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RISK ANALYSIS OF THE LOGISTICS OUTSOURCING

***Jana Fabianová* [1], *Zuzana Ridzoňová* [2]**

[1] *Technical University of Košice, Faculty of Mining, Ecology, Process Control and Geotechnology, Institute of Logistics, Park Komenského 14, 043 84 Košice, Slovak Republic, tel: +421 55 602 3158, e-mail: jana.fabianova@tuke.sk*

[2] *Technical University of Košice, Faculty of Mining, Ecology, Process Control and Geotechnology, Institute of Logistics, Park Komenského 14, 043 84 Košice, Slovak Republic, e-mail: zuzana.ridzonova@student.tuke.sk*

Abstract: *Many companies in order to optimize their costs go by way of outsourcing. However, the process outsourcing does not always mean cost reduction. Outsourcing is usually connected with many risks that may increase total costs for the process. This paper presents risk analysis in the logistics outsourcing. The risk assessment is carried out by the semi-quantitative method- risk matrix. Identified and analysed risks are assessed in terms of severity. In the end, the measures are proposed to reduce unacceptable risks to an acceptable level.*

Key words: *logistics outsourcing, risk assessment, risks matrix*

1 INTRODUCTION

Recently, more and more enterprises leave some part of its activities to external subcontractors. Businesses use outsourcing mainly in order to optimize their costs and outsource particularly supporting activities. Logistics outsourcing in which a third party logistics (3PL) provider is contracted for all or part of an organization's logistics operations has seen consistently increasing use. The external driving of supply chain integration process, developing core business, reducing operating costs and the need of improving logistics service quality become the main driving forces of logistics outsourcing [1]. There are clearly pros and cons of using logistics outsourcing and several studies have been conducted in this area. Regan and Wang [2] examined some of the outsourcing risks and discussed some risk reduction measures.

Despite the benefits associated with logistics outsourcing, there are many relationships that do not last as long as they were initially planned. In the study of Sauvage and Haouari [3] the authors tried to sketch a conceptual model of risk management applied to logistics outsourcing. Their results show that risk management could be an innovative tool favouring the success of logistics outsourcing. Hsiao et al. [4] empirically examined if outsourcing different logistics activities results in differences in logistics service performance. They

analysed outsourcing of four levels of logistics activities (delivery reliability, flexibility and lead-time) and their findings showed that outsourcing has no direct impact on service performance. The authors of [5], [6] and [7] presented how to identify, analyse and assess the various risks to supply chains. Tsai et al. [8] identified and empirically examined the potential risk factors and their structural relationships that could cause a logistics outsourcing relationship to fail.

The methods of risk analysis and risk assessment are various. Jifang and Jingzhi in [9] analysed and assessed specific risks in the field of logistics outsourcing risk management using the risk matrix method. Huihui et al. [10] introduced the basic concepts of risk as the research background and reviewed a widely applied semi-quantitative tool for risk assessment, namely risk matrix approach (RMA) as well as its typical variations. Markowski and Mannan [11] described a procedure for developing a fuzzy risk matrix that may be used for emerging fuzzy logic applications in different safety analyses and [12] described the original risk matrix for software application. Fuzzy hierarchical model for risk assessment was introduced by Chan and Wang [13].

The problem of risk in logistics outsourcing is varied and for each case specific. The dynamics of the environment and constant changes in business relationships are the source of many risks. Therefore, research in this area is always beneficial and expanding the knowledge base. This paper deals with outsourcing risk analyses using the risk matrix method. The analysed activity is a delivery service in a company engaged in wholesale and retail trade in Slovakia.

2 CHARACTERISTICS OF LOGISTICS OUTSOURCING IN THE COMPANY

The analysed company is a multinational company engaged in self-service wholesale and retail trade. The company provides sale of food, as well as non-food products to registered customers. Subsidiary Corporation of the foreign company in Slovakia operates six wholesale centres. The company within the extension of its service has introduced Delivery Platform and offers the delivery of goods directly to customers. This service is actively used by 12% of customers from near and distant surroundings. Approximately 50% of the delivery (of the total number of trips) is ensured by its own vehicles and the remainder is outsourced by a private transport company. At present, the delivery with its own vehicles is carried over short distances and external vehicles are used for longer journeys (longer than 200 km). It is because of transport costs. The payment for external delivery was according to kilometres only in the case of journeys of more than 200 km. If the path was shorter, there was a flat rate € 200. The overview of driven kilometres and the average price per kilometre in the period of three months is presented in Tab. 1.

This case study - risks analysis of the outsourcing in delivery- is done on one of the branches of the company allocated in Zvolen.

Tab.1 *Overview of driven kilometres and the average price*

	Non-outsourced distribution	**Outsourced distribution**
Number of driven kilometres	27,700	55,400
Total costs in €	34,790	58,900
Average costs in €/km	1.25	1.06

3 METHODOLOGY AND METHODS

Risk can be defined as a danger that could bring the company to fail. It represents the potential loss that may arise from activities or inactivity. Like any business activity also outsourcing has its risks that may arise from the use or provision of outsourcing services.
The risk management process according to ISO 31 000 includes:

1. risk identification,
2. risk analysis,
3. risk evaluation,
4. risk treatment.

For risk analysis and risk assessment may be used several qualitative and quantitative methods. In our study a semi-quantitative method - risk matrix was used. The risk consists of a combination of probability of a perceived threat and the size of its impact on the aims pursued. The value of the risk is calculated as:

$$R = P \times I \quad (1)$$

where:
R - value of the risk
P - occurrence probability of the impact
I - significance of the impact.

Risk analysis via the risk matrix

To draw up a risk matrix a simple scoring method with two parameters was used. Risks were evaluated and assessed by the risk matrix. Based on the evaluation the measures were proposed for the risks which had unacceptable value. Tab. 2 shows the 5-point scale of probability and impact of risk.

Tab. 2 *Risk probability and impact scale*

Value	Probability (P)	Impact (I)
1	Very low	Negligible
2	Low	Low significance
3	Median	Significance
4	High	Critical
5	Very high	Catastrophic

According to the Tab.2 a general format of the risk matrix was created (Fig. 1). The risk matrix presents results of multiplying the probability value by the impact value. The matrix determinates the level of risk and the individual levels which are also colour differentiated. The scale of the risk value, risk levels and characteristics of the risk categories are presented in Tab. 3.

		Impact				
		1	2	3	4	5
Probability	1	1	2	3	4	5
	2	2	4	6	8	10
	3	3	6	9	12	15
	4	4	8	12	16	20
	5	5	10	15	20	25

Fig.1 *General risk matrix*

The scores of risk level are corresponding to a particular level of risk. There are five risk levels. The risk level is in the range from negligible risk that requires no intervention or monitoring system to unacceptable risk of catastrophic consequences that requires immediate action - shutdown the system and take protective measures. The levels of the risks and their quantitative and qualitative value are in the Tab. 3.

Tab. 3 *Defining the risk levels*

Scores	Risk level	Category of safety
1 - 2	Negligible	The system is stable, safe. It continues in the conventional manner.
3 - 4	Low	The system is stable, safe. System monitoring is recommended.
5 - 9	Medium	Unstable system. It is necessary to monitor the system.
10 - 16	High	Unsafe system. It is necessary to take technological, organizational and security measures.
17 - 25	Extreme	Unacceptable system. Immediately stop and take protective measures.

4 RISKS EVALUATION OF THE OUTSOURCING

Based on the exploration and analysis of the situation there were identified and analysed 15 outsourcing risks in the company. The risks marked as R1-R15 are presented in Tab.4. These risks were subsequently evaluated in terms of probability of occurrence and impact, and the value of risk was calculated as a combination of probability and impact. The level of individual risks is presented in Tab.5. Applied risk matrix with color-coded levels of risks is viewed in Fig. 2.

Tab. 4 *Identified risks of logistics outsourcing*

Risk	Description of the risk
R1	The withdrawal of the outsourcing partner
R2	Bankruptcy of the outsourcing partner
R3	Problematic data protection
R4	Reducing the impact of the delivery manager on the outsourced staff
R5	Failure to comply with delivery schedules
R6	Failure to comply with the number of vehicles agreed in the contract
R7	Failure to comply with the number of employees agreed in the contract
R8	Departure of employees from the organisation to the outsourcing partner´s firm
R9	Removal of responsibility
R10	Damage to company reputation
R11	Different sizes of vehicles
R12	Possibility of conflicts between employees and outsourcing partner staff
R13	Irresponsible approach to work of the outsourced staff
R14	Price increasing
R15	Low quality of delivery service

Tab. 5 *Risk assessment and calculation of risk value*

Risk	Probability	Impact	R = P*I	Risk level
R1	2	5	10	High
R2	1	5	5	Medium
R3	2	4	8	Medium
R4	3	2	6	Medium
R5	2	3	6	Medium
R6	2	4	8	Medium
R7	2	4	8	Medium
R8	4	4	16	High
R9	1	3	3	Low
R10	1	4	4	Low
R11	2	1	2	Negligible
R12	2	1	2	Negligible
R13	4	4	16	High
R14	2	2	4	Low
R15	1	1	1	Negligible

		Impact				
		1	2	3	4	5
Probability	1	R15	R11, R12	R9	R10	R2
	2		R14	R5	R3, R6, R7	R1
	3		R4			
	4				R8, R13	
	5					

Fig. 2 *Applied risk matrix*

5 RESULTS AND DISCUSSION

The outsourcing risks were assessed by analysing the logistics outsourcing in the wholesale centre. It was found that the company is not threatened by any very high risks, but company shouldn´t neglect high and medium level of risk too. The biggest problem for the analysed company is the risk R8 (departure of employees from the organisation to the outsourcing partner´s firm) and R13 (irresponsible approach to work of the outsourced staff), whose consequents the firm feels in several areas.

Risk R8- Departure of employees from the organisation to the outsourcing partner´s firm

This risk was quantified as unacceptable just because of its frequent recurrence. There are many reasons why the employee decides to leave his company. These reasons can be categorized into several basic areas which may include: career advancement, wage conditions, working conditions and personal reasons. It is necessary to explore and define the problems in advance to avoid repeating unwanted situations. Effective communication with employees is the only way to find out their reasons for dissatisfaction and as far as possible, to fix this problem. On the one hand it is good that the outsourcing company secures the delivery by ex-employees of the company who personally know customers, unloading places and operation

of the distribution system. On the other hand it means additional costs and problems to learn and train new employees for the company.

Risks R13- irresponsible approach to work of the outsourced staff

The use of outsourcing increases the distance between the company and the customer, and places "an interface" between them. The third party, that provides delivery service, does not always share the same interests as the company. However, even in outsourcing, the most important is the relationship between buyers and sellers. In the analysed company you can see a big difference in the approach to work of its own drivers and the outsourced staff. Not only customers but also representatives often complain, and that is why this risk is placed into the category of unacceptable risks. A bad attitude of drivers towards customers could damage the reputation of the company and in the worst case could result in the loss of customers. It is difficult to motivate and influence the behaviour of another employer's employees. Many times the only way how to achieve the desired level of customer service is to notify the external provider which is the only able to influence its employees. The possible solution to reduce this risk is to transfer consequences to the delivery service provider. It is also good to point out that ex-employees who have gone to the outsourcing partner retain their good manners and continue to be unproblematic drivers.

6 CONCLUSIONS

Introduction of outsourcing in recent times is the most important issue for enterprises that cannot afford to carry out specialized activities due to their financial situation, organizational structure or lack of technical base. It is essential for the enterprise that the benefits of outsourcing prevail over the disadvantages. The article presents risk assessment of the logistics outsourcing in the company engaged in self-service wholesale and retail trade. Analysing of the situation in the field of delivery service the risks associated with the outsourcing has been identified. Analysis and risk assessment has been done using the risk matrix. The risks that need to be treated are departure of employees from the organisation and irresponsible approach to work of the outsourced staff. The proposed measures lead to the reducing or avoiding risks. Although the analysis, risk assessment and the proposed measures are based on the specific situation in the company, the risks identified are frequent and many companies that use outsourcing meet them. This study presents a general approach to risk assessment and can serve as a starting point for further research in this area.

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