



Advanced Logistics Solutions

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editor

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CHAPTER X

RISK MANAGEMENT VERSUS VALUE OF LOGISTICS PROCESSES

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Introduction

Valuation and interpretation of risk management influence on creation and implementation of surplus value by logistics processes requires analyzing both categories and finding barycentres in which that influence would be most visible.

Undoubtedly logistics processes management is always saddled with risk. Complexity of its structures causes frequent encountering events and phenomenon tending to be accidental. They are not completely predictable, mainly because of unknown reasons of their formation, and the procedures which allow adequate reaction critical situation occur most necessary when they are not available.

It concerns all processes, not only logistics ones, realized by companies regardless of their trade or the way they practice. It convinces that it's necessary to conduct some researches and studies in as far as risk management of processes and its connections with creation and implementation of surplus value for every market participant.

The aim of present solutions is analyzing influence of risk management on creation and implementation of surplus value for all market participants in regard of logistics processes.

Essence of risk management

Risk management is a field which continually undergoes alterations which are response to rapid changes in economic reality and new threats connected with those changes. Term "risk management" is defined as decision making which fosters achieving of social, economic or political objective, at optimal cost, with the aid of procedures which allow complete elimination of any risks or limiting them to the acceptable level [19]. Risk management should be planned and purposeful which means that actions in that direction should not be more or less sporadic but regular and long-term. The process also requires integration of ventures accomplished within complex system of logistics processes management.

In terms of logistics processes management, the basic task in risks minimization is finding the most likely places in which they might appear and levels in improving or planning new processes.

One of the crucial aims of processes management is creation and implementation of possibly the highest surplus value for all market participants. To accomplish that aim successfully any threats should be controlled by adequate system of risk

management which may identify major adverse agents and their elimination or limiting to the level that may be acceptable. Implementation of complex attitude towards risk management allows:

- To apprise important risks attendant to organizational activity
- Forming integrated strategies in risk management

Table 1. Strategies of risk management

AVOIDING	<ul style="list-style-type: none"> • Diversification • Elimination • Ban
DETENTION	<ul style="list-style-type: none"> • Acceptation • Retrial rating
REDUCTION	<ul style="list-style-type: none"> • Dispersal
TRANSFER	<ul style="list-style-type: none"> • Insurance • Protection • Compensation
ABSORBTION	<ul style="list-style-type: none"> • Allocation • Diversification • Expansion • Redesigning

Source: [17]

Integrated risk management is not a one-shot action or a set of few decisions. It is a process unfolding with a strict algorithm. It also includes a variety of strategies that may be used which are described in table 1. Te choice is made basing on number of activities which are liable to risk, importance of particular type of risk to desired process finalization and the most important effect and chance of appearance of a risk.

The effect should be a mapping of consequence of the worst of the scenarios. The chance is an indicator depending on quality of a threat as a phenomenon and environment in which the processes do function. These two are useful in quantification and simplifying all risks of examined process so that they would become able to compare with each other. [8]

Choosing the strategy of risk management in case of particular threats appearing in examined logistics process has an direct influence on created and implemented surplus value in terms of company and customer.

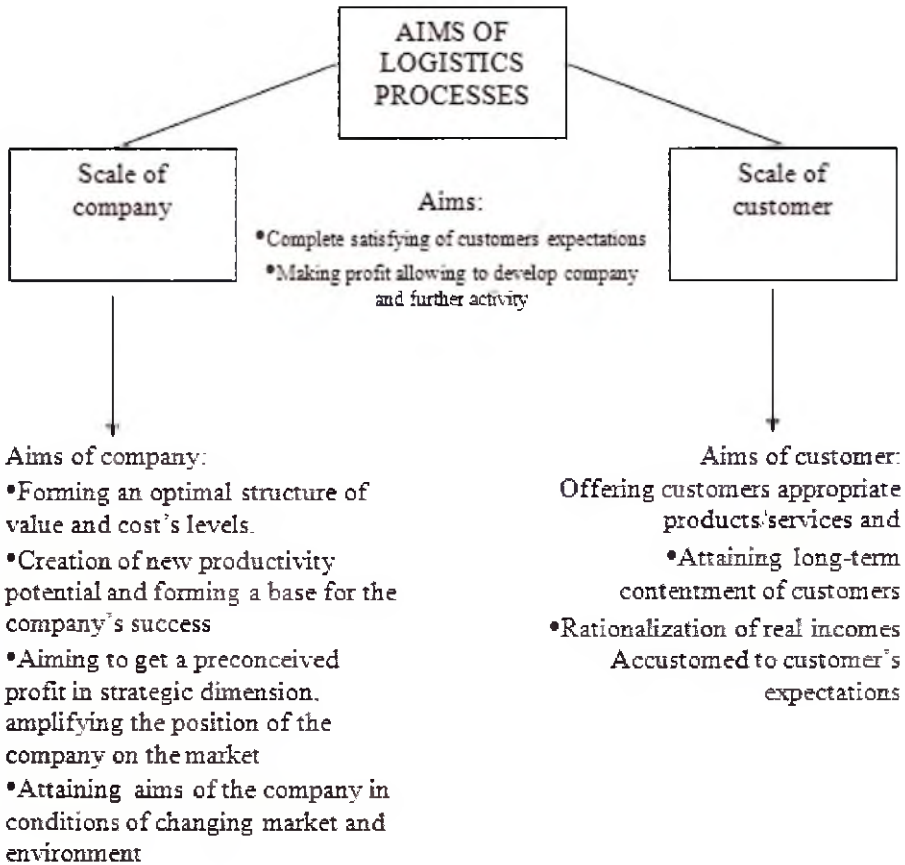
Surplus value in logistics processes

The idea of modeling and implementation of processes is transmission of initial resources into final resources with possibly the biggest surplus value for all of the market participants. The example of such an attitude is essence of category of a process presented by M. Christopher [2], process is actions of any type within

which the value is added to initial resources and the product is handed to the inner and outer customer.

Does the surplus value is the same for a customer (the outer customer) and a company (the inner customer)?

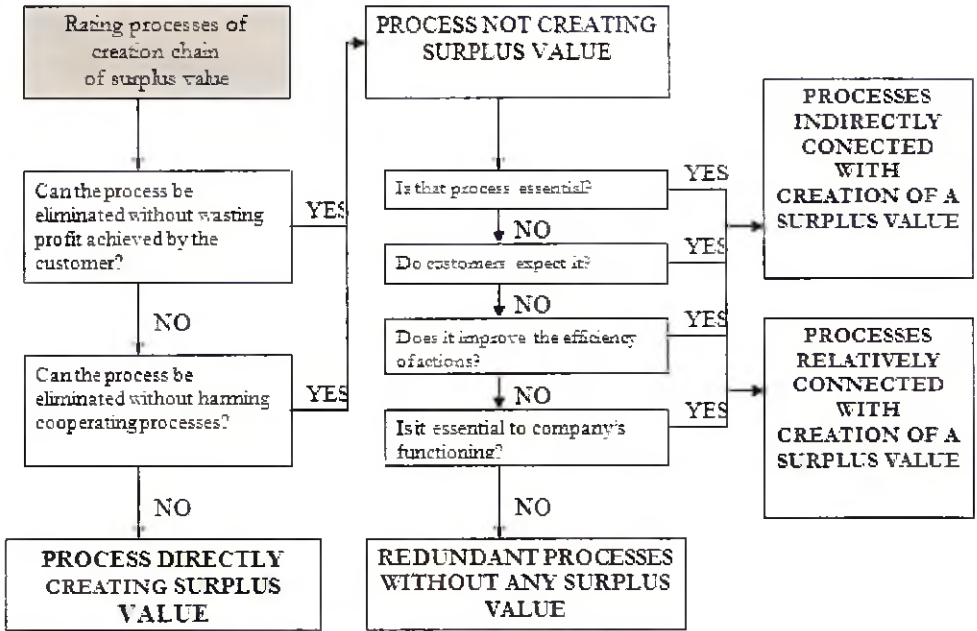
The answer for that question considers the aims of which implementation the process has been appointed. A classification of aims on the scale of customer and company is presented by drawing 1.



Drawing 1. Aims of the logistics processes
Source: own case study based on: [1], [11], [12].

Acquaintance of the aims of logistics processes represents essential step in identifying threats preventing from their implementation and determines considerably final effects of implementation of the processes which are creation and implementation of surplus value for market participants. What part of, implemented by all processes of the company, surplus value falls to logistics processes? And how big its increase may be after introducing the integrated risk

management system? This question leads to demonstration of the way of perceiving and interpreting the creation of surplus value in terms of logistics processes. Analysis of the processes considering creation and implementation of surplus values is presented in present diagram, Drawing 2.



Drawing 2. Algorithm of rating processes in terms of creation and delivery of surplus value.

Source: Own case study

Rating processes in term of creation and delivering surplus value requires answers for two crucial questions. Can the process be eliminated without wasting profits achieved by the customer? And can that process be eliminated without harming cooperating processes? If both of answers are negative it means that pursued process connected directly with creation and implementation of surplus value. However when both answers are affirmative, it is likely that we are dealing with process which do not create any surplus value. Not all of the processes which do not directly create any surplus value are the ones that require deletion from the structures of company's chain of processes. To rate that group correctly we should use assisting questions. Is the process essential? Do costumers expect it? Does it improve the efficiency of actions? Is it essential to company's functioning?

Negative answers assure that there is no link between studied process and creation and implementation of surplus value. However at least one of the answers is affirmative it means that this process is indirectly connected or relatively connected with creation and implementation of surplus value.

Interpretation of algorithm may constitute suggested by P. Schuderer, division of processes to[1]:

- Processes directly creating surplus value, characterizing with direct and strict connection with costumers – so called primary processes, among which divide into:
 - Major processes, incipient processes and processes in final state (by contacts with customer) on market, creating and delivering proper values and benefits in form of product, service or operation from the customers point of view;
 - Assisting processes, caused by major processes and necessary to their existence to a lesser extant connected with customer’s wishes and expectations;
- Processes indirectly creating surplus value characterizing with indirect link with customers – so called secondary processes which contribute to increase of surplus value by supporting direct processes creating that values;
- Processes relatively connected with creating surplus value, showing relative link with customers – so called third-rate processes, greatly remote to primary processes (especially in a sense of time and factual state);
- Processes not creating surplus value, not showing any link with customers – so called potential display of wastage.

The attempt of classifying logistics processes in term of creation of surplus value according to assumptions avowed in algorithm is illustrated by table 2.

Table2. Division of logistics processes considering their input in forming a value

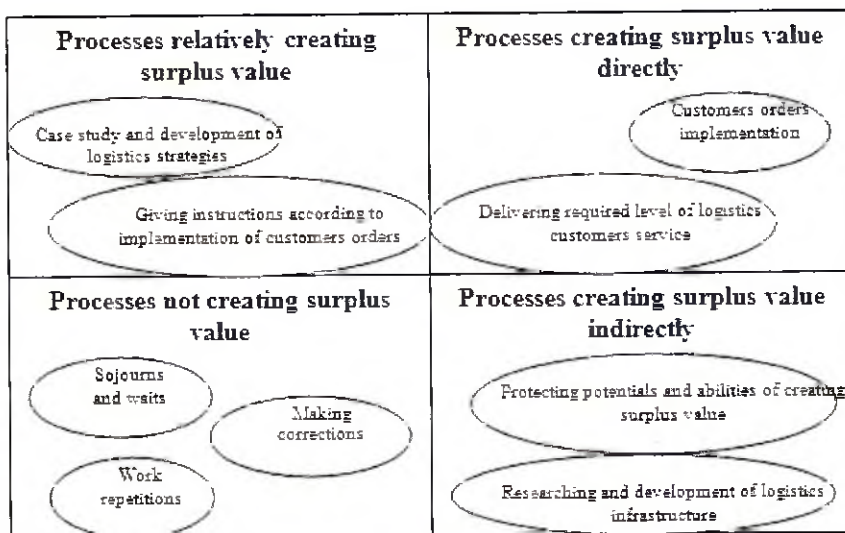
Influence of process on creation of surplus value	<i>Types of logistics processes</i>
Processes creating surplus value directly (primary processes)	<ul style="list-style-type: none"> – Fruition of customer’s orders – Fruition of logistics handling the customer – Offering customer some additional values – Minimizing the costs leading to reduction of price of product and service – Reception and shipping products by implementation of transport, lading, storage, packing and labeling processes – Delivery of required level of logistics
Processes creating surplus value indirectly (secondary processes)	<ul style="list-style-type: none"> – Analysis and prognosis of logistics market situations – Identification of customers preferences and expectations in as far as logistics service – Identification of logistics market segments – Case study and development of logistics strategies – Case study of set and structure of logistics component – Identification of aims and case study of assumptions of implementation of logistics customer serving – Giving instructions according to implementation of customer’s orders – Administration of product flow by developing a proceedings

	of transport, lading, storage, packing and labeling processes – Protection of processes quality of product purchases and disposals – Protection of processes quality of service – Protection and development of staff qualifications in as far as province of planning and implementation of logistics
Processes relatively connected with creation of surplus value (third-rate processes)	– Protection of abilities and potentials of creating surplus value – Research and development of logistics structure – Development of information technology – Forming and keeping relations with environment – Handling waste, packages, permanently damaged products – Protection of disposal and implementation of revenue – Protection of logistics financial aspects (implementation of customers bills)

Source: basing on: [1], [2], [3], [4], [5], [6], [9], [10], [11], [13], [15], [18].

Processes division in terms of their influence on creation and implementation of surplus value can be presented by map of creation and delivery of surplus value for all market participants. Drawing 3.

Creation and implementation of surplus values for company within logistics processes chain



Creation and implementation of surplus value for customer within logistics process chain

Drawing 3. Map of creation and delivery of surplus value for all market participants
Source: Own case study

The basis of preparing map of creation and implementation surplus value is consideration of two dimensions of values including aspect of company and aspect of customer as a key to appoint two dimensions of creation and implementation of

surplus value. In right upper corner there are displays of logistics process activity which are directly connected with creation and implementation of surplus value and implementation of lower value. In right lower corner there are secondary processes indirectly connected with creation and implementation of surplus value which assist indirect processes of creation and implementation of surplus value thereby contributing to its increase. In left upper corner there are processes relatively connected with creation of surplus value which show conditional connection with customers in appointed degree. In sense of time and actual state they situated beyond the primary processes. They are more important according to prosperity of company. Left lower corner contains processes which do not represent any connection with customers. They are named potential display of wastage.

Identification and rating of that processes in the terms of creation and implementation of surplus value have crucial sense in planning integrated risk management system. Optimally planned integrated risk management system directly influences on its formation.

Risk management relation – surplus value change of logistics processes

The relation between risk management and creation of logistics processes value can be considered bidirectionally.

The first aspect is connected with attained division of logistics processes on planned map of surplus value creation and implementation. The second one, however, shows the fact that the better elaborated system is the bigger increase of the process value becomes.

Risk management strategy study basing on identification of processes input in the terms of creation and delivery of surplus value allows to:

- Enunciate risk identification in a particular field of processes import in the terms of creation and delivery of surplus value.
- Pinpoint which processes in the first order should be taken under consideration during a strategy creating;
- Pinpoint the way of decreasing likelihood of appearance of particular threat;
- Pinpoint how to reduce effects of appearance of a particular threat;
- Work out common criteria of rating, possibilities of comparing and abilities involving dealing with risks of a particular field of processes import in the terms of surplus value implementation;
- Define relations between efficiency of risk management and creation and implementation surplus value by logistics processes;

It may be even intuitively certified that the better elaborated one system is the bigger increase of import of a process is. The problem is that it is mainly intuitive by now. There is no firm, backed with numbers data showing firmly how did for instance EBIT changed after implementation of risk management system, not to mention a surplus value.[14].

Estimate of likelihood of risk with analytic methods is not that simple. In most cases it deals with rating one-shot future events which do not have precedents. That is why it is not easy to describe them analytically.

The base of analytical study of model of risk rating in terms of creation and delivery of surplus value may be formed by suggested relation matrix: risk management – surplus value of logistics processes, table 3.

Table 3. Array of relation rating: risk management – logistics processes surplus value– example– attempt of identification

Risk group	Description	Explanation	Rate of likelihood	Processes directly creating surplus value	Processes indirectly creating surplus value	Processes relatively connected with creating surplus value
				Implementation of costumers orders	Case study and development of logistics strategies	Case study and development of logistics infrastructure
<ul style="list-style-type: none"> - problem of identifying crucial customers and emptor groups, - off target predictions about costumer requirements, - inadequate level of services, 	Almost impossible	Can happen in extreme circumstances	0,01	0	1	0
				1	1	0
				1	0	0
<ul style="list-style-type: none"> - serving process in insufficient way concentrated on customer, - to low ability of partners to react to unexpected orders (low flexibility), - problems at a filed of information flow, 	Unlikely	There is a little chance of that phenomenon	0,01-0,1	1	0	0
				1	1	1
				1	1	1

<ul style="list-style-type: none"> - Improper choice of distribution canals management strategy - failure to pursue customer order on time, - decreasing number of orders, - lack of integration between processes of production, distribution and transport. - Breach of contract by carriers, operators etc. 	Mildly possible	It sometimes may happen in some circumstances	0,1-0,2	1	1	1
<ul style="list-style-type: none"> - Too big costs of servicing, - Problems with integration of one level in supply chain, - underassessment of predictable costs - missing the time of implementation, - capital shortage. 	Probable	Very likely to happen	0,2-0,5	1	1	0
<ul style="list-style-type: none"> - Lack of flexibility in production process - Machines or devices outage, - Relation with contractor, - unbalanced production setup, - limits in products transition, production factors shortage 	Almost certain	It is expected that it will happen	> 0,5	0	1	0
<ul style="list-style-type: none"> - failure to pursue customer order on time, 				1	0	0
<ul style="list-style-type: none"> - decreasing number of orders, 				1	0	0
<ul style="list-style-type: none"> - lack of integration between processes of production, distribution and transport. 				1	1	1
<ul style="list-style-type: none"> - Breach of contract by carriers, operators etc. 				1	0	0
<ul style="list-style-type: none"> - Too big costs of servicing, - Problems with integration of one level in supply chain, - underassessment of predictable costs - missing the time of implementation, - capital shortage. 				1	1	1
<ul style="list-style-type: none"> - Lack of flexibility in production process - Machines or devices outage, - Relation with contractor, - unbalanced production setup, - limits in products transition, production factors shortage 				1	0	0
<ul style="list-style-type: none"> - Relation with contractor, 				0	1	1
<ul style="list-style-type: none"> - unbalanced production setup, 				1	1	1
<ul style="list-style-type: none"> - limits in products transition, production factors shortage 				1	1	0

Source: Own case study

The matrix shows possible options of the risk occurrence in making and providing with surplus value, formulating the probability with the numbers [0; 1]. Reducing the issue to zero-one (binary) form indicates great possibilities of making logical sentences, which are basic when using various modeling methods, e.g. the V. A. Gorbatow's characterization right [7].

The important issue is that there is only a probability, and the risk is being and the risk is also being reported by the result, which is the dependent variables. Therefore, for each identified in this way risk the potential consequences of its occurrence should be evaluated in a separate study. Most of them relate to one of two main parameters: the additional costs and the increase of execution time.

The data given in the matrix is only a proposal and in the case of studies on the impact of risk management for the creation and delivery of surplus value the processes set out by groups and types of risk and probability and potential impact should be identified and assessed individually.

In case of determining the significance of risk it is possible to organize a list of identified and assessed risks due to the contribution to the creation of surplus value. The level of risk depends in each case of both the probability and on the consequences. The importance of risk (RI) is the product of the probability of risk (RP) and potential consequences of risk (RC), [16]:

$$RI = RP * RC \quad (1)$$

If the assessment of the RP is expressed in the units of probability, and the assessment of RC expressed in absolute terms (in units of time or cost), the risk rank defines the value of the expected effects of risk, expressed in the same units as the RC. Therefore, it is useful to set a uniform system of the CR assessment, expressed in units of time, or in the costs for all the identified risks. Such an assessment of the CR provides the same unit of RR, which makes it possible to organize the risks in order from most to least severe. However, often such a uniform system of units of the RC is not possible. The potential effects of the workers' disease are easier to assess in the term of the time delay of the fulfillment of the task, and the potential consequences of failure of the device, which can be removed almost immediately by replacing expensive component, are more likely to be expressed in term of the increased cost of the process [16]. During the selection of units it should always be taken into account that the process of assessing changes in the surplus value will be more convincing if shown as costs, not the time units. The importance of the risk is calculated as the product of RP, RC is not interpretable units, but allows to develop a convenient ranking risks arranged in order from most to least severe. Trying to supplement it with convertible unit may lead to solving the problem in the form of numerical model supported with the implementation of the integrated impact of the risk assessment management system for creating and delivering surplus value services.

Summary

This study is an attempt to develop a comprehensive recognition of the issues related to the assessment of the changes, the creation and delivery of the surplus value, caused by the implementation of an integrated system of risk management. Drawing attention to the described issue is aimed at filling a gap in studies of management, logistics and economics. The present author's opinion is that the literature research which lead to a structured presentation of the achievements in this area and a try to propose her own solutions may lead to solving the problem in the form of numerical model of the implementation of the integrated impact assessment of the risk management system for creating and delivering surplus value to all market participants.

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