

## FEATURES OF LOGISTIC SYSTEM ADAPTIVE MANAGEMENT

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**Abstract:** *The study presents literature survey on enterprise logistic system adaptive management place and structure in the general enterprise management system. The theoretical basics of logistic system functioning, levels of its management and its effectiveness had been investigated. The role of adaptive management and its types had been scrutinized. The necessity of creating company's adaptive regulator such as its economic mechanism had been proved.*

**Key words:** logistic system; levels of enterprise management; enterprise adaptive management; active adaptation; passive adaptation

**JEL Classification:** L290

### Introduction

The changing global market environment, the increasing level of enterprises competitiveness and high entry barriers to existing goods and services markets had made the necessary subsoil to use organizational and managerial set of tools as a mean of technique that can provide companies with additional advantage in goods production to attract more customers and increase enterprise effectiveness. These global market tendencies brought the necessity to react quickly and produce speed high-quality managerial decisions. The company has not only to reply to the changes of business environment, but to provoke them as well. In this case the enterprise adaptive management should be implemented. There is a lot of misunderstanding and mishandling in company's adaptability as a feature and enterprise adaptive management as a conception.

The aim of this article is to investigate the place and structure of enterprise logistic system adaptive management (ELSAM) in structure of company's general management. Due to this aim the following tasks had been accomplished:

1. To analyze theoretical basics of enterprise logistic system management;
2. To define enterprise logistic system management structure;
3. To scrutinize enterprise logistic system adaptive management and state its role in general enterprise management structure.

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**1. Enterprise logistic system management. Theoretical basics**

The question of enterprise logistic system management had brought an immense interest in the scientific society. The scrutiny had discovered two theoretical approaches that are presented in the table 1. According to the assumptions, the key element is the attitude towards company’s logistic flow, whether it had been defined in advance and we can only coordinate and improve its characteristics or the managers have to design them first and afterwards create the other parts of organization. The main differences of these two conceptions can be defined in the target, subject, aim, actions and the key-criterion for company’s logistic management effectiveness evaluation.

**Table 1 - Theoretical approaches to enterprise logistic system management**

Elements Sources	Logistic management target	Logistic management subject	Logistic management aim	Logistic actions	Logistic management effectiveness criterion
Bowersox <i>et al.</i> (2002), Gadjinskiy (2012), Ivanov <i>et al.</i> (2010),. Krukavskiy <i>et al.</i> (2009), Daganzo (1999), Stahanov <i>et al.</i> (2001), Waters (2002)	Enterprise logistic system	Enterprise flows	All logistic flows coordination	Existing flows operation	Economic effect and effectiveness; costs minimization
Oklander M.A.(2003), Semeneko A.I. <i>et al.</i> (2003)	Enterprise logistic flows	Process of flows organization	Enterprise flow processes optimization	Material, information and financial flows design	Optimum in particular situations (reaching function extreme: taking into consideration limits such as costs minimization and profit maximizing)

Source: authors combination by Bowersox *et al.* (2002), Gadjinskiy (2012), Ivanov *et al.* (2010),. Krukavskiy *et al.* (2009), Daganzo (1999), Stahanov *et al.* (2001), Waters (2002), Oklander (2003), Semeneko A.I. *et al.* (2003)

Due to the first conception, its representatives (Bowersox *et al.*, 2002; Ivanov and Sokolov, 2010; Gadjinskiy, 2012; Krukavskiy and Chornopuska, 2009; Stahanov and Ukraintsev, 2001; Waters, 2002) define absolute or comperative indicator as a criterion of logistic system (e.g. productivity of one worker or aimed results divided by costs to acheiving it) effestiveness when the managers operate only with existing flows and improve enterprise logistic system by coordinating the flows parameters in order to improve company’s profitability in general and its specific features

such as competitiveness, effectiveness, sustainability, responsiveness, cost-efficiency, stability, quality and flexibility.

The representatives of the second paradigm (Oklander, 2003; Semeneko and Sergeev, 2003) state the necessity to design material, financial and information flows first, but their researches have only theoretical part without thoroughly practical recommendations. In this case the relative or taxonomy indicators (e.g. aggregated indicator of one worker productivity or company's productivity; logistic costs multiplied by function of optimization logistic flows) can be used to measure enterprise logistic system effectiveness in every particular situation and the prior aim of logistic system management is to construct its flows first.

According to this literature survey, the further investigation of logistic system of enterprise, the levels of its management and key-components and the nature of mentioned processes are necessary to study.

## **2. Enterprise logistic system management structure**

Generally company's management can be categorized by levels of managerial decisions and the areas of its influence within the enterprise. The assumption and classification made by authors are presented at the table 2.

Due to presented logistic system management structure, the levels and tasks of its maintaining can be defined by general logistic system for strategic level, its functions on tactical level and logistic flows at operational level. All mentioned above decisions can be separated by range of influence, problem classification, objectives, their orientation and limitations by time criterion.

Strategic level is stated by decisions on logistic system that are hard to cancel, had influence on all organization, oriented on final goal of enterprise, can be changed due to market trends and the horizon of planning is generally more than one year. The effect of their implementation has usually great effort on scientific and technical progress. The typical tasks at this level are network definition solution, optimum balance between cost minimization and profit maximization.

The set of tools on the next tactical level has its objective to make flexible decisions and to create a connection between functional links of enterprise – logistic functions of each part of company's production stage. The object of planning is usually determined, limited by time criterion for one year and directed to investment processes. These level tasks involve solving problems in fulfillment policies, material flow organizing and control.

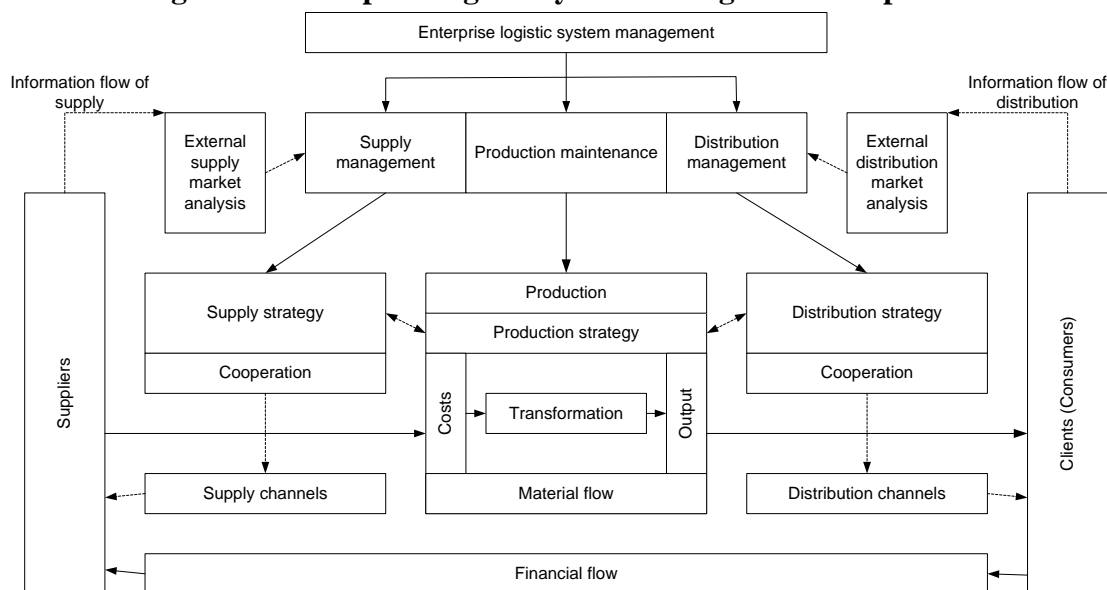
**Table 2 - Enterprise logistic system management levels and key-components**

Management key-components	Logistic system management levels		
	Strategic	Tactical	Operational
Management target	Logistic system (LS)	Logistic functions (LF)	Logistic flows
Types of decisions	Hard to cancel	Flexible	Short-term
Range of influence	Wide-range, all organization	Connection between functional links	One specified functional link
Oriented to	Final goal	Instruments that help reaching the goal	Continuity of function at a specified period of time
Object of planning	Variable	Determined	Determined
Time criterion	More than a year	One year	A day, a week, a month
Economic phenomena direction	Scientific and technical progress	Investment process	Production and resources distribution
Software	-	APS-advanced planning and scheduling	ERP – enterprise resource planning SCE – supply chain execution
Problem Classification	Location allocation problem (LAP), Network allocation problem (NLP)	Multi-echelon inventory distribution fulfillment system	Dynamic location allocation problem (LAP)
Objective	Network definition, cost minimization-profit maximization	Determination of fulfillment policies, material flow management, control of the bull-whip effect	Logistic requirement planning (LRP)

Source: combined by authors by Le rapport par le PIRAME (2009), Lambert Cooper *et al.* (1998), Christopher (2005), Manzini and Gamberini (2008), SAID (2009)

Operational level of decisions is presented by logistic flows maintainance and short-term objectives. The task of this level usually faces production and resources problems determined by one specified functional link, which connected to logistic requirement planning. Each of described levels represent the decisions on logistic flows, functions and company's logistic system in general.

The general scheme of LS components (figure 1) from the point of view of production process and organizational functional structure of enterprise based upon "cost-output" production model, includes relations with external market (suppliers, customers), enterprise information flow and its analyse, supply, distribution management and production maintenance, financial flow that provides the appropriate level of material flow due to cooperation strategy between supply and distribution channels and company's production strategy.

**Figure 1 - Enterprise logistic system management components**


Source: Mykhaylyk, 2005

According to the presented scheme the only cooperation strategies can be applied with existing supply and distribution channels. At the same moment to improve this description, the relations between competitors have to be taken into consideration as well. Due to company's life-cycle its market positioning towards its competitors might be (Ansoff, 1988; Le rapport par le PIRAME, 2009) - cooperation, competition or coexistence.

### 3. Enterprise logistic system adaptive management

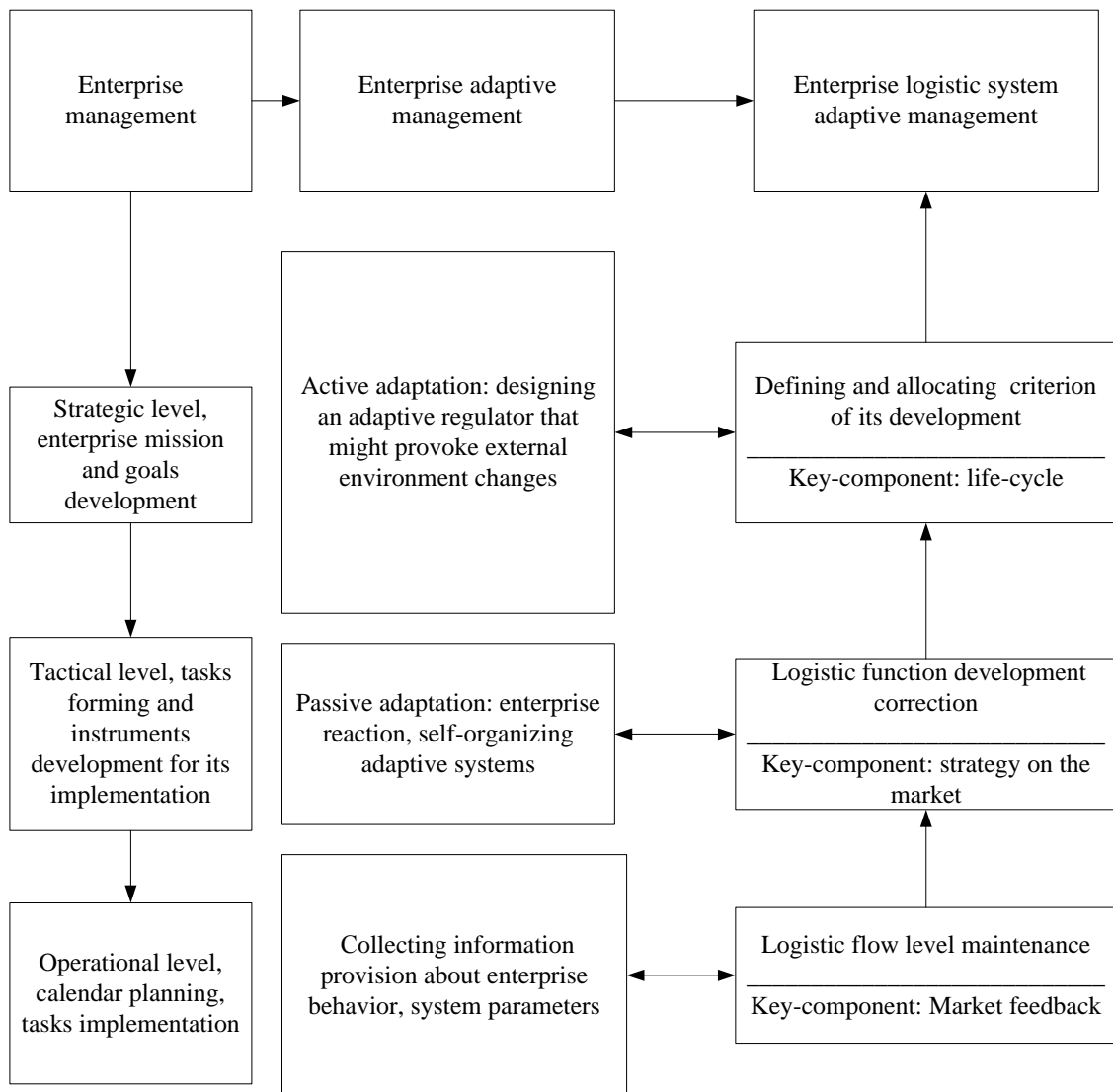
Generally, the enterprise adaptive management consists of active and passive adaptation that stands for provoking external market changes or answering for ones already existed.

To describe place and role of enterprise logistic system adaptive management (ELSAM) authors suggest its conceptual model (figure 2).

Due to it, ELSAM is a part of enterprise adaptive management and it has three levels of decisions and activities to implement.

On strategic level active adaptation is presented by choosing and creating the criterion of LS development. Due to company's life-cycle this level is presented also by designing an adaptive regulator and establishing enterprise LS basics.

**Figure 2 -Enterprise logistic system adaptive management in general enterprise management**



Source: authors combination by Ansoff (1988), Voznenko (2009)

Tactical level as a medium term decisions implementation characterizes by passive adaptation: choosing the appropriate strategy to react on competitors’ actions and on market tendencies. This scope is described by LF evaluation and corrections of their development.

Operational level is defined by collecting necessary information about external bifurcations and optimum logistic flow support.

## Conclusions

The suggested survey revealed the role and the place of enterprise logistic system adaptive management in the general company's management structure. It shows the necessity to design adaptive regulator for its active adaptation to environment and create self-organizing adaptive system upon collected information about company's behavior. The best practice-used set of tools has to take into consideration the peculiarities of company's life-cycle, the field of enterprise activities, relations between suppliers and distributors and the state of its logistic flows. The future research is to make an enterprise economic mechanism that coordinates and controls enterprise logistic system internal and external flows within all mentioned criteria.

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