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Barriers to planning and implementing Bus Rapid Transit systems

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ABSTRACT

Bus Rapid Transit, BRT, is now operating in many cities of emerging and developed economies around the world. It provides affordable connectivity, and fast and reliable services for a range of requirements. This paper presents barriers to introducing BRT based on the authors' experience in planning, implementing and improving these systems in cities of emerging countries. We conclude that most issues are related to institutional, financial, legal and political sectors. In particular, BRT planning faces: (i) institutional complexities and lack of technical capacity; (ii) lack of alignment among stakeholders; (iii) strong promotion of competing modes; (iv) perception of BRT as a lower quality mode; (v) traditional bias towards vehicle capacity expansions; (vi) opposition from existing bus operators; and (vii) lack of community participation. BRT implementation barriers include: (i) underestimating the implementation effort, i.e. optimism bias; (ii) discontinuities due to political cycles; (iii) lack of national policies supporting BRT development; (iv) insufficient funding for adequate implementation; and (v) rushed inauguration. By addressing and documenting common issues of many real world experiences, we expect to help cities enhance their ability to advance BRT as part of their portfolio of sustainable mobility improvements.

1. Introduction

Bus Rapid Transit, BRT, defined as "*a flexible, rubber-tired form of rapid transit that combines stations, vehicles, services, running ways and information technologies into an integrated system with strong identity*" (Levinson et al., 2003) has grown from an exotic way of providing mass transit in South America, to a common component of integrated transport systems in 168 cities from 39 countries around the world (Global BRT Data, 2014; Hidalgo, 2011). Besides enabling a more efficient use of urban road space by increasing capacity to carry people, BRT provides affordable connectivity, and fast and reliable services for a range of requirements (Fouracre, Dunkerley, & Gardner, 2003; Lash, Koch, & Lindau, 2012; Muñoz & Hidalgo, 2013; UN-HABITAT, 2013).

But BRT faces similar barriers to other urban mobility projects requiring political economy and community support, institutional capacity and funding. The novel characteristics of the concept – first full BRT system was implemented in Curitiba in 1982 (Lindau, Hidalgo, & Facchini, 2010) and most systems have less than 15 years – and its intrinsic flexibility (Levinson et al., 2003), imposes particular challenges. BRT is not always understood in the same way by practitioners and decision makers, and faces three especially contentious issues: i) institutional arrangements requiring the coordination of multiple agencies and, in many countries, reorganizing private transit service operators; ii) competition for space traditionally assigned to general traffic; iii) the misperception of buses as a low quality mode (Hensher, 2007).

In this paper we concentrate on the barriers to planning and implementing BRT, expanding previous assessments (e.g., GAO, 2011; GAO, 2012; Hidalgo & Carrigan, 2010). Despite the rapid expansion over the last 15 years, the BRT industry is still far from reaching maturity. There is still low technical and institutional capacity in most cities for the development of BRT. By addressing and documenting misperceptions, common issues and actual challenges of many real world experiences, we expect to help cities enhance their ability to advance BRT as part of their portfolio of sustainable mobility improvements.

The issues we raise and the conclusions we reach are mostly based on our experience in planning, implementing and improving urban mass transit systems, particularly in cities of emerging countries. We start by addressing the barriers related to the planning process and in continuation we present those related to the

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implementation of a BRT system. We finish by discussing BRT barriers that are of a more general nature.

2. Barriers in the planning process

2.1. Institutional complexity and the lack of technical capacity

In most cities, different departments and agencies, some of them with overlapping responsibilities, tend to work in isolation and ignorance of each other rather than collaborating on projects and policies. As opposed to institutional arrangements for rail systems, in which a single transit agency is usually designated and empowered to plan, implement and operate the full system, BRT touches on areas that fall under the purview of a range of city officials in different departments. Multiple stakeholders present a significant challenge when planning and implementing multifaceted projects. Governments often struggle to attract and retain top talent with the level of technical expertise and sophistication required to plan, implement, and manage complex urban transportation projects.

Invariably cities end up relying on consultancy services to plan their mass transit systems, including BRT. But a booming BRT market demands more work than experienced consultants with a credible track record in designing successful BRT systems can provide. Contrary to other transit technologies, BRT is not a turnkey project. There are no single companies in the market providing all elements from road infrastructure to rolling stock and control systems. So BRT designers require a very comprehensive understanding of the multiple project components and their interfaces, especially in cases where the BRT systems are expected to deliver high capacity and performance (Lindau, Pereira, Castilho, Diógenes, & Herrera, 2011). There is only a handful of BRT corridors with capacities beyond 15,000 passengers per hour per direction (BRT Data, 2014), so there is insufficient practical knowledge on how to plan, implement and operate such systems.

Experienced BRT experts are aware of the usual project pitfalls (Hidalgo & Carrigan, 2010). Both major and minor design problems are well known to the BRT community and some of them are even reported in the literature (Muñoz & Gschwender, 2008; Wright & Hook, 2007). Anyway, as poor design may lead to future operating and traffic safety problems, it is important to count with sound technical and independent advice during the different phases of project.

2.2. Lack of alignment among stakeholders

There are many stakeholders with overlapping roles and conflicting interests in the decision making process. Recognized BRT systems like Curitiba (Lindau et al., 2010), Bogota (Ardila & Menckhoff, 2002) and Ahmedabad (Rizvi, 2014) have benefited from committed participation of city leaders in either conceiving or leading its planning and implementation. Other systems that have experienced difficulties in implementation, like Santiago (Muñoz & Gschwender, 2008), Cali (Hidalgo, 2013) and Delhi (Rizvi, 2014) lacked the same level of commitment by top city administrators.

Strong leadership is fundamental for mitigating technical, economic, commercial, operational and political risks of BRT projects, as there are many public and private stakeholders involved. A typical BRT implementation is marked by constantly changing challenges imposed by external and internal actors, thus the importance of mapping stakeholders and establishing a close communication channel between stakeholders of the private and public sectors.

The lack of political commitment and strong leadership nurtures the thriving of conflicts. Problems vary from hidden agendas to lobbyists capturing decision makers. Political leadership is also important to ensure that procedures, like licensing by public departments and authorities, do not impose unnecessary delays to the BRT project.

2.3. Strong promotion of competing modes

Evidence shows that transit investments can benefit both the local economic growth and the national economy (Weisbrod & Reno, 2009). Nevertheless, national governments tend to favor the car and motorcycle value chains, especially in countries where vehicle original equipment manufacturers are established (Urry, 2004). While national finances and industrial development gain with sales of private vehicles, cities end up facing the burden of road congestion that, in turn, traps buses operating in mix traffic conditions.

The physical image of transport systems has a strong influence in the formation of user and non-user preferences Rail is often preferred to buses even for similar transport conditions in terms of waiting, travel time and costs (Hensher & Mulley, 2014). Metros tend to be also the favorite transit mode of the media that is seldom aware of their implementation challenges and costs (Ramos Barcelos, 2013). Long established rail transit industries count with active associations to promote their products and interests, like the Association of European Rail Industry, UNIFE, or the Latin-—American Association of Metros and Undergrounds, ALAMYS.

2.4. Perception of BRT as a lower quality mode

Conventional bus systems that have to divide urban road space with other vehicles are seldom ranked high by the population. Current technological paradigms tend to impair the general perception on the future of bus technology, on the great potential for improved vehicle design, internal layout and comfort, and lower emissions. Rare are the bus systems that benefit from proper marketing efforts (Weber, Arpi, & Carrigan, 2010).

Overall, bus is perceived as a lower quality mode than rail. Nevertheless, Buses with High Level of Service, BHLS, have been successfully adopted by many cities in developed countries as an alternative to more expensive rail based transit systems (COST, 2011; Finn et al., 2011; Hodgson, Potter, Warren, & Gillingwater, 2013).

Bus based transit systems can face prejudice by planners and decision makers even when performing well against rail transit

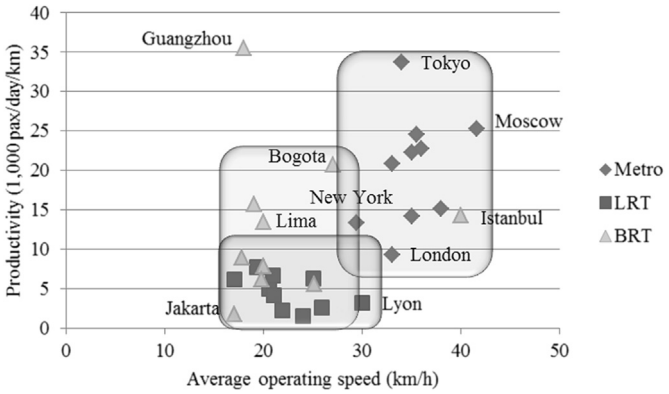

Fig. 1. Comparing the performance of the world's top-ten transit systems. Source: Petzhold, 2012; Lindau et al., 2014.

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