Real-time information systems for public transport: user perspective
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Abstract

Public transport (PT) agencies are expected to provide passenger-oriented services. There is a need to understand the user’s perception of information technologies, especially within specific socioeconomic and demographic groups. Because of this, although PT agencies are integrating various systems, this work aims at assessing which type of real-time information (RTI) and display platform (DP) for PT are perceived as the most useful among different socioeconomic and demographic groups citizens.

Surveys were disseminated in two different readiness level areas and results show the most valued RTI were arrival/departure time (ADT) and trip planning (TP) and suggest clear differences between the preferences of young and older users. With respect to DP, panels and apps are those with more votes. In general, younger people prefer Apps and older prefer panels. Moreover, the findings suggest areas served with less technology on information for PT give more value of having access to RTI. These results are important to support public authorities on designing an integrated system with such technologies to be possibly implemented at a regional level.

Keywords: public transport; real-time information systems; display platforms; user perspective.

1. Introduction

Providing accurate and real-time information on services can be an effective way of encouraging passengers to use PT. Information on current vehicle location, next stop and expected arrival times, and in more advanced applications, occupancy rate and possibility of planning routes/lines interactively in bus stops and intermodal stations, can affect trip planning/ experience. Most of the available RTI is based on automatic vehicle location and Global Positioning Systems (GPS) to predict arrival times for passengers and traffic system operators, and such information is usually provided through panels, smartphone apps and websites (Brakewood & Watkins, 2019). RTI systems are expected to improve travel experience, affect users’ perception in terms of reliability of service (Watkins et al., 2011) and allow passengers to make more informed decisions (Maclean & Dailey, 2002). However, few studies exist on assessing which display platform users prefer (Rahman et al., 2013). Alongside with the increasing level of technology, Europe is also facing an ageing trend in population and it is expected that older people are not quite familiar with new technologies (Castilla, 2018).

Therefore, for PT agencies to provide more passenger-oriented services, it is important to evaluate which RTI type and display platforms are perceived as the most useful, (Harmony & Gayah, 2017) and explore potential benefits to improve mobility among different population segments, considering that there may be preference differences between socio-economic and demographic groups, when designing an integrated system to be possibly implemented at regional level. This is precisely the aim of this study: to provide a thorough study to support the implementation of RTI systems for PT process. This is done through stated and revealed preference-based surveys on assessing perceived usefulness, ease of use, and user acceptance regarding different types and display platforms of RTI for PT, which were conducted in different readiness level areas in Centro Region, Portugal, and Stockholm, Sweden.
2. Methodology

A survey was designed and disseminated with the goal of understanding citizens preference related to RTI and DP in areas served by different levels of technology: none - Aveiro and Cantanhede (Portugal); centralized – panels, Coimbra (Portugal); centralized and decentralized – panels and apps, Stockholm (Sweden). Data was analyzed through frequency and contingency tables with SPSS, statistical tests were performed to determine if any of identified patterns between groups were statistically significant within 95% confidence and association measures were calculated.

3. Results

The sample (655 respondents) is divided into different served level areas: 20% of the respondents belong to areas with no access to RTI, and 70% to areas with both technologies. With respect to education level, 66% are in the ISCED6-8 level. Data show only 31% of the respondents use PT daily. Almost 90% say that DP improve travel experience. While in Portugal, high percentage of young people prefer TP as RTI, in Sweden it was found that the percentage of respondents that prefer ADT or TP increases with the increase of age. Figure 1 shows 90% of the respondents within areas served with some of the technologies show preference on ADT RTI. On the other hand, the preference on TP info of the respondents from areas not served by any information for public transport and from areas of both centralised and decentralised information is clearly high (65% and 85%, respectively). Results show respondents from areas with less access to information technologies present a similar positive pattern in preferring the Panels and Apps. Journey planning software seems to be not popular. 

4. Conclusion

The underlying goal of this study is to provide a comprehensive perspective in what concerns which type of real-time information (RTI) and DP for PT are perceived as the most useful among different socio-economic and demographic groups citizens. Survey results highlight different population segments prefer different RTI display platforms. In particular, the findings can be generalized to the population (95% confidence). Results also allow to draw the conclusion that public authorities and PT operators should gather efforts in order to define and implement integrated and citizen-oriented PT services solutions based on the citizen demographic and socioeconomic profiles.

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References


