



# Role of governance in the achievement of 20-fold increase in bus ridership – A case study of Taichung City



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## ARTICLE INFO

### Article history:

Received 22 July 2015

Received in revised form 27 September 2016

Accepted 30 January 2017

### Keywords:

Bus reform

Policy analysis

Institutional change

New institutional economics

## ABSTRACT

In the face of continuing development and the demands associated with the active lifestyle of its residents, the Taichung City Government needed to construct a complete public transportation network with high quality bus service. Since 2002, the Taichung City Government has proposed a series of reforms to gradually improve bus operations. As a result, bus ridership grew more than 20 times from 13,000 per day in 2001 to 330,000 per day in 2014. These successful reforms have led to increased public acceptance of bus service and created a win-win-win situation for the government, the public and the bus companies. The main purpose of this paper is to analyze the crucial strategies and policies that resulted in the successful implementation of bus reforms in Taichung City. The causes and effects, in terms of new institutional economics, are also discussed. The results showed that before the implementation of reforms, the Taichung bus market was locked in a vicious cycle. The Taichung City Government re-shaped the market structure through fare adjustment, electronic fare payment, subsidies and promotional efforts. Through institutional change, a new market-oriented framework was created. Institutional change is a gradual process that involves numerous interactions among relevant parties and interest groups. Policy progress is not made by the government alone, but rather through limited consensus among interest groups. The results of this paper also suggested that the government play the role of initiator of a new institutional environment and provide direction for institutional evolution. The case of Taichung City bus reform provides a good reference for similar-sized cities planning to upgrade or reform their public transportation system.

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## 1. Introduction

Taichung City is located in central Taiwan and occupies an area of 2214 square kilometers. Its officially registered population is 2,720,000 with a population density of 1223 persons per square kilometer. Due to its advantageous geographical location, it is a transportation hub for those traveling to and from northern and southern Taiwan. Although the general public can easily engage in various transportation behaviors of their own free will, there has been rapid growth in the number of private vehicles. Taichung City has the highest private vehicle ownership rate in Taiwan (373 cars and 606 motorcycles per 1000 inhabitants), leading to congestion on urban roads, intensified noise and air pollution, and deterioration of living quality. Decreasing usage of public transportation resulted in poor service quality and insufficient number of routes. This led to fur-

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ther reduction in the willingness of the general public to use public transportation, or, in other words, a vicious cycle. When bus service appears to be inconvenient and non-economical, the public's willingness to travel by bus is adversely affected. As a result, the profitability of bus companies is reduced. Due to operational losses, companies were unwilling to provide expected public transportation service quality, similar to the situation in Korea (Kim, 2006). Initially, the fare for bus services in Taichung City was 18 New Taiwan Dollars (NTD).<sup>1</sup> At the time, it was referred to as the most expensive in Taiwan. This also reduced the willingness of the public to travel by bus, instead opting to use private vehicles.

Before the implementation of reforms, Taichung City's public transportation system was seen as relatively inferior in terms of market competitiveness. To seek improvements in and enhance development of public transportation and to restrain the growth of private vehicle use, the Taichung City Government commissioned the Chinese Institute of Transportation to develop the "Plan for Urban High-Potential Bus Routes"<sup>2</sup> and draft relevant supporting measures on the 23rd of April 2001. The purpose was to actively plan and foster high-potential bus routes that are self-supporting and with desirable operating performance that can serve as a guide for future expansion and coordination with bus companies on operational rights for new urban bus routes. Moreover, it was hoped that new buses could be added to increase bus network density, service quality and usage ratio. Another aim was to set up new connecting routes between urban sub-regions to establish a complete bus route network, as well as to increase the ridership ratio, further increasing the revenue of bus companies and strengthening their operations.

The bus system reform plan was discussed among the operators, the regulators, and the users, similar to the process carried out in Korea (Kim, 2006). From the regulator's viewpoint, problems were classified into those of institutional reform risk and public affairs administration, such as the competitive relationship between urban bus and highway bus companies,<sup>3</sup> reduction in bus monitoring function and long-term public distrust. From the viewpoint of the general public, over-priced bus fare and inconvenient bus routes decreased the willingness to travel by bus. As for bus companies, by defending their original markets and enjoying government subsidization, they encountered insufficient constructive competition in the market and were unwilling to improve bus service quality.

The required involvement at various levels and by various authorities was extensive, which led to many challenges in policy planning and market promotion. Particularly during policy planning, market promotion and reform implementation, the government needed to carve out an appropriate role for itself. The Taichung City Government served as a leader in the reform of bus transportation policy. Through opening of the market, it sought to induce institutional changes to increase the competitiveness of the bus companies, and, thus, decrease bus route subsidization. The reform plan also included various strategic measures. Every proposal and every strategy implemented by the policy leader were key factors in the success or failure of the reform plan.

For a reform plan to have a long-term effect, rather than a transient one, it is important to implement reforms from the view of market mechanisms and to attain market equilibrium (Peters, 1996; Rhodes, 2000). The gains and losses of interest groups, cooperation of bus companies and the general public, and support of various authorities are all factors that can influence the success or failure of a bus system reform plan. The aim of this study was to explore the overall bus reform plan in Taichung City. By adopting the viewpoint of new institutional economics, the key factors in the policy design for successful planning and transition are discussed and analyzed. The Taichung City Government through institutional design corrected the past information asymmetry of market players, as well as the inconsistencies between individual and collective objectives. This has led to maximum efficiency in the market and in the operations of private and public agencies, as well as continued growth in ridership. The results can serve as an important reference for similar-sized cities internationally to improve the overall environment of their public transportation systems.

## 2. Concepts of new institutional economics: key factors of institutional analysis and design

Bus operation is constantly changing in the urban structure. In Taichung, although the demand for urban travel had changed, no adjustments to the bus route network or improvements to the service provided by bus companies or the city government had been made. Traditionally, urban public transportation systems have been based on the concepts of neo-classical economics and considered public goods and natural monopoly. Generally, the government provides services and regulation. Therefore, public transportation service is either provided by the government (public goods) or through special permission given to designated bus companies. From the concepts of neo-classical economics, to regulate bus companies under a natural monopoly, the fare must be based on marginal cost to correspond to the maximum social benefit. However, the practical conditions are never perfect. Taking Britain as an example, in 1919 Sir Eric Geddes suggested that the British government interfere in the bus market. In 1930, the British government adopted the special permission method to operate urban buses. Operating companies with special permission formed a cartel. Due to operating difficulties, the cartel lobbied the government to base the fare on the average cost method and implement subsidization based on cost of bus service to remote

<sup>1</sup> NTD: New Taiwan dollar (1 US dollar = 33 New Taiwan dollars in 2016).

<sup>2</sup> High-potential bus routes: High-potential bus routes refer to those routes actively planned and cultivated by the Taichung City Government and that are self-supporting and with desirable operating performance. Moreover, they can serve as a guide for gradual opening of the city's bus route operational rights and coordination with bus companies on adjustment of operating routes.

<sup>3</sup> Highway buses, urban buses: Highway buses refer to those with routes in which the starting and ending points are in different counties or cities. Urban buses refer to those with routes in which the starting and ending points are within the same county or city.

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