

## APPLICATION OF LEAN PHILOSOPHY IN TERMS OF RAILWAY TRANSPORT

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*Summary: The article describes state of implementation Integrated management system in the companies operating railway passenger transport in European Union. The paper describes the possibility of application Lean philosophy in the sector of transport services in order to eliminate any type of wastage. The result of this elimination is general improvement of processes and increase of quality provided services in mentioned area.*

*Key words: integrated management system, norms, quality, railway transport*

### INTRODUCTION

The transport is one of key factors of society development. It represent an important social-economic element of the environment in which operates. The main task of transport lay in satisfying of everyday requirements on transportation.

Current, rapidly changing and dynamically developing, economic environment represents problem of assurance of long-term competitiveness for the companies. Decisive factor for the customer represents positive marketing strategy which is based on promotion, quality and price. However, the decisive factor in the direction in to internal environment of the company is a system and quality of its management, which requires new management methods and changes in approaches.

In current time the integrated management system (IMS) represents management method where the main goal is raise of effectiveness and performance of company with respect on quality of provided services.

From the carried out research show that the special position within integrated management system receive an innovative management methods which include so-called the Lean management respectively the Lean philosophy. Lean philosophy across the board affects all major value-creating business processes with emphasis on the application of key passwords like „Our customer is our master“ or „Ask the people who do it“.

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## **1. INTEGRATED MANAGEMENT SYSTEM IN THE SELECTED TRANSPORT COMPANIES IN ABROAD**

In the European Union there are standards that represent a set of instructions on how to proceed in improving services in public transport. Basic norms, in quality area, are STN EN ISO 9001:2000 and STN EN ISO 9004:2000 which set the basic requirements on IMS.

For transport area we can mention whole "pyramid of standards". On the top can be classified STN EN ISO 9001:2001 norm (and also its actualizations ISO 9001:2008 and ISO 9001:2009), then STN EN 13816 and STN EN 15140. These norms serve like a tool for management quality in public passenger transport (PPT). (4)

IMS, in conditions of company, represent an integrated method of processes management that includes:

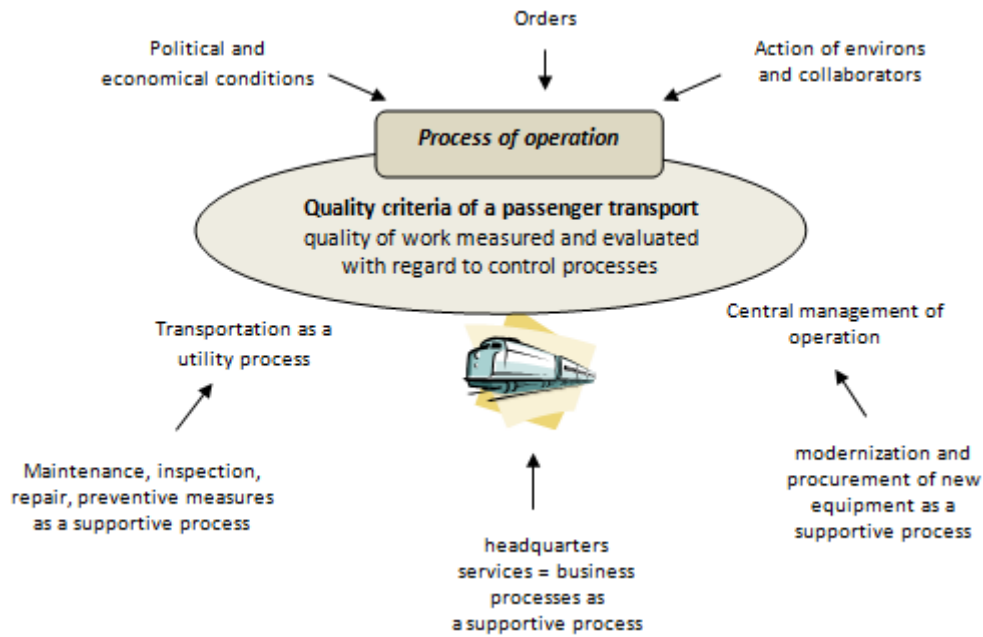
- Quality management system according to the requirements of international standards ISO 9001,
- Environmental management system according to requirements of international norm ISO 14001,
- Safety management system at work according to requirements of international norm OHSAS 18001.

In 2013/2014 was made a scientific research on Department of Railway Transport which was oriented on companies operating railway passenger transport in abroad. Partial goal of this research was find out the state of implementation of IMS in these companies. Results are summarized in following chapters.

### **1.1 Germany**

Railway passenger transport is operated by Deutsche Band. Company in monitoring the quality services provided in public passenger transport comes out from the model based on relationship between the service provider - customer.

The main function of model is "maintenance" that serves as material support process, important factor of costs. Maintenance forms a presumption of fault-free and economical transport process where passengers do not pay for maintenance performance, but for transport performances. The resulting revenues thus depend on passenger satisfaction. The model is shown in the following figure 1.



Source: (5)

Fig. 1 – Representation of relationships between the service provider and the customer

Deutsche Band is trying to maximize safety, improve quality and enhance reliability. For this purpose is established the Council of Safety and Quality. In the company is implemented the principle of systematic risk management. For this purpose serves a controller device for detecting assessment of the potential risks.

German DB, like as Swedish SJ AB, monitors criterion "timeliness" (respectively "punctuality" of the trains of passenger transport). In 2013 was punctuality in the case of 26.000 passenger trains (local, regional, international) exactly 94,6 %. In May 2014 was punctuality even 98 %. (5)

## 1.2 Sweden

Railway passenger transport is operated by SJ AB company. Owner of this company is state. On the territory of Sweden is every day operating 800 trains which are marked as "Good Environmental Choice".

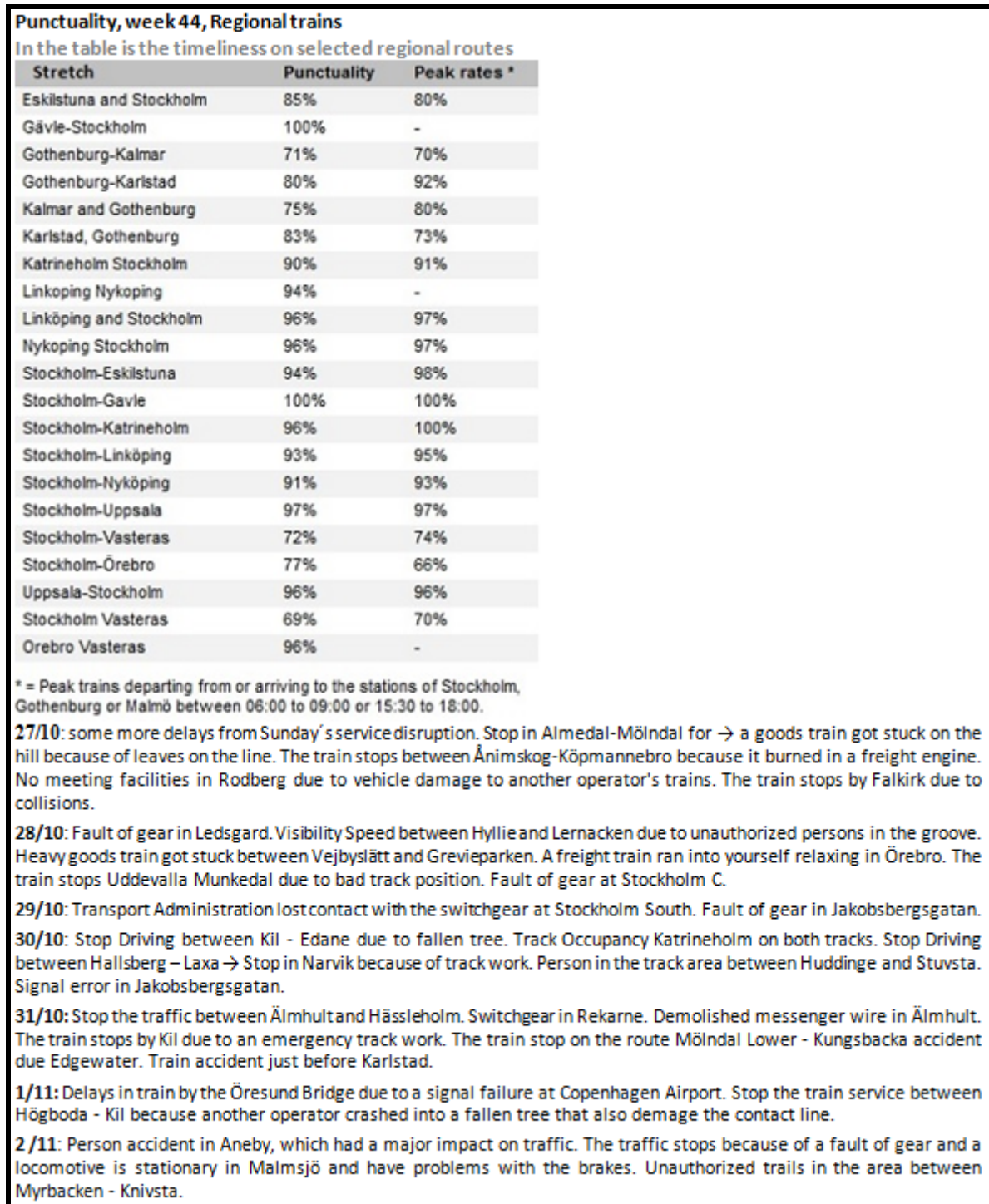
IMS is in the company integrated based on ISO 9001, ISO 14001 and OHSAS 18001 certificated by Bureau Veritas Company. In 2008 was granted the certificate in accordance with ISO 9001.

Quality policy of this company is based on idea: *"Good work means satisfied customers and stakeholders and contributes to profitability"*. Company wants effectively react on requirements and expectations not only customers but also employees and owners of company, be flexible and open for new solutions.

Main quality criteria in the company are timeliness (punctuality), safety, regularity, additional services and comfort Criterion punctuality is measured every week and company has special department for punctuality management.

In following figure 2 are shown measurement results of the criterion "punctuality" in 44th week (27 October 2014 - 2 November 2014) for regional trains. Delays of long-distance trains are recorded by the same way.

Company has implemented model of excellence EFQM and currently there is ongoing implementation of Lean philosophy in several departments of company. (5)



Source: (6)

Fig. 2 – Measurement criteria of "punctuality"

## **2. PARTIAL OUTPUTS OF SCIENTIFIC RESEARCH – IMPLEMENTATION OF LEAN PHILOSOPHY IN RAILWAY COMPANIES**

Lean management (Lean philosophy) is an approach to running an organization that supports the concept of continuous improvement, a long-term approach to work that systematically seeks to achieve small, incremental changes in processes in order to improve efficiency and quality.

Philosophy of Lean management and Lean production comes out from basic concept that all activities which goal is not make a value for customer are the wastage and have to be eliminated (it means elimination of any type of wastage of time, effort and money).

For the successful application of Lean management is necessary followed these principles:

1. Defining value from the standpoint of the end customer.
2. Identifying each step in a business process and eliminating those steps that do not create value.
3. Making the value-creating steps occur in tight sequence.
4. Repeating the first three steps on a continuous basis until all waste has been eliminated. (7)

This philosophy is initially intended for production area. As was mentioned, some railway companies are exploring the possibilities of implementation in the context of provided services. Lean sets standards of work, which are crucial to quality and productivity. Provides just what the customer wants. Important is determining of standards which are critical for the customer.

Scientific research proves that between the standards of quality in railway passenger transport belong customer care (which include all activities from beginning to the ending of transportation together with providing the necessary information about train delays, work on tracks and others), punctuality of train connections and its continuity, feeling of comfort during transportation and reasonable price for services. In the case of railway freight transport these standards of quality represents delivery accuracy and integrity of the consignment with emphasis on fluent information flow. This enables the customer to obtain information about location and state of shipment in any time of transportation.

Fundamental pillar of the success implementation of Lean management in enterprises are Lean tools, which include, for example:

- Japanese 5S method that promotes efficiency and quality especially when the company can quickly and securely provide their services at relatively low cost
- MUDA method, which consists in defining all types of waste and losses in company which reduce work efficiency,
- and other methods in the field of manufacturing enterprises such as Kanban, Kaizen, SMED.

## CONCLUSION

In recent years is characteristic gradual reduction of transport performance in the field of railway passenger transport. This development is also known in some EU countries. In the Slovak republic it is caused by slowly increasing the quality of service and fast increasing standard of living. As a response of EU to this state was edition a set of standards designed to raise the level of quality of public transport services, as well as to draw attention to the needs and requirements of customers.

Based on carried out research can be stated that foreign railway companies progressing in case of managing and monitoring quality according to established norms and standards. Undergoing a regular re-certified and seeks to continuously improve the quality of services provided with the goal to prove to the passengers that they care about their satisfaction. And more, these companies applied in addition to basic management tools also new methods which could contribute to the overall improvement of the integrated management system and to help them even better understand the current needs of customers.

Benefit of the research is acquisition knowledge from foreign companies from area of the implementation of innovative approaches to managing business processes with respect on customer. This knowledge can serve as inspiration for domestic railway undertakings towards to streamline working processes and ensuring the competitiveness of the transport market.

*Contribution is processed in terms of solving grant problem VEGA 1/0701/14 "The impact of the railway freight transport market liberalisation on the social transport costs" which is being solved at Department of Railway transport, Faculty of operation and economics of transport and communications, University of Žilina.*

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