American Journal of Engineering Research (AJER) ***2024***
American Journal of Engineering Research (AJER)
e-ISSN: 2320-0847 p-ISSN : 2320-0936
Volume-13, Issue-10, pp: 88-96
www.ajer.org
Research Paper Open Access

Transformation of Digital Enterprise in Contemporary Conditions

Slavoljub Milovanovic
[1] *Faculty of Economics in Nis, University of Nis, Serbia*

ABSTRACT. *Managing changes in organizational culture, values and norms, as well as technological changes, is necessary in order to fully utilize the possibilities of information technologies and systems in a company. Organizational factors that should be analyzed when planning the development of information system (IS) are: the organization's environment, structure, culture and politics of the organization, type of organization, leadership style, support from the top management, the main interest groups that are affected by IS, as well as the opinions and attitudes of employees in the organization that will use IS. On the other hand, the conditions in which today's companies operate have changed significantly, which has transformed the way information systems and technologies are used in those companies. These changes are mainly related to the business environment, which is characterized by the globalization of the economy and the transformation of industrial economies and societies into service economies based on knowledge and information. This paper studies the transformation processes in a company that develops or innovates information systems, passing through various degrees of digitization and automation of business activities. under the influence of modern conditions.*
KEYWORDS *information technologies and systems, organizational changes, business transformation, digital enterprise*

Date of Submission: 06-10-2024 Date of acceptance: 18-10-2024

I. INTRODUCTION

An information system is a set of interconnected components that collect, process, store and distribute information for decision-making, coordination and control in an organization. IS and the organization are in an interactive relationship. The interaction between them is very complex and is influenced by many mediating factors that include organizational structure, standard operating procedures, policy, culture, environment and management decisions. Information systems play an important role in helping an organization identify changes in its environment and function within it (Zaoui, Souissi, 2020).

Management is an activity that performs certain functions with the aim of providing, deploying and using human efforts and physical resources in an efficient manner in order to achieve some goal. In the management process, five general functions can be identified that every manager uses in his work: planning, organizing, staffing, leading and controlling. Different types of decisions are made in the management process. The best known is the classification of decisions according to which there are three basic types of decisions: structured, unstructured and semi-structured. Structured decisions are routine and programmed, and they are constantly repeated, while unstructured decisions are non-routine and unprogrammed. Semi-structured have features of both.

In every organization there are different levels of management activities. Managers at certain management levels have different tasks and make different types of decisions. Structured, programmed decisions are made at lower levels, while unstructured, unprogrammed decisions are made at higher levels. Programmed decisions are of an operational nature, while non-programmed ones are mostly of a tactical and strategic nature. Therefore, the management levels in the company are: strategic (highest), tactical (middle) and operational (lowest). Modern information systems provide support for all levels of managerial decision-making and can be divided into the following types: transactional information systems (support the information needs of operational management in daily, routine decision-making), management information systems (monitor the company's operations and are extremely important for tactical decision-making) and knowledge-based systems (intended for top management for strategic decision-making and planning in semi-structured or unstructured

situations). Knowledge-based systems include decision support systems (DSS), expert systems (ES) and executive information systems (EIS).

Information systems are used not only to support the automation of business processes, but also for their complete and radical transformation, which is defined as business process reengineering. It was observed that information systems and reengineering of business processes are mutually dependent, that is, in the so-called recursive relation. When thinking about information systems, consideration is given to how IT can support new or redesigned business processes. On the other hand, business processes and their improvement should be considered together with the possibilities provided by information tecnologies (IT) (Schwertner, 2017).

An organization is a stable, formal, social structure that takes resources from the environment and processes them to produce outputs. This technical definition focuses on three elements: input, production and output. However, according to the behaviorist definition, an organization is a set of rights, privileges, obligations, and responsibilities that are carefully balanced over time through conflict and conflict resolution. A much more realistic behavioral definition of organization suggests that building a new information system or redesigning an old one involves much more than the technical reorganization of machines or workers, and that some information systems change the organizational balance of rights, privileges, and obligations that have been established over a long period of time (Majchrzak et al., 2016).

Information systems play an important role in helping an organization identify changes in its environment and function within it. Information systems are the main instruments for examining the environment, helping managers to identify external changes that may require a response, i.e. management reaction. The main goal of this paper is to explain the role of information technologies and systems in the emergence and development of a digital enterprise and its organizational transformation in the contemporary conditions of a globalized economy that is increasingly based on service industries. In this context, after the introductory considerations, the characteristics of modern organizations, the interdependence of the organization and information systems in the conditions of the transformation of the global economy, the organizational transformation of the digital enterprise and the transformation of the management of information technologies and systems in the digital enterprise are explained.

II. CHARACTERISTICS OF CONTEMPORARY ORGANIZATIONS

All modern organizations have certain characteristics. First of all, these are administrative organizations with clearly defined divisions of labor and specializations, where experts are hierarchically organized and where everyone is responsible to a manager. Managers have the authority to manage certain business processes, which are regulated by rules or procedures. Business rules create a system of unbiased and universal decision-making.

Organizations try to hire and promote employees based on technical qualifications and professionalism (rather than personal connections). The organization is committed to the principle of efficiency: maximizing output (production) using limited inputs (resources). Other characteristics of organizations include their business processes, organizational culture, organizational policies, external environment, structure, goals, and leadership styles. All the characteristics together influence the types of information systems that organizations use (Verina, Titko, 2019).

All organizations, including businesses, become efficient over time, as the company's employees develop routines for producing goods and services. Routines (sometimes called standard operating procedures) are, in fact, precise rules, procedures, and practices developed for an organization to carry out business processes efficiently. When employees learn the necessary routines, they become highly productive and efficient, and the organization is able to reduce its costs over time as efficiency increases.

People in organizations occupy different positions and have different specialties, interests and perspectives. As a result, they naturally have divergent views on how resources, rewards and sanctions should be distributed. These differences apply to both managers and employees and result in political struggle, competition and conflict within each organization. Political resistance is one of the major problems in the introduction of organizational changes, especially in the development of new information systems. Virtually all information systems that lead to significant changes in goals, procedures, productivity, and personnel are fraught with political influence and will lead to serious political opposition (Plekhanov et al., 2023).

All organizations have fundamental and unquestionable assumptions that define their goals and products. Organizational culture is set of fundamental assumptions about what products the organization should produce, how it should produce them, where and for whom. In general, these cultural assumptions are completely taken for granted and are rarely publicly announced or spoken. At the same time, organizational culture is a strong constraint on change, especially technological change. Any technological changes that threaten commonly accepted cultural assumptions are usually met with great resistance. Development of information systems is usually slow, while culture adapts slowly to changes.

Organizations function in an environment from which they draw resources and supply products and services. Organizations and the environment have a reciprocal relationship. On the one hand, organizations are open to environmental influences and depend on the social and physical environment. On the other hand, organizations can influence their environments.

Fig. 1 shows that information systems play an important role in helping an organization identify changes in its environment and operate within it. Information systems are the main instruments for examining the environment, helping managers to identify external changes that may require a response, i.e. management reaction. The environment generally changes much faster than the organization. The main reasons for the failure of the organization is the inability to adapt to rapid changes in the environment.

To take full advantage of the opportunities of IT, changes in organizational culture, values and norms, as well as technological changes, must be carefully managed. Central organizational factors to consider when planning a new IS are: the environment in which the organization must operate, the structure of the organization, the culture and politics of the organization, the type of organization, the nature and style of leadership, the degree of support from top management, the main interest groups affected by the IS, the opinions and attitudes of employees in the organization who will use the IS, the history of the organization (past investments in IT, existing skills, important programs and human resources) (Vukšić et al., 2018).

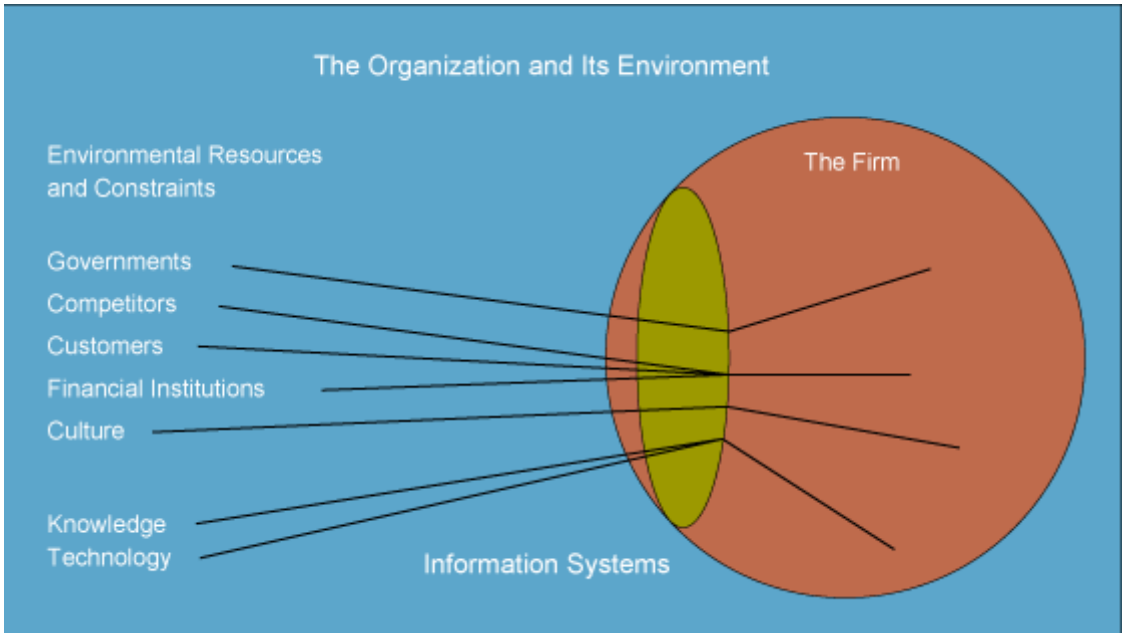

Fig. 1. Organization and its envoronment

III. INTERDEPENDENCE OF INFORMATION SYSTEMS AND ORGANIZATIONS AND CONTEMPORARY BUSINESS CONDITIONS

Information systems are very important for the overall performance of the organization, because they influence both daily operations and organizational strategy. Information systems and organization are in an interactive relationship. On the one hand, information systems affect the organization because they provide information that is needed by certain groups of users in that organization. On the other hand, the organization must be aware of the impact of information systems and be open to these impacts, in order to realize the benefits of new information technology. The interaction between information technology and the organization is very complex and is influenced by many mediating factors that include the organization's structure, standard operating procedures, policy, culture, environment and management decisions (Fig. 2). Managers must be aware that information systems can significantly change the functioning of an organization. They cannot successfully design new information systems or understand existing ones without understanding the organization (Bounfour, 2016).

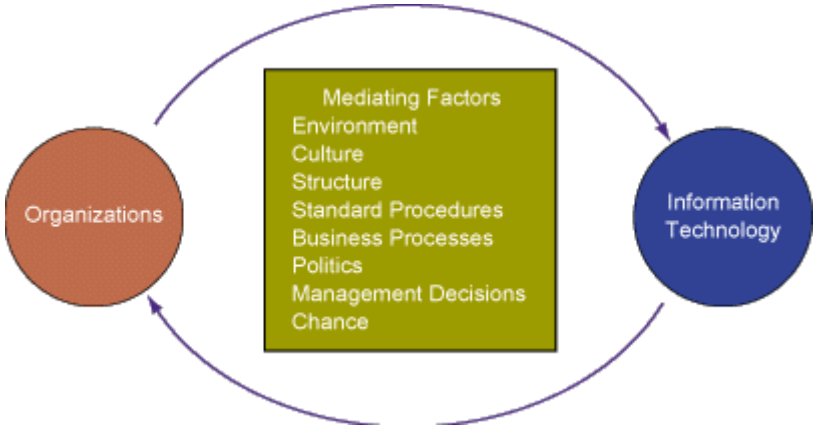

Fig. 2. Two-way relationship between organization and IT

In addition, there is an increasing interdependence between business strategy, rules and procedures, on the one hand, and software, hardware, databases and telecommunications as elements of information systems, on the other hand. Fig. 3 best illustrates the new relationship between the organization and the information system.

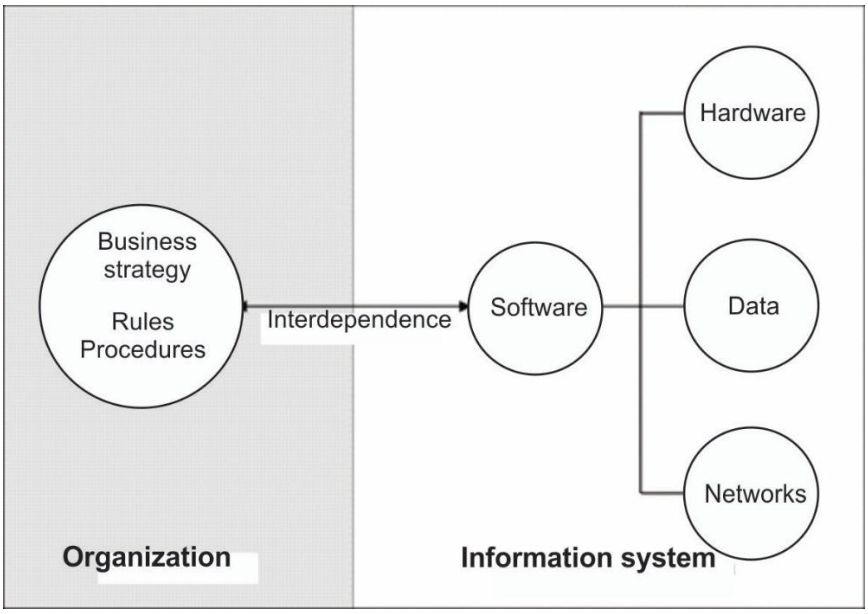

Fig. 3. Interdependence of organization and information system
Source: Laudon, K., Laudon, J., 2018

A change in any element often requires changes in other elements. This relationship becomes critical when management is planning the future of the organization. What an organization wants to do in the next five years often depends on the capabilities of information systems. Increasing market share, producing high-quality products at low costs, developing new products and increasing employee productivity increasingly depend on the quality of information systems in the organization (Gobble, 2018).

The conditions in which today's companies operate have changed significantly, which inevitably led to a change in the way information systems and technologies are used in those companies. The changes that mainly relate to the business environment, but also to the internal transformation of companies, are the following: 1. the development and strengthening of the global economy, 2. the transformation of industrial economies and societies into service economies based on knowledge and information, 3. the digital transformation of business operations and 4. emergence of the digital enterprise. These changes in the business environment pose numerous new challenges to companies and their management that are summarized in Table 1.

1. Development of the global economy. An increasing percentage of the American economy and other developed industrial economies in Europe and Asia depend on imports and exports, while the participation of foreign trade in the creation of the gross domestic product of these countries is increasing. The success of companies today and in the future will depend on their ability to function globally. In order to become a

competitive participant in international markets, a company must have powerful information and communication systems. Information systems today provide communication and analytical capabilities for organizing trade and managing business on a global basis. The main business challenges for modern information systems are: controlling decentralized global corporations, communicating with distributors and suppliers, operating 24 hours a day in different national environments and meeting local and international reporting needs. Global communication systems and networks allow customers to buy in markets around the world, providing reliable information about prices and quality, 24 hours a day (Laudon, Traver, 2016).

Globalization	**Enterprise transformation**
Management and control in the global market	Reduction in the number of management levels
Competition in world markets	Decentralization
Global work groups	Flexibility
Global delivery systems	Location independence
Transformation of industrial economies	Low transaction and coordination costs
Economy based on knowledge and information	Greater employee empowerment
New products and services	Collaborative and teamwork
Knowledge as an important strategic tool	**Emergence of the digital enterprise**
Competition based on time	Digital connections with customers, suppliers and employees
Shorter product life cycle	Vital business processes performed over digital networks
Turbulent environment	Digital management of key corporate assets
Limited knowledge base of employees	Identification and rapid response to environmental changes

Table 1. Contemporary business conditions
Source: Laudon, K., Laudon, J., 2018

2. Transformation of industrial economies. Many economically developed countries, such as the USA, Japan and Germany, have transformed their industrial economies into knowledge- and information-based service economies as production has moved to low-wage countries. In economically developed countries, knowledge and information are the main factors in creating national wealth.

The information and knowledge revolution began at the end of the twentieth century and gradually accelerated. By 1976, the number of administrative workers in offices exceeded the number of agricultural and manufacturing workers. Today most people work in sales, education, healthcare, banks, insurance companies. These jobs primarily include working with information. Knowledge and information become the basis for many new services and products (Chaffey, 2009).

Knowledge- and information-intensive products (for example, computer games) require a lot of knowledge to produce them. In the automotive industry, for example, design and production now rely heavily on IT and knowledge. Products and services, in general, are increasingly dependent on the use of new IT. IT accounts for more than 70% of invested capital in service industries such as finance, insurance and real estate. In contemporary conditions, information, knowledge and technologies become critical, strategic assets for business operations (Ebert, Duarte, 2018).

3. Digital transformation of the enterprise. A traditional enterprise has a hierarchical and centralized organizational structure with specialists who typically rely on standard operating procedures to deliver mass-produced products (services). The transformed company has fewer hierarchical levels of management (flattened organization). It is a decentralized, flexible organization of employees with general knowledge, who rely on timely information to deliver mass-customized products and services (products uniquely adapted to specific markets and customers). The new manager relies on knowledge and learning, so information technologies and systems enable this new style of management (Fernandez-Vidal et al. 2022).

4. Development of a digital enterprise. The intensive use of IT in companies since the mid-90s of the last century, together with significant organizational changes, created the conditions for the emergence of the concept of a digital enterprise. Digital enterprises differ from traditional enterprises in their total reliance on IT for organization and management (Legner et al. 2016).

Digital enterprises can be defined through several dimensions. First, all significant business relationships with customers, suppliers and employees are realized digitally. Second, vital business processes are executed through digital networks that span the entire organization or connect multiple organizations. The way an organization executes its business processes (eg new product development) can be a source of competitive strength. Third, the enterprise's key assets (intellectual property, core competencies and human

resources) are managed digitally. Fourth, any information needed to support key business processes is available anytime and anywhere in the digital enterprise. Fifth, digital enterprises identify and respond to changes in the environment much faster, which gives them greater flexibility to survive in turbulent times. Finally, digital enterprises can implement global organization and management, accelerate their operations and raise the level of profitability and competitiveness (Neugebauer, 2019).

IV. ORGANIZATIONAL CHANGES IN THE DIGITAL ENTERPRISE

The intensive development of information technology and the expansion of computer networks, including the Internet, have led to the emergence of a networked, digital enterprise. The characteristics of the new organization of the digital enterprise are the following: flattened organization of the enterprise, separation of work from location, reorganization of work flows, increase of flexibility of the organization, change of the management process and redefinition of the boundaries of the enterprise. (Pugh, 2016)

Flattened enterprise organization. Large, bureaucratic organizations that were primarily developed before the computer era are often inefficient, slow to change, and less competitive than newly created organizations. Many companies undertake significant organizational changes: organizations are downsized, the number of employees and levels in their organizational hierarchies are reduced. Flatter organizations have fewer management levels (Figure 4). Lower-level employees are given more authority to make more decisions than in the past. Modern information technologies provide a greater amount of information to immediate executors, so that they can now make decisions that were previously made by managers. Many companies have eliminated large numbers of middle managers as a result of these changes (Gebayew et al., 2018).

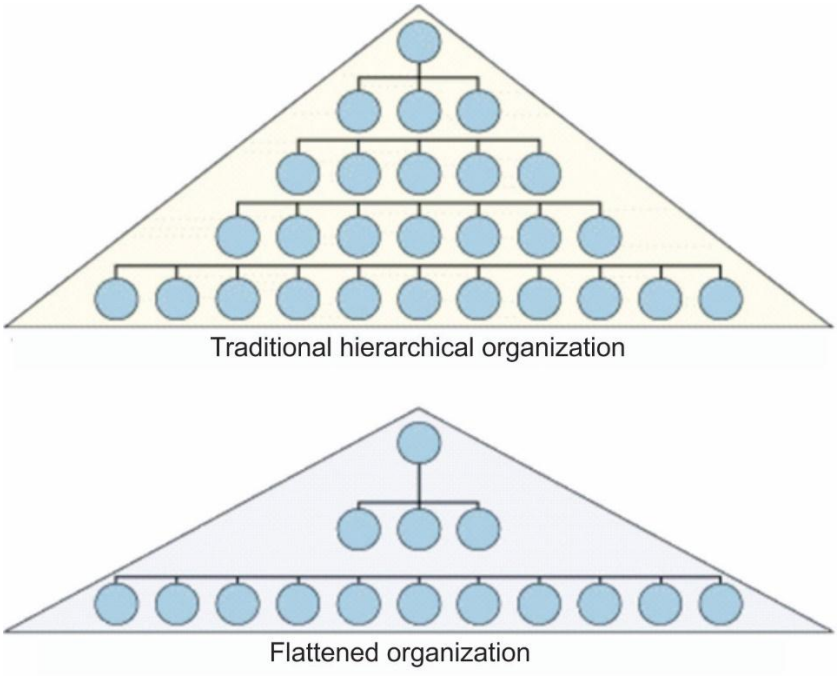

Fig. 4 Transformation of the company's organizational structure

Separation of work from location. Communication technology has eliminated spatial distance as an obstacle for many types of jobs. Salespeople can spend more time in the field with customers and have up-to-date information about them. Many employees may work away from their workplaces (eg, from home or on the trip). Collaborative teamwork becomes a reality when designers work on a new product together, even though they are located on different continents (Sousa, Rocha, 2019).

Reorganization of work flows. With the help of information systems, manual work procedures are increasingly being replaced by automated work procedures. Electronic workflows have reduced the cost of operations in many firms by eliminating manual routines based on paper documents. Advanced workflow management has enabled many firms not only to significantly reduce costs, but to improve customer service at the same time (Kraus et al., 2022).

Increasing flexibility. Businesses can organize themselves in a more flexible way with the help of IT, so they gain a greater ability to identify changes in the market and respond to those changes. Information systems can give both small and large firms additional flexibility to overcome some of the limitations imposed by their size. Small firms can use IS to compete with larger and wealthier firms. They can perform many

activities, with far fewer managers, clerks or production workers. Large firms can use IT to be more agile and flexible in the market, for faster reaction to market fluctuations (which are all characteristics of small firms). One aspect of that phenomenon is mass customization where information systems are used to more tightly link the factory floor with orders, product design and procurement. Products can be of different varieties and easily adapted to customer needs, without additional costs for small production volumes (Tabrizi et al., 2019).

Change management process. IT is reshaping the management process, providing support to managers in planning, organizing, leading and controlling. For example, it is now possible for managers to obtain information about the performance of employees in detail, from almost anywhere in the organization, at any time. In addition, by distributing information through computer networks, a manager can effectively communicate with thousands of employees and even manage field salespeople and teams in remote locations (Oliveira, De Souza, 2022).

Redefining company boundaries. The main characteristic of a digital enterprise is the ability to conduct business beyond its own borders. Networked information systems allow companies to coordinate their business activities with other companies across large distances. Transactions, such as payments and purchase orders, can be made electronically between different enterprises. These networked systems can create new efficient organization and new relationships between the enterprise, its customers and suppliers, which redefines their organizational boundaries. By creating new virtual organizational entities, enterprises are no longer limited by traditional organizational boundaries or physical location (Kotarba, 2018).

V. MANAGEMENT OF INFORMATION SYSTEMS IN CONTEMPORARY CONDITIONS

As we have already emphasized, there is a growing interdependence between the ability of organizations to use information technologies and their ability to implement business strategies and achieve business goals. Increasing market share, achieving high-quality products or low-cost production, developing new products and increasing employee productivity increasingly depend on the type and quality of information systems in the organization. Specifically, business organizations invest heavily in information systems to achieve six strategic business goals: operational excellence, new products, services, and business models, improved customer and supplier relationships, improved decision-making processes, competitive advantage, and survival (Brown, N., Brown, I., 2019).

•**Operational excellence**. Businesses continuously strive to improve the efficiency of their operations in order to achieve greater profitability. Information systems and technologies are some of the most important tools available to managers to achieve higher levels of efficiency and productivity in business, especially when coupled with changes in business practices and management behavior. Walmart, the world's largest retailer, demonstrates the power of information systems along with superior business practices and management support to achieve world-class operational efficiency.

•**New products, services and business models**. Information systems and technologies are the main tool that enables companies to create new products and services, as well as completely new business models. A business model describes how a company produces, delivers and sells a product or service to generate revenue. For example, today's music industry is very different from what it used to be. Apple Inc. has transformed the old business model of music distribution into a new one that is realized over the Internet on a legal basis.

•**Improving relations with customers and suppliers**. When an enterprise really knows its customers and serves them well, they generally respond by returning and buying again, which increases revenue and profits. It's the same with suppliers, the better the relationship with suppliers, the better they can support vital resources, which reduces costs.

•**Improving the decision-making process**. Many managers very often do not have the right information at the right time to make decisions. Instead, managers rely on forecasts, guesswork, and luck. In the past decade, information systems and technologies have enabled managers to make decisions using real-time market data.

•**Competitive advantage**. When companies achieve one or more business goals (operational excellence, new products, services and business models, better customer/supplier relationships and improved decision making) chances are they have already achieved a competitive advantage. Doing things better than your competitors, charging less for superior products, and responding to customers and suppliers in real time leads to higher sales and higher profits that competitors can't match.

•**Survival**. Business organizations also invest in information systems and technologies because they are necessary for doing business. Sometimes those "needs" drive industry-wide change. Today, most national banks in the world have ATMs and connect to national and international ATM networks. Providing services to the population through the use of ATMs is simply a condition for the survival of banks in dealing with the population.

In order for the organization to achieve the stated business goals, it must manage information systems in an innovative way. In this context, major changes have taken place in the management of information systems, and five changes have the most importance (Mugge et al., 2020):

1. IT innovations. Constant innovations in information technologies are transforming traditional ways of doing business. Many examples include the emergence of cloud computing, the growth of mobile digital business platforms based on smartphones and tablets, big data, business analytics and the use of social media to achieve business goals. The enumerated innovations have enabled entrepreneurs and innovative traditional firms to create new products and services by developing new business models and transforming everyday business. In the process, some old businesses, even industries, disappear, while new businesses develop.

2. New business models. For example, the advent of online video services like Netflix and many others for video downloads has forever changed the way video is distributed and even created. An increasing number of viewers are switching off from cable TV and using only the Internet for entertainment (Schallmo et al., 2018).

3. Intensive development of electronic commerce. Electronic commerce (e-commerce) is changing the way companies design, manufacture and deliver products and services. E-commerce has disrupted the traditional marketing and advertising industry, putting the big media in front of a big challenge. Facebook and other social networks, such as YouTube and Instagram, along with Netflix, and many other media companies, represent the new face of e-commerce in the 21st century. Their main characteristic is that they sell services. Although e-commerce is still based on the sale of physical products, it is developing and creating an entirely new value stream based on the sale of services rather than goods. Therefore, the service model of e-commerce is being intensively developed. In addition, the growth in social media-based e-commerce is fueled by the strong growth of the mobile platform, as a huge number of social media users access the service from mobile phones and tablets. Information systems and technologies are the foundation of the new service-based e-commerce, and mobile e-commerce is experiencing high growth rates (Ziyadin et al., 2020).

4. Changes in management. As we have already emphasized, management in organizations has changed significantly under the influence of information technologies and systems. With new smartphones, fast wireless Wi-Fi networks and tablets, business travelers are in direct contact with their managers. The work is done in a mobile way, together with consumers. In addition, managers on the move are in direct, constant contact with employees. The development of extremely data-rich information systems means that managers have online, near-instant access to the really important information they need to make accurate and timely decisions. For example, blogs are becoming important corporate tools for communication, collaboration and information sharing.

5. Changes in organizations. Compared to the industrial organizations of the previous century, the new business organizations of the 21st century place less emphasis on hierarchy and structure and more on employees taking on multiple roles and tasks and working together as a team. New business organizations place greater emphasis on competencies and skills rather than position in the hierarchy. They emphasize faster and more accurate decision-making based on data and analysis. They are more aware of changes in technology, attitudes and consumer preferences using social media to connect with them. Modern organizations show a better understanding of the importance of information technology in business management, thus showing that they are digital organizations of the twenty-first century.

VI. CONCLUSION

Contemporary information systems support all levels of managerial decision-making and can be divided into the following types: transactional information systems, management information systems and knowledge-based systems (decision support systems, expert systems and executive information systems). Information systems are used not only to support the automation of business processes, but also for their complete and radical transformation. When thinking about information systems, it is taken into account how IT can support new or redesigned business processes. On the other hand, business processes and their improvement should be considered together with the possibilities provided by IT.

It can be concluded that IS and the organization are in an interactive relationship, because information systems influence the organization and provide the information needed by the employees of that organization. In addition, employees must be aware of the impact of information systems and be open to their application, in order for the organization to realize the benefits of new IT. The interaction between information systems and the organization is influenced by many factors that play the role of intermediaries.

Information systems play an important role, because they help the organization to identify changes in its environment, to take advantage of positive environmental influences and to prevent or mitigate negative ones. Information systems are the main tools for examining the environment, which often suggest a response, that is, a managerial reaction to changes in the environment. Business organizations invest heavily in information systems to achieve six strategic business goals: operational excellence, new products, services and

business models, improved customer and supplier relationships, improved decision-making processes, competitive advantage and survival. In order for the organization to achieve the stated business goals, it must manage information systems in an innovative way. In this context, there have been major changes in the management of information systems, the most important of which are the following: constant innovations in information technologies that transform traditional ways of doing business, development of new business models, intensive development of electronic commerce, changes in management under the influence of information technologies and systems and changes in organizations where less emphasis is placed on hierarchy and structure, and more on employees who take on more roles and tasks and collaborate as a team.

REFERENCES

[1]. Bounfour, A.: Digital futures, digital transformation. *Progress in IS*, *10*, 978-973 (2016).
[2]. Brown, N., & Brown, I.: From digital business strategy to digital transformation-How: A systematic literature review. *Proceedings of the South African Institute of Computer Scientists and Information Technologists 2019*, 1-8 (2019).
[3]. Chaffey, D.: E-business and E-commerce Management: Strategy, Implementation, and Practice, Fourth edition, Pearson Education, Prentice Hall. (2009).
[4]. Ebert, C., & Duarte, C. H. C.: Digital transformation. *IEEE Softw.*, *35*(4), 16-21 (2018).
[5]. Fernandez-Vidal, J., Perotti, F. A., Gonzalez, R., & Gasco, J.: Managing digital transformation: The view from the top. *Journal of Business Research*, *152*, 29-41 (2022).
[6]. Gebayew, C., Hardini, I. R., Panjaitan, G. H. A., & Kurniawan, N. B.: A systematic literature review on digital transformation. In *2018 International Conference on Information Technology Systems and Innovation (ICITSI)* (pp. 260-265). IEEE (2018).
[7]. Gobble, M. M.: Digital strategy and digital transformation. *Research-Technology Management*, *61*(5), 66-71 (2018).
[8]. Kotarba, M.: Digital transformation of business models. *Foundations of management*, *10*(1), 123-142 (2018).
[9]. Kraus, S., Durst, S., Ferreira, J. J., Veiga, P., Kailer, N., & Weinmann, A.: Digital transformation in business and management research: An overview of the current status quo. International journal of information management, 63, 102466 (2022).
[10]. Laudon, K. C., & Laudon, J. P.: Management Information Systems: Managing the Digital Firm. Prentice Hall Press (2018).
[11]. Laudon, K.C., & Traver, C.G.: E-commerce: Business, technology, society. 12th edition, Harlow: Pearson Education, Inc. (2016).
[12]. Legner, C., Urbach, N., & Nolte, C.: Mobile business application for service and maintenance processes: Using ex post evaluation by end-users as input for iterative design. Information & Management, 53(6): 817-831 (2016).
[13]. Majchrzak, A., Markus, M. L., & Wareham, J.: Designing for digital transformation. *MIS quarterly*, *40*(2), 267-278 (2016).
[14]. Mugge, P., Abbu, H., Michaelis, T. L., Kwiatkowski, A., & Gudergan, G.: Patterns of digitization: A practical guide to digital transformation. *Research-Technology Management*, *63*(2), 27-35 (2020).
[15]. Neugebauer, R. (Ed.): *Digital transformation*. Springer Berlin Heidelberg (2019).
[16]. Oliveira, K. K. D. S., & De Souza, R. A.: Digital transformation towards education 4.0. *Informatics in Education*, *21*(2), 283-309 (2022).
[17]. Plekhanov, D., Franke, H., & Netland, T. H.: Digital transformation: A review and research agenda. *European Management Journal*, *41*(6), 821-844 (2023).
[18]. Pugh, L.: Change Management in Information Services. London: Taylor and Francis (2016).
[19]. Schallmo, D. R., Williams, C. A., Schallmo, D. R., & Williams, C. A.: History of digital transformation. *Digital Transformation Now! Guiding the Successful Digitalization of Your Business Model*, 3-8 (2018).
[20]. Schwertner, K. (2017). Digital transformation of business. *Trakia Journal of Sciences*, *15*(1), 388-393
[21]. Sousa, M. J., & Rocha, Á.: Digital learning: Developing skills for digital transformation of organizations. *Future Generation Computer Systems*, *91*, 327-334 (2019).
[22]. Tabrizi, B., Lam, E., Girard, K., & Irvin, V.: Digital transformation is not about technology. *Harvard business review*, *13*(March), 1-6 (2019).
[23]. Verina, N., & Titko, J.: Digital transformation: conceptual framework. In *Proc. of the Int. Scientific Conference "Contemporary Issues in Business, Management and Economics Engineering* (pp. 9-10) (2019).
[24]. Vukšić, V. B., Ivančić, L., & Vugec, D. S.: A preliminary literature review of digital transformation case studies. *International Journal of Computer and Information Engineering*, *12*(9), 737-742 (2018).
[25]. Zaoui, F., & Souissi, N.: Roadmap for digital transformation: A literature review. *Procedia Computer Science*, *175*, 621-628 (2020).
[26]. Ziyadin, S., Suieubayeva, S., & Utegenova, A.: Digital transformation in business. In *Digital Age: Chances, Challenges and Future 7* (pp. 408-415). Springer International Publishing (2020).