



Contents lists available at ScienceDirect

Research in Transportation Economics

journal homepage: www.elsevier.com/locate/retrec

Towards multi-modal integrated mobility systems: Views from Panama City and Barranquilla

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ARTICLE INFO

Article history:

Received 1 November 2015
 Received in revised form
 26 March 2016
 Accepted 27 March 2016
 Available online xxx

Classification codes:

R400 Transportation Economics: General

Keywords:

BRT systems
 Caribbean cities
 Stakeholders' engagement
 Intermodal systems
 Social sustainability

ABSTRACT

This paper undertakes the assessment of the bus transport systems of two port cities in the Caribbean, the BRT system *Transmetro* in Barranquilla, and *Metrobus*, a 'light' BRT system, in Panama City. Although the systems have different contexts, design and operational characteristics, they have in common that over the last years their service quality has deteriorated, leading to negative users' perception and consequently decrease in patronage levels. Understanding these problematic factors is key for the mobility of these cities as they are both planning to expand their systems and consolidate multi-modal integrated transport systems in the upcoming years. Through a series of interviews with several stakeholders from institutions related to the mobility sector in each city our analysis identifies aspects of conceptual design, planning and implementation of institutional, operational, financial and management frameworks that might have been preventing the systems from achieving a better performance. Moreover, our analysis highlights two factors embedded at the core of the systems' difficulties: First, BRT technology transfer with limited understanding of context and little adaptation to local user's expectations and preferences; and second, design criteria that address financial requirements at the expense of quality of service for people's needs.

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1. Introduction

Like many other Latin American cities Barranquilla (Colombia) and Panama City (Panama) have implemented new bus systems designed to transform existing inefficient bus systems into modern systems with new institutional, operational and physical characteristics (Hidalgo & Carrigan, 2010). The new systems being considered here are a Bus Rapid Transit system for Barranquilla and a 'light' BRT for the case of Panama. These aimed to provide sustainable urban transport by addressing the problems created by the existing traditional public transport services – private buses with low quality of service, high externalities, including high traffic accident rates and pollution caused by poor maintenance and old vehicles, resulting from the incentive structures associated with competition in the market and the 'penny war' (Estache & Gómez-lobo, 2005).

In both cities the systems started operation in 2010 and, although under very different contexts, by the end of 2014 both

bus systems were facing great operational challenges that resulted in decreasing ridership and negative perception of the service from the users and general population. Both cities have plans to address the observed difficulties including, among other measures, the development of integrated multimodal citywide transport systems that promote the complementarity of existing transport modes. This paper presents the operational difficulties that the systems in both cities have been experiencing. In the following section the paper describes briefly a framework for conceptualizing BRT or Integrated transport systems which presents the criteria that is considered for assessing the Barranquilla and Panama City systems. Section 3 and 4 present the transport conditions previous to the implementation of the BRT system in each city and the current situation and challenges. The challenges described here emerged on a series of interviews conducted with the main stakeholder institutions from the mobility sector in each of the cities in mid-2014. The selection of the interviewed organizations aimed to be comprehensive and considered all organizations involved in the mobility from different sectors and government levels. However, user's groups or representatives from civil society might be under represented. Appendix 1 presents the summary of the stakeholders involved in these

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interviews. The paper ends with the cities' strategies to move forward, a discussion of main lessons learnt and critical factors to consider for the development of the multimodal integrated transport systems.

2. General framework for conceptualizing integrated transport systems

Existing literature provides highly detailed guidelines for the physical design of BRT systems; comprehensive planning guides and manual such as “BRT Planning Guide (3rd edit.)” (Wright & Hook, 2007) and “The BRT Standard” (ITDP, 2014) provide description on how to design physical elements, more specific documents have covered safety or universal accessibility considerations for planning and design (Rickert, 2011), or evaluated conditions to improve capacity (Barker et al., 2003; Hidalgo, Lleras, & Hernandez, 2013), among others. The conceptual framework presented on this paper builds on the available literature and defines general conceptual guidelines for key areas that need to be considered when planning, implementing and operating a bus rapid transit or an integrated transport system. As presented in Fig. 1 the framework for the conceptual design has two large components: i) physical elements and ii) ‘soft’ elements. The case studies will present a brief description of the physical characteristics of the systems and will primarily focus on the ‘soft elements’ criteria defined in Fig. 2 because of their relevance for Barranquilla and Panama City.

3. Description of Barranquilla BRT system

3.1. Barranquilla general characteristics and urban configuration

Historically, Barranquilla is a city that was not founded, but that emerged as a result of commercial activity. Barranquilla's Metropolitan Area (AMB) comprises 5 municipalities (Soledad, Malambo, Puerto Colon, Barranquilla y Galapa). The total population of the metropolitan area is 1.8 million inhabitants, with the two largest

populations located in Barranquilla (1.2 million) and Soledad (around 650.000) which is contiguous with Barranquilla (DANE, 2005). Soledad is the 7th municipality in terms of population in the country and its population is mainly of low income.

From the perspective of the economic activity in the city, the role of the AMB is very relevant as 40% of the distribution and logistics centres are or will be based on the other 4 municipalities outside Barranquilla. The overriding vision of those municipalities is to have heavy industries. Hence it is important to guarantee good connectivity between municipalities and between residential and industrial areas. However coordinating this public transport provision is complex because each municipality of the Metropolitan Area has its own mayor and land-use plan. Moreover, the transport routes operating between municipalities are the responsibility of the Ministry of Transport. Perhaps, due to that complexity, until now the connectivity needs of outskirts industries workers have been addressed by their own company through private transport routes. Nonetheless, the city wants to position itself as a port city in which the industrial and trading activity is dominant, but also as a sustainable and attractive city to live in (Findeter, 2014). As part of this transformative aspiration the city is currently turning its face back towards the river, after decades of neglect of this resource. In this context, the pier will be transformed into a touristic area and the passenger transport service in the city should be able to serve this purpose. This city vision imposes a great challenge for the transport system in the city because the industrial activity requires considerations regarding freight and logistics, whereas the commuting needs of workers and travel needs of tourists demand adequate levels of urban passenger mobility and urban design that promotes quality of life. Hence, the need to formulate a multimodal integrated transport system.

3.2. Barranquilla's public transport characteristics

Barranquilla is a dense city (around 8000 inhabitants per km²) with a diversity of land uses. The public transport modal share, including traditional buses, Transmetro (BRT) and informal services

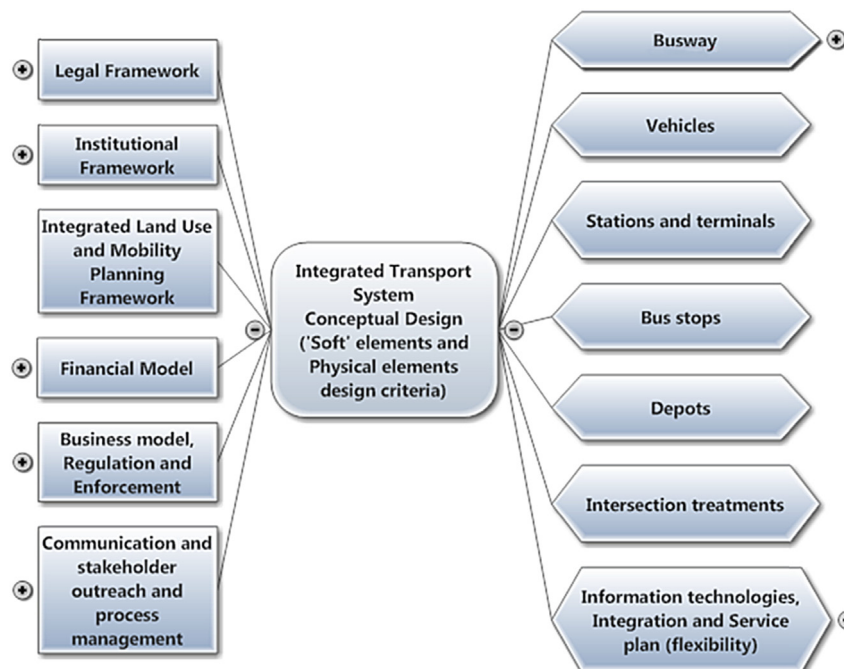


Fig. 1. General framework for the conceptual design of BRT and Integrated Transport Systems.

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