



A user-centred assessment of a new bicycle sharing system in Medellín



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ABSTRACT

A bicycle sharing system (BSS) offers multiple benefits to a city as well as numerous challenges for effective implementation, especially if the system is connected to other modes of transportation. User-centred assessments of BSSs have been recognised as a paramount factor in transportation research, although it has received relatively little attention. This ethnographic study implemented a user experiential approach for assessing EnCicla, which is a new BSS in the city of Medellín, Colombia. A deeper understanding of users was needed for identifying the perceived journey maps; including route stages, functional likes and dislikes, affective reactions, and motivations for using the system. Findings identified not only the functional but also the affective aspects of the user experience. The 40 participants were also classified into four user groups: Lover, Civic, Grateful, and Adapted. Managerial implications involved recommendations for improving the service design and the communication and promotion strategies of the system. Limitations have to do with the specific characteristics of the sample.

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1. Introduction

The use of bicycles has increased popularity worldwide as an alternative means of transport. Since 1965, the shared use of bicycle fleets or bicycle sharing systems (BSSs) has expanded through the five continents (Shaheen & Guzman, 2011; Shaheen, Guzman, & Zhang, 2010). By 2010, Shaheen et al. (2010) estimated that more than 139,000 bicycles belonging to approximately 100 BSSs exist in around 125 cities. Europeans for decades have known the value of having bike systems in countless cities. Bicycle sharing can be found in countries like Spain, France, Sweden, Germany, England, and Italy, among others (Antoniades & Chrysanthou, 2009). Outside Europe, there are systems operating in Australia, Canada, Japan, New Zealand, and other countries, such as Brazil, Chile, China, India, Iran, and Mexico (Midgley, 2011). For example, in the United States, the city of Washington has created a BSS in order to reduce traffic congestion (Holtzman, 2008). Since 2013, Citi Bike also operates to provide New Yorkers with an additional transport option (About Citi Bike, 2013).

This sustainable mode of transport has become an important tool for urban mobility planning because it facilitates the effectiveness of mass transit systems. A prospective study on urban mobility by 2050 (Lerner, 2011) mentioned some strategies that should be adopted by cities in order to improve the mobility of its citizens. One of these strategies was to ensure full integration of the travel value chain especially if public transport is interconnected with systems of cars and bikes. Indeed,

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urban transport has influenced the achievement of social sustainability in urban regions (Boschmann & Kwan, 2008), and therefore, cities have begun to pay significant attention to finding opportunities for implementing programs that reduce short-motorised travel and increase active and sustainable transportation, like walking and cycling (Maibach, Steg, & Anable, 2009). In this regard, due to the “growing concerns over global motorisation and climate change” (Shaheen et al., 2010, p. 1), the use of bicycles as a transport system presents great benefits for the health of the planet and its citizens (DeMaio, 2009; Krizek & Stonebraker, 2010; Rabl & Nazelle, 2011). The frequent use of bicycles has also been perceived as a practice that combines independence and interdependence of citizens, and as an appropriate response to contemporary problems (Aldred, 2010). Shaheen et al. (2010) pointed out that, “several studies have documented bikesharing’s social and environmental benefits including reduced auto use, increased bicycle use, and a growing awareness of bikesharing as a daily mobility option” (p. 1). On the contrary, Miralles-Guasch, Martínez-Melo, and Marquet-Sarda (2014) found that the use of private transport, especially cars, has been strongly related to time travel, convenience, and social status, but not as a way to improve the city conditions.

Despite the increasing number of BSSs and perceived benefits to cities, individuals, and the environment; obstacles remain to their effective implementation. Challenges mainly relate to the system’s integration with other public transport systems, future demand, safety, business models, costs, and user convenience for the cyclist (e.g., weather conditions) (Shaheen et al., 2010). In particular, Shaheen et al. (2010) stated that little research has been made concerning BSSs from the point of view of the users. Most research has been focused on the instrumental motives for using BSSs; whereas the affective response of the user has received very little attention in the literature (Mann & Abraham, 2006), even though it may be a key factor in implementing BSSs. Yet, the integration of a new transport system, such as a BSS, additionally requires analysing the reasons behind its potential use as well as the perceptions of its users (Miralles-Guasch et al., 2014). Nevertheless, limited studies were found relating to the user experience in BSSs.

1.1. The EnCicla bicycle sharing system in Medellín

The city of Medellín in Colombia (South America), with approximately 3.4 million inhabitants in a metropolitan area of 173 km² (Municipio de Medellín, 2013), implemented a new BSS called EnCicla. Its main objective was to find solutions to some of the city’s mobility challenges. It is no coincidence that Medellín was named the most innovative city in the world by the Wall Street Journal (City of the year, 2013) and was selected as a model for sustainable urban innovation by the international award Lee Kuan Yew World City Prize (Medellin wins the Lee Kuan Yew World City Prize, 2016).

There are several antecedents to EnCicla in Medellín. The city of Medellín has a complex and integrated transportation system with a variety of means of transport. The Metro is the city’s main mass transit system since 1995. Nowadays, the Metro system includes not only elevated railways known as the Metro, but also aerial cable-car lines called Metro Cable. The bus system also includes a variety of options, such as public buses and MetroPlus, which is a bus rapid transit system. As for the Metro system, it is important to note that it has built an outstanding citizen culture called the “Metro culture.” The Metro culture introduces the Metro not as a mere means of transportation, but as a lifestyle and meeting place (Metro culture, 2016). The Metro culture reinforces “correct” behaviour and messages concerning the good citizen and the values, attitudes, and everyday habits which it expects of users (Brand, 2013). This has produced positive changes in civic culture by presenting a public transport system as an instrument of civic transformation. The Metro culture has been recognised as a benchmark of good mass transit system use by its users, to the point that this Metro culture was selected to be replicated internationally by the Panama Metro system (Nuestro metro, 2014). The successful implementation of the Metro culture has contributed not only to the education of the users of the Metro, but also has become an ideal to follow by the whole integrated system of transport in Medellín.

Due to the complexity of the transport systems in Medellín, the city government has promoted urban mobility, including non-motorised mobility, as means to improve security, and the economic and social wellness of its citizens. The Área Metropolitana del Valle de Aburrá is an administrative entity of public law associated with the municipalities of the valley called Valle del Aburrá, where the city of Medellín is located. In a mobility master plan for the metropolitan region of Medellín, The Área Metropolitana del Valle de Aburrá expressed the importance of integrating the transportation systems by using non-motorised mobility (translation from Spanish): “Non-motorised mobility associated with pedestrians and bicycles is a cornerstone within the system of mobility for all citizens, because it ensures accessibility and connection within the inner areas and residential tissues. This should be achieved by a subsystem, that is structured, and physically and functionally articulated, within the vial subsystem” (Plan maestro de movilidad, 2009, p. 15). Accordingly, among other initiatives, the city government invested in developing a system of permanently designed bikeways that were semi integrated with the Metro. However, these bikeways were presenting a very low utilisation rate.

Taking advantage of these circumstances, Universidad EAFIT (EAFIT) made a proposal to the Área Metropolitana del Valle de Aburrá. The idea was to develop and implement EnCicla as a public BSS in the city by using a bicycle product model that was qualified as appropriate for a BSS in Medellín. The model was designed by Lina Marcela López, José Augusto Ocampo, and Felipe Gutiérrez, students of Engineering Product Design at EAFIT. After the project was approved, EAFIT developed a quantitative market research to clarify the expectations of future bicycle system users. Afterwards, EAFIT designed and implemented a pilot program for the bicycle system that proved to be successful. The pilot program included a qualitative research, which was the ethnographic study presented in this manuscript. The general objective was to explore how the new EnCicla users assessed the system. EnCicla started fully operating in August 2012, and with only three months of oper-

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