IT SUPPORT FOR LOGISTICS IN BIG SLOVENIAN COMPANIES

Matjaz Stor

Logistics manager in ŠTORE STEEL Company

Železarska 3, Štore, Slovenia

Abstract

The development of IT has increased in the last decade which reflected the rapid computerization of logistics processes within the organizations. The importance of IT in logistics is nowadays continuously growing as logistics management expects relevant information in every moment. Organizationally logistics is nowadays overgrowing in the strategic function of the company as it faces new challenges in everyday's business. This paper presents the problem of the information which will have modern logistics in the organization to provide for the needs of management. To the end of last year we conducted a survey among managers of the largest Slovenian companies, the purpose of which was to show relevant information in the management of goods and information flows in organizations, furthermore, it is a very important area of exchange of information throughout the supply chain. We conducted a survey among 200 Slovenian companies and data analyzed using statistical methods (chi - square test and rank correlation) that have made new findings and conclusions. The highest level of IT support in logistics processes and in supply chains will undoubtedly linking individual information systems in integrated information systems.

Key words: *computerization of logistics, information systems, logistic processes, supply chain, strategic management*

1. INTRODUCTION

Logistics in recent years, hit by a wave of changes that have roots in the globalization of business, information technology development and the implementation of operations in real-time as a generally accepted way of doing business – see for example IRT 3000 no. 27 et al. (2010). Factor, which is heavily influenced by the changes in the concept of logistics, the introduction of new information technologies. The computerization of logistics allows that at any time available for the desired information. Thus, it is necessary in accordance with the requirements to reduce costs, optimize the paths of goods, storage and method of exchanging data between participating in the process on the basis of information-communication technologies and systems, which affect the operations and organization of the individual companies and entire supply chains – see for example Barjis and Wamba et al. (2010).

The physical progress of distribution of goods must be supported by appropriate information flow. An important task at this time is to achieve the benefits of the racing information flow that provides certain information which can be utilized to prepare for the reception of goods. The production process is the transition of responsibility to the logistics normally completed, and coordinating the production of technical and preliminary logistic processes is also necessary, which is not correct from the perspective of the profession. Most authors and experts from practice in this area is Stresses the need to coordinate logistics and other processes in the company. When looking at the process of provisioning, logistics is part of a larger business process. The same natural Implementation distribution of goods to other functions partially connected. The best illustration of information and technical support for business logistics tasks can be done by showing the relationship between the material and information flow in the downstream channel, which often represent a multi-stage supply chains in which they participate as shippers, carriers, insurance, business services etc. – see for example et al. (http://www.datalogic.si/).

Business Logistics occupies the entire flow of material and product manufacturing businesses, which covers the cost of logistics (raw materials), internal logistics (production), sales logistics (products), after-sales logistics (repair and maintenance). In analyzing the state of logistics in a manufacturing company is to better understand the logistics usually be in the company after studying its parts or subsystems. It is necessary to select certain criteria for this subdivision. For the purposes of our discussion, we will follow when designing subsystems of Business Logistics chose the basic features that have to be enforced in any manufacturing company – see for example Ogorelc et al. (2004).

The fundamental problem of studying the article, what are the information needs of the logistics process to perform its function. Logistics in recent years, hit by a wave of changes that have roots in the globalization of business, information technology development and the implementation of operations in real-time as a generally accepted way of doing business. With a well planned and carried out the transport and handling of goods a company can substantially reduce operating costs and improve the quality of services provided. With the proper approach to deciding on the proper IT support logistics company can save a lot, improve the quality of products and services become competitive and successful in the market etc..

2. IT SUPPORT FOR LOGISTICS

Information system in the logistics process manufacturing enterprise is an activity that the communication channels connecting the individual logistic processes within an organization and provide adequate and timely supply of information – see for example et al. (http://www.oria.si/), which are necessary for effective decision-making at all levels companies (operational, tactical and strategic level). This allows in such a way that with the help of information technology, processes and people to collect, process, store and transmit the necessary data and information. Business-information system allows all the company to obtain such information by the competition does not have, which is a competitive advantage in the market. It is important that all levels of the company also supplies users with relevant business information systems that give more or less accurate answers to more or less structured decision-making problems. At the operational level are usually faced with a well-structured problems, which can be automated. At the tactical and strategic levels of decision-making problems are usually poorly defined, so the business information system is expected to offer a variety of scenarios solutions, among which the user selects the most rational option. Decision-making is an integral part of management. Information system to support logistics should allow: refresh data, data processing, data analysis and the creation and presentation of results and reports – see for example Barton and Thomas et al. (2009) and integration of a number of logistics processes – see for example Wong et al. (2009).

Information system to support logistics in the context of the whole or. integrated information system of cargo companies to follow the flow of goods and related services and execute the mapping of the most important product information in its database. Expansion of IT support to all business functions, especially sales, purchasing, production and logistics, has significantly increased the complexity of the information system and many companies started developing the strategic plan. Unfortunately, many strategic plans were just pretty pictures, and information models unrealistic goals, costs and expected effects – see for example Greenstein and Todd et al. (2000). Development of information technology and the supply of information solutions not only deliver much better functionality, integration, reliability and efficiency of IT support, but also increased investment in information technology development company – see for example Woerner and Woern e tal. (2005).

Globally, companies rarely address the introduction of new information systems to support logistics in developing new products or . how , thereby increasing the competitive capacity of enterprises and the global economy – see for example Barjis and Wamba et al. (2010). Development and production logistics information support in the development of new products represents infrastructure to assist in setting targets in this area. Below are some logistical information subsystems that have experienced very high growth of the art and modern organizations in recent years. Accordingly, it is also the development of these extremely fast, since modern management due to the presence of global

competition compelled to constantly look for internal reserves and an information sub-systems in logistics represent a real opportunity in this regard.

Information Support Logistics serves the marking and tracing of goods includes information systems, hardware and software-necessary for logistics. Hardware each computer that is part of the IT systems, all its material components (monitor, motherboard, processor, ATA sockets, random access memory-RAM expansion card, power supply, optical drive-CD/DVD, hard drive, keyboard, mouse) unlike immaterial software. The next part of information systems, software is a set of computer programs and together with computer hardware form the whole. The software can split even the system software (operating system and support programs) and application software, which is divided into standard and special software. This user equipment used for specific tasks (word processing, spreadsheet creation and editing, creation and editing databases, planning, designing, constructing, browsing the web, editing e-mail, navigation, control and monitoring of devices etc.). It is necessary to continue operating system, which is also software and is essential for the functioning of the computer. Acts as an interface between user and computer hardware. Hardware needed for logistics, representing radio transmitters and receivers, and form a wireless network in a room, optical scanners (mobile or landline) for reading barcodes, printers for printing bar code labels, microchips with radio-frequency labeling etc. In view of the software that is needed for logistics in warehousing operations already know a lot of programs that serve the management and optimization of warehouse operations (Summary Warehouse Management System).

3. OBJECTIVES, METHODS OF RESEARCH AND HYPOTHESIS

In this paper we examine the business logistics, information systems, which are widely used in logistics processes. We present the results of a study whose purpose was to examine the information needs of the logistics.

In exploring these issues, we have set the following goals:

- examine innovations in the field of business informatics and logistics in Slovenia and abroad,
- to find a good management concepts in logistics companies,
- relate their experiences in the economy in this area with the findings of the profession.

With the help of the deductive method was derived from general observations are defined by the theory and practical conclusions on the dependence between phenomena that we have analyzed.

In the following we want to study evaluated the following hypothesis:

- H1 - IT support has a positive impact on logistics processes.

The research conducted in 2013, respondents were CEOs or CEOs directors or Head of logistics and IT. Research sample consisted of two hundred companies (responded to the sixty managers), a questionnaire was first tested on a small sample of companies in cooperation with experts and scientists. Primary data obtained in the quantitative survey were analyzed by methods of descriptive statistics. After the execution of the survey, we collected data appropriately analyzed with statistical methods and statistical software tool IBM SPSS Statistics 19. We used the chi-square test and rank correlation.

4. RESULTS OF SURVEYS

For the purpose of research, we selected a large Slovenian companies, since we assessed to have an organized unit or service logistics and IT, having its own leader or director. Of course, we first turn at the top management of companies that participate strategic management easier glass or by e-mail. by phone. The survey results sixties large Slovenian companies showed that most companies already clearly that logistics is not only an important source of savings, but also one of the drivers of the strategic development of the company.

Below we present some key findings:

- the response was very good, in most cases, the management of the largest Slovenian companies aware of the importance of IT support logistics processes and that there are significant causal link between the share of new products launched on the market and adequate IT support and strengthening the competitiveness of enterprises,
- surveyed companies recognize that they should participate in the development of best personnel with interdisciplinary knowledge, but a lack of will, trust and communication between all business functions of the company.

The final results of empirical research are as follows:

- in companies where new products represent more than 30% of total revenue and managers are very satisfied with their IT support (on Likert scale are surrounded rating of 3 or more), we conclude that they have adequate information support operations, as they are to this emergency high speed and complexity of transactions and the increasing demand for flexible technology, employees, processes and overall company operations,
- on the basis of data on investments in information technology managers and satisfaction with it, we first found that the observation adequate IT support. On the other hand, we are in business to get an overview of investing in the development of logistics and so we can conclude that in most companies, which invest in Informatics enough resources to create appropriate information support operations, but also speed up the development of logistics,
- on the basis of the data obtained, we can conclude that those companies that develop and successfully market new products, and they represent more than 30% of total sales, a strong competitive advantage or are always a step ahead of competitors.

Testing H1 was conducted by interviewing strategic management, responsible for logistics and informatics, top menedžmentom respectively, CEOs and Presidents' administrations. In order to verify the expectations of how we strengthen the competitiveness of enterprises through the development of logistics (dependent variable) contributes to the clarification of the variability of IT support (as independent variables), we used a statistical method: chi-square test.

H1 confirm (Asymp. Sig. (P) respectively. Precise degree of significance of the test = 0.001, which is <0.05, which means that the difference is statistically significant), although the majority of respondents through their perception of the perceived need for an electronic support in the development of logistics to strengthen the competitiveness of companies and are Likert scale of 1-5 (1 - e-logistics support contributes nothing to the competitive ability of the enterprise, 5 - electronic logistics support very strongly contribute to the competitive ability of the enterprise) surrounded rating of 3 or more.

Based on sample data, the null hypothesis is rejected and could confirm the alternative hypothesis that adequate IT support logistics contributes in a modern enterprise strengthening its competitive ability. In order to further justify what constitutes adequate IT support logistics, we carried out a second phase of research where we found that support electronic commerce major impact on the competitiveness of the company.

Based on the data on investments in information technology managers and satisfaction with it, we found that companies have adequate IT support, since most companies invest 5-10% of all investment funds in Informatics and managers are very satisfied with the IT solutions in the observation. In parallel, we also get information on the level of investment in the development of logistics and concluded that the companies, which represents the logistics max. 10% of the total investment managers on the Likert scale circled no. 3 or more as they are very satisfied with the information support operations and, therefore, the evidence of the adequacy of IT support logistics. From this we can conclude that the appropriate IT support accelerate development of logistics, since those companies which have appropriate information and support, investing heavily in information technology, successfully developed logistics and this is an additional argument to confirm the

hypothesis H1. Adequate IT support logistics is therefore one with which they are satisfied managers and their opinion is very important in business, and thus affect the competitive ability of enterprises.

Followed by a nonparametric test to determine significant differences between mean values for independent samples (Mann-Whitney test and the Wilcoxon rank-sum test) when we want to further examine the impact of relevant logistics information support the competitiveness of enterprises. Competitiveness of the company, in our case measured by the number of new products that the company has launched the last year. More new products launched on the market triggers the need for modern logistics and the appropriate IT support, which enhances the competitive ability of companies, which we studied and confirmed by the already mentioned his own empirical research among 200 Slovenian companies last year.

To this end, we selected 30 companies divided into two groups by 15 companies. In the first group are companies where the assessment of satisfaction with IT managers greater than 3, the company launch on the market more than 10 products per year, this represents more than 20% range and more than 30% of annual revenue in Informatics filed more than 1.000.000 €, which represents more than 10% of all investments in companies. The second group includes companies where the assessment of satisfaction with IT managers less than 3 business launch on the market for less than 10 articles per year, this represents less than 20% range and less than 30% of annual revenue in Informatics filed less than 1.000.000 €, which represents less than 10% of all investments in companies. In doing so, we are careful that the companies were really fulfilled all the conditions for admission to the first or second group, because we were aware of the importance of a statistical test for the confirmation of hypotheses.

Since the data is not normally distributed, we used the above-mentioned test. For convenience, the above range, which belong to the individual values of the variables, but by the user of the computer program SPSS does not need to count. If the SPSS performed nonparametric test for two independent samples of data in the table give the information in Table 1.

In Table 1 are given the sum and average rankings for both groups. Thus, the sum of the rankings for the first group of 254 + 302.50 = 556.50 and another group of 211 + 162.50 = 373.50. The average rank for the first group 16.93 + 20.17 = 37.10 / 2 = 18.55 for the second group was 14.07 + 10.83 = 24.90 / 2 = 12.45. From a comparison of the average values, we see that the average rank of the first group is larger. We are interested in whether these differences in average values of ranks characteristic. The answer can be found in Table 1. First of all, given the value of the Mann-Whitney U-statistics and Wilcoxon statistics, then the value of Ws, and its standardized value. The absolute value of the variable with the second group is less than 1.96 and greater than those values for the first group of companies. Corresponding exact level of significance of the test of its value is found in the next row of Table 1

Table 1: Rank correlation for H1

Ranks				
	Group	N	Rank average	Rank sum
Number of new products	1	15	16,93	254,00
	2	15	14,07	211,00
	Total	30		
New products	1	15	20,17	302,50
	2	15	10,83	162,50
	Total	30		

Statistic test		
	Number of new products	New products
Mann-Whitney U	91,000	42,500
Wilcoxon W	211,000	162,500
Z	-,895	-2,908
Asymp. Sig. (2-tailed)	,371	,004
Exact Sig. [2*(1-tailed Sig.)]	,389a	,003a

Taking into account the results of that must be terminated to the first group of companies statistically different from the other groups. Here is the difference between the average ranks significant (z = \2.908\, a <0.01), which means that adequate IT support logistics accelerate the development of logistics (ie H1 final proof), since those companies in the first group, providing more new products on the market than others. Thus creating more revenue from this source and strengthen its ability to compete in the global marketplace.

5. CONCLUSIONS

Designing an information system to support logistics and ensure the continued presence of goods on the shelves when in today's world, no business system can not own logistic function to ensure all so different and diversified commodity business processes, it is very difficult – see for example Gianpaolo and Gilbert and Riberto et al. (2004).

To succeed is possible only by cooperation between business systems that will create the climate and conditions for the formation of new relationships, connections and opportunities to introduce new concepts to solve problems that arise in providing IT support in the development of new products – see for example Dale and Lambert and Knemeyer et al. (2004), Fava-Neves et al. (2007), Fleish and Kickuth and Dierks et al. (2003).

Based on secondary sources – see for example Oakey and Groen and Sijde and Cook et al. (2010), Bhatti and Kumar and Kumar et al. (2010) and our own experience, we find that the firms business development of the logistics function inadequately supported by IT support, which does not support the competitiveness of enterprises. Testing hypotheses H1 gave us confirmation that we think correctly, as we properly define the IT support business, explore the links between logistics and information technology and their impact on competitiveness companies.

Companies should consider in planning the development, whatever the activity, always include the question of what will happen in ten, fifteen or twenty years in terms of logistics, business systems, IT infrastructure and attitude to the environment or. ecology and sustainable development. In the domestic logistics profession, supply chain management and strategic management positions are well aware that, in accordance with the possibilities done much in the area of infrastructure (the introduction of new technologies, streamlining costs etc.), but the economic crisis and the rapid spread of ICT sets new challenges as for example changes in business processes, the possibility of the implementation of business logistics and informatics in the long run and exercise is increasingly necessary strategic management.

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