Possible Challenges of Integrating ICTs into the Public Transportation System in the Free State Province, South Africa

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Abstract. There is need for ICT in the Free State public transportation system and for its implementation to be successful, information is needed on the needs of the various stakeholders and assessment of whether those needs are possible to fulfill using ICT solutions. The conventional and traditional poor quality transportation system needs to be improved. ICTs have shown to be the ultimate solution to most public transport problems. For successful ICT integration, implementation and operation of these ICT solutions to improve the public transportation system challenges may be encountered which has to be addressed. This study investigates the challenges which are likely to be faced by the different stakeholders at the different levels of the integration process.

Keywords: ICT · Integration · Public transportation system · Challenges

1 Introduction

Information Communication Technologies (ICTs) are becoming a huge part of the public transportation systems all over the world. ICTs in public transportation, also known as Intelligent Transportation Systems are relatively new in South Africa and even unheard of in some parts of the Free State province of South Africa. These technologies, which include electronic fare payments, Variable Message Signs, Automatic Vehicle Location, CCTV surveillance, mobile applications and the internet are yet to be implemented in the Free State province. The uptake of ICT solutions in public transportation in other countries was based on assumptions that it will improve public transportation through these technological developments. It was thought that technology will improve service delivery, therefore reducing the existing barriers towards public transportation and resulting in the public being more patriotic to public transportation systems (Nelson and Mulley 2013).

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Challenges are likely to be encountered when integrating ICTs into the public transportation at all stages of the process, from planning how to use the solutions to the functional stage of the fully integrated public transportation system. Therefore, before deploying these technologies, these possible challenges should be considered, taking into consideration the current state of public transportation, its management, commuters, operators and drivers.

2 Motivation

Public transportation systems all over the world and in South Africa are improving because of ICT while the Free State's public transportation system is still very much conventional and inefficient with no ICT integration. Considering how ICTs have improved transportation in other areas, implementation should be considered in the Free State. Stakeholders may not all be positively affected by ICT solutions in the public transportation system and even though ICTs may lead to good results, challenges and negative impacts may be encountered when integrating ICTs into the public transportation system at all stages of the integration process, i.e. from planning stages to the final stage where the public transportation is fully integrated with ICT.

3 Research Question

What challenges are likely to be faced by stakeholders in integrating ICT solutions into the public transportation system? The public transportation system has many stakeholders who may encounter varying challenges at the different stages of integration.

4 Methodology

Qualitative data gathering through questionnaires and interviews were used. Stratified random sampling was used for fair representation of all stakeholders. Data was gathered between June 2015 and August 2015. Both questionnaires and interviews respondents were passengers, operators, drivers, transportation planners, IT professionals and academics in order to provide a heterogeneous overview of challenges from all the stakeholders perspectives.

5 Results

The challenges (Fig. 2) are influenced by other findings on the study regarding the types of ICT stakeholders were willing to use and those operators were willing to provide in future (Fig. 1). Operators willing to install buzzers, map and route display screens, tracking devices and online platforms for booking tickets should consider financial implications, literacy and user's willingness to use the technologies.

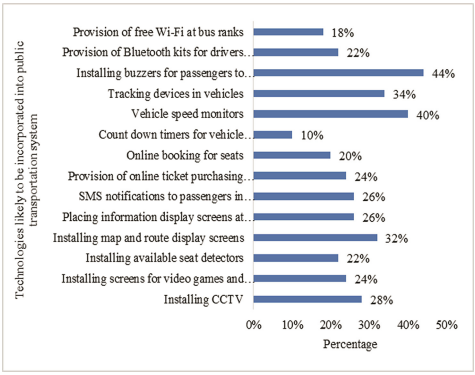

Fig. 1. ICTs operators are willing to provide

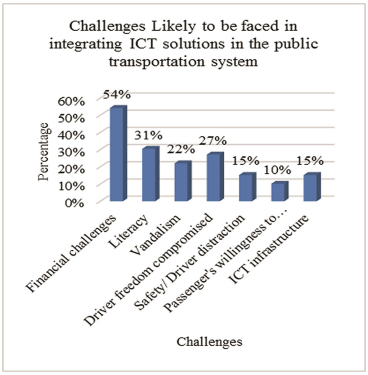

Fig. 2. Possible challenges

6 Discussion

As the public transportation system is a government controlled but run by private companies and individuals, politics plays an integral part in any major decision making that involves public transportation. Skills and competence are needed for the integration process to be fully operational. Resistance to these technologies and applications by stakeholders may also be encountered. The public should have the ability and knowledge to use the applications and devices once they are in place and be willing to use them. Education and awareness of ICT solutions should be promoted to the public because these are some of the may lead to resistance of the system. Results further showed that most stakeholders may face financial challenges that my substantially curtail successful integration of ICTs into the public transportation system. Another major challenge is the infrastructure; even though some ICT solutions can work within the current infrastructure, it needs to be expanded to support other technologies and as well as ensure efficiency.

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