Determination of Users’ Perception of Paratransit Service Quality in Dhaka City Based on Users Perception

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Abstract
Paratransit is an indispensable mode of public transport in Asian developing countries, where mass transit system is insufficient. Customer-oriented service quality of public transportation sector is essential in developing a comprehensive and satisfactory urban transport system. This paper aims to explore users’ perception of paratransit service in Dhaka, Bangladesh. A questionnaire survey was conducted to the paratransit users in Dhaka city. Result shows that availability of paratransit, speed of paratransit vehicle, integration with supporting modes, travel time, ticketing system, travel cost comparing with other modes and cleanliness of the vehicle comparing with public transport service are important variables for paratransit service quality. By improving these factors, the overall condition of paratransit can be improved and future existence of paratransit will be more acceptable in developing countries such as Bangladesh.

Keywords
Paratransit, Users’ Perception, Service Quality

I. Introduction
An important feature of modern society is its concern with providing sustainable modes of transportation to substitute the excessive use of the private car in urban areas as explained by dell’Olio et al. (2010). Bus services are frequently insufficient to meet demand although buses play the vital role in any urban areas. Moreover, the facilities that are provided mostly suffer from low output (Ali, 2010). People tend to use their private vehicles owing to lack of contentment they derive from the services of public transportation. If it is in general perceived to be good and cheap, public transportation can suppress demand for private cars as shown by Cullinane (2002). Eboli and Mazzula (2007) observed that an improvement in the supplied service quality can attract further users.

Majority of people in developing countries, especially the low income people, cannot afford private transport, and hence predominantly rely on paratransit services. Because of its service necessity the role of paratransit remains inevitable in urban mobility context. A number of researches have been carried out to investigate various study fields of paratransit system including physical and operational characteristics, cost and benefit and its sustainability (Shimazaki and Rahman, 1995; Regidor et al. 2009; Tarigan et al. 2010). The rapid pace of motorization throughout the world has changed travel behavior, which in turn has influenced every aspect of transport operations. This impact has also increasingly challenged the future existence of such road-based urban public transport as paratransit due to its characteristics and problems especially in developing countries (Joeowo, 2007 a, b). It establishes important factors and attributes to explain user perceptions and priorities regarding the service. Its hypotheses explain how users measure paratransit service quality, inferring that they are likely to continue to use it.

The role of paratransit, however, differs in the context of developed and developing countries. In developed countries, paratransit is often used for demand responsive systems such as shared taxis, subscription buses etc. In the developing countries where public transportation system is not so efficient to meet the needs of exceeding demand of transport needs thus various forms of paratransit appears in fulfilling the gaps between public and private modes. Thus paratransit plays an essential role in supporting these less developed countries mobility needs as it involves a large proportion of the public transport system.

Paratransit vehicles vary from human-powered pedicabs to mid-sized motorized buses (Cervero 2000; Illes 2005). The most popular individual type of motorized paratransit has various local names in different countries such as tempo in Bangladesh. Paratransit is used in almost all over in Bangladesh. Rapid increase in urban population, per capita income along with inadequate existing transport infrastructure has stimulated their usage as a cheap and convenient public transport mode. In almost all cases, the paratransit systems have developed spontaneously in response to local need. There are several factors which often have aggravated the growth of paratransit. Owing to its distinctive features like low carrying capacity, low speed, low energy requirements, higher labor intensity, more dependable and small area coverage paratransit modes are considered as essential component of urban transport system in cities of Bangladesh (Shimazaki and Rahman, 1996). Thus the objective of this research is to explore users’ perception of paratransit service in Dhaka, Bangladesh.

II. Literature Review
The studies on paratransit sector have become more popular in the last two decades. Cervero (2000), Cervero and Golub 2 (2007) compared urban paratransit modes in several cities of developing countries, and discussed relevant transport policy issues. Shimazaki and Rahman (1996) reviewed several paratransit modes in Asian countries from the viewpoint of physical and operational aspects. Joeowo and Kubota (2005) summarized characteristics of paratransit as well as nonmotorized modes in Indonesia. Phun and Yai (2015) performed a comprehensive review on paratransit literature in Asian developing countries and discussed their definitions, characteristics, and sustainability. Phun and Yai (2015) also included the discussion on the integration of urban paratransit mode with comprehensive urban public transport network.

A number of techniques for evaluating service quality and user satisfaction for public transport are found in literature. Assessing service quality is necessity to afford customer satisfaction. Several studies illuminated the satisfaction and dissatisfaction in public
transport to develop and create attractive public transport (for instance, Winder, 2005 and Straddling et al 2007). Very few studies focused on assessing public transport of developing countries (Senbil et al. 2005; Andaleeb et al. 2007). Many studies also have analyzed the role of the paratransit sector in the overall public transport system and its impact on the urban structures where it operates.

Service quality is an abstract concept that is hard to be defined, and in practice, often used interchangeably with satisfaction (Lien and Yu, 2001; Sumaedi et al. 2011). However, the differences between both variables have been clarified in the literature. Oliver (1997) explains that service quality is more specific and related to cognitive judgments while satisfaction is more holistic and associated with affective judgments. Some studies also conducted about paratransit service quality which defines it as service quality is a measure of how well the service level that is delivered matches customer expectations, while a firm delivering quality service means conforming to customer expectations on a consistent basis (Transportation Project Board, 1999, 2004; Lai and Chen, 2010).

III. Methodology

Twenty three (23) important factors regarding paratransit service quality were asked to the paratransit user in this study to know the actual condition of its service in Dhaka City. A total 15 routes of paratransit service were surveyed to make this assessment. The service quality feature questions are designed on a 5-point Likert scale, ranging from excellent (value 1) to very poor (value 5). Questionnaire survey was conducted from 14th June to 17th June 2015. The questionnaire contains five main parts about the service quality, safety, security, reliability and existing condition of paratransit. Total 2000 sample were interviewed by nine enumerators. After checking the completeness finally 1645 sample was considered for the analysis.

IV. Data Analysis and Results

Respondents were asked about the existing condition of paratransit service quality. 42% of the respondents said that overall quality of paratransit service is satisfactory while 30% users’ think that existing condition is good. Fig. 1 shows the user perception about prevailing paratransit quality.

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**Fig. 1:** User’s Perception About Prevailing Quality of Paratransit

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Fig. 2 shows that seat comfort level of paratransit in Dhaka city is not good enough. 52% respondents said that seat comfort level is poor and 20% opined that it is in very poor condition.

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**Fig. 2:** User’s Perception About Seat Comfort Level of Paratransit

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Fig. 3 shows the user’s perception about fitness of paratransit vehicle. Result shows that about half of the users said that the conditions of paratransit vehicles are poor.

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**Fig. 3:** User’s perception about fitness of paratransit vehicle

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Fig. 4 shows that the noise condition of paratransit is not good enough. 39% of the respondent said that noise level is poor (noisy) while 33% mentioned it as satisfactory. Most of the time there is a small lighting facility available inside the paratransit vehicle which is not sufficient for passengers. Sometimes passengers have to travel a vehicle which has no lighting system at all. Fig. 4 shows that 39% of the respondents said that lighting facilities of paratransit is poor, while 33% said that it is satisfactory.

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**Fig. 4:** User’s perception about lighting facility of paratransit

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Cleanliness of the vehicle was found satisfactory according to the users’ rating. Fig. 5 shows that 42% of the respondents mentioned that the cleanliness is satisfactory while 35% mentioned it as poor.

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**Fig. 5:** User’s perception about cleanliness of paratransit vehicle

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Basically there is no standard ticketing system in paratransit service. People pay fare on board depending on distance. Fig. 6 shows that 40% of the respondents think that the ticketing system is satisfactory while 31% perceive it as poor.

As the sitting arrangement is not good enough to the passenger so movement flexibility is also not satisfactory. 42% respondents said that movement flexibility is poor in condition, while 35% opined that it is very poor and 17% said that it is satisfactory as shown in fig.9.

Respondents provide different opinion about quality of driver which is shown in fig. 10. Some of them said they are satisfactory (31%) while some users said the quality of driver is poor (27%) as they drive very rough most of the time.

Speed is one of the most important factors that influence users to choose paratransit service. Because of their size paratransit vehicle (Tempo, Leguna) can move faster than buses. Major portion of the respondents said that speed of the vehicle is either good (41%) or satisfactory (38%) as shown in fig. 11.
Availability of paratransit vehicle varies with the demand. It is more available in off-peak time than office time because the demand is decreased. Most of the respondents (47%) mentioned the service quality is satisfactory in terms of availability and only 12% users opined it as poor as shown in fig. 12.

Travel time during office days depends on traffic volume on the road. Major portion of the respondents (33%) said that travel time is poor (more time consuming) in office days on the other hand, 32% of the respondents mentioned that it as satisfactory as shown in fig. 13.

Users’ of paratransit are satisfied about travel time in holidays because the traffic volume remains very low. 43% respondents said that travel time is good in holidays, 36% said that it is satisfactory while 13% said that it is excellent as shown in fig. 14. Most of the paratransit users are satisfied with the integration of supporting modes with paratransit. 55% user said that it is satisfactory while 37% said that it is good as shown in fig. 15.

Riding safety features of paratransit service in developing countries is not in a good condition. 43% respondents said that riding safety is poor but 31% said it is satisfactory. On the other hand 20% users mentioned that raiding safety is very poor as shown in fig. 17.
Travel cost is another important factor for which users choose paratransit service. Cost is much less than rickshaw or CNG 5 auto rickshaw but little bit more than bus. Most of the time, respondents use the service instead of bus to save travel time and to get better connectivity. 53% of them said that travel cost is satisfactory however 27% said that it is good as shown in fig. 18.

![Fig. 18: User Perception about the travel cost comparing with other transport](image)

82 respondents comprising drivers/owners/operators of paratransit vehicle were asked a question about its operating cost. Half of them (50%) said that it is satisfactory, while they also mentioned that, it depends on fuel cost, drivers and helper’s salary, maintenance cost etc. Fig. 19 shows the users’ perception about the operating cost comparing with other transport. Performance for long route movement of paratransit service found poor according to the users’ perception.

![Fig. 19: Users’ perception about the operating cost comparing with other transport](image)

Fig. 19 shows more than half of the respondents (52%) said that it is poor for long route movement, while 25% mentioned it as satisfactory.

![Fig. 20: Users’ perception about performance for long route movement](image)

Paratransit users think that the movement flexibility in any road is not good for paratransit service. It is better for the roads with medium width (20-40 ft). It is not good in highways because of presence of heavy vehicles such as bus and not good at narrow roads because of rickshaws. Fig 23 describes 43% of respondents think that movement flexibility is poor for all roads but 27% thinks that it is satisfactory.

![Fig. 21: User perception about the movement flexibility in any road](image)

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![Fig. 22: Users’ Perception Rating About Prevailing Paratransit Quality of Service in Dhaka](image)

V. Conclusion and Recommendation

Nowadays, a lot of people travel by paratransit service, but service is not advanced according to the expectations of the user. There are so many limitations are present in existing system and authority should improve these limitations to keep the ridership and attract new user. It is found that majority of the paratransit user complained that the following factors are the main limitations of paratransit service:

- Seat comfort level of paratransit vehicle is very tight
- Fitness of the vehicle is not up to standard
- Noise level of the service is very poor
- Lighting facilities and riding safety are insufficient
- Ease of entry-exit system is very risky
- Sitting arrangements is congested for passengers
- Movement flexibility in the vehicle is very poor
• Travel time during office day is very high
• Security of the passenger during off-peak period is not enough
• Performance of long route movement is not remarkable
• Movement flexibility of vehicles in any road is not so good.

The entire challenge of enhancing schemes is therefore to find the suitable action levers and the appropriate regulatory structures to maintain the advantages of paratransit services. While in many countries organized transport appears inadequate and expensive paratransit is acclaimed for its flexibility, meeting a large part of demand, and its low cost to the user. Improving paratransit service quality as well as filling service necessaries remains the major focus to deal with for public transit authorities and paratransit service providers. Prevailing inadequate service quality of paratransit can be focused by taking into account the outcomes of this study. There research results will assist in recommending measures to improve the existing system with necessary modification. It is expected that the outcome of this research work will facilitate identification of the best process to implement effective paratransit mode in Dhaka city.

References