

THE IMPORTANCE OF INFORMATION TECHNOLOGIES IN MANAGING HUMAN POTENTIALS OF THE LOGISTIC CENTERS OF THE REPUBLIC OF SRPSKA

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Abstract: Information technologies within logistic systems and their impact on economic, social and personal development have become an important subject of scientific research over the past decades. Theoretical and empirical research has shown the need to achieve and exploit positive outcomes (organization expansion, efficiency, effectiveness, competitive position) adoption and implementation of information technologies in logistics centers. At the time of great technological innovations, the human resources management plays an important role in achieving the competitive advantage of logistics centers on the market. With the development of new technologies, there are also changes in the way human resources management is handled within companies. The theme of this paper is the research of the connection between the importance of information technologies in managing human potentials and the performance of logistics centers. Information technologies have a growing presence in the management of human resources within logistics centers, and therefore their application achieves a great competitive advantage on the market. The aim of this paper is to use the analysis and descriptive methods to find a solution to the importance of information technologies in human resources management within a logistics center with the greatest focus on ERP systems.

Keywords: information technology, human resources management, logistics center, ERP system.

INTRODUCTION

The global processes of globalization, social knowledge and economic effects of the existence of separate countries, organizations and individuals, as well as the rapid development of information technologies have greatly influenced the changing of the existing business structure and ways of communication, and the fact is that the adoption and implementation of information technologies is the basis of competitiveness and economic growth for companies, organizations and countries that are able to use them [18].

Information technologies and their impact on economic, social and personal development have become an important subject of scientific research over the past decades. According to the data from

Ollo-Lopez and Aramendia-Munte (2012), numerous studies focused on the analysis of how the adoption of information technologies affects logistics centers [9].

The development and use of information and communication technologies have transformed modern society into an »information society«. Its main characteristic is that information and communication technologies play the most important role in both production and the economy, as well as in all other spheres of life of individuals and society as a whole [13].

In a business environment, the basic resource of each company is made up of people with their abilities, which enable them to solve their tasks, and thus achieve the common goals of the company.

In the companies and countries that assimilate new technologies and innovations, rapid changes are expected. There are different studies analyzing ICT, especially factors that impact ICT adoption. Analysis of ICT effects in private sector is significant only after thorough analysis of conditions that should be satisfied in order to successfully adopt ICT – expectations towards positive impacts of ICT and characteristics of individual company (financial, technological, personnel resources, flexibility of structures etc.) are closely linked. According to Alam and Noor (2009) the adoption of the ICT “is considered to be a means to enable businesses to compete on a global scale, with improved efficiency, and closer customer and supplier relationships”. Therefore, the adoption of ICT is recognized as crucial condition enabling SMEs to consider information and communication technology as an important implement in their business to take competitive advantage from the global markets.

Global competition encourages companies to make steady and rapid progress in order to survive against the new demands posed by globalization. If the company has good human potential, i.e. quality and educated human resources, it is possible to respond to the challenges and demands that it is constantly facing. Human resources are the most important component of any organization. Human resources have the treatment of the most important capital - human capital.

Human resource management is a management activity that focuses on human resources. Human potentials include the total knowledge, skills, abilities, creative possibilities, motivation and loyalty that an organization (or society) has at its disposal. It is the total intellectual and psychological energy an organization can engage in achieving goals and developing a business [11].

The ability of logistics centers for efficient and effective functioning, at the time of the global expansion of information technologies in the world, depends on the support of various information technologies within the logistics center itself. The basic motive for the application of information technologies in the management of logistics and supply chains is in their ability to collect a multitude of data and information, as well as savings arising from sophisticated analysis of these data [16].

Information technologies can be used to manage and monitor business processes within an enter-

prise, or to transfer information between different businesses or individuals. The application of information technologies within the logistics center itself will increase the competitive advantage of the center on the market. Many companies provide value-added services to their users by applying modern information technology, and at the same time it is a means of their differentiation on the market, and, on the basis of this, the way of conducting business contributes to the development of strong and long-lasting connections with its users.

At the time of major changes and the daily introduction of modern technologies into all business segments, the most important part of each logistics system is the information flow, which includes the exchange of information between parts of the internal transport system and between the enterprise and the external system.

The importance of information as a new production factor in the conditions of increased competition, the opening of new markets, the shortening of the product life cycle and the globalization of the market has grown remarkably. This is due to the fact that, without the use of a modern information system that would allow the introduction of a flexible and time-optimized business concept, many companies would not be able to successfully do business or to exist and survive on the market.

The use of modern information technologies is the imperative for the successful operation of logistics centers on a global basis.. The reason for this is the fact that information technologies, which are constantly in great expansion, contribute to the process of creating a new way of doing business in all its segments.

Development of human resources management, at a time when globalization of the market has reached its stagnation, shows that this activity takes its place in the development of companies that want to maintain their leading position on the market or achieve greater competitiveness [12].

Strategic goals of logistics centers are trying to be realized through better connections with the organizational structure of the company. Personal interests of individuals and teams must be in line with organizational goals, which achieve the strategic goals of the company. A very important link in the chain is human potential, which, with their knowledge and possibilities, help achieve goals.

Using the analysis and the descriptive method in this paper, we find a solution on the importance of information technologies in human resources management within the logistics center and in order to gain a certain competitive advantage in the market.

PROCESSES OF MANAGEMENT OF HUMAN RESOURCES IN LOGISTIC CENTERS

Human resource management is one of the most important sectors of each company, and so in logistics centers, as it is precisely the human resources managers that determine whether the logistics center will achieve the set goals and tasks in its business, and therefore whether it will be competitive on the market or not. Logistic centers daily notice that people are their biggest capital, which gives them a competitive advantage on the market. Increasing the complexity of logistic processes within the logistics centers requires a high-quality, competent and educational staff capable of responding to all the requirements [7].

Human Resources Management relates to the practice and policies necessary to perform managerial tasks in relation to personal issues, and in particular the recruitment, training, assessment and rewarding of employees in the company and the provision of a secure, ethically acceptable and just environment for them. Human resources management is very important for companies, as the last thing the manager wants is to choose the wrong candidate for the job, and thus endanger the performance of a particular sector, and the entire company [8].

With the development of globalization, there is a growing competition and companies are constantly facing new challenges to reduce costs and increase productivity. In addition to globalization, technological progress is very important, that is, human resources management has to find a way to quickly apply new technologies in order to improve its own work and efficiency. A competitive advantage on the market is achieved with an adequate workforce that is able to respond to market needs and changes that are happening [13].

Human resource planning must be dynamically linked to the needs of creating staff assumptions, timely and successful realization of tasks, or goals of logistics centers.

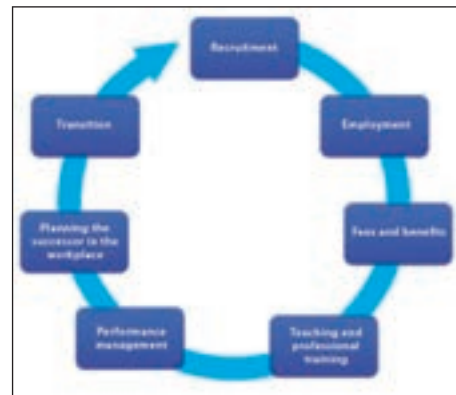


Figure 1. Life cycle of employees in logistics centers [6]

This cycle allows logistics centers to make choices and employ the best potentials, develop employee skills, harmonize employee aspirations with business goals, measures and rewards employee results, plan future exchanges in key locations, and ensure the transition of employees through retirement and exit from the company [6].

Recruiting management is a module used at the earliest stage of the employee’s life cycle to attract the most talented candidates who will become successful employees within the center [7].



Figure 2. The life cycle of employees in human resource management [7]

INFORMATION SYSTEM FOR THE MANAGEMENT OF HUMAN RESOURCES OF THE LOGISTIC CENTER

The most common segment of information systems is information that can be defined by Shannon and Viver as “the amount of reduction in uncertainty when a message is received.”

This creates the need for an explanation of the concept of data that can be defined as the raw material of the system it receives through the procedures and used to generate information. According to one

of the definitions of the information system, several forms of resources are used, so apart from people as one of the most important resources, there are also resources that fall into hardware such as appliances that are used and resources that are part of the software, for example, guidelines for activities, procedures and the like. In this way, the organization of resources takes the data, processing, output, storage and control of data, and then they turn into products of information nature [18].

Modern technology plays a very important role in human resource management, facilitates and improves its functionality, but it also modernizes, accelerates and improves the work of the human resources department of each logistics center.

In order to maximize the management of the human potentials of various individual logistics centers, it is necessary to have a special organizational unit for human resources that develops the methodology, obtains, analyzes and stores data on employees and proposes to the superiors in the hierarchical system determined. In addition to such systemic hierarchical forms, it is also necessary to use modern IT solutions designed specifically for the management of human potentials.

The Human Resources Management Information System is used for decision making in management, launching initiatives for improvement in human resources management, and adopting regulations in the field of human resources. The most important functions of the system are updating employee data, maintaining organizational scheme of the company, integrating with other relevant systems, analyzing and creating job descriptions or their structure, producing statistical reports and analyzes, recruiting, analyzing needs for additional training and education, developing training plans and education, assessment of work results and analysis of employee performance and career planning.

Implementation of information systems is one of the most important processes of every company that seeks to improve its business and constantly develops its information system.

Logistic information systems supported by computers are defined as a unique and harmonized system of hardware, software, data, networks and staff that serves logistic planning, implementation, management and control in all activities that are carried

out in order to accomplish the necessary tasks [15]. According to the decision-making method, information systems can be divided into several groups depending on the level of hierarchy in the company. Planning, managing and monitoring the information system as a whole with all interaction influences provides optimal use of synergy and efficient management of current and segmented processes.

Today there is a very large number of information systems that can be found on the market, and whose introduction improves and facilitates the entire business system business, that is, the process of human resources management in companies.

Resource Planning in Corporations (ERP) is a process in which business resources are planned, and in the very implementation of this process, one of the business information systems (commercial software package) is mainly included. Application of certain software packages can contribute to a significant improvement in the quality of services and products.

ERP is a strategic tool that enables the integration of all organizational parts and the synchronization of isolated business functions in the organization into related business processes of a single information system.

What is very important for ERP systems is that they have a number of application advantages because they consist of a set of standardized software solutions for business processes. As a consequence, the implementation of these systems leads to the reorganization of existing business processes within logistics centers. Given the difficult adaptation of existing business processes to the ERP system, its implementation is always closely linked or almost inseparable from reengineering [14].

In response to the needs of logistics centers of all sizes to redefine their business processes, ERP (Enterprise Resource Planning) software packages are developed that integrate and process information based on business process monitoring in an organization.

Considering the trend that is actual in our country and in the world, where there is the rule that an organization has to have a wide spectrum and a large volume of its business if it wants to be successful, competitive and above all to provide support from the public interest through the use of current and modern information technology, the conduct of such business and its planning must in many ways be performed through some of the modern ERP solutions [17].

ERP systems as standard, complex, software packages were developed to meet the business requirements of organizations as a whole and as such have incorporated the experience and skills taken from organizations, as well as previous ERP solutions users [17].

Adequate implementation of the ERP system in companies enables efficient and effective job management in a number of fields. ERP systems are a combination of managing the entire company's business and modern technology, which makes it easier to manage.

Within each ERP system there are specific modules, and a module that supports human resources management contains information about employees, collecting and archiving information about their skills, their positions, and the like. The modules can have exactly the same content, but the different names, and vice versa [4].

ERP systems consist of modules representing standard processes in organizations, such as financial modules, human resource modules and logistic modules.

The ERP system for new technologies and the Internet integrates new modules, such as SCM (Wsupply Chain Management), CSM (Customer Relationship Management), Sales Force Automation (SFA), Advanced Planning and Scheduling (APS), Business Intelligence (BI) and e-Business.

The most important characteristics of the ERP system are flexibility, independence, comprehensiveness, modularity, openness, flexibility and experience.

The flexibility of the ERP system implies its ability to respond to every set request in the organization in line with changes in the business environment.

The independence of the ERP system implies independence from the hardware, operating system, and database management system.

The ERP system, through its comprehensive feature, supports all types of business functions and business organizations of all types of activities [17].

The structure of the ERP system is globally comprised of subsystems and modules, but it must also be ensured that each of the modules can be added to the subsystem or removed from it, thus reflecting the characteristics of the ERP system modularity.

The openness characteristic implies that the ERP system must support different hardware platforms,

but also provide links to applications from other software vendors.

Each organization does not need all modules of the system, so it is necessary to adapt the system to the requirements of each organization, and in this we will look at the characteristics of the ERP system of flexibility.

The ERP system is an experience for all business processes, as well as solutions that have shown the best results in the practice so far.

One of the most important advantages of ERP is in linking work units within the enterprise, which contributes to effective communication and rapid response capabilities [2].

As technology developed, the influence on strategic human resource planning has also grown. Human Resource Management Information Systems can be defined as systems that group data in databases for easier access and analysis. Certain information systems provide the possibility of automating the process as in the case of calculating tax rates, while in others it is done in order to reduce the need for manual data entry, which improves accuracy and efficiency. As one of the functions in the human resources sector that benefits from the use of human resources management information systems, there is a system of total rewards for the model of overall compensation, including benefits and wages. These information systems provide more efficient monitoring and planning of salaries, insurance, pensions and other aspects. System monitoring of current costs and others [16].

In the very creation and development of human resources management, information systems for human resources management were primarily used for administrative and operational procedures. Collecting data on requests for leaving the company, compensation and possible accidents, as well as wage reimbursement was carried out. During the 1970s and 1980s, due to some factors, there was a change in access to these information systems. Given the complexity of the payment system, there is a need for greater flexibility and the use of information systems as a result of the development of the use of hardware and software systems. In larger organizations, the payment processing system was separated from other human resources functions, and some organizations delegated those responsi-

bilities to associates outside companies because of their expertise in the area [16].

Information systems for human resources management are used to collect, store, manipulate, analysis of information on human resources of the organization. The purpose of these systems is to implement and provide support for tactical operational decision-making, program evaluation, procedures or day-to-day operations [17].

GOALS OF THE APPLICATION OF INFORMATION SYSTEMS IN LOGISTIC CENTERS

Logistics information system can be defined as a structure of interaction between people, equipment and procedures that together provide relevant information to the logistics manager for the purpose of planning, implementation and control.

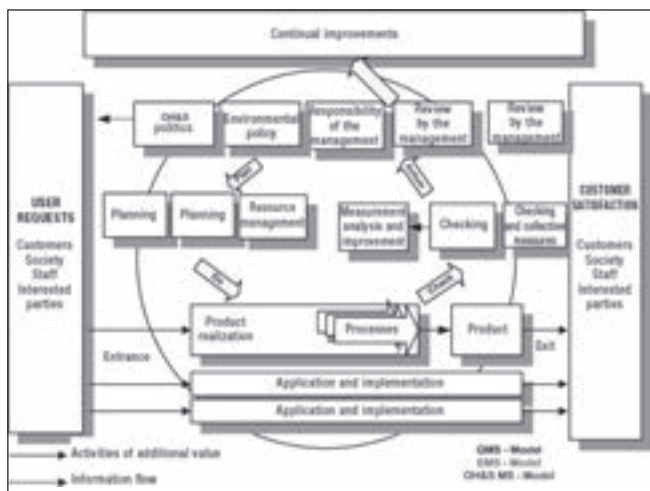


Figure 3. Logistic information system [17]

One of the most important goals of application of information systems within the logistics center is to connect all members from the place of supply of raw materials or semi-finished products for the production process to the place of delivery or ordering, whereby synchronization of the information flow with the goods flow is necessary. In this way, it is possible to plan, monitor and determine the time from the occurrence of a request (order) to the final realization on the basis of real data. Each participant in the chain should have access to information on where the appropriate product is located [1].

Based on the structure of the chain, different flows of goods and information can be defined. Re-

specting the needs of chain members for different types of information, the question of the availability of the requested information is raised. The availability of information on the status of raw materials and products is the basis for making appropriate decisions. In the event that there is a delay in the delivery of raw materials, which may significantly influence the realization of the production program, the task of the information system is to forward this information to relevant stakeholders in order to make appropriate correction in the production process (delay of the planned production plans or consideration of alternative sources of raw materials).

Moreover, one of the essential goals of the application of information systems, which is to satisfy conditions in terms of information, can be accessed from anywhere, and that information has the same content for all users of that system.

The third goal of information systems application in logistic centers is to analyze data in order to achieve a state of overall functioning within the logistics center. In addition to the possibilities of analysis, the information system should support finding the most efficient ways of production, assembly, storage and product distribution. On the basis of the information received, operational, tactical and strategic decisions within the center can be made[1].

Previous studies have shown that the priority of each logistics center should be logistics elements such as deliveries on time, stock levels, orders, tracking, ordering, ordering, downloading from customers and the possibility of replacement. All activities are in the domain of logistics managers, and their successful implementation depends largely on the exact flow of information, and this is successfully achieved through the use of information systems [3]. The goal of all of the above is that information solutions, that is, the use of information systems that are maximally convenient and easy for users, support all business functions, i.e. To maximally facilitate the work of the employees within the logistics center.

There is no information technology or type of information system without contribution to human resource management. In one area, some systems do it in a good and productive way, while in another system their performance is not so impressive. On the other hand, some systems have completely opposite benefits and impacts. The best measure of

availability of information capital in human resources management is the level of development of online transaction processing systems [12].

APPLICATION OF ERP SYSTEM IN LOGISTIC CENTERS OF THE REPUBLIK OF SRPSKA

A survey on the importance of information technologies in the management of human potentials of logistics centers on the market was conducted on a representative sample of 136 economic entities in the territory of Republika Srpska.

The relatively high return rate of correctly filled questionnaires (68% - 136 questionnaires) can be explained by the fact that the questionnaire is sent to experienced officials who are familiar with the issues of this research. Survey questionnaires were sent to respondents mostly via e-mail, post or in person. The survey process was carried out in the period from the beginning of February to the end of May 2018.

The significance of information technologies in the management of human resources of logistics centers in the Republic of Srpska, in the conditions of the global crisis, has a number of other advantages reflected in the modernization of business activities with a reduction in the number of employees, better financial performance of the company, more rational use of resource capacities as well as better distribution of materials and goods. In the Republic of Serbia, 93% of respondents of business entities confirmed that they use modern information technologies in their business.

The questionnaire is addressed to managers who are intensely using information technology in carrying out everyday tasks. Using the modern methods of descriptive and quantitative statistics, the data submitted are processed.

The aim of this research is to obtain data in order to define the importance of information technologies in the management of human potentials of logistics centers in the Republic of Srpska in the conditions of the global crisis. In addition to the stated main goal of this research, there were other goals of the research related to the impact of information technologies on reducing the need for hiring of employees, automation and faster recording of business events, improvement and development of financial reporting, improvement and development of accounting analysis, increase of productiv-

ity of labor, the development of logistics operations in the near future, and more. In the first part of the questionnaire, general data on surveyed entities were collected, such as name, activity, ownership and number of employees.

Distribution of surveyed subjects according to the activities they perform are shown in the following chart.



Figure 4. Distribution of surveyed subjects by activity

Modern information technologies are quick steps towards improving all business activities in logistics centers. Modernization of business activities in the company in order to increase the competitiveness of logistics centers on the market is achieved by reducing the number of employees and consequently by reducing the costs related to employees. A part of the research conducted for this purpose has confirmed that the application of information technologies has a great impact on the number of employees, and consequently also on the labor force, and the standard of work of workers is becoming more and more complex in the process. Based on the very rapid development of information technology, the results of the research related to the contribution of information technologies to the reduction of employees in logistics centers confirmed a significant contribution to reducing the demand for work force. As much as 75.55% of the surveyed subjects confirmed that the introduction of information technology indicates the need to reduce the number of employees in logistics centers.

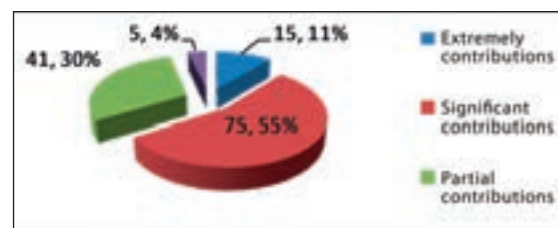


Figure 5. Influence of information technology on the reduction of labor demand

An empirical research on the impact of information technology on the competitive advantage of companies in the market in the conditions of the global crisis has confirmed their significant influence on maintaining a competitive position on the market. The conducted research is shown in Figure 6 where it is clearly seen that the majority of subjects surveyed, as much as 66%, agree that information technologies make a great contribution to achieving and maintaining the competitive position of logistics centers on the market.

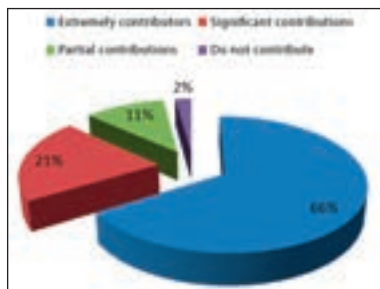


Figure 6. Influence of information technologies on achieving and maintaining the competitive advantage of the company

The conducted research has shown that the management of logistics centers in the Republic of Srpska is aware of the role and importance of information technologies for improving the business results, for achieving a competitive position in the market, and at the same time the introduction of information technologies in the company is seen as a long-term investment.

An important segment of the conducted research is the views of users of information systems who believe that the application of information technologies is extremely important and necessary in the everyday work of the company. They believe that the business problems will be overcome with their application, and they will meet the habits, needs and expectations of the customers, and therefore will also achieve the competitive position of the companies on the market in times of crisis.

In the world, ERP systems represent a powerful management tool for daily resource management of modern logistics centers.

It is evident that logistics centers that use ERP are in great advantage compared to competition due to transparency of data, rationalization of costs and time, optimization of business functions, auto-

mation of business activities and better planning of resources.

The situation in the Republic of Srpska is not very favorable.

Statistical Office of the Republic of Srpska conducted a survey on the use of information and communication technologies within logistics centers.

It could also be said that in our country, the initial introduction of the ERP system started in companies that had to now increase their value for sale or privatization, as well as in companies that wanted to work with large foreign partners at the same level.

Enterprise size analysis shows that of the total number of large companies, the ERP system owns 27%, 11.6% of medium-sized enterprises, while 8.4% of small businesses have an ERP system.

Banks and insurance companies mostly use the ERP system (24.1%), followed by companies in the field of Transport, storage and communication (24%).

Based on the research, it was concluded that the number of companies using the ERP system decreased by 6.4% compared to 2007. The reason for this is most likely a poor information about the ERP system. The following data is also supported by this:

In 2008, even 16.9% of companies declared that they did not know if they had an ERP system, while this figure for 2007 was much smaller and amounted to 4.4%

It could also be said that in our country, the initial introduction of the ERP system began in companies that had to now increase their value for sale or privatization, as well as in companies that wanted to work with large foreign partners at the same level.

CONCLUSION

The intensity of changes and qualitatively changed business conditions emphasize the special importance of the communication system in order to facilitate the interaction and connection of all elements of the system and the environment. We are witnessing a daily increase in the use of information technology in logistics centers for the easier operation of these.

The model as a whole ensures that each user performs tasks more easily, more precisely and more efficiently with the provision of data and tools for the realization of his functions.

The application and project solutions of this model greatly contribute to the development and

improvement of accounting information through the following:

- creation of accounting information for the needs of decision making,
- improvement and development of the business accounting functions of the company,
- creating new and improving existing project and application solutions,
- development of modern forms of accounting information and the like.

The presented model represents a set of practically possible solutions based on the scientific understanding of information systems that influence the process of creating a competitive advantage in a global context. Taking into account the above, it can be concluded that this model influences the development and improvement of:

- planning and management of employment of accounting officers,
- planning and management of costs,
- profitability of the product,
- financial reporting,
- audits of accounting information systems.

By creating timely and quality information systems, the model significantly contributes to the development of the business decision-making process and business in general. Therefore, it can be concluded that the existing solutions provide the following:

- performing a significantly larger scope of tasks in a very short period,
- improving the efficiency and effectiveness of business operations,
- providing new services and creating new opportunities for more efficient management enterprise,
- the growth and development of the accounting profession,
- increase the productivity of the work of accounting officers,
- better information support for users.

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Considering the above, it can be noticed that the advancement and development of information technologies in the process of crushing competitive advantage greatly contributes to increasing the profitability of business, ie strengthening the competitive position of companies on the domestic and international market in the conditions of the global crisis.

After the introduction of the ERP system into logistics centers, it can be concluded that the quality of business has been raised to a significantly higher level.

Logistic centers that use ERP are of great advantage over the competition due to transparency of data, rationalization of costs and time, optimization of business functions, automation of business activities and better planning of resources.

The time of big technological changes and the daily introduction of new information technologies led to the fact that the traditional appearance of the company changed under the influence of numerous changes. The business environment has also experienced major changes in terms of stronger and more modernized competition in the market, new customer demands, and thus all of this reflected and human resources management within logistics centers.

Logistic centers are forced to rely on the knowledge, abilities and skills of employees within it, and with the use of information technologies in the management of human potentials occupy a significant competitive position on the market, and therefore most logistics centers now see information systems as an area of strategic importance.

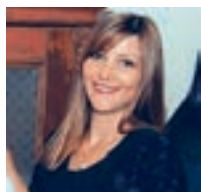
Human resource management is an extremely complex business, but in the logistic centers it is essential to investigate whether the introduction of certain innovations in the domain of information technology is cost-effective. It is very important that every company analyzes how each component can contribute to its development and take a competitive position in the market.

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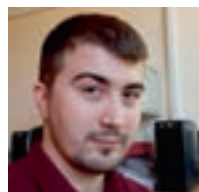
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