Chapter 9
Improving an App for Visually Impaired Travelers:
EMT Malaga Case Study

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ABSTRACT

Some public transportation companies have begun to develop mobile applications that facilitate the accessibility to their services for people with visual impairments. Nevertheless, despite their importance, up until now, very few studies have analyzed the particular characteristics and needs of this segment of the population in order to adapt the design of and services provided by this type of application. The objective of this study is to understand how users interact with this technology. This research is based on an analysis of the application developed by the Malagueña Transportation Company (EMT). Given its exploratory nature, a qualitative methodology was used based on focus groups with the participation of experts and users. The results allow the authors to learn about users' opinions, perceptions, and attitudes towards these applications, and to help guide strategies to improve their design and performance.

INTRODUCTION

On a global scale, approximately 1.3 billion people live with some sort of visual impairment, 36 million of whom are blind and 217 million are moderately or severely visually impaired (WHO, 2018). Unfortunately, these figures are expected to increase in the next few decades. Visual impairment has a significant impact on the quality of people's lives. Among other factors, this group experiences difficulties due to physical barriers of accessibility and restrictions in transportation. For example, 75% of disabled people in Spain have problems accessing public transportation (Abellán, Pérez, Esparza, Castejón & Ahmed, 2012). In order to overcome or reduce some of the difficulties associated with visual impairments, an extensive study has been dedicated to building relevant support systems.

Information and Communications Technology (ICT) systems can serve as an essential facilitator for the development of social integration and the quality of life of people with visual impairments. ICTs can be used to allow these groups to access relevant information, adapted to their specific needs or disabilities. The generalized use of mobile devices permits software developers to provide reliable applications that are easy to use and help people with disabilities (Ribeiro, Silva, Metrôlho, Silva & Barbosa, 2018).

Within this context, the Malagueña Transportation Company (EMT) is a pioneer organization in Spain in developing and implementing audio devices at bus stops, as well as inside and outside the buses. In addition to a remote control that enables users to activate the voice communication system, in the last few years, a mobile application (app) has been implemented that offers the visually impaired better conditions for accessing information from the transportation operator (Figure 1). This system was originally developed in collaboration with the Spanish National Organization for the Blind (ONCE). Sometime after the system was put into operation, the EMT considered it necessary to find out users' opinions about their services in order to implement necessary developments contributing to the process of continuous improvements in accessibility to the transportation service. This study has two main objectives: (1) to understand how users interact with this technology and (2) to formulate proposals for improvement.

In order to understand how users interact with the EMT's electronic devices (i.e., remote control and app), we will first proceed to identify the factors that influence usage behavior (Liébana-Cabanillas, Muñoz-Leiva & Sánchez-Fernández, 2018). According to the literature, the intention to continue using a mobile technology is determined by user satisfaction, perceived usefulness, usage habits, and social norms (Karaiskos, Drossos, Tsiaousis, Giaglis & Fouskas, 2012; Hsiao, Chang & Tang, 2016). Another factor that has a direct influence on intention to use is the trust developed in the service offered by the technology and the potential risk of loss of benefits derived from its use (Wood, Tam & Witt, 2005; Woisetschläger, Lentz & Evanschitzky, 2011). Furthermore, users also value the possibility of interacting through technology, both with the system itself as well as with other users (Coursaris & Sung, 2012). This study therefore evaluates the impact of these factors on users' behaviors with the implemented technologies.

This paper first defines the conceptual framework based on the literature review, followed by an explanation of the methodology used for this study. The following section presents the results obtained from the study and the last section offers the authors' main conclusions and recommendations.

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