis, induction, deduction, abduction, comparative analysis. Subsequently, we can note that the new model of a modern SME management in the 21<sup>st</sup> century is based on the use of new information technologies, which represent the fundamental competitive advantage, helping the SMEs to make their activity more efficient, as well as to draw a path towards increasing organizational competitiveness. Accordingly, towards the end of the research, we note that SMEs must infiltrate their activity with new IT technologies, software elements, which will contribute to the improvement of the management system in view of increasing competitiveness and sustainability.*

**Key Words:** *information technologies, modern management system, model of the management system, drivers of the management system, SME.*

**JEL Classification:** L26, M1, L96.

### 1. Introduction

The process of emergence of the Republic of Moldova to a market economic system requires all enterprises to develop the managerial system according to the national strategic priorities. Economic development and the growth of fair competition in all economic sectors in Moldova make the company’s managerial system the fundamental tool for affirming and achieving the entrepreneurial goals of business people.

The research related to the managerial system concerns its dimensions and the relationships between them. The finality of the investigations is the anticipation and channelling of the future reactions of the holders of the request for a more accurate correlation of the supply with demand.

Thus, modern enterprises are pressured by the competitive struggle to anticipate the evolution of phenomena on the market, and to implement new managerial methods, information technologies in order to increase consumer satisfaction but also to achieve managerial objectives with maximum effectiveness.

In this context, there is a need to point out those changes that have taken place in the management system of modern enterprises in order to adapt to the new demands of the market, to the new preferences of consumers.

A viable and modern managerial system certainly includes the most modern information technologies that ensure the company a good performance on the market but also the possibility to anticipate the evolution of economic phenomena. Information technologies, as catalysts, ensure the rapidity of the enterprise’s transition to new markets, new values and ensure their strategic development.

### **Material and method**

*The aim of the study* is to develop a model of the modern management system focused on the use of modern information technologies.

At the same time, among the *adjacent objectives* of the research we can note:

- a. elucidating the role of information technologies in the remodelling of the modern SME management system;
- b. Identification of changes in the management system as a result of the implementation of information technologies;
- c. Elucidation of the influence of the factors of the modern management system characteristic of SME.

In order to advance in the complex research approach, we focused on the use of several research methods, such as: analysis, synthesis, induction, deduction, comparative analysis, scientific abstraction. Each of these methods helped us to identify the factors of the modern management system, to elucidate the links between them, as well as to develop a model of modern SME management centred on the use of new information technologies.

## **2. Information technologies – development and perspectives**

The 21<sup>st</sup> century marks the age of knowledge explosion, an age marked by an abundance of information. In this era of knowledge and information explosion, companies must keep up with technical, scientific, technological, political, social, cultural changes and especially with the globalization process, where continuous effort should be directed to updating the knowledge and educating professional staff for solving the challenges faced by the companies.

With the increase in information abundance, companies become dependent on the implementation of new changes in the management system. Changing technology is causing the nature of jobs to change. Information technologies are replacing jobs and drastically changing the requirements towards them.

Information technologies refer to the process of knowledge and its methods of application, processing, transfer, and realization of information. The information system includes the collection, organization, storage, publication and use of information in the form of sound, graphic image, text, number, ... using the computer and telecommunication tools (Pascari, 2021).

## **3. The contribution of information technologies on the modern management system**

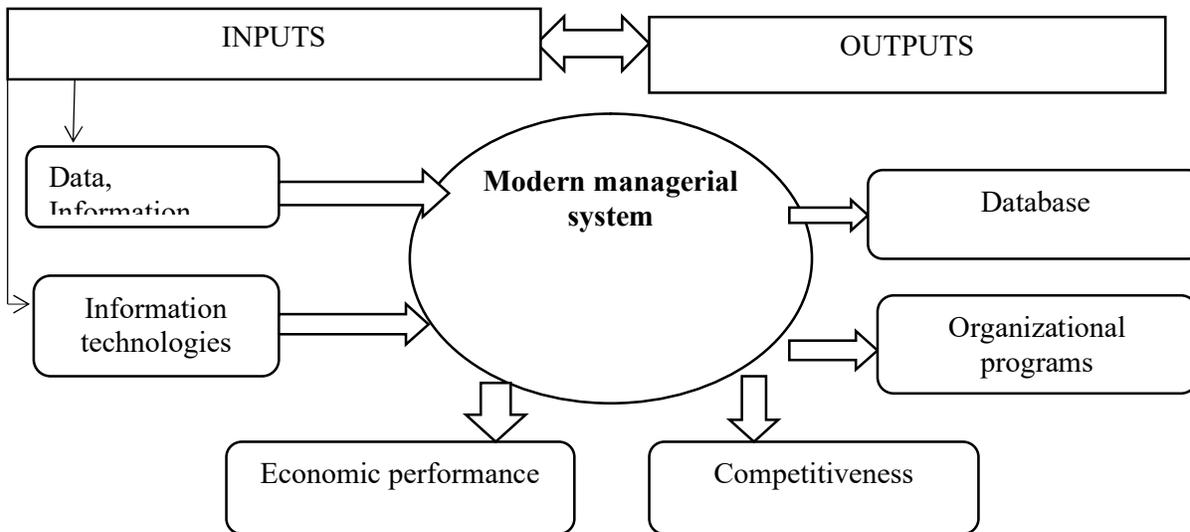
The important changes resulting from the information technology sector have become the source of the basic changes made in business management. The most important changes derive from the fact that technology has allowed managers to highlight the necessary information and monitor the work of their employees (Oprea, Airinei, Fotache, 2002).

In recent years, research in the field of management amplifies the importance of information technologies for business success. In 1998, research carried out by the Nolan-Norton Institute showed that the use of information technologies in management is reflected by the quality of the new managerial methods applied (Pascari, 2021).

According to D. Danaiața, 1998, information technologies offer several advantages to the business world, such as speed of operation, stability and compatibility of data, promoting organizational efficiency and improving productivity, controlling internal processes (Danaiața, 1998).

At the same time, the researchers D. Oprea, D. Airinei, M. Fotache, 2002, consider that information technologies remain a tool that makes changes in the nature of work, integrates organizational duties and contributes to the stimulation of organizational competitiveness (Oprea, Airinei, Fotache, 2002).

Schematically, the modern management system is shown in Figure 1.



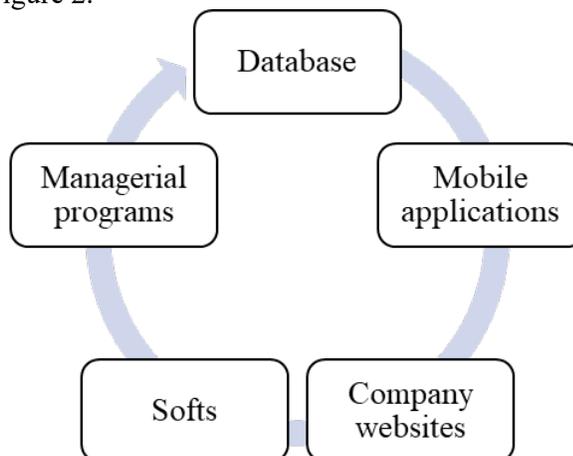
**Figure 1. The role of information technologies in achieving economic performance**

Source: elaborated by the author

The use of information technologies can reduce transaction costs through electronic data transactions and shared databases, can eliminate intermediaries in organizational processes. Using computers and communication equipment, it can be shared from data, audio, images, sound and even video.

According to the data in Figure 1., we can see that companies that apply information technologies in business, achieve a high level of economic performance and tend to achieve competitiveness by forming strategic competitive advantages.

The main information technologies that can be applied in enterprises differ from one company to another, from one country to another. However, the most important information technologies are shown in Figure 2.



**Figure 2. The main information technologies applied in management**

Source: elaborated by the author

The most modern information technologies that are applied by companies around the world are: mobile applications, software, programs, databases, interactive websites, etc., which help companies to anticipate customer needs, apply relational management and become competitive enterprises.

On the other hand, the globalization of business involves major changes in the activity of companies. National markets were influenced by foreign (multinational) enterprises. Commercial companies, trying to survive and maintain competition with other countries and companies, must introduce rapid changes in managerial paradigms.

A useful tool that has been applied within companies is information technology that has modified the managerial system of enterprises by infiltrating a new managerial tool focused on achieving success and streamlining the processes.

Undoubtedly, managers have a fundamental role in shaping the development approach of organizations where information technologies have proven to have a decisive impact on business success and in achieving organizational performance.

However, it is clear that IT, by creating a wide spectrum of information that records the smallest events and information, helps managers to make decisions and plan via analysing updated data to make a bright future for themselves and their organization.

Information technologies allow managers to quickly control and coordinate the performance of the organization with management through rapid feedback and solidarity, using the rapid information process.

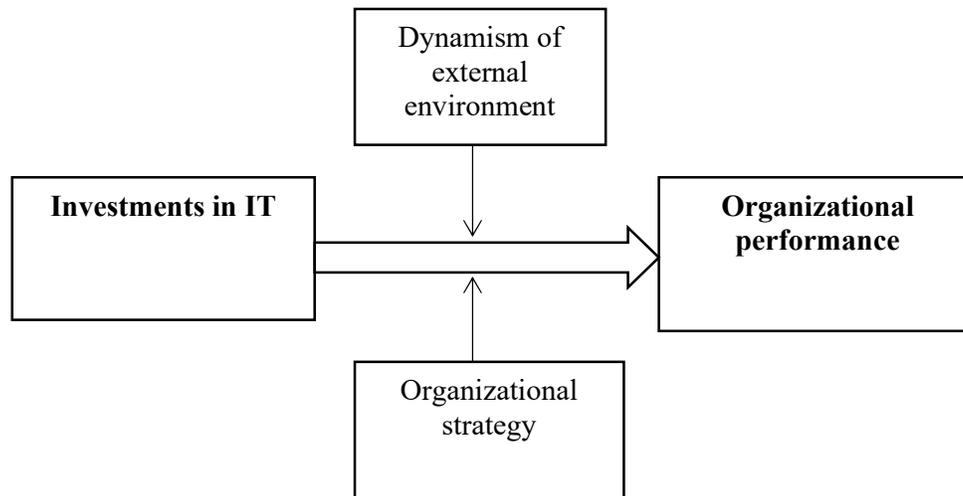
In general, getting information technology right and accurate seems to be difficult. In 1980, the computer was the only technology that was identified as information technology. Nowadays, IT has become like an umbrella that includes a group of equipment, services, functions, and basic technologies.

Information technology as defined by the US Information Technology Association (ITA) is “a technology that studies, designs, develops, implements, supports, or manages computerized information systems, especially computer programs and hardware” (Pascari, 2021).

Briefly, information technology deals with issues such as the use of electronic computers and software to securely transform, store, protect, process and transfer information.

Information technologies represent a tool, among many other devices that managers can use, in solving problems (Parcalab, 2021). At the same time, information technology is a branch of technology that makes possible the study, use and process in the fields of storage, manipulation, transfer, management, control and automatic preparation of data using hardware, software and NetWare.

The research named “information technology (IT) and corporate performance in the USA” was conducted by C.L. Lewis. The researcher studied the role of environmental dynamics and IT investments in achieving organizational performance. The researcher concluded that when environmental changes are greater, company strategy is more active and relationships are closer, IT investment has a stronger effect on organizational performance (Parcalab, 2021). The model presented in this research includes a direct interdependence between the investments made by the company in the IT sector and the organizational performance of the company (Figure 3.).



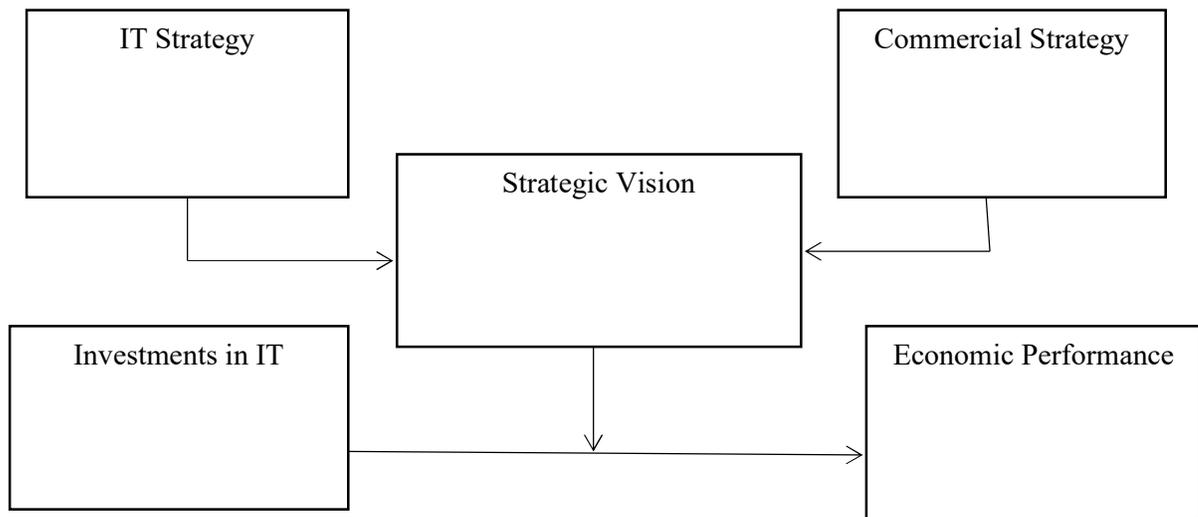
**Figure 3. Relationships between IT strategy and organizational performance**

Source: elaborated based on Lewis, C.L.

IT investments are measured by software and hardware costs as well as by the company's economic performance, which is determined by return on assets and return on sales. The environmental dynamics includes the degree of instability in the environment. The more complicated the environment, the more information and consistent studies are required (Soim, 2021).

At the same time, another research "The impact of strategic coordination leverage on IT investigations" which was carried out by researchers B. Lewis and A. Byrd complements the studies that point out the close connection between the IT technologies used and organizational performance (Lewis, 2018). These researchers considered the strategic context as a mediating variable in the relationship between business performance and IT investigations. They believed that the context and coordination of business strategies, information systems strategy, have a very important impact on the relationships between IT investments and business performance of companies.

The model presented in the research carried out by B. Lewis and A. Byrd is shown in Figure 4.



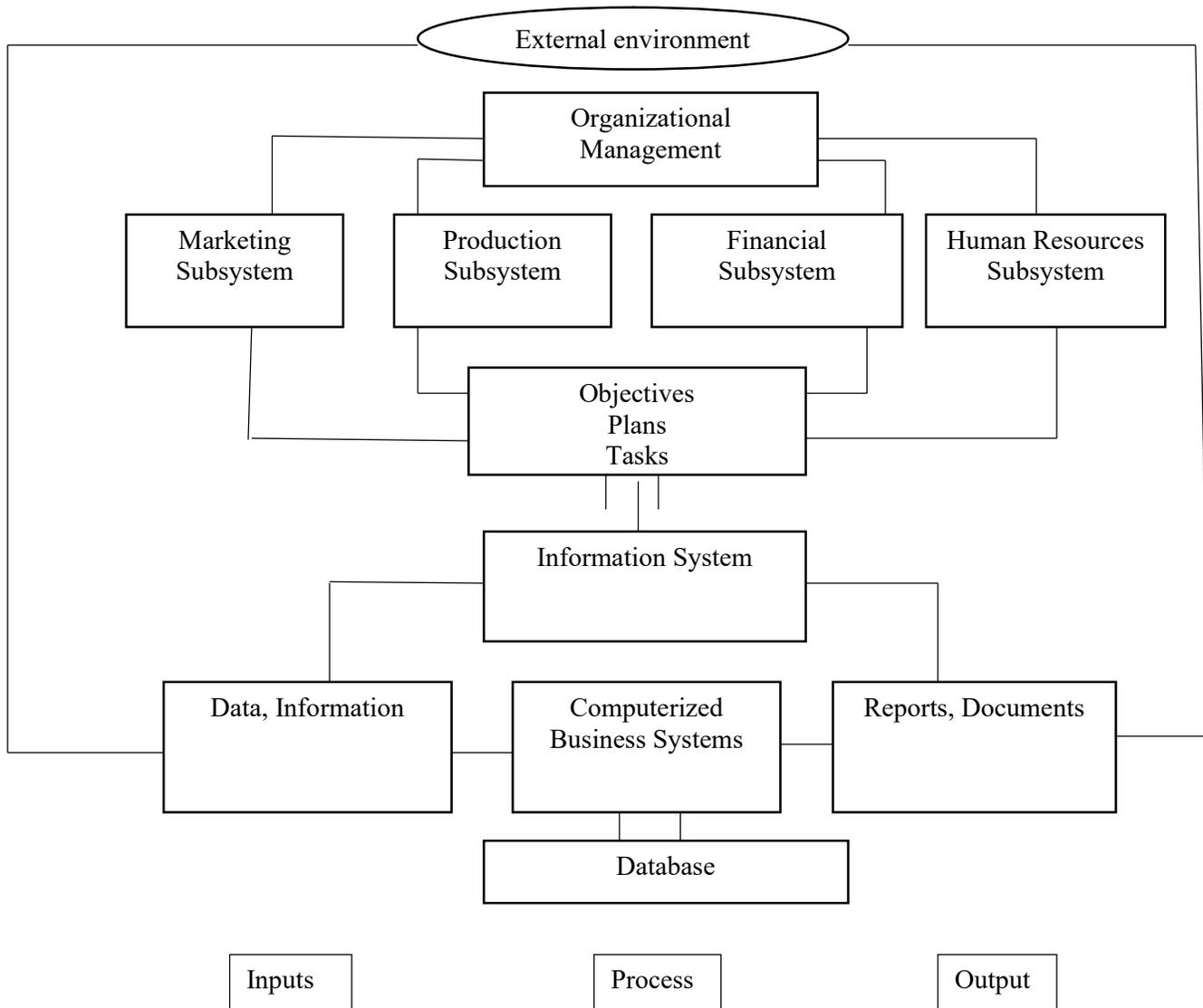
**Figure 4. The connection model between IT strategy and managerial performance according to B. Lewis and A. Byrd**

Source: elaborated based on B. Lewis and A. Byrd, 2018

From the data in Figure 4., we outline the positive impact of the IT strategy, of investments in the IT sector on the economic performance of the companies. Thus, studies have shown that with increased investments in the IT sector, companies become more competitive, more attractive and more efficient.

At the same time, IT technology, in recent years, has decisively affected the processes that take place within the enterprise, facilitating and improving the process of storing, processing, transmitting information within the organization. Thus, the management of enterprises, being influenced by IT technology, has undergone important changes in recent years, through the emergence of new methods that have been infiltrated in all subdivisions of the organization.

With the use of IT technologies, the managerial system was transformed into a modern management information system which is shown schematically in Figure 5.



**Figure 5. Management information system**

Source: elaborated based on Pascari, 2021

From the data in Figure 5., we can see the particular importance of information technologies in dynamizing the processes, streamlining the storage process, transmitting the information, but also the opportunities to transform the managerial system into a management information system.

At the same time, we can note that with the middle of the 20<sup>th</sup> century, companies all over the world began to use information technologies in a huge volume, given the fact of the multiple benefits that are brought by the implementation of information technologies within companies.

Thus, in the 1960s, US companies began using computerized production planning (MRP) programs, which helped companies develop production plans based on material stocks but also depending on the demand received from customers.

The researcher O. Wight was the one who pointed out the importance of these integrated business programs that can contribute to achieving organizational efficiency and performance. At the same time, O. Wight's ideas are still found today as the groundwork of the programs (MRP- manufacturing resource planning) (Soim, 2021).

The essence of the computerized MRP business model resides in:

1. Orders are sorted, for example, by priority or by shipping terms.
2. A production schedule is formed considering the required volume. It is usually created by product groups and can be used to schedule the loading of production capacities.
3. For each product included in the production schedule, the product components are "detailed" at the level of semi-finished products, units and component parts (Soim, 2021).

The main disadvantage of this computerized business model is the fact that for the calculations made according to this concept, the material requirements, neither the available production capacity, nor the possibilities of their use, nor the cost of human resources are taken into account. This drawback was corrected in the MRP II concept.

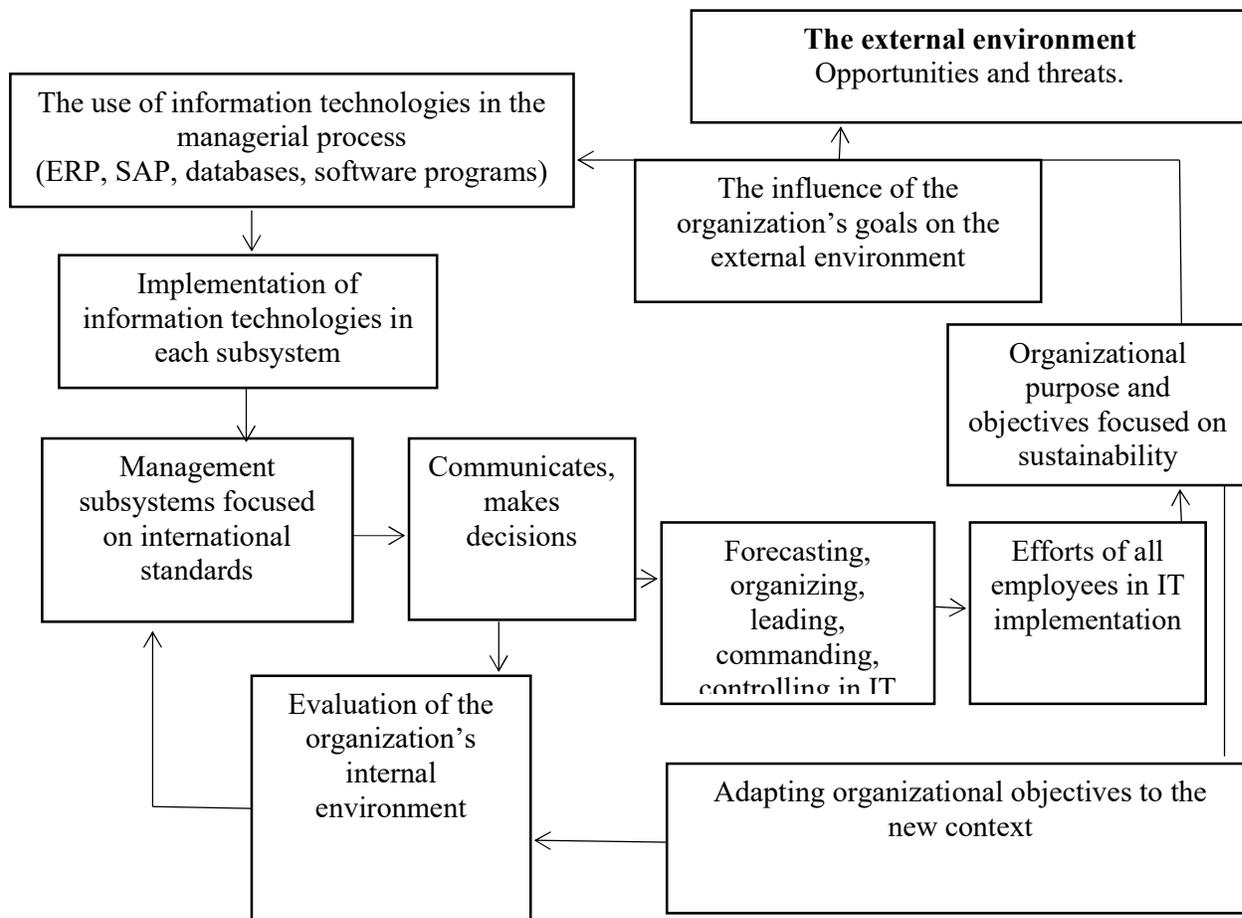
#### **4. The model of the modern management system focused on the implementation of information technologies**

Based on the research carried out, we observe that information technologies are the vital resource of the 21<sup>st</sup> century in ensuring organizational performance, because companies that adapt, implement information technologies, position themselves very well on the market, register profit and achieve a higher level of competitiveness.

Consequently, the selection of the most relevant information technologies to be implemented must be carried out quickly, through an analysis of the economic context, of the economic-financial situation of the company and also of the organizational goals.

The management systems of modern companies include the use of the most relevant information technologies, which provide the opportunity for the managerial system to streamline its activity and contribute to achieving success on the market.

In Figure 6., we schematically rendered the model of the modern management system focused on the use of modern information technologies. From the data of the figure, we can see that according to the data of the model of the modern management system that includes the use of the most modern information technologies, is one focused on international standards, it is a flexible, adaptive one, which includes an integrated, systemic vision of the managerial system, the efficiency of which depends, mostly, on the performance of information processing by the company's subsystems, but also on the efficiency of the implementation of information technologies.



**Figure 6. The model of the modern management system focused on the implementation of information technologies**

Source: elaborated by the author

Finally, we can mention that, in the 21<sup>st</sup> century, information technologies have transformed the managerial processes, automating business management and helping to increase the organizational performance. The role of information technologies in the business environment is a colossal one, aiming to ease, improve the process of transmission, storage, processing, planning, evaluation of data, processes, functions. The studies carried out in this field prove the direct link between the use of information technologies and organizational performance.

At the same time, information technologies contribute to animating processes, reducing costs, expenses and resources, along with increasing organizational efficiency and effectiveness.

In recent years, companies have intensified their process of infiltrating information technologies in all processes within the enterprise. IT companies support company managers with automated business programs, such as ERP, SAP, which help managers plan their necessary resources, as well as income, profit, activities related to each subdivision, step by step, taking into account the external factors.

At the same time, information technologies have been successfully applied in different subdivisions of companies through the prism of automated systems for sales, marketing, production, logistics, which help manufacturers and traders to increase their

performance, along with increasing the quality of products or services his but also the satisfaction of his customers.

In conclusion, we can mention that modern companies must resize their management system, in order to include the strategy of information technologies in the business strategy that would ensure a good performance on the market, a high level of economic performance but could also ensure multiple competitive advantages for companies.

## 5. Conclusions

Following the theoretical-methodological incursions carried out in this work, we can highlight the following conclusions:

1. Through the research carried out, the conceptual basis of management was completed, which, in our opinion, *management represents a complex system of relationships that are established between the subsystems of the enterprise, in order to achieve organizational objectives, through the prism of the efficient use of resources in order to ensure organizational performance.*

2. At the same time, we can identify *our opinion in the definition of management as a system, which represents a complex organizational approach, in achieving organizational performance, through which the organization builds a viable internal instrument to face the external environment according to its own organizational objectives.*

3. The research carried out allows us to outline that the managerial model of small and medium-sized enterprises is a poorly defined one, influenced by several internal factors (managerial tools, managerial objectives, organizational culture, available resources, applied technology, competitive advantages) but also by external factors such as – the socio-economic situation, competitive pressures, rules and regulations.

4. Following the research, we can highlight that the successful managerial model of small and medium-sized enterprises, operating in the 21<sup>st</sup> century, is an “adaptive” one, because enterprises in this sector require permanent adaptation, being extremely vulnerable to external and internal influences. Thus, the “adaptive” managerial model is a solution for SMEs in the 21<sup>st</sup> century, a century of changes and turbulence, where companies are required to quickly find viable solutions to stay on the market and to focus on strategic steps in order to achieve competitiveness and sustainability.

5. The studies carried out by us *allowed us to develop our own model of the modern management system in the context of the use of information technologies.* The model is an open one, focused on Sustainable Development Objectives, given the fact of establishing sustainable organizational objectives, focused on principles of efficiency and economic performance. At the same time, the model implies a systemic approach because it involves all subdivisions in the successful implementation of information technologies in its activity. The model is a flexible and adaptive one that is easy to implement in small and medium-sized organizations in order to achieve sustainability and organizational performance.

6. Finally, we can mention that, in the 21<sup>st</sup> century, information technologies have transformed managerial processes, automating business management and helping to increase organizational performance. The studies carried out in this field prove the direct link between the use of information technologies and organizational performance.

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