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Logistics Controlling: The Driver of Advanced Logistics Efficiency

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Abstract- Logistics controlling is an indispensable element of success for companies in advanced economies. The complex nature of the economic and logistic processes requires that they are being monitored and kept under control so they are properly coordinated, modified and adjusted when needed. Logistics controlling is a technology that is designed to satisfy these requirements. Success and efficiency in business largely depends on how accurately the companies are able to delineate their own profiles and environments, and how flexible they are in adjusting themselves to the changes going on in their environment. In my research I aspire to prove that logistics controlling is a potent tool for companies desiring to be more successful in business by improving their productivity.

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I. Introduction

Current challenges of the economic environment are making a pressure on the companies to be thorough and rigorous in preparing their decisions so they hold themselves ready to bring proper and timely decisions in the changing **global** market environment of our day. The dynamic markets spur on the companies to be fast and flexible in **adjusting** themselves to the changes. They are challenged, among others, to reduce their expenses to the **minimum**, and to increase their incomes, quality standards and reliability to the **maximum**. None the less, the companies have to comply with the requirements of the economic transparency, efficiency and optimal operation, continuous supply of information, timeliness, adaptability and flexibility.

In order to be profitable in a sensitive market, the companies have to acquire such integrated information systems that are suited to retrieve relevant live information and data of high reliability and applicability which can be then used in support of well grounded and sophisticated decision making processes. In addition, such information systems must ensure that the economic procedures of the enterprises can readily be modified or corrected whenever needed. The logistics controlling system discussed herein is perfectly suited to meet these requirements.

The importance of this logistics system lies in its comprehensible approach to the company processes, to the specificities of their activities and management.

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Given that the details of a business are interconnected with each other, an effective information system has to be capable of handling and managing such type of complexity. It follows from the comprehensive, whole-company nature of the collected information that every single correction made within the system will have an overall effect on the rest of the company, which, in turn though, may save considerable amounts of money and time. The proper application of the system, naturally, requires competent users as it is men and not computer programs that will take the responsibility for the decisions made.

My PhD research endeavors to prove that the logistics controlling system discussed herein is capable of giving the enterprises the best tool to respond to the ever growing requirements of the rapidly changing global market situations. At the same time, the controlling system will further the companies in maximizing their profits and minimizing their expenses.

Of the hypotheses formulated in my doctoral paper, here I will discuss two:

- Logistics controlling enhances the efficiency of the logistics processes (procurement, forwarding, storage and sales).
- Logistics controlling makes the company logistics more effective.

II. Materials and Method

Samples were taken from a population of enterprises engaging in activities closely related to logistics; the enterprises have it in common that they lay a strong emphasis on controlling, especially on logistics controlling. Proportionate to the national distribution ratio, the reference sample comprises enterprises with agricultural, industrial and service profiles. Due to its diverse nature, logistics is found in each of the branches of the national economy. Being aware of this, I sent out the questioners to 1500 enterprises.

It was one of my research priorities that the enterprises of the sample population are selected according to and structured by their logistics profiles, irrespective of their sizes.

I had 198 valid responses sent back to me. Because of their low number, the companies with agricultural profiles have not been included in the sample.

In my research I applied the following research methods:

- Questioner survey
- Evaluation of the survey data:
  - Quantitative analysis
  - Qualitative analysis
- On-line data collection
- Off-line face-to-face data collection
- Case study
- Interviews

III. Research Results

The logistics controlling method is designed to coordinate and analyse the tasks of logistics, which in final issue means linking logistics and controlling together. "Logistics operations can only be successful if the subtasks of the sequence are professionally and accurately coordinated and there is no room left for collisions between them. (…) An indispensable requirement of the holistic systems approach is the inclusion of control and feedback processes. The lack of control may cause the operation of the organization to break up and, in final issue, to become inoperative. Market pressure, on the other hand, is making adaptation, readjustment, and reorganization of the enterprises and their operations inevitable." (MÉHESNÉ, 2011).

In **Hypothesis 1** I presume that "Logistics controlling enhances the efficiency of the logistics processes (procurement, forwarding, storage and sales)." The assumption is based on the systems approach principle which says that the operations of a company are to be tackled and managed in a holistic, comprehensive fashion. Compound processes by nature have to be regularly revised so they can operate reliably and properly. The question to be answered here is whether the regular feedback and control activities will actually make the operational processes more efficient.

To answer this question I analysed the use and impact of the controlling systems with the companies included in the survey. The results are shown in Table 1 below:

Table 1: The impact of logistics controlling on the organizations

144 companies applying logistics controlling systems			
Industry		Services	
58,6%		41,4%	
Improvement recorded	No improvement recorded	Improvement recorded	No improvement recorded
36,8%	21,8%	12,6%	28,7%
Reduction of logistics costs recorded			
27,6%		4,6%	
Reduction of logistics costs per unit			
15%-25%		10%-15%	

Source: Own research and development

There are 144 companies applying logistics controlling techniques; 58.6% of the companies have industrial and 41.4% have service profiles. It has been found that 36.8% of the companies in the industry and 12.6% in the services sector realized improvement thanks to the application of the technique; they recorded 27.6% and 4.6% reduction of their logistics costs, and 15-25% and 10-15% of reduction of their logistics costs per unit, respectively. The positive impact of the logistics controlling application is different between the two sectors. There is a higher proportion of companies with industrial profiles satisfied with the application of the system, while those in the services sector do not seem to have experienced significant improvement. The cause, probably, is that in contrast to those in the services sector, for companies dealing with materials in physical terms logistics is of higher importance. Consequently, the improvement achieved due to the application of the logistics controlling system has a more significant positive impact on their operation too. Nevertheless, the overall positive impact of the logistics controlling technique is obvious in the services sector just as well.

For a more precise analysis of the impact of the system, I hold it important to investigate the logistics costs per unit data in further detail (Table 2).

Table 2: Logistics costs per unit in companies applying the logistics controlling system

144 companies applying logistics controlling systems	
Improvement recorded	No improvement recorded
49,31%	50,69%
Logistics costs per unit	
Reduction	Stagnation
23,61%	50,69%
Industry / Volume	
20,14% / 15%-25%	
Services / Volume	
3,47% / 10%-15%	

Source: Own research and development

Data in Table 2 show very close measures of companies experiencing improvement in their logistics costs per unit and of those experiencing no such improvement (49.31% and 50.69%, respectively). Those realizing positive impacts reported the reduction of their logistics costs. The reduction is measured 15-25% with the industrial companies, and 10-15% with the services. It is important to note, though, that there is only stagnation and no increase of costs found even with companies that do not report any improvement.

In order to see the difference between the application and non-application of the logistics controlling system, I drew up a table with respective data on companies not using the system (Table 3).

Table 3: Logistics costs per unit in companies not applying the logistics controlling system

54 companies not applying logistics controlling systems			
Logistics costs per unit	Increase	Stagnation	Reduction
Industry	22,22%	22,22%	5,56%
Services	5,56%	29,63%	14,81%
Total	27,78%	51,85%	20,37%
Change %			
Industry	0-15%	-	5-8%
Services	0-12%	-	3-5%

Source: Own research and development

The basic difference between Table 2 and Table 3 is the data shown in column "Increase" referring to the increase of the logistics costs. Whilst there are some companies that can succeed in reducing their logistics cost per unit without using the logistics controlling system, their number (20.37%) and the volume of the cost reduction achieved (3-8%) are very low, much lower than the respective figures of stagnation and increase.

In sum, data of Tables 1, 2 and 3 lead us to the conclusion that the application of the logistics controlling system facilitates the reduction of per unit logistics costs in general, and the occurrence of the cost reduction is much more typical and of higher volume for companies using it.

Thus, my **Hypothesis 1** presuming that "Logistics controlling enhances the efficiency of the logistics processes (procurement, forwarding, storage and sales)" **has been justified.**

My full length PhD paper is discussing several other examples of the positive impacts of the logistics controlling system. It has been found in conclusion that thanks to its flexibility the system is highly adaptable for use in a variety of company profiles. In order to verify this assumption I completed my research by conducting face-to-face questioner interviews with 10 companies.

Efficiency is a relative concept, there is no single formula known to measure it in exact terms (SZŰCS and FARKASNÉ FEKETE, 2008). The general definition, however, is the following:

- Efficiency = Return/Expenditure
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Relying on these definitions, the concept of efficiency, the ratios of the different combinations of returns and expenditures (outputs and inputs) can be determined.

The survey interviews were made with persons in senior positions capable of influencing the management of the company (logistics) processes and having sound competences in the application of the logistics controlling system.

The companies interviewed have the following principle activities:

Table 4: Principle activities of the companies

Principle activity	(%)
Food industry	20
Electronics	40
Trade and commerce	20
Special machine manufacturing	20

Source: Own research and development

The companies have a wide variety of profiles, but they have it in common that they have been successful in improving their productivity by the application of the logistics controlling system.

The research results showing the positive impact of the logistics controlling system on the productivity are summarized in Table 5 below.

Table 5: Practical pay-offs of logistics controlling application with 10 enterprises

Achievement	Rate of realization (%)	Range (%)
Improved income	30	10-15
Reduced inventory	60	5-15
Reduced logistics costs per unit output	50	5-10
Improved efficiency	30	-
Contractor selection by efficiency indicators	40	-
Improved control of contractors	50	-
Updated production, sales and planning	10	-

Source: Own research and development

The data show that each of the enterprises has achieved improvement by the application of the logistics controlling system. The number of those realizing pay-offs and the range of the pay-offs, however, differ according to the type of their principle activities.

The highest is the proportion of those being successful in reducing their inventory (60%). Somewhat lower but still high (50%) is the proportion of enterprises succeeding in reducing their logistics costs per unit output, and improving the control and follow-up processes of their contractors. 30% of the respondents can see the growth of their incomes.

The positive impact of the logistics controlling mechanism is not something that is always seen promptly in the costs and incomes lines; the method will first "put the operation in order", which will in due turn generate reduced expenses and improved incomes for the company budget.

Taken it in general, improvement in productivity is achieved usually when the outputs are growing and the inputs are reducing, or these two are taking place simultaneously. In our case, all the three of the alternatives of achievement are seen: improved incomes, reduced logistics costs per unit output, and the volume of the inventory that also is contributing to the growth or reduction of the expenses.

It must also be noted, however, that actual improvement of efficiency has been recorded with 30% of the respondents only. The reason for this lies in the very concept of efficiency. Given that it is a complex concept, it is impossible to use a single formula to express it. This means that, within certain limitations, there is always room for subjective interpretation left.

In sum, we can say that logistics controlling does function as a tool of efficiency improvement for the enterprises, which is a proof of my **Hypothesis 2.**

IV. Conclusion

An important expectation of the modern enterprises challenged by and aiming to preserve their positions in the rapidly growing and ever competing (global) markets is that they ensure a maximum level of productivity, a minimum but still competitive level of expenses, prompt adaptability to the market environment, and transparency, reliability, timeliness and flexibility.

The integrated company management systems and controlling systems can offer feasible techniques for the enterprises so they are able to respond to the challenges of the markets. An important advantage of these systems is that they are not "static", instead, they are flexible and readily adaptable to any given organization profile, and also, they are capable of ensuring improved profitability by minimizing costs and maximizing incomes.

The final outcome of the research justifies the practical feasibility of the logistics controlling system for organizations striving to improve and maintain a high level of productivity for the long run.

Literature:

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