
Master Thesis Abstract

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Topic: Applicability of the tariff system of RMV GmbH for an implementation of e-ticket solutions

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Changes in the demographic and socioeconomic structure of the population, such as the decreasing number of school students and the increasing elderly population influence the mobility needs of the society. These mobility needs have in turn, an effect on public transport: e.g. barrier-free access to public transport, simplifying ticketing and funding problems (VDV, 2009). At the same time, technology boosts all types of industries including services of general interest (SGI) like public transport. Internet, RFID (radio-frequency identification) and NFC (near field communication) are just a few examples which have made possible the introduction of mobile ticketing and electronic tickets in the transportation industry. Electronic ticketing in public transport can have, unlike electronic ticketing in air transport, a significant influence on the tariff system. This research focuses on the identification of weaknesses in current tariff systems and the identification of opportunities for improvement with the implementation of an electronic fare management system (EFM) using the example of the Rhein-Main Verkehrsverbund GmbH (RMV).

The research methods used in this thesis include morphological analysis and cross-consistency assessments in order to identify, categorize and evaluate the characteristics and elements of tariff systems and EFM systems to look for integrated solutions.

In this thesis, pricing elements and marketing aspects have been identified and analyzed in depth in order to categorize tariff systems. The pricing elements are based in differentiation according to space, time, type of customer and mode of transport. The marketing aspects are based on the competitor's structure and customer relation management. Each of the categories of tariff systems identified was analyzed according to the three equally important basic requirements set by the German Passenger Transportation Act (PBEFG, 1961): to achieve transparency, fairness and yield. The consideration of many aspects plus the

influences of local governments and the organization within transport companies can make current tariff systems very complex and very difficult to understand.

Until now, area based tariff systems with spatial and temporal flat rates (e.g. season passes for specific zones) have been offered in many regions in Germany and Europe in order to offer a fair and transparent tariff system. Today, the implementation of electronic fare management systems opens the door to new tariff models with an approach to a dynamic pricing which can make tariff systems more transparent, fair and achieve higher yields.

Electronic Fare Management (EFM) involves the accounting for interoperable and intermodal public transport and the processes which make possible the utilization of electronic mediums in sales. Electronic ticketing is the cashless acquisition, electronic storage and the administration of tickets in an electronic medium. The four elements of an EFM system which are the front-office, back-office, control infrastructure and the electronic ticket; have been identified and analyzed in depth in order to identify categories of EFM systems.

The findings from this research provide evidence that the current tariff system of the RMV was appropriate by the time of its foundation and that changes have to be made. Not only weaknesses can be improved, but also EFM draws the path towards a flexible tariff offering that considers different aspects which has not been possible up to now. For example, relation tariffs have been implemented in air traffic and long distance trains traffic with success although they are not perceived as transparent by the customer. The pricing system is not communicated to the customer due to market circumstances. Prices in relation tariffs can be adapted more easily to demand, time of journey and distance travelled. An additional price differentiation in form of surcharges or discounts to a base tariff (e.g. distance-based) offers interesting possibilities but can be confusing to the customer. Another advantage is that journeys can be priced differently in urban areas from rural areas and long distance journeys from short distance journey. This means that pricing in relation proportion tariff can be better adjusted to local conditions, e.g. the size of the city. Therefore, the relation proportion tariff scenario is recommended for further analysis and consideration for a tariff structure reform.

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