

Public Management: Demonstration of the Importance of Privatization of Public Services to the Development of Urban Public Transportation based on Information Technology

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Abstract: To effectively improve the operational efficiency of the urban public transport system, save the public's transportation cost, and improve public transport service quality, the United Kingdom has adopted the strategy of privatization of public services based on information technology. Based on the model analysis of the British public transport system, this paper argues that privatization of public services based on information technology is of great significance in the urban public transport system and discusses the possible impact of privatization of public services based on information technology on the Chinese public transport system and its enlightenment.

1 INTRODUCTION

Urban public transport in the UK has a long history and has been fully regulated since 1930. In 1985, the conference passed a transportation law that required bus companies to be privatized and the government to delegate management and management to enterprises to operate on commercial principles. The act spurred innovative competition better to adapt public transport services to the needs of passengers and generate revenue (Holland, 2000). Under the socialist market economy in China, the partial introduction of privatization of urban public transportation can perfect the deficiency of traditional public transportation. This paper argues that the use of market economic regulation to manage public transportation can improve public service efficiency by opening the market and encouraging competition to improve the efficiency of public transportation to reduce the cost of government operation. The functions of government institutions can also be transformed into financial assistance, project management, supervision and implementation, quality control and coordination development. Finally, this paper offers suggestions for public transportation services in China (Lo, Lam, Wong and Leung, 2010).

2 THE BASIC FORM OF URBAN PUBLIC TRANSPORTATION PRIVATIZATION

The basic form of public service privatization has changed from monopoly to cooperation, which means that the government and the private sector are contractual partnerships with separate ownership and management (Wise, 1990). The government delivers public services through private sector investment and participation, reduces operating costs and improves public satisfaction. The private sector manages and makes profits in the process. Finally, the people will have a better experience in service reform and healthy market competition. Thus, the government is the ultimate owner of urban infrastructure, while the private sector is the business partner. Because the government ultimately represents the interests of the people of the country, it must monitor and regulate the behaviour of the private sector to make it consistent with the purpose of public service (Treheux, 1992).

3 BRITISH PUBLIC TRANSPORT SYSTEM BACKGROUND

The effective operation of London's public transport system is based on integrated policy and planning. Buses, trams, light rail and train commuter services are all operated by private companies, and commercial competition allows them to keep costs low while providing a quality service to passengers. It is worth noting that these private companies have contracts with Transport for London, while train commuter services have contracts with the UK government and operate under these contracts. These contracts specify in detail what services are to be provided (Holland, 2000).

Transport for London's primary responsibilities as the public sector regulator of private sector operations is to determine bus routes and stops, the spacing of light rail services and the evening hours of the Underground; to install wayfinding signs and require operators to provide real-time traffic information; to set fares, provide maps and marketing campaigns, build interchanges; and to identify new rail lines or extend existing lines. It is also responsible for setting fares, providing maps and marketing, building interchanges and deciding on new lines or extending existing ones. Very importantly, Transport for London has overall responsibility for managing London's major road network and developing bus priority schemes and traffic management plans (Holland, 2000).

4 THE MAIN BENEFITS OF THE PRIVATIZATION OF URBAN PUBLIC TRANSPORTATION

4.1 Government Brings in Private Sector Construction Funding

The private sector can provide a certain amount of construction funds to make up for the lack of construction funds from the government sector (Baker, 2001). The government's lack and pursuit of construction funds was the initial motivation for privatisation. The increase in urban population has led to an increase in urban transport loads, and the expansion of urban public transport requires many construction funds. Therefore, the involvement of the private sector can be an excellent way to help the government raise funds.

4.2 The Private Sector Provides High Services at Low Prices

The private sector can provide more efficient urban transport services at a lower price (Baker, 2001). Due to the phenomenon that public transport is dominated by one company, employees' work is relatively stable, which leads to decreased employees' enthusiasm, low efficiency and inability to serve the public effectively. At the same time, the public sector and the urban traffic organization is usually conducted by different government rules and regulations and limited inflexible take measures suited to the development of market economy, it also makes the price controls, and private enterprises in order to be able to get the recognition of the masses is the pursuit of service quality and efficiency, we can let the crowd at a lower price to enjoy a better service (Bond, 1998).

5 DATA FOR PRIVATIZATION OF PUBLIC TRANSPORT IN THE UNITED KINGDOM

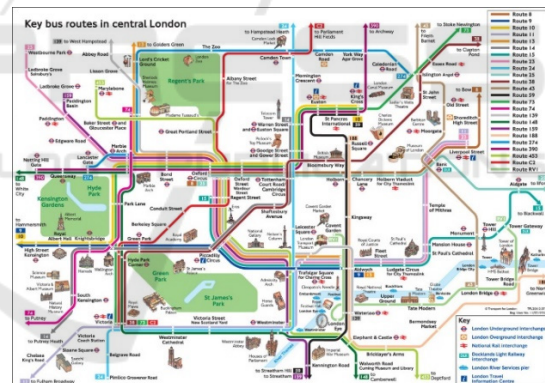


Figure 1: The bus route of London (Source: Transit Map).

Britain has one of the best road safety records in the world. They have taken a series of measures to continuously improve public transport safety, among which the British public transport system is a typical example. Take the bus system in the UK, which is successful privatisation of public services. The government oversees the design of bus routes, flights and prices, and the quality of operations. Private bus companies apply for specific operations through bidding. If the scheme works well and the quality of service is high enough, they can get airline operators. In 1986, the British government deregulated most of the local bus industry, cutting subsidies and privatising many bus companies. As a result, the UK's

unit cost of public transport has been significantly reduced, as has cross-subsidy and operational practice innovation. Between 2013 and 2018, the UK's total number of public transport passengers remained around 8.3 billion. Data show that traditional buses are still the preferred way for passengers to travel by public transport. The perfect public transport system makes traditional buses one of the essential choices for passengers. In 2018, 4.8 billion trips were made by ordinary buses in the UK, with passengers travelling 27.4 billion kilometres. London's public transport system is the largest globally, with 17,000 stations and 700 lines. Nearly 7,000 buses pass in and out of London every weekday, carrying 2.2 billion passengers in 2018 (Gu, 2014).

6 BUA RIDE SYSTEM MODEL

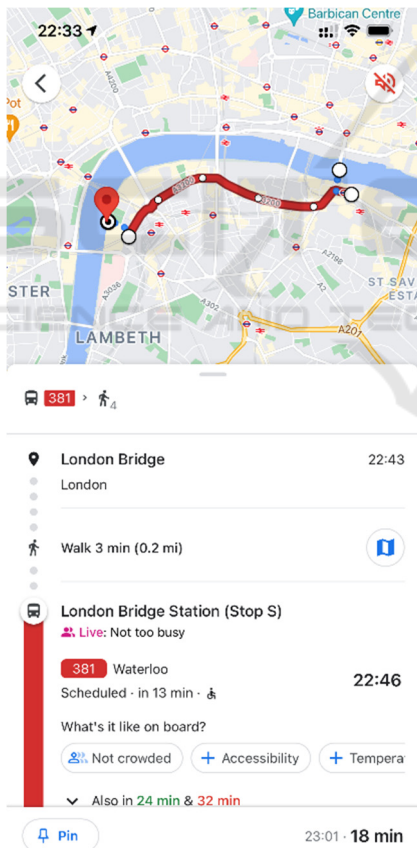


Figure 2: Google-based bus ride system (Source: Google Map).

Bus arrivals in the UK are shown via Google Maps'

bus routes system. Using GPS and universal packet radio services, Google Maps shows people all the bus routes to their destination and when they arrive (Puranik, 2021). Users only need to open Google Maps on mobile devices, enter the destination and click route planning, click the 'bus' button at the top, select the preferred mode of transportation and route, and scroll to find the transportation options and time to complete the planning (Hlaing, Naing and Naing, 2019).

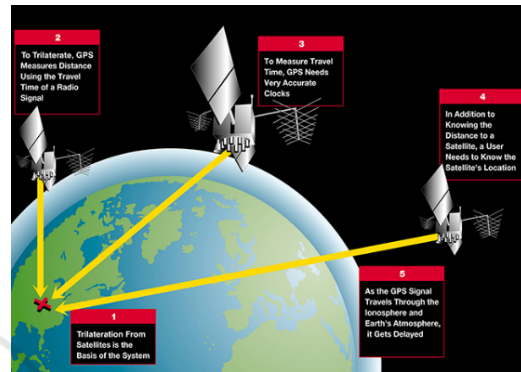


Figure 3: How GPS works (Source: Federal Aviation Administration).

On the downside, there is no way to track the location of buses in real-time, which also leads to delays in location situations, such as traffic congestion, unexpected delays, irregular vehicle scheduling times and other events. So Google could use GPS to perfect its tracking system for delays and safe roads (Shalaik, Jacob and Winstanley, 2012).

Therefore, GPS is still the tool recommended in this paper to achieve real-time bus positioning. GPS is used to locate the real-time route of the bus to determine whether there will be delays.

$$f' = \left(\frac{v \pm v_0}{v \mp v_s} \right) f$$

Figure 4: The formula of Doppler effect (Source: Equivalence of the Doppler effect, relativistic Doppler effect and scattering effect).

Bus companies in the UK have developed a strategy: they equip bus drivers with walkie-talkies to communicate with each other and the company at all times. Not only that, they have installed electronic screens at many significant stations that bus companies and passengers can use to see how many buses and passengers are running. In this way, it is convenient for passengers to decide which bus, but also convenient for bus companies to decide how

many buses to send at any time, to avoid the disadvantages of not having enough buses during rush hours and too many buses during rush hours (Gu, 2014). Finally, according to the Doppler effect, the speed limit and position of the driver are judged. It is a phenomenon that when the wave source and the observer have relative motion, the frequency of the wave received by the observer is not the same as that sent by the wave source. Drivers' operating companies will monitor activities with a mobile speedometer to ensure that drivers drive according to regulations. Traffic police emit ultrasonic waves with known frequencies to move vehicles and measure reflected waves' frequency. The speed of vehicles can be known according to how much the frequency of reflected waves changes. A monitor equipped with a Doppler speedometer sometimes mounted above the road, takes a picture of the vehicle's license plate number while measuring the speed and automatically prints the measured speed onto the picture (Chan, 1970).

7 THE IMPORTANCE OF PUBLIC TRANSPORTATION SYSTEM IN CHINA

As China develops and progresses, the transport needs of its citizens and the lagging development of its public transport system have led to severe challenges for the country's public transport system. Due to factors such as road conditions and the number of vehicles, the government's investment in conventional public transport is yielding less and fewer results, while large scale rail transport, such as the metro, is a substantial investment, has a long construction cycle and has demands on the city. Therefore, high-capacity, universal public transport systems with low investment, short construction cycles and ease of management mean that public transport systems have relevance and a need for improvement in China (Liu and Ceder, 2015).

8 THE ENLIGHTENMENT OF BRITISH PUBLIC TRANSPORT SERVICE TO CHINA

A combined public-private model can better facilitate development. In China's socialist market economy, the Chinese government focuses on protecting national industries and the interests of the people.

However, the government's introduction of private enterprises in urban public transport can improve the efficiency of the entire transport system, making the existing public transport model better and ultimately creating a virtuous cycle of public transport trends. In regions where private enterprises are relatively developed, some private enterprises can be introduced to operate public transport institutions to reduce the government's financial burden and inject confidence into the public transport service industry (Wang et al., 2018). Of course, private enterprises should be monitored by regulatory bodies to prevent the interests of the public from being compromised. For example, the government should ensure the effective use of existing buses, facilities and staff skills to ensure the continuity of passenger services. Generally speaking, private bus companies have limited capital and weak technical skills to undertake large-scale passenger transport tasks or build extensive transport facilities. Secondly, state-owned bus companies should operate the most efficient peak hour bus routes in densely populated urban areas. Private bus companies should be considered for less dense and less efficient suburban bus routes during off-peak hours for contracting to take full advantage of their low costs and operational flexibility. Such a strategy may be in the best interests of the public and private sectors and passengers (Gormley et al., 1989).

To ensure the quality of public services, the government has also established a mandatory exit mechanism for private bus companies. If their service quality is poor, accidents are frequent, and passengers complain, the government should punish them by eliminating substandard operators and replacing them with new ones to ensure good service (Gormley et al., 1989).

9 CONCLUSION

In conclusion, by exploring the public transport system in the UK, this paper argues that under the conditions of China's socialist market economy, the privatisation of urban public transport can, to a certain extent, compensate for the shortcomings of traditional public transport. Therefore, the government's introduction of advanced information technology can improve the quality of public transport services, thereby increasing the efficiency of public transport and reducing operating costs.

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