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## Six Sigma and Dynamic Models Application as an Important Quality Management Tool in Railway Companies

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### Abstract

The most effective way of achieving superior business performance is related to the understanding of the process and subsequent improvement. This article focuses on the various management tools of quality those interconnection conditions in a railway environment together generate positive synergies. The following philosophy as Kaizen, Total Quality Management, Six Sigma or usage of dynamic models in terms of the railways belong to an innovative approach to improving the quality of services. Their thought of process optimization, as well as continuously improving the expertise of its staff, makes it easier to cope with global changes but also a service disruption and extraordinary circumstances. Within these tools, it is also essential to have a detailed knowledge of customer requirements, the use of not only subjective, but particularly objective data and especially the use of statistical analysis to achieve success in a transport company. Effective measurement of services quality cannot be bound only to a particular point in time, therefore it is necessary to ensure continuous monitoring of quality throughout the process of services provision. The connection of Six Sigma and dynamic models, which are shown in this paper, represent a modern trend in quality management. Dynamic models follow the procedural character of the provided services that are unique, unrepeatable and constantly changing.

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*Keywords:* dynamic models, Six Sigma, Leonard Berry model, railway transport, quality management, process-oriented management

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## 1. Introduction

It is obviously important in the competitive environment in railway sector to make efforts, maintain or create a new service that appeals to customers in different areas. In addition, the railway transport has safety and environmental impacts that are considerably less than other modes of transport. Therefore, it would be necessary to encourage and accentuate its position on the transport market by increasing service quality.

The goal of a research was to highlight the advantages of using Six Sigma in railway transport whereby Six Sigma would become an integral part of the culture in railway companies. An important step towards the implementation Six Sigma is the training of staff. According to the research which has been solved at the Department of Railway Transport, University of Žilina in cooperation with foreign research institutions, dynamic models represent one of the best approaches to the quality improvement. Apparently, service quality in railway transport is currently often discussed problem, especially in view of the existing competitive environment. Railway companies need to find ways to identify quality through which they can precisely intercept the procedural character of the services provided [1].

The advancement of quality journey in services is accomplish by using significant methods in this area. One of them is Six Sigma, which has been adopted as a quality philosophy by lots of companies. Motorola Company, as its pioneer, extents own profile by inventing the Six Sigma quality improvement process.

Services can be defined as intangible activities that produce time and place. They are created and consumed simultaneously (or nearly simultaneously) [2]. Furthermore, we can define the service features as inseparability, complexity and uniqueness. Quality of services is defined as the degree of fulfilment of customer expectations by a service rendered or the disharmony between expectations and perceptions. The definition of the quality of transport services is specific and it is perceived differently by user, who is the customer, a service provider or a transport operator, but also by the whole society [3]. According to Schmenner, the services are categorized into four categories (service factory, service shop, mass service and professional service) in the service process matrix. Transport services are included in the group service factory, which fall under a low degree of interaction and customization and they also have a low degree of labour intensity, thereby the service quality is easier to manage [4].

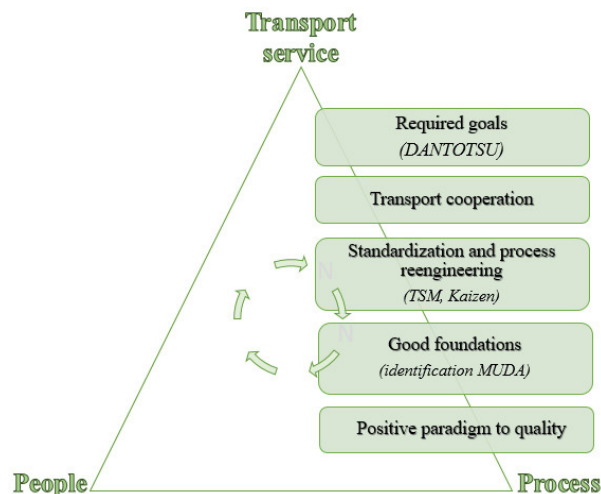


Fig. 1. Transport model TSM.

Total Service Management is such a newly adopted philosophy that helps any organization to fulfill its goals concerning innovative quality approach (Fig. 1). It is nothing but an aggregation of measuring, improving and controlling sets for any service organization. It is obviously essential to implement dynamic quality models in Total

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