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ҒЫЛЫМИ-ТӘЖІРИБЕЛІК КОНФЕРЕНЦИЯСЫНЫҢ БАЯНДАМАЛАР
ЖИНАҒЫ*

***СБОРНИК МАТЕРИАЛОВ
ІХ МЕЖДУНАРОДНОЙ НАУЧНО – ПРАКТИЧЕСКОЙ
КОНФЕРЕНЦИИ: «АКТУАЛЬНЫЕ ПРОБЛЕМЫ ТРАНСПОРТА И
ЭНЕРГЕТИКИ: ПУТИ ИХ ИННОВАЦИОННОГО РЕШЕНИЯ»***

***PROCEEDINGS OF THE IX INTERNATIONAL SCIENTIFIC-PRACTICE
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В сборник включены материалы IX Международной научно – практической конференции на тему: «Актуальные проблемы транспорта и энергетики: пути их инновационного решения», проходившей в г. Нур-Султан 19 марта 2021 года.

Тематика статей и докладов участников конференции посвящена актуальным вопросам организации перевозок, движения и эксплуатации транспорта, стандартизации, метрологии и сертификации, транспорту, транспортной техники и технологии, теплоэнергетики и электроэнергетики.

Материалы конференции дают отражение научной деятельности ведущих ученых дальнего, ближнего зарубежья, Республики Казахстан и могут быть полезными для докторантов, магистрантов и студентов.

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СЕКЦИЯ/ SECTION 4

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QUALITY MANAGEMENT OF TRANSPORTATION SERVICES: CONCEPT; SYSTEM APPROACH; MODELS OF IMPLEMENTATION

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Preface

The aim of this study is to suggest an improved transportation process through introducing basic quality tools to control all transportation processes.

The need for this is caused by the lack of specific quality checkpoints for the delivery in the current transportation process. If misunderstandings and malfunctions occur during the delivery, they are fixed and discussed, but not documented for further improvements since no specific support tools exist for the workforce.

Currently, most companies use guidelines and working instructions, but they are rather complex.

Therefore, there is a need for improving the current transportation process through suggesting the quality tools.

The quality in transportation processes was approached in two stages:

- 1. It was interpreted as a number of gaps and bottlenecks in the process which can be identified, minimized and improved.*
- 2. A constant use of quality tools was suggested for continuous quality improvement, to prevent the gaps from further occurring in the transportation process.*

The outcome of this study is an action plan and addresses covering possible gaps during the delivery time. This article is based on the improved process flow.

The outcomes of the study can be implemented in the company's transportation process. Additionally, the results can be used to develop the IT software support, where all requirements and documents for transportation are gathered in one place for better access and understanding. In the future, checklists can be supported by updated manuals for each stage of the transportation process towards obtaining ISO 9001 Certification.

Abstract

The article represents a summary of my previous work on the above topic. It proposes a conceptual approach to transport services quality management. It is based on the principles of logistical management, management of relationships with consumers, harmonization of the enterprise management system, based on the quality and the use of principles of a synergetic systemic approach.

The synergetic, systemic approach suggests the formation of a self-organizing quality management system for transport services (cybernetic adaptive, in which the accumulation of experience, the memorization and structuring of information is expressed in a change in the structure of the system and the level of its organization).

The scientific novelty of the proposed approach to transport services quality management consists in the integration of the principles of the TQM concept and logistics, the application of a variable approach to selecting technologies for improving the processes of transport and logistics services; comparison of consumer assessment of motor transport services with an evaluation of the quality of processes of its formation.

The proposed methodological approach to evaluation takes into account the influence of integrated processes on the final result formation, as well as the effectiveness of each process execution. The implementation of this approach will provide a reasonable choice of methods for providing and improving the quality of transport services, the effectiveness of creating/improving the management system.

Narrative

In modern conditions, the quality problem occupies a central place in the activity of any enterprise. The creation of conditions for further development of the transport complex, its integration into the European and world transport systems predetermine the priority of this problem for road transport enterprises. There is a positive trend towards the development of the logistics services market; the increase in the volume of cargo transportation (in 2017, the increase in the turnover of goods accounted for almost 10% compared to the previous year, while the entire volume of freight turnover falls on the road transport). The development of a trucking enterprise focused on servicing a large number of consumers; increasing their level of exactingness should be very dynamic; the volume and quality of transport services provided should meet the expectations and requirements of consumers. An effective solution to the problem of quality assurance is possible provided that the modern concepts, approaches to management are used. At the same time, the approaches used to manage the quality of transport services are associated with the following shortcomings: the relationship with consumers of services is not taken into account (there are no mechanisms for involving them in the production preparation process, the deployment of quality requirements for transport services, etc.); it is not supposed to regulate the quality of transport products during the development and implementation of the technological process, in particular there is no systematic development of preventive actions (such as algorithms, the scope of such impacts is not justified, etc.); the processes and procedures for quality management are not sufficiently developed; the principles of logistics management are not fully used.

This calls for conducting scientific research towards the development of modern concepts, approaches to quality management of transport services.

3. Results and Findings

This paper proposes the concept of transport services quality management (Fig. 1), which reflects a holistic view of the system of basic ideas for achieving and ensuring the required level of transport services.

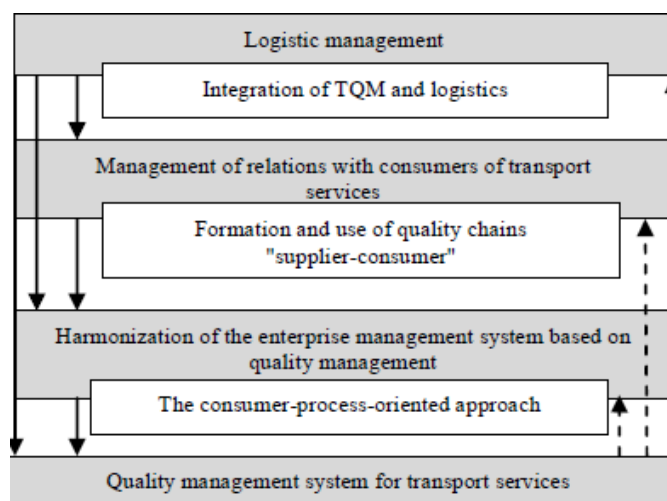


Fig.1: The concept of transport services quality management.

At the heart of the concept of transport services quality management, it is expedient to envisage the formation and implementation of logistics management. In general, the logistic management is: firstly, the process of administering the logistics system, i.e. the performance of basic management functions (with the use of information and computer technologies) to achieve the

goals of the logistics system; secondly, it includes management of changes in the organization, management of personnel; thirdly, its strategic aspect is connected with the activity on setting goals, global and common tasks for the logistic system of an enterprise and maintaining the company's mutual relations with the external environment, which provides an opportunity to achieve the goals that correspond to its internal capacity and to flexibly respond to external factors.

Logistic management and quality management are a common process of organization of production at an enterprise, aimed at increasing the efficiency of using the available material, financial, information and human resources. At the same time, the quality determines which product or service needs to be produced, taking into account the requirements of consumers and norms, and logistics determines how to achieve the required level of production, the level of organization of processes and the level of costs.

Logistic quality management provides, on the one hand, the application of principles and methods of logistics for quality management, and on the other hand, the formation of a logistics system of the relevant organization with adequate management effects on the quality as an entity of management. At the same time, the use of logistic management is carried out not only from the positions of technical and operational indicators of transport, financial indicators, but also from the position of personnel, i.e. through motivation, and monitoring.

Consequently, logistic management in the management of the quality of transport services is aimed at integrating the basic principles of TQM and logistics (customer focus, the defining role of management in enterprise reform activities based on the principles of TQM, strategic planning, involving all employees, staff training, using motivation methods, process management, quality of suppliers, an information system, application of benchmarking, constant evaluation of the efficiency of the quality of management system functioning, a process approach to the logistics flow and the flow of quality formation, an integration of the functions of forming economic ties with the functions of planning, organizing and managing stream processes, coordinating the strategy and tactics of management in all links of the logistics chain and the processes of quality formation).

Integration of both TQM and logistics will provide a common emphasis in the organization of material flows and the quality as a flow; to create and maintain partnerships between interacting transport companies, as well as their customers (cargo owners) on the basis of mutual interests and trade-offs, and to ensure the dynamics of their convergence.

The next direction of the concept of quality management of transport services is the management of relationships with consumers, which is a permanent, purposeful process used for the formation and development of relations with consumers of transport services based on the desire to achieve mutually beneficial solutions. The use of the provisions of relationship management is conditioned by the targeted orientation of this process to meet the requirements of consumers to the quality of services rendered, to increase their satisfaction and, on this basis, to form long-term relationships.

While working with consumers, various kinds of information systems are used, among them the Frontline Information System (FIS); Customer Relationship Management (CRM); and the Sales Expert system as an example of a CRM application.

In order to create (maintain) long-term and mutually beneficial relations between the consumer and the enterprise, which enable the enterprise to provide such transport services, the quality of which would satisfy the consumers, it is necessary to develop a special system, the elements of which will be presented by a transport enterprise (subject of management) and consumers (object of management). In this case, the object of management (the consumer) is proposed to be endowed with the attributes of a self-organizing system, and the interaction between the subject and the object should be envisaged as participatory.

A self-organizing system is a cybernetic adaptive system in which the accumulation of experience, the memorization and structuring of information is expressed as a change in the structure of the system and the level of its organization. In this case, the self-organizing system can be self-adjusting, self-developing and self-learning. Self-adjustment of the system involves the accumulation of experience (information storage), which is expressed in the change of certain

parameters essential for the purpose of the system. So, the consumer can change the preferences concerning separate characteristics of services, their volumes, and the ways they are rendered.

Self-development of the system is conditioned by the development of the goal of its development, the criteria for achieving them, parameter and structure variation, etc.; self-learning, that is the ability to independently seek quality criteria for its functioning, based on accumulated experience

Unlike traditional management (the manager makes decisions while the subordinate carries out decisions), the participatory management assumes joint participation of the head and the subordinate (subject and object) in the managerial process. At the same time, the participatory management can be implemented in the following areas: firstly, the involvement of the consumer in setting goals with regard to the services provided as well as their quality, and the relationships. Secondly, the consumers are given the right to supervise the quality of transport services provided. Thirdly, the participatory management presupposes a broad participation of consumers in rationalization activities, in making proposals to improve certain elements of the service process and, in general, the provision of services, and participation in solving problems. It should be noted that the presented directions should be used in a certain combination, as they are closely related and complementary.

Implementation of management of mutual relations with consumers of transport services will make it possible to provide effective formation and the use of quality chains «supplier-consumer».

4. Conclusion

The development of modern economy of transport enterprises is connected with quality management. The essence of the new concept of transport services quality management is the integration of the basic principles of TQM and logistics management. The introduction of logistics management, according to the experience of other countries, allows saving up to 15-20% of the costs of enterprises, while reducing logistic costs by 1% is equal to an increase in the volume by 10%.

The application of the system paradigm of economic entities (enterprises and consumers) means changing the attitudes towards the relationship with consumers (including the consumer in the process of not only purchasing the service, but also in the overall process of the enterprise functioning: developing the service, assessing the quality, motivating the performers of the service, etc.).

Harmonization of the enterprise management system on the basis of quality is based on the following principles: hierarchy of the structure of the elements making up the system; integration with the company general management system; influence on production processes, but not on their results; change of the organizational structure of an enterprise to include the external and internal consumers in the process of providing transport services.

The proposed approach to transport services quality management will make it possible to form and more efficiently use the process control of the continuous “consumer-supplier-consumer” quality chain.

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UNIVERSITY METROLOGICAL EDUCATION: OPPORTUNITIES AND CHALLENGES

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I Introduction

All for-profit organizations whose output are products, either goods or services, aim the same: increase revenues and reduce costs to increase the difference between the two, that is to say, to increase profit. Costs depend essentially on the organization while revenues depend mostly on the quality perceived by the receiver of the products, either clients, users or consumers, for short, customers. Quality, which can be defined as *the degree to which a set of inherent characteristics of an object fulfils requirements* [1], stresses the fundamental role of customers on the evaluation of goods and services. To maximize revenues and minimize costs, it is thus fundamental that organizations adopt management quality systems. Particularly in the case of goods, quality is associated to quantitative indicators, most of them resulting from the measurement of quantities, physical, chemical or others. That is the domain of Metrology, the *science of measurement and its application* [2].

II Metrology

Measurements are essential to almost every aspect of human endeavours, as they are used in activities that include production control, assessment of the quality of the environment, health and safety, and the quality of materials, food and other products to ensure safe trade practices and consumer protection, to name a few examples. Metrology, the field of knowledge that deals with everything related to measurement and to its applications, is usually subdivided in three subfields: