Models for Perceived Importance and Satisfaction of Outsourcing Factors: Evidence from Slovakia

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Abstract: Outsourcing of logistics activities brings companies a number of benefits, in the form of increasing the quality of logistics processes, reducing costs or reducing risk throughout the supply chain. Although a number of studies have examined outsourcing in various sectors of the economy, so far no study has constructed models based on the interrelationships between importance and satisfaction with the logistics activities of companies provided by an external partner The main objective of this paper is to develop simple models that will be adequate to measure the importance of and satisfaction with outsourced logistics activities in selected areas. The reliability of the research tools was verified using a reliability estimation coefficients. We also use several mathematical-statistical methods, in the field of descriptive and inductive statistics. The results point to reliable partial-models. It can also be concluded that there are significant correlations between the importance and satisfaction of individual factors in the models.

Keywords: customer service; distribution; logistics; logistics centers; outsourcing

1 Introduction

The impact of international trade, globalization and increasing competition makes it important for manufacturing and commercial enterprises to ensure the highest possible degree of supply chain efficiency, which they can achieve thanks to the efficient services of logistics providers. Logistics providers enable them to increase quality, flexibility and reliability on the one hand and reduce costs on the other. A logistics provider can be characterized as an independent economic entity that creates value for its client [23]. Overall, five types of logistics providers can be distinguished, namely carriers, freight forwarders, couriers, third party 3PLs

and fourth party 4PLs [10]. The most frequently outsourced logistics activities can be considered transportation, warehousing, goods consolidation, product labeling and packaging, inventory and order management and administration, carrier selection and logistics information systems [26] [30]. Logistics providers operating in the Slovak Republic often lease logistics centers that have been built by developers for business purposes, so that they can offer and efficiently provide logistics for third parties - the business community.

2 Literature Review

The word outsourcing was coined by combining the English words "outside resource using", which implies that it is the use of external (outside or non-enterprise) resources. The process of outsourcing involves the use of external resources to achieve business performance, while internal functions are assigned to specialists in the field [18] [26] [34]. When deciding on outsourcing, it is therefore essential to determine which part of the logistics will be outsourced and who will be the provider of this service, taking into account factors such as the logistics capabilities of the provider, the stability or reputation of the logistics partner [15] [31] [36]. One of the main characteristics distinguishing outsourcings from other ways of using external resources is the added value that is created by using services through outsourcing [8]. Generally speaking, the business model can be said to be based on collaboration with a company referred to as Third-Party-Logistics (3PL) [16]. However, in addition to the 3PL level, other levels can also be distinguished, which are based on the developmental phases of outsourcing. At the 3PL level, logistics providers take over the management of sub-selected parts of the supply chain (e.g., individual transport services, warehousing services, information on inventory levels or shipments in transit). 4PL logistics are complex logistics services whereby the logistics provider seeks to eliminate activities that do not bring value and efficiency to the business [24]. At the highest level of 5PL, in addition to complex logistics services in the form of the implementation of flows between suppliers and end customers, it is also the mediation of logistics related to e-commerce, in which we can register a huge increase in orders in recent years [20]. The 5PL concept can also be referred to as e-logistics agent or e-solutions logistics provider [22]. The introduction of new procurement, production and distribution concepts have also created a demand for more flexible but time-consuming transport operations and information processing services. Also, as a consequence, outsourcing of logistics functions has then evolved to third-party logistics services that offer tailored solutions including a wide range of value-added activities [29]. According to the study, the decision to outsource logistics services and their scope is also derived from the internal and external environment of the enterprise [21].

The objectives of outsourcing can be divided into four basic areas, namely economic, organizational, technological and market objectives. **In the economic area**, it is mainly about reducing logistics costs, gradually increasing viability and profit. From the strategic point of view, it is furthermore about achieving additional profit, which is generated from the new customers that the enterprise has acquired through the logistics operator [20].

The organizational goals of outsourcing are mainly based on speeding up the information flow, slimming down the organizational structure, or shifting attention and resources to the core business [24]. Increasing the flexibility of logistics processes also plays an important role here, as enterprises are able to react more quickly to changes in their external and internal environment [20]. By outsourcing logistics activities, enterprises are able to benefit from modern technologies, systems and approaches that are used in the logistics center, they can also benefit from the error-free processes and the use of know-how that the logistics partner provides [19]. From a strategic point of view, it is of course important to mention the increasing quality of the services in question and the introduction of innovations in both material and information flows, which play a key role in logistics processes [12]. From the market point of view, we can talk about deepening cooperation with suppliers, increasing the level of customer service or customer loyalty. Strategic goals of outsourcing are oriented towards increasing market share, better adaptation of the offer to individual customer requirements, or more effective sales forecasting [20].

Benefits of Outsourcing Logistics

The main benefits of outsourcing logistics services include **reducing or cutting down on logistics costs of an enterprise**. Many authors point out that the services of logistics providers are more efficient mainly because this is the core activity of their business, in which they have sufficient know-how and resources to carry it out [6] [5]. Lower costs can also be achieved through economies of scale, where scale in this sense means a larger volume of similar or identical logistics services performed by a logistics provider for multiple enterprises. It also has the advantage of avoiding investments in transport infrastructure [37], software or rolling stock that logistics providers make on their behalf by building strong logistics networks and buildings based on modern technologies (e.g., logistics centers) in which high-quality logistics services can be provided to customers. These costs are then part of the overheads of the enterprise for which the firm outsources logistics, but are shared by many clients and therefore their value is significantly lower [2]. The reduction of total costs is also related to the elimination of labor costs, as the company is relieved of the burden of increasing its workforce by separating out logistics activities. Outsourcing also results in the knowledge [38], technology and infrastructure of logistics providers, which leads to **increased logistics performance and higher quality of logistics activities.** Thanks to its know-how, the logistics partner is able to design new individual solutions for customers, which may relate to logistics solutions for particular

(often specific) geographical areas [9]. The services of logistics providers enable enterprises to achieve a **higher degree of flexibility**, whereby they can respond better and faster to changes in market or customer needs [37]. It is by outsourcing logistics that it is possible to ease the transition between seasonal periods and to adapt to fluctuations in a given period [11] [39]. Furthermore, it is an opportunity for an enterprise to **concentrate on its core business**, leaving the logistics activities to competent entities. Lagore [17] considers success in logistics to be an in-depth understanding of the freight market, the capabilities of carriers, the technologies and innovations on the horizon, which can then be used to maximize service performance and costs. Last but not least, it is important to mention that outsourcing logistics activities **reduces strategic** (e.g., investment decisions) **and operational** (missed deadlines) **risks for enterprises**, as unexpected cost increases or quality problems in processes have to be largely borne by logistics providers [10]. The benefits of outsourcing also include more efficient risk management and adds, that it is an overall improvement in the order cycle and return on investment [36]. Thus, outsourcing of logistics activities positively affects logistics costs, flexibility, customer service and overall performance of an enterprise. In forecasting the evolution of outsourcing, it can be expected that enterprises will increasingly want to focus on their core competencies [13]. Information and goods flows need to be synchronized at both regional, national and global levels, leading to complexity in the logistics system. All of this creates opportunities, specifically for logistics service providers, who have the opportunity to become full-service providers offering a broad portfolio of logistics and value-added services.

Disadvantages of Outsourcing Logistics

One of the main disadvantages that makes many enterprises skeptical about outsourcing is the **loss of control** over a certain part of their processes [14] [25]. The enterprise has to fully rely on the activities of logistics providers who are fully responsible for the level of quality of logistics services. Thus, the actual selection of a trustworthy logistics partner that carries out and monitors the entire logistics process of the enterprise is also important. In the case of outsourced logistics, poor selection of a logistics provider **can lead to hidden costs** [35]. Failure to thoroughly review the contractual basis on which an enterprise works with a logistics service provider can result in the payment of unexpected fees. If the enterprise has been providing logistics in-house for several years, it may feel that it is an additional cost generator when switching to a logistics partner [3]. However, with logistics, it is essential to realize that as sales and daily delivery volumes increase, in-house logistics becomes an untenable and time-consuming area. Outsourcing logistics therefore appears to be a suitable alternative, especially for small and medium-sized enterprises (SMEs) that send at least 1000 packages per month. In order to implement supply chain management practices in SMEs, it is necessary to use specially developed models that would bridge the gap between the customer and the logistics provider [32]. Poor partner selection can also lead

to **information leakage**, which can concern not only the enterprise itself, but also its customers [27].

On the basis of theoretical assumptions based on the main objectives, advantages and disadvantages resulting from outsourcing logistics, the structure of primary research in the B2B sector was set up, which involved manufacturing and trading enterprises operating in the Slovak Republic, which can be regarded as customers of logistics providers in this relationship.

3 Methodology

The main objective of the paper is to develop simple models that will be adequate to measure the importance and satisfaction with outsourced logistics activities in selected areas.

Since the objective is complex, we segmented it using research questions.

Based on the stated objective, the following research questions (RQ) and a hypothesis (H) were developed:

RQ1: What is the level of perceived importance of logistics outsourcing factors?

RQ2: What is the level of perceived satisfaction of logistics outsourcing factors?

RQ3: How can the direction and intensity of the relationship between importance and satisfaction be characterized in outsourcing of logistics activities?

H1: Is there a relationship between the level of perceived importance and satisfaction within outsourcing of logistics activities?

3.1 Sample

The survey was carried out by the quantitative method of enquiry using a questionnaire. Enterprises were contacted on the basis of an available database with a total number of 7000 enterprises. Companies were questioned on the basis of available email addresses. The request to fill out the questionnaire survey was addressed to distribution managers (mainly logistics) or the person responsible for distribution. The return rate of the questionnaires was 4.58 %. 321 enterprises participated in the survey, but 138 enterprises did not outsource logistics activities (they outsourced logistics activities internally). From the above, it can be concluded that 183 enterprises from all over Slovakia became the base for the primary survey and evaluation. The enterprises had wholesale activities as their

core business (51.4%), followed by retail activities (28.3%) and manufacturing and industrial activities were carried out by approximately 20.3%.

3.2 Measurement and Creation of Simple Models

In order to meet the objective, two simple models - the importance model and the satisfaction model was developed from the theoretical findings. The models are scales instruments that contain 11 factors that are rated by the enterprises/respondents based on a 5-point bipolar scale. The factors represent the key determinants of the choice of outsourcing logistics activities supported by several theoretical and practical studies. To validate the reliability of the scale's instruments, we used the reliability estimation coefficients, namely Cronbach's α and McDonald's ω. Both coefficients contain some limitations as well as advantages and hence we decided to use both for a comprehensive assessment. In general, we can conclude that if we want to label an instrument as reliable it should have a coefficient value above 0.700, and we consider this value acceptable [33]. As these are newly developed instruments, it was also appropriate to investigate their internal consistency by the factor exclusion method. Using this method, it was possible to investigate whether higher reliability of the instrument would be achieved when any of the factors was excluded. The results of the reliability analysis were recorded in Table 1.

Table 1
Reliability estimation of the suggested models (Source: own calculations)

Factors	Importance model of selected logistics activities		Satisfaction model of selected logistics activities	
	McDonald's ω*	**Cronbach's α****	**McDonald's ω*****	**Cronbach's α********
Cost reduction	0.840	0.835	0.869	0.868
Focus on core business	0.837	0.832	0.871	0.872
Lower up-front investment for logistics activities	0.830	0.822	0.863	0.862
Savings in human resources	0.835	0.829	0.867	0.867
Quality of service	0.809	0.807	0.862	0.861
Elimination of errors in logistics processes	0.808	0.806	0.858	0.857
Utilization of the know-how of the logistics partner	0.813	0.811	0.856	0.858
Well-established logistics network	0.814	0.811	0.865	0.866

Quality of customer/delivery service	0.815	0.811	0.858	0.857
Transfer of risk to the logistics partner	0.813	0.810	0.867	0.867
Ensuring competitive advantage	0.827	0.822	0.863	0.863

Notes:

* Total McDonald's ω for tool = 0.836 (CI 95% = <0.801 - 0.871>).

** Total Cronbach's α ** for tool = 0.832 (CI 95% = <0.793 - 0.865>).

*** Total McDonald's ω for tool = 0.874 (CI 95% = <0.847 - 0.901>).

**** Total Cronbach's α ** for tool = 0.874 (CI 95% = <0.845 - 0.900>).

Considering the reliability estimation results (Table 1), it can be concluded that both tools achieve high reliability estimation [7] and can be further worked with in the context of the model. At the same time, it should be noted that in the context of the if item deleted method, some fluctuations in the cost reduction factor can be observed in the importance model of the selected logistics activities. Considering the recalculation of confidence intervals and low fluctuation, we will continue further with this factor.

4 Results

In the following section of this paper, we will focus on answering the research questions and the hypothesis that will lead to the fulfilment of the stated objective.

RQ1: What is the level of perceived importance of logistics outsourcing factors?

We have recorded the mean importance ratings and standard deviations for each of the factors examined in Table 2. We would like to note that the midpoint value of the scale was 3 points. As you can see, all of the factors examined scored well above the average, which only proves that they were chosen correctly. At the same time, it can be noticed that the highest mean value is achieved in the context of importance by the quality of service. This is a clear impulse towards quality in the context of logistics activities.

As long as we take into account that the individual statements achieve strong internal consistency, we can speak of a simple model. In this context, by accumulating the individual evaluations, the perceived importance of logistics activities in the context of outsourcing can be assessed.

Table 2
Mean values and standard deviations of the elements of the importance model for selected logistics activities (Source: own calculations)

Factor	Mean	St. dev.
Cost reduction	3.96	0.97
Focus on core business	3.97	0.95
Lower up-front investment for logistics activities	3.84	0.92
Savings in human resources	3.99	0.91
Quality of service	4.15	0.98
Elimination of errors in logistics processes	3.84	1.05
Utilization of the know-how of the logistics partner	3.66	1.10
Well-established logistics network	3.93	1.05
Quality of customer/delivery service	4.10	1.05
Transfer of risk to the logistics partner	3.44	1.06
Ensuring competitive advantage	3.47	1.10

The model contains 11 statements to which the respondent/enterprise, responded on a five point scale. From the above it can be concluded that the range of possible scores is 11-55. The mean value measured by us is 42.34 points, which is well above the average. The median is at 43 points and the modus at 41 points. The maximum measured value also represents the maximum of the scale (55 points). From the above, it can be concluded that the importance of the selected elements is at a high level and they represent important elements of outsourcing logistics activities.

RQ2: What is the level of perceived satisfaction of logistics outsourcing factors?

We have recorded the mean satisfaction ratings and standard deviations for each of the factors examined in Table 3. We would like to note that the midpoint value of the scale was 3 points. As you can see, all of the factors examined scored well above the average, but we recorded the lowest measured value for cost reduction. This is a simple logic whereby every enterprise tries to minimize its costs and it is this dissatisfaction that can lead to stimulate the creation of innovations in this area as well. At the same time, it can be noticed that the highest average value in the context of satisfaction is achieved by saving human resources.

Table 3
Mean values and standard deviations of the elements of the satisfaction model for selected logistics activities (Source: own calculations)

Factor	Mean	St. dev.
Cost reduction	3.55	0.91
Focus on core business	3.98	0.81
Lower up-front investment for logistics activities	3.81	0.89
Savings in human resources	4.01	0.88
Quality of service	3.75	0.82
Elimination of errors in logistics processes	3.61	0.90
Utilization of the know-how of the logistics partner	3.74	0.92
Well-established logistics network	3.91	0.91
Quality of customer/delivery service	3.79	0.92
Transfer of risk to the logistics partner	3.57	0.98
Ensuring competitive advantage	3.48	0.96

Based on the results, the statements can be considered as a simple scaling tool - a model, to measure satisfaction in the context of outsourcing logistics activities. The average value measured is 41.19 points, indicating well above the average satisfaction. The median is at 42 points and the mode is 44. Overall, there is a high level of satisfaction with outsourcing of logistics activities based on the selected key factors.

Table 4
Spearman's rho for the individual logistics outsourcing factors of importance and satisfaction (Source: own calculations)

Importance model of selected logistics activities	Satisfaction model of selected logistics activities	Spearman's rho	Sig. (2-tailed)
Cost reduction	Cost reduction	0.247	0.001*
Focus on core business	Focus on core business	0.491	0.001*
Lower up-front investment for logistics activities	Lower up-front investment for logistics activities	0.401	0.001*
Savings in human resources	Savings in human resources	0.552	0.001*
Quality of service	Quality of service	0.251	0.001*
Elimination of errors in	Elimination of errors in	0.368	0.001*

logistics processes	logistics processes		
Utilization of the know-how of the logistics partner	Utilization of the know-how of the logistics partner	0.636	0.001*
Well-established logistics network	Well-established logistics network	0.575	0.001*
Quality of customer/delivery service	Quality of customer/delivery service	0.396	0.001*
Transfer of risk to the logistics partner	Transfer of risk to the logistics partner	0.470	0.001*
Ensuring competitive advantage	Ensuring competitive advantage	0.616	0.001*

Note: *Correlation is significant at the 0.01 level ($\alpha = 0.01$).

RQ3: How can the direction and intensity of the relationship between importance and satisfaction be characterized in outsourcing of logistics activities?

H1: Is there a relationship between the level of perceived importance and satisfaction within outsourcing of logistics activities?

If we refer to the association of the individual elements of the models, it is appropriate (given the nature of the data) to use Spearman's correlation coefficient. We have recorded the results in Table 4.

As Table 4 shows, significant correlations of a positive nature can be observed in the context of the individual factors. These correlations reach different intensity of association [28]. The lowest observed correlation was found for the cost reduction factor. The importance rating is related to the satisfaction of cost reduction, however, it can be noted that the satisfaction is at a lower level, indicating the non-fulfillment of the importance of this factor.

In the context of the models, an equally strong association can be observed (Pearson's correlation coefficient reaches 0.52). We have graphed the simple linear regression model in Figure 1. In our graph, the x-axis represents importance and the y-axis represents satisfaction.

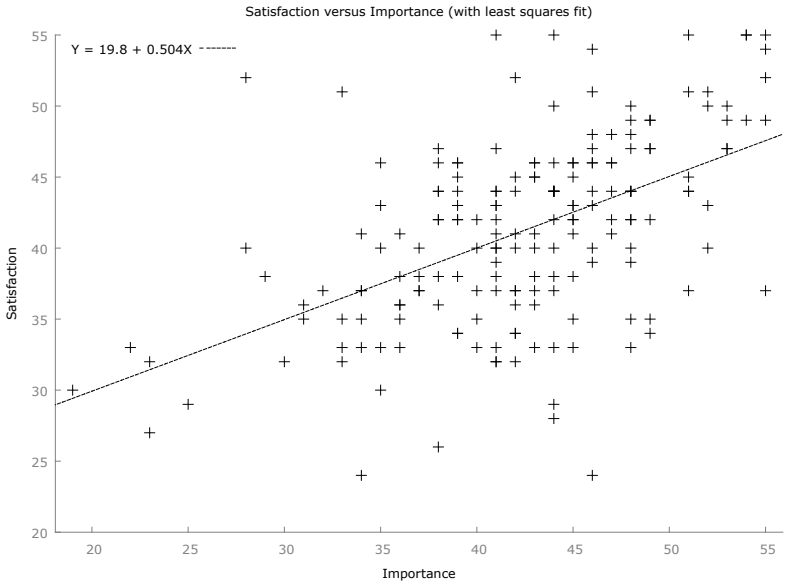

Figure 1
Graphical representation of a simple linear regression (Source: own processing)

The results indicate a linear relationship between the Importance Model of selected logistics activities and the Satisfaction Model of selected logistics activities (Rsquared = 0.27; $\beta 1 = 0.504$; significance F = < 0.05). Based on the above, we conclude the existence of a strong positive relationship between importance and satisfaction ratings in the context of the developed models.

Discussion

The perceived quality of services and customer service, can be considered as a priority. In this work, we stated that customer service can be characterized as a key component of the quality of logistics processes, which connects the marketing and logistics functions of enterprises. Among the key elements, we also include the elimination of errors in logistics processes, because we can consider error-free delivery as an important element of an effective delivery service. Errors that occur during input operations are often manifested only at the cash registers of end customers, which is why their early identification and possible elimination is one of the main priorities of successful and high-quality logistics. As companies, whose primary business is not logistics and related activities, rarely have experience in the field, we also consider the use of the logistics partner's know-how as another logistics factor affecting the overall quality of its services. The logistics provider has a qualified workforce, modern technologies and a well-developed logistics network, which positively affects the efficiency of logistics activities and thus enables manufacturing and commercial enterprises to achieve a higher level of quality of the logistics services provided, than would be the case

with their internal provision. Due to the influence of international trade, globalization and growing competition, it is important for manufacturing and trading companies to ensure the highest possible level of efficiency and quality of the supply chain, which can later depend on their position on the market. Companies that are aware of the importance of logistics and are able to provide it with quality and efficiency, thanks to an external logistics partner, can differentiate themselves from the competition and gain a competitive advantage, which we recommend as the last quality factor. It is also possible to observe the significance of the financial parameters of outsourcing, including cost reduction, concentration on the main subject of business, lower input investments to ensure logistics activities and saving human resources. It can be concluded, that there are links between the perceived importance and satisfaction of these key factors. It is therefore necessary to educate the importance of these factors, which will contribute to satisfaction and the subsequent effectiveness of outsourcing relationships.

Conclusions

Based on the current scientific literature, we developed two simple models, each having a high degree of reliability. One model focuses on evaluating the importance of key factors of logistics activities outsourcing and the other model focuses on satisfaction with these key factors of logistics activities outsourcing.

The factors of outsourcing were chosen to be investigated - cost reduction, focusing on core business, lower up-front investment, savings in human resources, increasing quality of service and customer service, eliminating errors in processes, utilizing the know-how of the logistics partner, building a good logistics network and ensuring a competitive advantage.

The results indicate (based on 183 enterprises using outsourcing of logistics activities) that the perceived importance of the examined factors is also reflected in the satisfaction of those factors. The results also suggest the possibility of generalization to the whole population (enterprises using outsourcing of logistics activities in Slovakia). Based on the regression model, a certain satisfaction can be assumed on the basis of perceived importance. In other words, perceived importance predicts satisfaction in outsourcing of logistics activities.

This paper adds to the theoretical knowledge in this area. Bolumole [4] already identified factors that influenced the decision to outsource logistics activities, identifying as the most important the pursuit of reducing logistics costs, increasing the quality of customer service and focusing on the core business. All the factors mentioned above have also been included in our linear regression model. Aktas and Ulengin [1], in turn, investigated in depth the outsourcing of transport activities, which also according to the respondents from the Slovak enterprises can be considered as the key logistics activities outsourced to an external partner.

However, our study deepens the existing knowledge as it examines outsourcing in a comprehensive way, based on which the developed models can be used in diverse areas of logistics. The results may be crucial for both economic practice and logistics outsourcing providers.

The limiting factors of the research can be considered the use of only certain factors identified on a resource basis and only a simple linear model. In the future, we see potential for investigating behavior of enterprises, e.g., in terms of cluster analysis, which will highlight the segments of enterprises and their behavior in the context of outsourcing of logistics activities. Furthermore, it is possible to extend the research to other V4 countries (Hungary, Czechia, Poland), which will make it possible to compare the results between countries and add an International dimension to the research.

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