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# Obstacles to the creation of successful bus rapid transit systems: The case of Bangkok

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## ABSTRACT

Bangkok has failed in the implementation of its BRT system. The single line in operation since 2010 stretches only 15 km and transports merely 15,000 passengers daily. This article examines the reasons why Bangkok has (so far) been unable to implement a full BRT system, unlike many counterparts in Asia, Africa, and Latin America, which have similar financial constraints. The authors' position is that there is as much to learn from failure as from success. BRT issues are placed in the broader context of urban transport problems in Bangkok. The study indicates that the Bangkok BRT project was curtailed due to a combination of reasons, which confirm the findings of prior studies on BRT planning and implementation worldwide. The crucial issues in this case were the weak and discontinued political leadership and the failure to manage competing modes, the primary of which is the automobile. Nonetheless, creating a however limited BRT system was not a loss for Bangkok and extension plans could always be resumed in the future. Should another attempt be made at creating an integrated and large-scale BRT system, local planners and leaders who care about the city's sustainable future must avoid repeating past mistakes and falling into past behavioral patterns. While this article focuses on a single case study, the findings apply to a number of cities in similar geo-political and economic contexts.

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## 1. Introduction

Bus Rapid Transit (BRT) is a low-cost bus-based alternative to metro and tram systems. A BRT system emulates the performance and amenities of modern rail-based transit systems, including segregated rights of way, closed stations, and pre-board ticketing. However, it has major advantages over rail-based transit, including much lower construction costs, short implementation periods (one to three years after conception), accommodation of many route permutations, and flexibility to adapt to a range of urban conditions. In the last few decades, BRT has become widely used for urban mass transit, especially in developing cities. More than 40 cities on six continents have implemented BRT systems, and at least as many systems are either in the planning or construction stages (Wright & Hook, 2007; Pojani, 2014; Global BRTData 2016).

Cities in Latin America have been at the forefront of innovation in BRT planning, with Bogota's TransMilenio being the most famous system worldwide. By 2011, the TransMilenio system encompassed

116 km of trunk corridors and 446 km of feeder routes, moving more than 2.5 million passengers daily (Pojani, 2014). The Latin American experience has been successfully transferred into many East Asian cities, which have implemented large-scale, integrated BRT systems. For example, the BRT system in Guangzhou – a city of eight million – covers 273 km and transports 800,000 passengers daily (ITDP, 2014b).

On the other hand, Bangkok – another city of eight million with a metropolitan area of 14 million – has failed in the implementation of its BRT system. Before the emergence of BRT, Bangkok had a range of transport options including buses, paratransit, trains, boats, and rail. While a BRT master plan was prepared since 2005, the first corridor did not open until 2010. Thereafter, the remaining five lines were cancelled. The single line in operation stretches only 15 km, with no express services, and transports merely 1200 passengers/hour/direction during the peak (ITDP 2014a; EMBARQ, 2015). Daily it moves only 15,000 passengers – less than the low-capacity BRT systems of Paris and Johannesburg, which move up to 70,000 daily passengers (EMBARQ, 2011). While vague promises have been made to extend the BRT system, they have not materialized so far.

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The Bangkok BRT was meant to complement the existing rail-based mass transit system (about 80 km), which, while popular, has also failed to relieve congestion. Traffic conditions are onerous, with vehicular speeds as low as 10–15 km/h on some roads during rush hour. Both rich and poor spend substantial amounts of time and money sitting in traffic. The average one-way motorized commute is 45 min (Chang-Hee & Suthiranart, 2003). Before the economic crisis of the late 1990s, traffic jams cost in Bangkok an estimated \$2.5 billion per year in lost work hours and wasted fuel. Some estimates in the mid-1990s indicated that nearly one million people had respiratory impairments and air pollution caused up to 5500 premature deaths annually (Eskenazi, 2006). This bundle of problems is sometimes referred to as “Bangkok syndrome” (Braun, 2011).

This article examines the reasons why Bangkok has (so far) been unable to implement a full BRT system, unlike many counterparts in Asia, Africa, and Latin America, which have similar financial constraints. The authors' position is that there is as much to learn from failure as from success. While transportation policy reviews most often showcase “best practice,” an analysis of problematic cases can also help decision-makers to avoid newcomer costs and learn from the mistakes of others (Marsden & Stead, 2011). The authors place BRT issues in the broader context of urban transport problems in Bangkok, which helps explain why this project failed. While this article focuses on a single case study, which has been seldom analyzed in the academic literature, Bangkok's situation is certainly not unique. The findings apply to a number of cities in similar geo-political and economic contexts.

The data for this study comes from three main sources: (a) published and unpublished reports, as well as newspaper articles (most in English but also some in Thai), on the Bangkok BRT system; (b) interviews with five highly knowledgeable informants (four based in Bangkok and one in Guangzhou), who included transport planners from practice and academia; and (c) personal observations of the authors. The interview questions were designed to fill the information gaps in the literature. (In discussing the findings, the names and positions of the interviewees have been withheld in order to protect their privacy.) The article opens with a brief overview of the case study context. This is followed by the analysis, in which the key factors for success and failure of BRT systems worldwide are compared against Bangkok's context in order to identify the local barriers and pitfalls.

## 2. Study context: transport in Bangkok

Bangkok is a sprawling metropolitan area which covers nearly 1600 sq. km. With 12% of the national population and more than half of the national GDP, Bangkok dwarfs Thailand's other urban centers in terms of political, economic, and social importance (Cherry, 2011; UNDP, 2012). It has substantial poverty but also a large and growing middle-class. According to the National Statistical Office, the average household income is \$1000/month.

Despite lingering nostalgia for a long-gone canal city and river-based lifestyle (the lost “Venice of the East”), contemporary Bangkok is a car-dominated city, which could be called the “Los Angeles of the East” (Kenworthy, 1995). Ownership of motorized vehicles is among the highest in large Asian cities, including wealthier ones. Based on 2005 data, about 75% of households own at least one vehicle (car or motorcycle), and about half of all trips are made by a private motorized mode. The city has 388 cars per 1000 people – a lower level than in U.S. cities but higher than in most neighboring capitals (World Bank, 2007; Braun, 2011). Between 1990 and 2005, car ownership grew 135%, while bus patronage dropped by 5% annually (World Bank, 2007). Rates of car use are high even for individuals who live relatively close to the

center (Charoentrakulpeeti, Sajor, & Zimmermann, 2006). Although only 11% of the total space is dedicated to roads, the urban landscape is punctuated by elevated freeways and spaghetti junctions and feels dominated by cars (Kenworthy, 1995).

However, public transport services are ubiquitous, if not always convenient or comfortable. Bus, paratransit, train, and boat transport have the largest role in meeting the daily travel needs of the poor in Bangkok (Tangphaisankun, Okamura, & Nakamura, 2009). For squatters in exurban sites, paratransit is often the only means to access jobs in the city. Middle-income individuals rely on private cars or use urban rail systems (also taxis in the case of larger groups), while the wealthy use taxis and private cars or employ a personal driver (Bengtsson, 2006; Cherry, 2011; Choiejit & Teungfung, 2005; Jaensirisak & Paksarsawan, 2011). As in other developing countries, women of all social strata rely on public transport more than men (Charoentrakulpeeti et al., 2006; Choiejit & Teungfung, 2005).

Mass transit arrived in Bangkok much later than in other East Asian cities (Braun, 2011). Now, three main mass transit options are available to local residents, in addition to BRT. They have high quality but limited reach (Fig. 1). In total, rail transit covers less than 80 km (compared to nearly 310 km in Greater Tokyo – a region of 37 million). In comparison to rail, the BRT system is rather modest. Moreover, while the BRT project was cancelled or placed on hold indefinitely, the rail expansion plans for the next 25 years are very ambitious: more than 290 km of new lines have been planned (Cherry, 2011). Table 1 compares the coverage, ridership, and construction costs of these systems.

The land use pattern and urban form – towards which the government has taken a *laissez-faire* approach – adds to Bangkok's congestion (Rujopakarn, 2003). With growing urbanization, the city has sprawled along its radial axes with insufficient ring roads. However, jobs are denser in the center, concentrating traffic there (Chang-Hee & Suthiranart, 2003; Choiejit & Teungfung, 2005; Sirikijpanichkul & Winyoopadit, 2015). Bangkok includes many so-called superblocks, i.e., areas of land enclosed by major roads but not provided with an internal system of interconnected distributor roads. Small, often dead-end access roads (*soi*) lead directly from major roads to individual houses, with no hierarchical downscaling. This pattern produces wasteful cruising as vehicles cannot access the interior of a block from any side but are forced to circle it.

On the positive side, jobs and home locations can be largely chosen at will as prevailing policies permit both rich and poor, and low- and high-income jobs to be located close by and throughout the city. In parallel with the economic boom of the 1980s and early 1990s, the middle-classes tended to suburbanize along the main transport corridors, following a North American model. Now, a portion of the residents, especially single professionals, are returning to the inner city and locating in high-rise housing near transit (see World Bank, 2007; Kenworthy, 1995; Bengtsson, 2006; Charoentrakulpeeti et al., 2006; Cherry, 2011). By Western standards (though not by Asian standards) Bangkok's densities are high; in the center they approximate Tokyo's densities (Chang-Hee & Suthiranart, 2003).

## 3. Findings: why did the Bangkok BRT fail?

The following analysis employs a modified version of a theoretical framework constructed by Lindau, Hidalgo, and de Almeida Lobo (2014), which focuses on barriers to BRT planning and implementation. This framework was selected because, among the several literature reviews of BRT that exist (see Deng & Nelson, 2011; Hidalgo & Gutiérrez, 2013; Wirasinghe et al., 2013; Heshner & Golob, 2008), it is the only one specifically structured around barriers. The present authors have contracted the framework in the

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