



Urban Transitions Conference, Shanghai, September 2016

The role of quality assessment for development of sustainable bus service in mid-sized cities of India: A case study of Patna

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Abstract

Public transport in urban areas has been observed to have contributed significantly to the reduction of traffic congestion and pollution, providing alternate means of sustainable transport mode and in a general improvement in ‘quality of life’ of city dwellers. In developing countries like India, rapid urbanization has led to increased travel demand, an increase in a number of the personalized vehicles; however, lack of commensurate comprehensive transportation planning in urban areas has put tremendous pressure on the existing inadequate and out of date transport infrastructure. In order to overcome such alarming situation, improved public transport both in qualitative and quantitative terms has been recommended from all quarters. The present study assesses the existing ‘quality of services’ of midi buses operating in Patna, India. Accordingly, a Likert-type ordinal scale rating based face-to-face survey was conducted among midi bus users in Patna. Respondents were asked to rate the 20 attributes of midi bus services in the city, in terms of satisfaction based on their experiences while commuting. A total of 402 refined questionnaires were analyzed using TOPSIS method. The findings will help to understand the shortcomings of the existing public bus service and provide the responsible authorities and bus operators with suggestions that can enhance the ‘quality of service’ and attract more users to public bus service. Commuters were found satisfied with ‘qualitative’ attributes such as ‘ticketing facility’, ‘seat comfort’, ‘condition of bus stops’, ‘condition of bus’, etc. while dissatisfaction was found for ‘bus information at the bus stop’, ‘frequency of bus service’ and ‘buses being on time’. This study justifies the need of improving ‘qualitative’ aspects of existing bus services. The findings of the study will provide the policy makers and bus operators in planning and implement the effective and sustainable public transport system in future for small and mid-sized cities of developing countries.

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Peer-review under responsibility of the organizing committee of the Urban Transitions Conference

Keywords: Sustainability; Public Transport; Quality of Service; Midi Bus; TOPSIS

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1. Introduction

Transportation is the mean to satisfy users' need for mobility. At the same time the transportation system that includes infrastructure, administration, vehicles and users, should be managed in such a way that it cater the needs of present without 'comprising the ability of future generations to meet their own needs' (UN WCED, 1987). World Bank (2010) states sustainability as a balance of economics, environmental and social concerns. Ramani et al. (2009) introduced the idea of sustainable transportation, and has defined it as an expression of sustainable development in transportation sector keeping in view the three tenets namely economic, social and environmental.

Public transit is supposed to score high on sustainability measures as it has lower economic cost, lesser environmental damage and social equity as compared to personalized vehicles (Maitra and Sadhukhan, 2013). Public transits cause lesser environmental pollution, has better affordability and accessibility, involves lower transportation cost and have enhanced efficiency and safety (Litman, 2008). Peng et al. (2011) have suggested various transportation planning strategies among which level of service based on multimodal transportation in which was based on person trips rather than vehicular trips, in this enough importance was given to transit system. Further, Green Transport Hierarchy (Keegan, 2001) has put public transit at a level immediately after walking and biking. These facts show the need for the development of public transportation system in the development of sustainable transport system.

Transit operation in urban areas has been observed to have contributed significantly to the reduction of traffic congestion and pollution, providing alternate means of travel and in a general improvement in the quality of life of people (Maitra and Sadhukhan, 2013). The role of transit operation in developing countries is even greater, as it serves a larger number of people living in urban agglomeration in rapidly growing urban areas and thereby provides capacities to handle the requirements of urban transportation in these rapidly growing urban areas (Vuchic, 2005).

In developing countries such as India, rapid urbanization has led to increased travel demand; however, lack of commensurate comprehensive transportation planning in urban areas has put tremendous pressure on the existing inadequate and out of date transportation infrastructure. Cities are characterized by severe congestion, high level of pollution, low travel speed and large travel time (Maitra and Sadhukhan, 2013). In order to overcome such alarming situation, transit-oriented development has been recommended from all quarters (MOUD, 2014).

Even though with the rapid increase of population and expanse of the city, there has not been a proportional rise in public transit system both in qualitative and quantitative terms. This has contributed towards the tremendous growth of usage of the personalized vehicle in the city. Shrivastava et al. (2011) has reported that in spite of huge potential of patronage of urban trips by buses, it is about six per cent buses for non-slum population whereas for slum population it is about three per cent whereas usage of cars and two-wheelers together amount to thirty per cent in now –slum areas to about seven per cent in slum areas. This shows that the public transport patronage in the city is abysmally low as compared to that of the personalized vehicle.

2. Problem Definition

Bus service in the city of Patna, a mid-sized city, and capital of eastern province of Bihar, has been in operation since the early 1970s. These buses are often overcrowded but have a low fare. Lately new buses namely midi buses have been introduced in the city funded by the central government funded scheme of Jawaharlal Nehru National Urban Renewal Mission. These buses were operated by Bihar Urban Transport Services Limited (BUSTL), an institution under the state government of Bihar; however, its operation has been handed over to other state-owned institution named Bihar State Road Transport Development Corporation (BSRTDC). Midibuses have seating capacity for thirty-two passengers with nine seats reserved for ladies and one space for a wheelchair. They are semi-low floor buses and operate on five routes in the city. In spite of being introduced for about two years now, the patronage of the midi buses has not been encouraging. In order to investigate the reasons for this, a survey was

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