

DECISION-MAKING PROCESS OF A CUSTOMER IN CONTAINER TRANSPORTATION

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Abstract

The survey deals with factors of the customer decision-making process by choosing Third-Party Logistics (3PL) providers in the Czech Republic market. While applying factors by other relevant research studies focusing on the decision-making process of customers in the Asian, Australian and American market, the research monitors factors characteristic for the Czech customers. Questionnaires and interviews as qualitative research methods are applied in the survey project. A new service quality instrument TARRQUAL was developed during the research. The TARRQUAL model as service quality measurement is supposed to be applied especially in logistics. The project aims at providing input for empirical research in the field of service quality in container transportation, which is lacking not only in the Central and East European (CEE) countries.

Keywords: Decision-making factors; container transportation; service quality; customer preferences; Third-Party Logistics provider.

1. INTRODUCTION

Nowadays, in the globalised world full of rivals offering a similar service, it is essential to reveal the needs of a particular customer and make changes in current service delivery process set-ups. Especially in logistics, there are requirements for even a more convenient, faster and high-quality service. However, 3PL providers apply weak tools for customer preference monitoring and do not seek customer feedback concerning service quality. Thus, there is a need for recognising the role of a customer as well as a 3PL provider within the service delivery process. This survey focuses on the identification and evaluation of decision-making factors by 3PL provider selection with special focus on an ocean freight forwarder, NVOCC respectively, and multimodal transportation - Full Container Loads (FCL) in the westbound trade lane between the Far East and Europe.

The main objective of the survey is to evaluate customers' preferences by 3PL provider selection and set up a new model for the measuring of service quality. The survey is supposed to provide further cooperation input for 3PL providers and their customers. Once the customer preferences are evaluated, 3PL providers can deliver their services more precisely and set up a new kind of partnership with their customers [1]. The research answers the following research questions:

- RQ1: Is the factor of low transportation costs seen as the most important by 3PL provider selection?
- RQ2: Will there be any other decision-making factor mentioned by survey respondents (not published in existing transportation literature)?

The research is carried out in cooperation with one of the biggest freight forwarders worldwide - Kühne+Nagel (K+N). As a freight forwarder, K+N Czech Republic accounts for approximately 10% of TEU volume with a final destination in the Czech Republic

2. LITERATURE REVIEW

In the work of [2] there is developed the perception of complex service quality performance from the technical and functional point of view. The technical element of the service is the outcome of provided service. The functional element includes the process of providing a service. Service quality plays a key role in the long term

survival of logistics providers in the market. According to [3], the logistics service itself should be accompanied with various marketing services that help to create a complex logistics service required from customers. According to [4], the quality of service should be perceived as a relationship between customer expectations and the service itself. Regular feedback from customers is needed to provide a quality service. In the work of [5], there are discussions about a sophisticated logistics chain achieved by the long term cooperation between logistics providers and their customers. The aim of the research within the business area is to start a new kind of cooperation between logistics providers and their customers.

In the global research perspective, several papers have focused on the level of customer service offered by 3PL providers. Other publications have addressed the importance of factors for an individual customer or group of customers influencing their decision-making process. The prevalent objective of existing papers is to reveal bottlenecks of the service provider while offering a tool for providing more customer-oriented services. Appendix 1 shows research papers focused either on 3PL provider selection criteria or on the evaluation of service quality and the outcomes.

3. METODOLOGY

This survey applies qualitative research methods. The factors were identified based on existing literature and sorted according to a newly developed service quality instrument called TARRQUAL. The TARRQUAL model is derived from service quality model SERVQUAL and divides 42 factors into 4 groups while each group comprises logically connected factors (in contrast to SERVQUAL which evaluates 22 factors in 5 dimensions). Data collection has been conducted both via questionnaire and personal interviews. Factor analysis has been carried out via mean score analysis both within one single factor and within one group of factors. The mean score indicates the "importance score" of each factor.

3.1. Metodology for measuring service quality

Service quality (SQ) is a function of factors $f(f)$ as equation (1):

$$SQ = f(f) \quad (1)$$

Since SERVQUAL model intended for perceived service quality measurement is a subject of critique [6], this study uses a TARRQUAL method. The factors were divided into 4 dimensions: Tangibles, Assurance, Reliability, Responsiveness, so that the model better fits the needs of the logistics branch. The factors in groups are sorted according to logical key as follows:

- **Tangibles:** tangible assets and measurable abilities that a 3PL provider offers in general. These factors are the first that the customer evaluates before the 3PL provider selection. Tangibles comprise 10 factors.
- **Assurance:** intangible assets and abilities that a 3PL provider offers during the process of service delivery. Assurance factors make customer feel secure. Assurance includes 11 factors.
- **Reliability:** factors of the logistics service itself that a 3PL provider offers during the process of service delivery. Reliability factors bring satisfaction of a service delivery at the end of the business case. Reliability comprises 11 factors.
- **Responsiveness:** describes the flow of information and response activities and flexibility of a 3PL provider during the process of service delivery. Responsiveness includes 10 factors.

TARRQUAL model comprises the evaluation factors associated with the outcome of the service (i.e. what is received from service) and the factors associated with the process of the service encounter (i.e. the manner in which service is delivered).

Furthermore, the five-point Likert type scale is applied since seven-point SERVQUAL Likert type is too detailed and leads to biased outcomes. Due to the fact that the number of factors is quite huge, the importance score

of factors within each dimension is computed. Unlike TARRQUAL, the SERVQUAL model evaluates each factor and brings too heterogeneous outcomes.

3.2. Factors selection

Besides the factors extracted from existing transportation literature, respondents are also supposed to add other factors that were not mentioned in the list. Selection of factors and their allocation into TARRQUAL groups have been consulted with high representatives of the Association of Forwarding and Logistics of the Czech Republic and Hafen Hamburg Marketing-e.V., the representation in Prague.

3.3. Questionnaire design and distribution

Once 42 service factors were set, a questionnaire was designed and distributed to respondents via e-mail while using marketing software Quanda. E-mail questionnaire is a relatively low cost method of data collection and can be distributed to an indefinite amount of respondents. The method is fully anonymous and it is very time and place convenient for the respondent [7].

The questionnaire distributed to 176 randomly selected customers of K+N Czech Republic. Simple random sampling is a method used in similar surveys dealing with service quality, e.g. [8], [9], [1], [7], [10]. The sample size also corresponds to the sample size used in similar surveys, e.g. [1] and [11]. Some studies also examine the sample size smaller than in this survey, e.g. [9], [12].

In the questionnaire, logistics managers of selected companies were asked to indicate individual importance of selected factors at the five-point Likert type scale from 1 not important, 2 quite important, 3 important, 4 very important to 5 extremely important. Logistics managers as respondents were contacted via e-mails upfront to reduce the rejection rate. The questionnaire was enclosed with a cover letter explaining the purpose of the research. Questionnaires have been supplemented by 21 personal interviews. The data were collected over a period of three months in 2015. During this period, two e-mail reminders were sent to respondents, who had not filled out the questionnaire, in order to increase the response rate.

3.4. Data analysis

Out of the 176 distributed questionnaires, 56 usable responses were received. Since the online questionnaire could be submitted only as completed, only usable responses were received. The response rate of 31% is considered satisfactory since the average top management survey response rates achieves approximately 15-20 % [13].

Once the data collection is completed, a mean score analysis using SPSS/PASW Statistics 18 has been used for the questionnaires evaluation. Many researchers have used mean score analysis as a standard approach in similar studies dealing with the relative importance of carrier selection factors, e.g. [9], [1], [14], [7] and [10].

The mean score is calculated as a sum of scores indicated by respondents related to a factor and divided by the number of respondents. The higher the importance score, the higher the perceived importance within one factor or group of factors. Thus, customer preferences are revealed.

4. RESULTS

The results of the survey are presented in Table 1. Table 1 shows the mean score of each factor along with the overall ranks. Respondents evaluate 19 factors by a mean score value higher than 4 (very important), 21 factors by a mean score value between 3 (important) and 4 (very important) and only two factors achieved a mean score value between 2 (quite important) and 3 (important). According to this analysis, it was realized that customers of freight forwarder K+N Czech Republic consider On-time delivery as the most important factor by 3PL provider selection with a mean score of 4.89. They consider Information Quality as the second most

important factor with a mean score of 4.78 and that is followed by Arrival and Delay Notice (mean score 4.76), Price (mean score 4.73) and Pricing Flexibility (mean score 4.65) as the third, fourth and fifth most important factor. According to the survey, the least important factors are Availability of “Hard to Find” Services with a mean score of 2.80 and ISO Certification with a mean score of 2.28.

Table 1 Five most important decision-making factors

Factor	Importance score
On-time delivery	4.89
Information Quality	4.78
Arrival and delay notice	4.76
Price	4.73
Pricing flexibility	4.65

Source: Authors

Note: 1 = not important, 2 = quite important, 3 = important, 4 = very important, 5 = extremely important.

Even the list of factors seems to be comprehensive, the survey has added a new factor to transport literature and thus contributed to existing research. The factor “Participation” was mentioned by two respondents during the interviews. The factor “Participation” is defined as Participation of a provider to additional costs caused by force majeure, e.g. weather conditions, operational black-outs, strikes etc., where no party is feeling responsible for these costs.

The survey illustrates the decision-making process of customers by 3PL provider selection, and may help to create new strategies for customer satisfaction and secure the best quality of service [15]. The survey enables 3PL providers to understand the priorities of their customers and may help with the creation of new marketing strategies and customer retention [7]. Understanding the most important factors leads to a new partnership between a 3PL provider and a customer [1]. Competitiveness across global markets is evident [16] and to reach competitive advantage is desirable [17]. In order to survive in the competition jungle, 3PL providers should emphasise the most important factors and diminish factors with low priority within the process of service delivery. Thus, 3PL providers may attract new customers and make current customers more satisfied. Furthermore, within a newly developed TARRQUAL model, 3PL providers may consider one group of factors with the highest importance score while creating a new marketing strategy. The service quality measurement model TARRQUAL is expected to open up enormous scope for further research. In order to see the development in decision-making factors by a 3PL provider selection and feedback for TARRQUAL model setup, the study may be “refreshed” and the outcomes compared a few years later.

5. CONCLUSION

The survey reveals individual customer preferences by 3PL provider selection. In the questionnaire, respondents indicated the importance score of 42 factors in the list, at the five-point Likert scale. The outcome answers the first research question and unlike the major part of studies from the Asian continent, the price of a service does not play the essential role in the process of 3PL provider selection. Price of a service ranks as the fourth with a mean score of 4.73. The survey has also contributed to existing transportation literature by adding one more decision-making factor.

There is limited research addressing customer requirements in the logistics market within a wider CEE perspective and in the Czech Republic in particular. The survey can be applied with an altered set-up also in other markets not only within the CEE region. The list of factors can be easily extended or modified to fit the special needs of any other research. A similar survey can be conducted also for other cargo, e.g. bulk, tankers

[7] or by other modes of transport (air, rail, road or combined transport air-sea, rail-road). Therefore, this study is perceived as a guide for other research within the CEE region. [18]

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APPENDIX 1 Existing papers focused on 3PL Providers selection criteria

Reference	Area	Number of criteria Sample Methodology	Outcomes
[19]	3PL provider selection process (Asia and Australia)	10 criteria 309 managers (divided into 3 segments) Discrete Choice Analysis	Most important criteria: reliable delivery performance, price parity with other providers. Estimation of the choice model.
[10]	Ocean carrier selection process (India)	48 criteria 1000 shippers Questionnaires, SERVQUAL	Performance evaluation of 7 ocean carriers. Recommendations based on gap analysis.
[11]	3PL selection, service evaluation (India)	23 criteria 273 purchasing agents and managers Questionnaires, Analytical hierarchy process	Global priority weights in in global lead logistics provider (LLP) environments.
[20]	3PL provider selection process (electronic company in Asia)	28 criteria Delphi method, Analytical network process	Most important criteria: service costs, service quality, operational performance, logistics technology, company performance.
[7]	Ocean carrier selection process (India)	48 criteria 600 shippers Questionnaires, SERVQUAL, focus groups	Most important criteria: low freight, pricing flexibility, safety, equipment availability.
[21]	Benchmarking of ocean carriers (India)	48 criteria 15 shippers Questionnaires, focus groups, SERVQUAL, Analytical hierarchy process	Most important criteria: rate, scheduling, operations, infrastructure, customer service.
[1]	Evaluation of service attributes (Taiwan)	30 criteria 300 shippers, 185 3PL providers Questionnaires, gap analysis	Most important service attributes (for shippers): accurate documentation, reliability of advertised sailing schedules, the availability of cargo space.
[9]	Carrier selection criteria (United States)	18 criteria 100 shippers, 25 3PL providers Questionnaires, gap analysis	Most important service attributes (for shippers): transit time reliability, equipment availability, willingness of carrier to negotiate rate changes