https://doi.org/10.26552/com.C.2016.2.11-14

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APPLICATION OF RAYMOND FISK MODEL IN RESEARCH OF SERVICE QUALITY

This article describes the results of research focused on service quality after transportation by railway freight transport. The importance of these services completes the final quality of service and has crucial importance for customers considering the future use of railway transport. The proposed algorithm of evaluation of services after transportation is based on dynamic model of Raymond Fisk. This model represents a support tool for increasing service quality in the area of railway transport.

Keywords: *Service quality, railway freight transport, transportation chain, dynamic model.*

JEL Classification: R49

1. Introduction

One of the goals of a railway company operating in the area of services in railway freight transport is to obtain a lasting interest on the market with the prospect of increasing its operation. This goal can be fulfilled through constant monitoring and evaluation of the quality of the services provided, taking into account the specific characteristics of all parts of the transportation process.

Service quality in railway freight transport can be followed within the frame of the whole transportation chain or through division into its single constituent stages. It is currently a pressing problem to identify quality not only before the start of transport and during it but also after the end of transportation. At that point, the customer often requires supplementary services, and ultimately, if the customer is not content with the transportation, he may seek compensation.

In terms of the breakdown of single characteristics of transportation, several methods exist within the frame of world and domestic research. To meet the research requirement within the frame of research carried out for the Department of Railway Transport, the University of Zilina, in collaboration with the railway company Cargo Slovakia, Inc., applied a model that takes into account the characteristics of transportation, linking these with perceptions of service quality.

In practice, different objective and subjective methods of evaluating service quality are used, but the area of using dynamic models in railway freight transport has not previously been explored. The dynamic model of service quality addressed in this paper represents up to date trends in quality management. This model monitors the procedural characteristics of the services provided that are unique, unrepeatable and constantly changing.

2. CharacteristicS of The Dynamic model and Selection of characterS of quality for the last phase of the transportation chain after the end of transportation

In the area of providing services in railway transport, it is necessary to take into account that the requirements and claims of customers change over time [1]. It is necessary to know at any moment of the transportation service, what the expectations of the customer are, because it is he who assesses the quality of the services provided and decides whether or not to re-use the services of the railway undertaking [2].

Currently, in the area of services, several dynamic models of quality are used, including the models of Stauss and Neuhas, Liljander and Strandvik, Raymond Fisk, Boulding and others. The application of these models in the area of services forms the first assumption for its successful implementation in the area of railway transport.

In the research which was conducted for the Department of Railway Transport, several dynamic models were verified for application to the area of railway freight transport. In the

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following part, we present part of this research in which the Raymond Fisk model was verified. Specifically, this is a phase of the transportation chain after the transportation has been completed.

In the Raymond Fisk model the aim is to integrate knowledge both from research on customer behavior and from research on customer satisfaction levels, based on defined characteristics (signs) of quality for normal and extraordinary operation. Within this model three phases are recognized: the buying decision, claims on performance and conditions after the purchase (after the transportation). The basic scheme of the Raymond Fisk model is shown in Fig. 1.

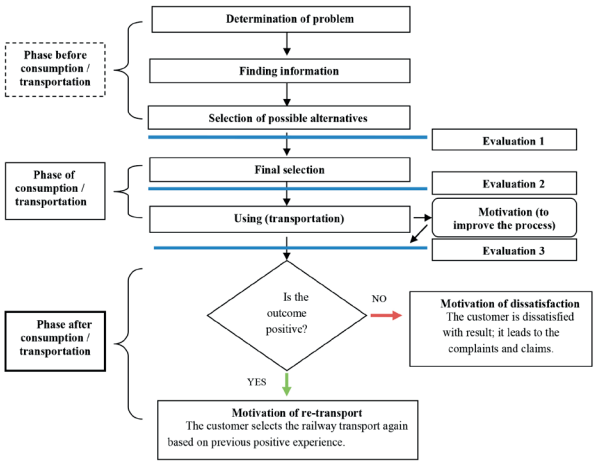

Fig. 1 Raymond Fisk model as applied to railway transport [edited by 3]

Selection of characters for ordinary and extraordinary operation within the frame of research was realized considering interconnecting the possibilities of assessing them by means of both objective and subjective methods, because the characteristics set is varied and some of them are challenging to qualify. To assess the resulting level of quality, it is necessary to connect the results of measuring and rating by means of both types of method (or exploiting the combination of several methods). All these principles were based on correctly defining the goal of quality in the transportation chain of railway freight transport, as well as on the expectations and needs of customers as identified from research [4 and 5].

For the last phase of the transportation chain, after the transportation was finished, six basic characters of quality were defined in the research:

1. Information,
2. Availability,
3. Reality,
4. Flexibility,
5. Customer care,
6. Understanding and knowledge of customers [6].

These characters of quality can be explained in more detail as follows:

1. Information = systematic provision of knowledge about the railway freight transport system, which has to assist in the realization of actions taken after the execution of transportation.

Processes defined and monitored by the research — Table 1

Process to ensure requirements	Explanation
1. Direct contact with customer	Pleasant demeanour, patience, verbal communication, neatness, employee helpfulness
2. Information about the arrival of the consignment	Immediate provision of information with customer feedback, provision of all necessary information to the customer
3. Unloading	Unloading, ensuring and securing the consignment, information about the unloading
4. Railway operation techniques	Modern and satisfactory, evolving in response to customer requirements
5. Cleaning of wagon	After the loading wagon is cleansed and washed out, goods can be repeatedly loaded up [9]
6. Resolving claims	Complaints promptly handled without delay
7. Invoicing of fees for transportation	Manual or electronic invoicing
8. Intactness of the consignment	Intactness of consignment and goods; informing customer about state of goods during and after unloading
9. Placing wagon on unloading	Correctly placed wagon; information about wagon location; readiness on unloading
10. Ensure the completion of the process	Full support solutions of customer problems after transportation and in his favor; settling of customs controls; periodic inspection of consignment during the day

Source: [5]

2. Availability = scope of the process in terms of time, frequency, geography and suitability of railway operation techniques.
3. Reality = temporal, spatial and informational security of the phase after transportation, including ensuring the consignment is intact after transportation.
4. Flexibility = speed of handling complaints in the case of additional customer requirements after transportation, including exact invoicing of fees for transportation.
5. Customer care = reinsurance of operations related with unloading of consignment at destination station, solution of problems that arise after the end of the transportation.
6. Understanding and knowledge of customers = helping and supporting customer needs, knowledge of customer needs.

Figure 2 characterizes the sequence of steps that were made within the application of the methodology in the real conditions of the transport market.

The selection of characters within the frame of research comes from practical operation, from experience of contact with customers, according to their interests, their requirements and needs, the factors that are attractive for them, and from watching with deciding about the utilization of railway freight transport and purpose-built units within the structure of a formally organized railway company [6 and 7].

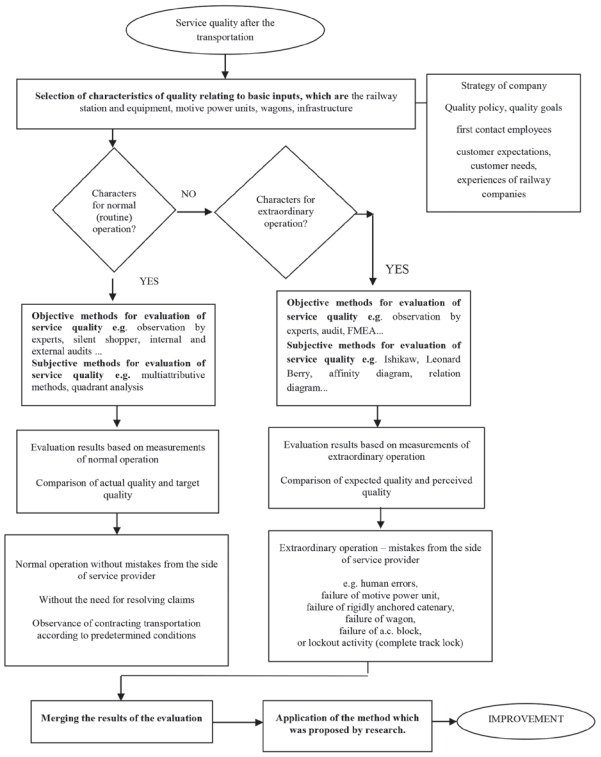

Fig. 2. Algorithm of service evaluation [8]

Partial output of research (No. 8 to 10) Table 2

Point rating of quality after transportation					
S.n.	**0 points = unsatisfactory**	**2 points = partially satisfactory**	**5 points = standard**	**8 points = above standard**	**10 points = fully satisfactory**
8.	Loss of goods	External damage to consignment, but goods intact	Consignment and goods intact	Consignment and goods intact; customer informed about state	Intact consignment and goods; customer informed about state of goods during and after unloading
9.	Wagon not placed	Incorrectly placed wagon; failure to inform about placing of wagon	Correctly placed wagon; customer informed about placing of wagon	Correctly placed wagon; customer informed about placing of wagon; readiness on unloading	Correctly placed wagon; customer informed; readiness on unloading, realization of unloading in accordance with customer requirements
10.	Without additional services	Partial additional services, insufficient support for flexible solution of requirements, even in the case of claim	Partial support solutions to problems for customer after transportation and in his favor	Partial support solutions to problems for customer after transportation and in his favor; settling of customs controls, periodic inspection of consignment during the day	Full support solutions to problems for customer after transportation and in his favor; settling of customs controls, periodic inspection of consignment during the day

3. Processes fulfilling Quality requirements after transportation

Within the frame of the mentioned characteristics, after the transportation ten processes needed to fulfill the quality requirements were defined and monitored, as documented in Table 1.

Table 2 presents the partial output of the research, giving an exemplary assessment of quality through the application of selected quality characteristics, which served as support for the identification of the quality of transportation services in railway freight transport in the phase after ending the transportation. Individual quality characteristics were monitored within the frame of ordinary and extraordinary operation.

4. Conclusion

The benefit of this research is the newly created methodology, with exact definition and detail of quality characteristics that has been designed for the management of railway companies. The benefits of the methodology consist in its clarity and in the selection of new characteristics for rating the quality of processes and services. It was created to be universal, and, therefore, offers the possibility of application across the whole transportation chain providing railway freight transport.

The research revealed that the biggest problems within the evaluated services occur with technical securing, but also with related inadequate equipment at railway stations (space, ramps, general loading and unloading track), or the poor condition and insufficient number of certain types of wagons. These problems interfere with the transportation chain even after the end of the transportation and play an important role in normal and extraordinary operation. Simultaneously it was found that there are important time, local or technological expressions of "resistance", which must be overcome so that customer, through the provision of a relevant process, is able to achieve the fulfillment of his requests, i.e. change of place from the starting station to the destination station.

Bottlenecks (narrow spaces), meaning constrained spaces, were defined in this article as hindering improvements to the total quality of the services provided. These bottlenecks should be the subject of review in order to define corrective measures and their subsequent implementation. The removal of bottlenecks will increase the quality of operational processes, which is an imperative condition of survival in a competitive business environment.

Acknowledgement

The contribution is processed within resolving of grant task VEGA 1/0701/14 "The impact of liberalisation of the railway freight transport market on social transport costs" and KEGA 026ZU-4/2015 "Innovative approaches to the system of teaching management in the study program Railway transport with a focus on application of the dynamic quality models in the railway transport", which are being addressed at the Department of Railway Transport, FPEDAS, University of Zilina.

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