

# INTEGRATED OPTIMIZATION OF PROCESS INNOVATION IN INDUSTRIAL ENTERPRISE AS AN EQUIPMENT OF ENSURING AN INCREASING OF SUPPLIED GOODS VALUE

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**Abstract:** *The subject of paper is a demonstration of influence of integrated optimization innovation processes of supply chains in industry enterprise, in term of valuation of logistics system efficiency in turbulent changing conditions on the market. A methodology proposal and a set of working equipment for integrated optimization of process efficiency of company logistics system in term of quantitative and non quantitative process valuation and also in term of customer productivity increasing as an equipment for ensuring of supply goods values, including its verification.*

**Key words:** *process efficiency, optimization, innovation, goods value*

## 1. INTRODUCTION

According to statistics provided by several authors (Košturiak, 2006), (Lambert, 2000), (Pernica, 2004) the area of transport, storage and handling in an enterprise employing 25% of all employees, occupies 55% of the area and make up 87% of the total production time, dwelling on the holding material in company. These activities represent sometimes 15 to 70% of the total product cost and also influenced the quality of products. The 3 to 5% of the material is decline by the improper transport, handling and storage.

The presented statistical data identified the high potential of losses in material flows and stocks. Reducing losses in the material flow is usually reflected in the reduction of logistics costs and time.

The direct impact of reducing logistics costs and time for holding gain is greater than the effect derived from increased sales volume of the same amount of funds. Greater benefit is that the value of savings in logistical costs is directly reflected in full the increase in value of company profits, which increased sales volume in the case.

A comprehensive solution of efficiency the information and material flow of logistics system, including the methodology is described in the following chapters of contribution.

## 2. INTEGRATED OPTIMIZATION OF LOGISTICS PROCESSES

The role of logistics is steadily increasing of value of the supplied product and the level of the delivery services. The growing of both attributes is made by optimizing the total cost of and delivery service, while ensuring the required performance and expanded supplied product and delivery services, thus ensuring reliable and complete supplied product and services, faster and error-free deliveries and increasing the level of customer service.

These factors allow for the company to improve their market position against competitors. Increasing the value added of the supplied products there is a reduction in customer inventories of supplied products for storage customers, shortening the period of continuous follow-up of production at the customer, reducing the state of work in progress, reducing

the time ordering of supplied products, which also allows the customer to increase its competitiveness in the market. This is reflected in his complexity and reliability of supply, reducing the time of delivery to the followed customer and the subsequent reduction of inventories.

These are only the basic attributes of value added of supplied products or services to customers.

Competitive enterprise in the integrated logistics chain has expanded value added of product (Košturiak, 2006). That is the completion of services, information and feelings that customer with the product received and he understood it as an integral part of the supplied product. For example, it is the extension of the warranty period, the quality of product information, ensuring the purchase of the product after its performance, reduce costs of each species with its use, reducing response time to customer orders, the way of resolving the complaint, using appropriate sales rhetoric, the involvement of suppliers and customers in product development, reinsurance contract with suppliers of materials, customer involvement in service cooperation, reduce the time service intervention, in the price of spare parts, modularity of solutions delivered the goods and increase customer productivity.

Often, extending value of the supplied product shall decide about the marketability and competitiveness of product over the company's own product. Application of expanding value of products allows the company to differentiate itself from competitors and gain market advantage.

Integrated assessment of the effectiveness of logistics chains files allows highlight of synergistic influence effectiveness of planned process changes.

Anyway, it is recommended in large differences in the structures of the logistic processes of logistics chains to apply the procedure of valuation the various proposed changes chain logistics processes to obtain greater clarity on the effectiveness of the proposed process changes and their impact on the intensity change of profit making the logistics chain.

For an integrated assessment of the effectiveness of logistics chain processes changes is appropriate to apply the simulation tool, which allows a minimum valuation of the maximum value of intensity increase of profit enterprise logistics system creation. The simulation tool facilitates the implementation of the decision to choose options newly designed process changes of logistics chain in logistic company in terms of specific business conditions.

## 3. INTEGRATED PROCESS OF INCREASING THE VALUES OF PRODUCTS FOR BUSINESS AND CUSTOMER

Underlying assumptions of applying a integrated approach to increasing the value of goods and enterprise customers:

- it is the company where the share of the costs to logistics processes is a major factor, it means, that the costs of logistics processes is not negligible,

- the company is integrated manage, it means, that company applies integrated logistic chain,
- in the business the process approach is applied to securing of logistic processes,
- in the enterprise the logistics system is the conductor of all structures and processes between identified the opportunity in market and delivered the products to the customer. Therefore, its logistic system becomes an active co-business strategy;
- basic theory of radical strategies are applied in business managing.

The steps of the complex process of increasing the values of the logistics system products of the company:

- the strategy of company logistic system,
- the concept of company logistic system,
- determine the logistics processes of logistics chains,
- mapping of logistics processes through indicators of matrix model,
- the proposals of logistics chains processes changes,
- quantitative evaluation of the processes changes effectiveness,
- proposals evaluation of processes changes from the point of enhanced value of the products,
- timely decision about realization of processes changes proposals,
- setting the limits of matrix model indicators,
- monitoring of logistics system indicators,
- dynamic and continuous improvement of logistics system effectiveness.

The design of effective and reciprocal links of logistics processes are applied new information and logistics technologies, including the aspects of integration from proposals (internal and external) and coordinate the processes activities, and of course, any effective changes of logistics chains processes, especially that allow the achievement the increase in value of products for business and the customer.

It is important in the design of effective processes, using the effective information flows. Information flow is usually more multiplied than material flow. It covers various areas of industrial company, which material directly does not pass very often. Information is an important logistics factor. They consistently capture, processing and transfer allows substitution of certain logistic processes. Information allows effectiveness of processes and capacity for storage, and also influences the transport. Lack of timely information usually causes the accumulation of material. The uncertainty of the customer about delivery, or uncertainty of supplier about customer requirements usually leads to the creation of higher buffer stocks. Each material flow works well only if a reliable, comprehensive and accurate information comes to the right place at the right time. The information area provides big area for streamlining the process mutual relations in terms of their integration and coordination. Effective information links with suppliers and customers lead to streamline of practically all input processes associated with ordering materials, managing demand, managing the offer, acceptance and recording of orders, administration and management over the contracts, it increase the flexibility to react to customers, including accuracy, speed, satisfying the requirements and reduce overall time of delivery to the customer.

Effective use of information flow also means the application of appropriate information infrastructure, which must be as effective and must also provide sufficient flexibility to implement the new changes in logistics processes. Implementation of new and modified logistic processes depends primarily on how it is difficult to ensure communication between existing and planned applications. Normally the flexibility of logistics processes managing requires process automation in real conditions, which means

the application of service-oriented architecture that allows automated implementation of dynamic logistics processes and effective integrated of current information systems by changes of organizational structure. Thus, managed processes allow efficiently implementing of changes and continuously improving the efficiency of logistics business processes. Normally it starts with a uniform approach to handling customer and its requirements. The Internal processes is closely related to the mentioned. Their adaptation to this architecture is a requirement for success. Effective implementation of the proposals of process logistics chain logistics system changes creates the conditions for the comprehensive integration of the supply chain.

Highly efficient complexes of logistics processes are achieved by applying logistic technologies.

Effectively solution with such complex interconnections of logistics processes delivers the enhanced synergistic added value of the products as reflected in the increase of efficiency of logistics chains and logistics system. The aim is to design just as much synergy to each other such efficient logistics processes, which brings up the execution of more efficient logistics system, the maximum growth and enhanced value-added of products, while increasing customer productivity and competitiveness of the company. The highest synergistic and enhanced value added of products is reached in the drafting of proposals for radical processes changes, which means a completely new way of realizing the processes of logistics chains, namely the application of new information, logistics and technology innovation of logistics processes.

For improving the efficiency of logistics processes are all the resources reevaluated from point of the review of their effectiveness for example by simulation programs. Based on the resulting data about the expected benefits of the logistics system, the total cost needed to realize their value and benefits of customer productivity increasing, it decides on the sequence of their realizing.

The aim is to apply comprehensive quantitative and non quantitative optimization of proposals for radical and gradual changes of logistics system processes, which allows the maximum value of the products.

#### 4. CONCLUSION

Integrated optimization of logistics processes innovation of logistics system was successfully applied in chosen industries in Slovakia. Achieved results of integrated optimization application in companies showed a synergic increase of process efficiency connected with rapid increase of quantitative and non quantitative indexes of logistics system, that showed in rapid increasing of supplied good, for customer and company also. This increasing of supplied good value showed at increasing of competitive ability of industry company. Such verified progress of integrated optimization of process innovation is going to utilize by making more efficient of processes in many other companies in Slovakia.

A next way in solving of such problem means finance flow allowance by increasing a supplied goods value.

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