



UNIVERSITY OF LEEDS

This is a repository copy of *Pre-determined fixed fare structure for rickshaws to integrate with mass transit systems*.

White Rose Research Online URL for this paper:
<http://eprints.whiterose.ac.uk/144683/>

Version: Accepted Version

Article:

Rahman, MS-U and Timms, P (2020) Pre-determined fixed fare structure for rickshaws to integrate with mass transit systems. *Case Studies on Transport Policy*, 8 (1). pp. 236-244. ISSN 2213-624X

<https://doi.org/10.1016/j.cstp.2019.03.006>

© 2019 World Conference on Transport Research Society. Published by Elsevier Ltd. All rights reserved. Licensed under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Reuse

This article is distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives (CC BY-NC-ND) licence. This licence only allows you to download this work and share it with others as long as you credit the authors, but you can't change the article in any way or use it commercially. More information and the full terms of the licence here: <https://creativecommons.org/licenses/>

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



eprints@whiterose.ac.uk
<https://eprints.whiterose.ac.uk/>

REF: CSTP_2018_192

**PRE-DETERMINED FIXED FARE STRUCTURE FOR RICKSHAWS TO
INTEGRATE WITH MASS TRANSIT SYSTEMS**

Authors

Dr. M. Shafiq-Ur Rahman (Corresponding Author)
Professor, Department of Urban & Regional Planning
Jahangirnagar University
Dhaka 1342, Bangladesh
Email: shafiq_urp@yahoo.com

Dr. Paul Timms
Senior Research Fellow
Institute for Transport Studies (ITS)
University of Leeds
UK
Email: p.m.timms@its.leeds.ac.uk

**PRE-DETERMINED FIXED FARE STRUCTURE FOR RICKSHAWS TO
INTEGRATE WITH MASS TRANSIT SYSTEMS**

Abstract

This paper examines the feasibility of pre-determined fare structures for rickshaws. An empirical study was conducted with two case study locations (prospective BRT stations) in Dhaka City, Bangladesh. Eleven focus group discussions (FGDs) were held with rickshawpullers and other stakeholder groups, and semi-structured open-ended interviews were conducted with twenty five transport professionals/policymakers. It was found that rickshawpullers often like a bargaining process for fixing a fare so that they can charge more from passengers, particularly from those who are new in the area or ‘seem to be’ wealthy, or when there is no other alternative mode available for passengers. On the other hand, passengers prefer a fixed fare structure and do not like the bargaining process. Rickshaw-pullers, passengers and policymakers all mentioned that it would be possible to have a pre-determined fixed fare structure for rickshaws if rickshaws were more localised (serving only within a particular neighbourhood or for a short distance, as an access leg to public transport). However, this policy would need to be backed by effective planning, regular monitoring and enforcement, along with ‘awareness generation’ for rickshaw-pullers and wide scale publicity campaigns.

Key words: Fare, integration, rickshaw, BRT, FGD.

1. Introduction

Integrated public transport provides many benefits, particularly convenience and comfort of the users. Some researchers (i.e. Kubota and Kidokoro, 1996; Tiwari, 2003; Samanta, 2012; Schipper, 2004) argue for considering and treating all the available travel modes, including non-motorised transport (NMTs), together in multi-modal transport systems in order to maximize synergies with existing transport and built infrastructure. This is because “it is uncommon for a single mode of transport to be the most efficient Rather, a combination of modes needs to be accommodated in a complementary fashion to meet the needs of diverse travel” (Replogle, 1991: p.9). An example of integrated public transport concerns using rickshaws to feed bus rapid transit (BRT) systems. Rickshaws fill a niche in transport when speed is not too important and distances are short (Gallagher, 1992). Therefore, rickshaws could play a significant role in sustainable transport, particularly as a feeder to complement public transport by providing last mile services, if they are planned properly and the required facilities are provided.

Rickshaw trips are usually for short distance (e.g. below 3 km in Dhaka and Delhi) and often provide as a feeder to public transport or flexible (demand-responsive) taxi-type ‘on-demand’ services for the entire trip (Rahman, et al 2013). Rickshaws are an emission free mode and are usually complementary, rather than competitive, to public transport; therefore, potentially possesses a useful role in the city transport for last mile services. ITDP (2013) outlined that NMT such as rickshaws and bicycle hire scheme (BHS) may solve the “last mile” problem of transit passengers who need to travel from the station to their destination. However, in the past, many cities across Asia (e.g. Bangkok, Jakarta, Beijing, Delhi, Manila, Dhaka) have tried to restrain or prohibit rickshaws, either from the entire city or from certain roads or parts of the city. There are arguments that decisions to ban rickshaws have not been based on scientific or technical grounds (see ITDP, 2009; Gallagher, 1992; Bari and Efrogmson, 2005), but rather

upon ad-hoc ‘political decisions’ taken from the top (bureaucrats and rich carowners). Thus, such rickshaw bans have been highly controversial; opposed by environmentalists, rickshaw-pullers and users. Rahman et al (2013) provided a solution that reconciles the two sides of the controversy: ‘for’ and ‘against’ the rickshaw bans – which involves providing a multi-modal integrated transport system where the formal mass public transport should get priority in the major arterials, with the rickshaws (or NMTs and other paratransits) operating in other (narrow) streets to provide feeder services or access/egress legs to public transport. Such a solution recognises that access/egress legs are very important for public transport trips because, in many developing cities, public transport is not available within walking distance and passengers need to take NMTs or paratransits to reach a public transport station. Thus, rickshaws could play an important role as a feeder mode of public transport to provide last mile services when they are well integrated in a multi-modal system.

Transport integration could be of various types and forms (see May and Roberts, 1995; Potter and Skinner, 2000; Sahai and Bishop, 2010). Scope of this paper is limited to only the predetermined fare structure for rickshaws. A pre-determined fare structure for rickshaws may help for establishing fare integration of rickshaws with public transport to enable easy transfers through their multi-modal journeys with a single ticket or payment. Stokes and Parkhurst (1996) advocates ticketing policies that allow through travel on more than one mode such as the London travel card. They argue that the most important element to ensuring integration is to view all transport nodes as ‘travel points’ which could be used to encourage people to become aware of the travel possibilities which exists. Integrated fare system of multi-modal integrated transport enables seamless travel and convenience of passengers. However, Rahman (2013) stated that unless a pre-determined fare structure is established for rickshaws, it would be impossible to implement an integrated fare system for journeys involving both rickshaws and public transport. This is because rickshaw fare is usually determined through a bargaining process between the user and puller before the trip is initiated.

Objectives and methodology of this paper are mentioned in Section 2. The existing fare structure of rickshaws in Dhaka city and relevant literature are described in Section 3. Section 4 reports on the results of FGDs and interviews from case study conducted in Dhaka city about pre-determined fare structure for rickshaws.

2. Objectives and Methodology

The main purpose of this paper is to examine the feasibility of having a pre-determined fare structure for rickshaws in Dhaka city (as a case study) in order to facilitate fare integration between the rickshaws and BRT systems. As the rickshaw fare currently is not predetermined/fixed and passengers have to settle the cost of desired trip before the trip is initiated through a bargaining process with the puller, the following questions are relevant to an integrated fare system: is it possible to have a pre-determined fare structure for rickshaws in Dhaka city and how to do that? In answering these questions, the paper presents the views of passengers, rickshaw pullers, and policymakers’ opinions about the possibility of a predetermined fare structure for rickshaws. These views may potentially help policymakers to introduce fare integration of trips involving both rickshaws and BRT systems in Dhaka city.

An empirical study was conducted in 2012 with two case study locations (prospective BRT stations) in Dhaka City, Bangladesh. The case study locations were selected considering the socio-economic difference, land use, traffic pattern, rickshaws operation etc so that they do

represent different aspects of the city. Figure 1 shows the case study locations: Kakoli-Banani and Sayedabad. Kakoli-Banani is in a well-planned and high-income residential area with higher car ownership where in the main corridor passenger flow is 5,000 passenger per hour per direction (pphd) in northbound and 6,100 pphpd in southbound (ALG, 2013) and rickshaws are restricted. Sayedabad is in an unplanned (spontaneous growth) area where mostly low-income or lower-middle-income groups live (Rahman, 2013) and rickshaws are operating in the major corridor - rickshaws share the same lane along with other traffic.



Note: Not in Scale.

Figure 1: Scheme of the case study locations – Kakoli-Banani (top) and Sayedabad (below)
Source: Prepared by author, 2017.

A participatory approach and qualitative techniques have been followed for this research. Eleven focus group discussions (FGDs) were held with different stakeholder and rickshawpullers. During the FGDs a 3-D physical model of the initial plan of BRT station and its surrounding area (prepared for the case study locations) was always kept in front of the participants – in the middle of the group – so that everybody could visualise and understand the area with spatial contexts and effectively take part in discussion. Semi-structured openended face-to-face interviews of 25 transport professionals - ranging from BRT implementing agency, academia, transport agencies, city authority, policymakers, international funding agency, and advocacy groups - were conducted for collecting data regarding case study locations. During discussion professionals were asked whether possible for having a predetermined (fixed) fare structure for rickshaws. A standard discussion protocol was followed for both FGDs and interviews to cover different aspects of the research; however, the protocol was not rigid to allow accommodating diverse/new issues while discussing. The discussion was made in the local language (Bengali), which helped the participants in discussing effectively. Along with

note taking, the discussion in FGDs was recorded in video tapes and in interviews was audio recorded.

Collected data were transcribed and then translated in English. There were about 16 hours of video data from FGDs and about 24 hours of audio data from interviews. Qualitative analysis of the data was done. Transcribed and translated data were organized and analyzed both in manually and using computer based technique NVivo. Descriptive summaries and categorisation of collected data were done under the topics or themes of discussion and then explanation-building (explanatory) analytical technique was followed to report the findings.

3. Global Context and Existing Fare Structure of Rickshaws in Dhaka

The issues covered in this paper should be seen in the broader context of research into informal public transport and paratransit (two terms that, whilst conceptually distinct, largely overlap in practice in countries in the Global South). Various broad reviews of such transport, sometimes accompanied by more detailed case studies, have been made on a variety of geographical scales: Global (Cervero and Golub, 2007); Asia (Phun and Yai, 2016; Phun et al, 2015; Quan, 2016; Guillen et al, 2013; Gwillian, 2013); Africa and Latin America (Heinrichs et al, 2017; Jiron, 2011; Pochet et al, 2017; Yi, 2016); and India (Kumar et al, 2016; Basu et al, 2017). A particular focus of research has been upon the integration of paratransit with BRT, including: Gauthier and Weinstock (2010); Ferro et al (2013); Ferro and Behrens (2015); Schalekamp and Behrens (2016); Quan (2016); and Jennings and Behrens (2017). Furthermore, various guidebooks produced by transportation NGOs have produced advice on good practice with such integration, including: Ferro (2014); ITDP (2017); and trafficQ et al (2018). This literature (both academic and guidebooks) has mainly been concerned with the integration of larger paratransit vehicles such as minibuses, although small-capacity paratransit, carrying one or two passengers, is also covered. The latter is clearly of particular relevance to the current paper, with its focus upon rickshaws. A comprehensive review has recently been published by Ehebrect et al (2018) and Phun and Yai (2016) which, whilst concentrating mainly upon motorcycle-taxis in sub-Saharan Africa and Asia respectively, provides many references more generally to case studies of smallcapacity paratransit in Africa and Asia. Taking together all the literature cited in this paragraph, it can be concluded that the issue of fare structure is frequently seen as being of importance for informal transit, with ‘driver-negotiated’ fares being seen as problematic from the point of view of the passenger, especially in the context of small-capacity transit. However, very little concrete evidence is available in the literature on concrete case studies as to whether policies of fare integration between informal and formal transit have been implemented, and hence whether they have been successful.

The rickshaw fare in Dhaka city is usually determined through a bargaining process between the user and puller before the trip is initiated. As a result, even if the interchange area is designed to ensure convenient transfers to/from rickshaws, “without fare integration of rickshaws with the formal public transport there would not be the ultimate benefits or convenience for public transport users” (Rahman et al, 2012: p.11). This is because, a passenger may have to approach many pullers (one after another) until (s)he finds one willing to serve him with his desired rate; this will create crowding and congestion in front of station, delay in transfer trips and inconvenience of passengers. Therefore, unless a pre-determined fare structure is established for rickshaws, it would be impossible to implement an integrated fare system for journeys involving both rickshaws and public transport.

However, as the rickshaw journey has no specific fixed route, and also because means are not readily available to measure the distance for each trip, it is a challenging task to have predetermined and fixed fare structure for rickshaws. Moreover, Rahman et al (2013) mentioned that rickshaw fares for a certain distance may vary depending on different aspects such as weather and time of the day, availability of the number of rickshaws, willingness of the puller for a trip, desired destination (location) of the trip, number of passengers travelling, quality of the road surface (of intended trip), traffic congestion, and the bargaining capacity of the two parties, etc.

Only a few documents (e.g. Asija 2012; Rahman et al 2012; Goyal and Asija, 2015; Wipperman and Sowula 2007) are available on pre-determined fare structure of rickshaws from South Asian contexts. However, there is no publication available on integrating rickshaw fares with public transport systems. A 'pre-determined fixed fare structure' for rickshaws would be possible in Dhaka city based on an agreed predetermined (tentative) distance between two locations when rickshaws operate only within a locality or neighbourhood for short distances (Rahman et al 2012). Similarly, as Nugroho et al (2012) reported, fare structure of ojeck (motorcycle taxi) in Jaarta is generally pre-determined by route association. FazilkaEcocabs, a charity NGO for rickshaws based in India, operates with a pre-determined fare structure based on the distance (km) of trip within/between locality (Asija, 2012; Goyal and Asija, 2015).

On the other hand, Wipperman and Sowula (2007) suggested an approach to determine rickshaw fares in Bangladesh based on the travel time of a journey: a chart of pre-determined fare rates (previously set by the managing authority) would be available in each and every rickshaw. All the rickshaws would be nationalised and the passengers would pre-pay by purchasing 'tokens' (similar to the 'flexiload' phone-credit system in Bangladesh) for using rickshaws. However, there are potential risks of this system where the speed of a rickshaw varies due to quality of rickshaw and age (or physical strength) of puller, including the following: passengers may prefer to travel with young and strong pullers only; pullers may drive much slower than the average speed; pullers may ask for cash instead of tokens; and the passengers may forget to buy tokens before the trip to offer cash money (Rahman, 2013). Furthermore, as Rahman et al (2012) claimed, the rickshaw-pullers of Dhaka expect their wage in the form of hard cash immediately after finishing the trip. Nevertheless, Rahman (2013) reported examples in two municipal areas (e.g. Savar and Gazipur) in Bangladesh where rickshaws had a pre-determined fixed fare structure based on tentative distance of the trips.

4. Results from the Case Study in Dhaka City

This section gives the results derived from the case study into the possible pre-determined fare structures for rickshaws when integrating with BRT systems, with particular emphasis upon the proposed BRT system in Dhaka. The section reports on various selected topics related to pre-determined fare structures for rickshaws, particularly on: necessity of having a pre-determined fare structure; possibility of having a pre-determined fare structure; how to determine a fixed fare structure for rickshaws; having a variable or fixed fare rates for rickshaws; whether the pre-determined fare structure for rickshaws will be followed by pullers and passengers; and how often the fare structure need to be updated or revised.

4.1 Do Rickshaws Need Pre-determined Fare Structure?

Results from the FGDs interviews show that there are arguments both for and against of having a pre-determined fare structure for rickshaws. Most of the participants in user-based FGDs reported that they do not like the bargaining process to fix the rickshaw fare for each trip, and therefore would prefer a pre-determined fare structure. Their main arguments in favour of a pre-determined fare structure are: it would be convenient for passengers (e.g. no need to wait and arguing with pullers before boarding and hence no more dispute between pullers and passengers); and passengers would know the fare for a particular trip in advance. Several of the female participants also added that sometimes the pullers pass on bad comments towards female passengers whilst bargaining to determine the fare. Furthermore, only if there were a pre-determined fare structure for rickshaw trips would pullers maintain a queue while waiting at a BRT station. However, on the contrary, participants in puller-based FGDs reported that they often like the bargaining process to fix the fare so that they can charge more from passengers, particularly from those who are new in the area, or seem to be wealthy, or who have no other alternative mode of travel available.

On the other hand, during interviews while discussing whether or not a pre-determined fare structure for rickshaw trips is needed, most of the respondents talked about the necessity of controlling or regulating the fare. Nevertheless, the topic for discussion was not controlling the fare; it was about whether or not there should be a pre-determined fixed fare structure for rickshaws. Three interviewees mentioned having a fixed fare rate for rickshaws would give benefits; such as passengers will know their monthly travel cost as well as whether pullers are charging extra for a specific trip, pullers will know how long they have to work to earn a certain amount. Four of them were very optimistic and enthusiastic about it; as one claimed “this is happening in a few areas of Bangladesh, such as outside train station of Gazipur a billboard shows a chart of rickshaw fares for different destinations”. However, five interviewees opposed having a pre-determined fare rate for rickshaws thinking it would not be possible to implement because it would be very difficult to enforce, and it would also be difficult to determine what should be the correct fare since the fare of a rickshaw trip depends on multiple aspects. Hence, the pullers or owners of rickshaws will not agree with a predetermined fare rate. Moreover, rickshaw fares are constantly changing; if food prices go up then they must go up and the government could not be sufficiently responsive. Above all, they argue that since rickshaws are a type of paratransit it would not be wise to determine the fare for rickshaws in advance; demand and supply in the market should do it. As one mentioned “most people know about the reasonable fare; if the pullers ask for more, then they could walk”. Furthermore, doing a pre-determined fare structure for rickshaws will be hard work logistically and may involve additional administrative costs.

4.2 Is it Possible for Rickshaws having a Pre-determined Fare Structure?

Participants in FGDs and interviews mentioned that the rickshaw fare on a particular route or between major locations in Dhaka is already in the process of being determined at an acceptable rate (for both the pullers and users) through the market force itself. The majority of public usually become familiar with the acceptable standard (rationale) fare for the distance between an origin and a destination and almost everybody pay that rate. Thus, rickshaw fares between certain locations become settle for a period of time by the demand-supply of market. For instance, a puller reported that “many passengers do not bargain to determine the fare before making the trip but they usually pay themselves the acceptable fare after completing the trip”. However, in such a case if either the passenger or puller tries to pay less or collect more than the standard amount respectively, then there is a possibility of arguments and disputes at the

end of the trip. Moreover, a participant mentioned that she travels on easybike (battery driven auto), operating in a specified route between two locations in Mirpur, and pay a pre-determined¹ fixed fare for the trip. Furthermore, a few participants during FGDs mentioned there are examples where rickshaws have or had pre-determined fare structure in certain areas of Dhaka such as Cantonment DOHS and Kamalapur. These examples give valuable insights that a pre-determined for rickshaws may function in Dhaka city if a rationale fare rate is determined. Nevertheless, all the respondents from interviews mentioned that it would not be possible to determine a fixed fare structure for rickshaws unless their operation are localised.

4.3 How to Determine a Fixed Fare Structure for Rickshaws?

Participants in all the FGDs mentioned a similar technique to determine a fixed fare structure for rickshaws – fare based on the distance. The fare structure could be either a variable rate for different distances or a flat rate within a demarcated area. The fare would need to be based on an agreed pre-determined (tentative) distance, not the true distance in km, between two locations. This is because it would not be possible to measure the true road distance for all rickshaw trips. Therefore, participants suggested for determining the tentative distance between two locations and then determining the fare for those trips (based on per km or unit rate). Participants further mentioned that this system of a pre-determined fare structure for rickshaws would be possible only if the rickshaws operate within a locality. This means, rickshaws operating in a city wide scale would be very difficult or impossible to have a predetermined fare structure. Furthermore, even if rickshaws operate within a locality, they operate not only between two major (known) points or locations but also provide door to door services in narrow alley streets. Therefore, a few of the participants in user-based FGDs mentioned a fixed flat rate or minimum fare for rickshaw trips within a demarcated area could be considered; one rate for trips within the demarcated area and another rate for the trips beyond that area.

Results from interviews are also similar. “A pre-determined fare structure for rickshaws would be possible” was mentioned by 15 respondents. They added, fare structure for rickshaw would not be meter-based like taxi cabs, but could be done by various techniques as shown in Table 1. The BRT project manager mentioned a minimum flat rate fare, such as BDT² 10 for any distance, could be done for rickshaw trips within a demarcation line or locality. He further added “it is difficult to measure the distance of rickshaw trip hence it would not be possible determining a fare based on distance travelled and it would be difficult to disseminate the information about fare rate. However, a tentative guideline of possible fare structure for rickshaw trips could be given”.

Table 1: Methods of determining a fixed fare rate for rickshaw trips

Methods	Description	Respondents
Based on area or locality	Hypothetically delineating the neighbourhood and a fixed rate for trips within the area or outside the area	5

¹ The drivers of easybike decided for a fixed fare rate for the trip of the route (have to pay the full fare even if someone gets off early before reaching to the end of trip); all the regular passengers know about that fare rate and pay it without any bargain.

² BDT 80 = US\$ 1 in 2018 value.

Based on time of the trip	Measuring the time of rickshaw trip and determining a rate for per hour or minute	3
Based on distance of trip	Identifying tentative distance between two locations and determining a fare for that trip distance	7

Figure 2 shows the demarcation line of three different neighborhood areas (i.e. A, B, C) at Kakoli-Banani location where rickshaws' operation already become localised due to provision of physical barriers and enforcement. Rickshaws operating in one of these areas are not able to move into another area. Participants of FGDs mentioned the maximum rate of rickshaw fare from the proposed BRT station at Kakoli-Banani to the far end of area A or B, say Gulshan 1 or Gulshan 2, would be BDT 30 whilst towards Naval Office (within the area B) would be BDT 15; these rates could be pre-determined within the respective demarcated locality.

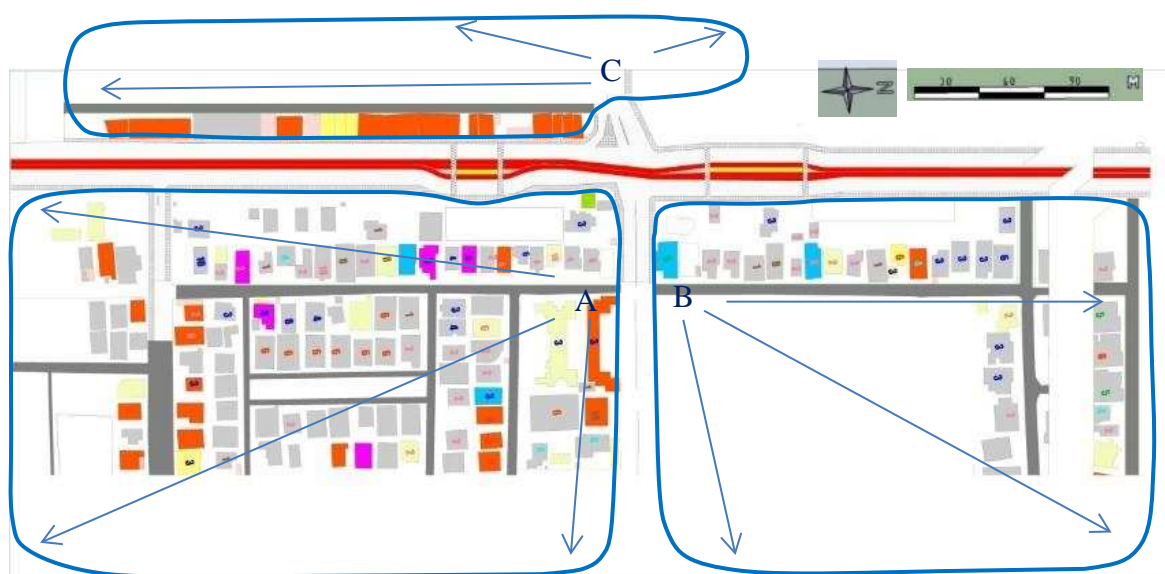


Figure 2: Localising rickshaws for pre-determined fare structure at Kakoli-Banani

Results from the FGDs also reveal that it might be possible to have a pre-determined fixed fare structure for rickshaws if their operation is localized, such as serving only within the neighbourhood area or for short distances as access/egress legs to public transport. Localized operation of rickshaws will not be able to offer any city-wide long distance journeys. Almost all of the respondents of interviews mentioned that rickshaw operation should be localized otherwise it would not be possible to determine a fixed fare structure. Two of them further added that rickshaws in Dhaka already became delineated within the neighbourhood area; in a few cases, pullers also do not want to move out of the neighbourhood. It was suggested that the rickshaws operating within an area could be of different colour or design than those in another locality.

The local government authority responsible at the neighbourhood level could identify the distance between major points and determine a list of fare for different distances/routes after consultation with different stakeholder groups (i.e. users and pullers). Participants of the puller-based FGDs mentioned that the fare structure should be determined either by the government or by the rickshaw owners' association. Participants of the user-based FGDs suggested that the local authority should determine fare rates after consultation/discussion with different

stakeholders. The person responsible for the local authority (i.e. chief executive or mayor of the city or ward commissioner) could take the initiative and consult with the pullers' association or committee. However, to determine the fare rate structure, participants of a middle-income women-only group mentioned the importance of support from the top level of government or ruling party, whilst participants from poor-income groups mentioned the importance of administrative power and incorporating the social elites or power-groups in deciding fare rates. Nevertheless, participants in most of the groups mentioned to have discussion with all the stakeholders, particularly the rickshaw pullers and owners.

Participants in all the FGDs as well as interviews mentioned to provide a large size billboard at BRT station and major locations showing the chart of fare lists for different destinations from that point so that everybody could see it and understand the fare for their rickshaw trips. However, participants in poor-income groups raised the issue that many pullers as well as passengers are illiterate and will not be able to read or understand the fares mentioned in the chart. Hence, one of them suggested for deploying a traffic warden (employed by rickshaw owners) at BRT station who would know the fare structure for different locations from that point and will tell (to both the puller and user) the amount will be charged for their trip. However, this seems impractical that one person will inform passengers and pullers; what if there are many passengers approaching to different pullers at a time for different trips. Moreover, who will pay the salary of that support staff or warden? Therefore, all other participants opposed this claiming that illiterate people would ask to others in the initial few days and later they will be familiarised. Several other participants in different FGDs mentioned that a fare chart could be placed in the back of each rickshaw. Nevertheless, most of the participants in all FGDs and interviews suggested for providing a fare chart in a large billboard. This would help everybody to see and understand the fare for a rickshaw trip before it is initiated even if someone is newcomer or stranger in that locality.

4.4 Fare Rates for Rickshaws should be Variable or Fixed?

Participants of the user-based FGDs reported that during the peak hours of the day (i.e. morning 9 am) or when it rains the pullers charge an exorbitant rate compared to the normal time. Hence, a participant was suggesting for having two sets of pre-determined fare structure: one for peak hours and another for off-peak hours. However, this would create other problems such as: deciding on which time would be peak hours, how to enforce different rates, and if any trip starts in off-peak hours but terminates in peak hours or vice-versa. Thus, the groups have decided for only a standard fare structure for throughout the day. Results from the interviews are also found similar – mostly suggested for a standard fixed rate.

Another issue about pre-determined fare for rickshaws is: whether the fare would be applicable for a single passenger or two and whether including children or goods. After having a thorough discussion, participants in the middle-income women-only groups have suggested that standard fare rate should be for a maximum of two adults and two accompanying infant children travelling together; however, if a single person travels (s)he should pay the standard fare. In short, rickshaw fare could be variable or flexible and the predetermined fare will be applicable for a maximum of two passengers.

4.5 Is it Possible to Implement Pre-determined Fare Rates for Rickshaws?

Several participants of the user-based FGDs raised their doubts as to whether in practice a pre-determined fare structure for rickshaws would be possible to implement. For example, referring to auto-rickshaws and taxi-cabs a participant of a middle-income group mentioned “rickshaw-pullers will not follow the pre-determined fare rate. Auto-rickshaw and taxi-cab drivers in Dhaka are not following themetre for charging the trip and instead they rely on bargaining so that they could charge more”. Another participant claimed that bargaining to settle the fare of a rickshaw trips has been practiced for so many years that it has almost become a part of the culture. The pullers also raised their concerns that a pre-determined fare structure for rickshaws may not function because of the following reasons:

- A small number of pullers may possible to unite but organizing over 500 pullers would be difficult;
- Pullers usually operate in different areas of the city, so it would be difficult for them to follow the instruction of localized operation; and
- Price of the commodities has a direct influence on rickshaw fare and in Bangladesh increase very frequently.

To ensure that pre-determined fare rates for rickshaws are followed by pullers, different suggestions were made by different participants as follows:

- Deploying a traffic warden at BRT station to monitor and enforce that pullers are taking the exact amount which is mentioned in the fare chart.
- Owners’ responsibility to instruct or order the pullers, to whom rickshaw is rented out, as a precondition to follow the prescribed fare structure.
- A very strong law and effective enforcement to bring under the law both the puller and owner if a puller does not follow the prescribed fare structure.
- Awareness generation among the pullers so that they are willing to follow the prescribed pre-determined fare rates.

However, instead of enforcing the law it would be better to make the pullers aware so that they are willing to follow the prescribed fare structure. Using media such as radio and TV was suggested for awareness generation of pullers about the benefits they may get from following the prescribed fare structure. Participants also mentioned that media could help disseminating information about the prescribed fare structure (of different locations) among the users and pullers. Participant pullers further mentioned that if they are sufficiently aware they will follow the prescribed fare-structure. They further added that the pullers who are renting the rickshaws will generally follow the prescribed fare structure if they receive an order/instruction to do so from the owner of rickshaw.

Similarly, a number of interviewees also pointed out that the idea of pre-determined fare structure for rickshaws based on demarcating a localized zone is nice but would be very challenging to implement. Nevertheless, a more participatory approach in the decisionmaking process including the pullers and owners of rickshaws, along with local representatives, may help the functioning of pre-determined fare rates of rickshaws. A strong enforcement as well as willingness of the pullers will be needed. If an association is formed (i.e. owners’ association), they could sit with local government and discuss about a fare structure to be determined. Local government could fix a rate for rickshaw fare and public representatives of each area (e.g. ward commissioner) could be involved to monitor and report if the fare rate is being violated. In

short, a large chart of fare mentioning all the areas, strong enforcement, and willingness of both pullers and users will be needed. It was mentioned that the government could fix a rate for rickshaw fare and should revise regularly, once a year, particularly when price of commodities increase or fuel prices increase or salary of people are increased.

4.6 How frequently Rickshaw Fare Structure should be Updated?

It is important to know why the pre-determined fare structure for rickshaws that was introduced in few places of Bangladesh (e.g. Savar and Gazipur municipality) did not function. The main causes were: fare structure was not revised regularly despite the rise of commodity price and stakeholders (mostly pullers) were not consulted while determining the fare rates. For example, a participant from user-based FGDs for Sayedabad location said “If I ask the puller in Kamalapur Mullarpur why he is not following the chart of fare structure and instead asking for extra, he would probably reply - those who have written the billboard would they feed me or did they ask me before writing this?” A puller from Kakoli-Banani location mentioned that in Cantonment DOHS area it is almost a year the pullers are not following anymore the prescribed fare chart because the price of commodities has increased but not the fare rates mentioned in billboard not been revised. Participants in all the FGDs reported that the fare for a rickshaw journey increases with the increase of price for essential commodities (i.e. rice, oil, vegetables); the commodity price in Bangladesh changes very often hence the fare structure for rickshaws also need to be updated or revised frequently.

The experience in Gazipur and Savar suggests that fare rates for rickshaws should be revised regularly, particularly when price of commodities increases or fuel price increases or salary of people increases. The user-based FGDs suggested for revising or updating the fare rates for rickshaws once in a year, particularly during the time of national annual budget. Similar to the users, one group of the pullers also mentioned for updating once in a year whilst another group suggested for 3-4 times per year. However, it would be quite impossible and unrealistic to revise the fare rates more than once in a year.

Similarly, all the respondents of interviews as well as participants of informal discussion gave emphasis on regular or periodic update and revisions of the pre-determined fare rates for rickshaws. For instance, one interviewee mentioned updating would require particularly when price of commodities increase rapidly or fuel prices increase or salary of people are increased whilst others suggested for an annual or twice per year or once in every two years. Nevertheless, the majority suggested for an update of fare rates once in every year.

5. Suggested Way Forward for Pre-determined Fare Structure

Discussion in previous sections reveals that it would be impossible to implement an integrated fare system for journeys involving rickshaws and BRT systems unless a pre-determined fare structure is established for rickshaws. Based on the results, the suggested plan for having a pre-determined fare structure for rickshaws are:

- Rickshaws should operate within a locality or neighbourhood but not in the city wide network.
- A pre-determined fare structure for rickshaws could be determined either based on an agreed pre-determined (tentative) distance - not the true distance in km - between two locations or a demarcated area within a distance. The fare rates for Sayedabad location

has been suggested based on a distance based rate whilst for Kakoli-Banani location it is based on a demarcated area. For example, as shown in Figure 3, rickshaws from three different rickshaw stands (A, B, and C) at Kakoli-Banani would operate only within the respective demarcated area and the fare would be flat rate within each demarcated area.

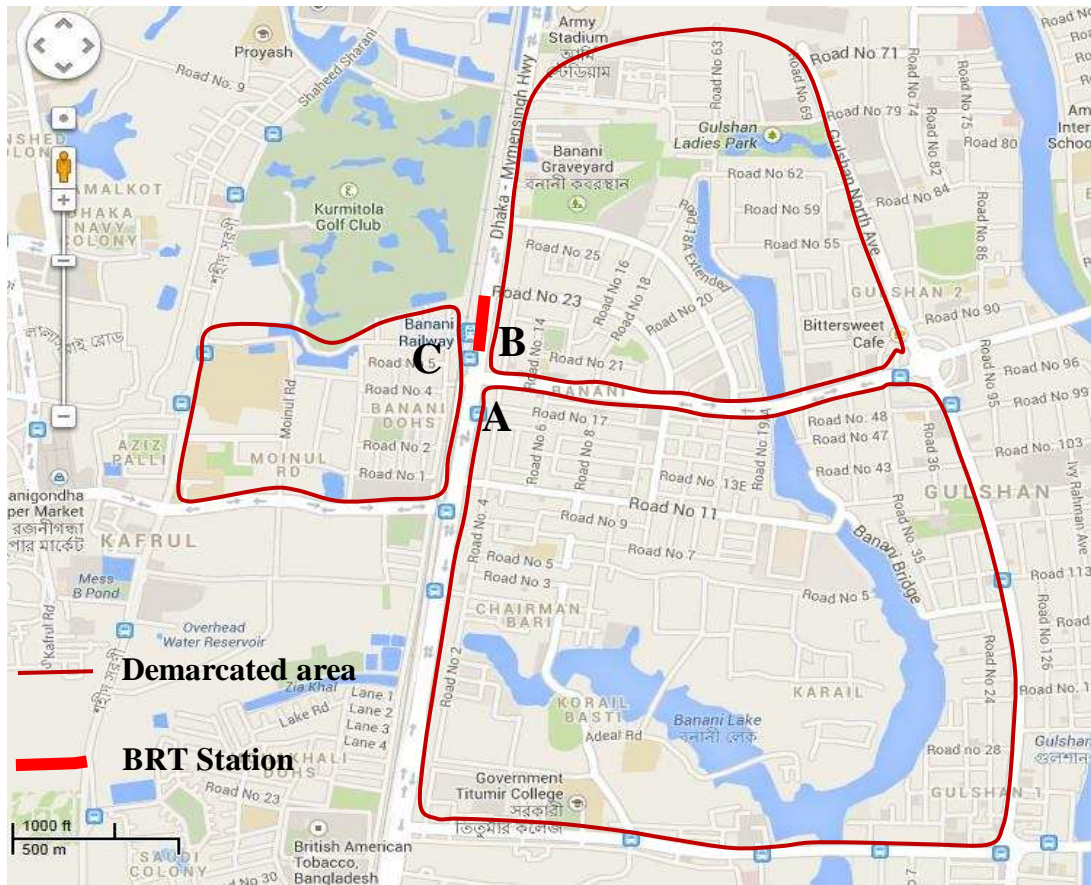


Figure 3: Demarcated area for pre-determined fare structure for rickshaws at Kakoli-Banani

- A large size billboard showing the chart of fare lists for different destinations from that point would be placed at BRT station as well as at major locations so that everybody could see and understand the fare structure what it may cost for their rickshaw trips.
- The local authority (i.e. mayor or ward commissioner) needs to take responsibility, discussing with all stakeholders, in determining a fare rate for rickshaw trips. A participatory approach in decision making process including the pullers and owners of rickshaws may help in functioning the pre-determined fare rate of rickshaws. If the association of owners or pullers is formed, they could sit with local government and discuss to determine a rationale fare structure for rickshaws.
- Capacity building needed for institutional stakeholders so that local authority is capable to implement, manage and monitor the system. As the fare of paratransit is generally pre-determined by route association (Phun and Yai, 2016), Schalekamp (2017) emphasised the need for capacity building of institutional stakeholders.
- Awareness and training of rickshaw-pullers and owners are needed. Furthermore, regular monitoring and enforcement of the prescribed fare structure for rickshaws should be done by local authority and puller's association. Public representatives of each area need to be involved in monitoring and report if the fare rate is violated by pullers while charging passengers.

- Fare rates for rickshaws will be revised or updated in every year.

Nevertheless, this pre-determined fare structure for rickshaws should be backed with smart³ planning with effective stakeholders' involvement, regular monitoring and enforcement, periodic updates, awareness generation of rickshaw-pullers and wider publicity campaigns.

The possible barriers for implementing pre-determined fare structure for rickshaws will be as follows: demarcating the local area for rickshaw operation; determining the fare rates for rickshaw trips; overall cost for implementing the system; and combating corruption. Proper marketing campaign for public outreach and awareness generation among the pullers and owners of rickshaws for establishing pre-determined fare structure along with incentives for the pullers could help to overcome the barriers. For instance, member pullers of Fazilka Ecocabs in India receiving various incentives such as free health and education for the puller's family, and training for the pullers (Asija, 2012; Goyal and Asija, 2015). Institutional capacity such as forming association of pullers/owners and strengthening the role of local government for monitoring and enforcement are required.

6. Conclusions

This paper gives a potential solution for establishing a pre-determined fare structure for rickshaws. This solution may enable establishing an integrated fare system for journeys involving both rickshaws and mass transit system. Thus, a multi-modal integrated transport system would be possible where the formal mass public transport (e.g. BRT) should get priority in the major arterials, with rickshaws (or NMTs and other paratransits) operating in other (narrow) streets to provide feeder services or access/egress legs of public transport. Based on the review of existing literature this paper at first described the arguments for having a predetermined fare structure for rickshaws and possible ways for doing that. There are good arguments that rickshaws should be planned in such a way that they could play a vital positive role in the modern city transport instead of restraining or prohibiting them. Having a predetermined fare structure for rickshaws is very critical for fare integration of rickshaws with public transport to ensure easy and convenient modal changes for the passengers.

Finally, this paper reported the results of FGDs and interviews from a case study conducted in Dhaka City about pre-determined fare structure for rickshaws. Several participants in FGDs and interviewees mentioned to have a pre-determined fare structure for rickshaws and showed how to achieve or implement this; however, on the other hand a few others opposed it saying that rickshaws are informal paratransit and they should not be controlled rather the market should determine herself the fare rate. Nevertheless, unless a pre-determined fare structure is established for rickshaws, it would be impossible to implement an integrated fare system for journeys involving both rickshaws and BRT systems. Moreover, without having fare integration of rickshaws with BRT systems it would not be possible to have a seamless public transport or improved public transport services and the ultimate benefits or convenience for the passengers.

The outcome of this paper provides new knowledge and suggestions how to establish a predetermined fare structure for rickshaws which may greatly enhance the use of rickshaws in Dhaka as well as in many developing country cities. Although the main findings concern

³ Effective and efficient planning considering the socio-economic dynamics for the sustainability.

predetermined fare structure for rickshaws, the insights of this paper could be helpful for establishing a pre-determined fare structure for other informal modes. Thus, the results might be helpful in formulating policy for other informal modes in developing cities that might, from the perspective of city transport managers, be operating in a disorganized and haphazard way without having a pre-determined fare structure. Further research could be on: fare integration of rickshaws with BRT and other public transport modes; testing the transferability of the results described above for Dhaka to other similar cities.

Note: This research was conducted in Leeds University, UK during 2010-2014 and an early version of this paper was presented in the CODATU Conference held at Hyderabad, India in November 2017.

7. References

- ALG. 2013. BRT and Corridor Restructuring Implementation Study and Preliminary Design Work for the Uttara-Mohakhali-Ramna-Sadarghat Corridor in Dhaka, Final Report on Preliminary Design Volume II (Main Report). Advanced Logistics Group (ALG) S. A., Intercontinental Technocrats Consultants (ITC), and Transports Metropolitans de Barcelona (TMB).
- Asija, N. 2012. *Fazilka Ecocabs: first “dial a rickshaw” facility (India)*. Paper presented in CODATA XV Conference ‘The Role of Urban Mobility in (re)shaping Cities’, Addis Ababa, Ethiopia, 22-25 October.
- Bari, M. and Efroymsen, D. 2005. Rickshaw bans in Dhaka city: an overview of the arguments for and against. *Roads for People*. Available at: http://www.wbbtrust.org/view/research_publication/33 [Accessed 25 January 2019].
- Basu, R., Varghese, V. and Jana, A. 2017. Comparison of traditional and emerging paratransit services in Indian metropolises with dissimilar service delivery structures. *Asian Transport Studies*, 4(3), pp. 518-535.
- Cervero, R. and Golub, A. 2007. Informal transport: A global perspective. *Transport Policy*, 14, pp. 445-457.
- Ehebracht, D., Heinrichs, D. and Lenz, B. 2018. Motorcycle-taxis in Sub-Saharan Africa: Current Knowledge, implications for the debate on “informal” transport and research needs. *Journal of Transport Geography*, 69, pp. 242-256.
- Ferro, P. S. 2014. Paratransit: A key element in a dual system. Report prepared for the Agence française de développement. Available at http://www.codatu.org/wpcontent/uploads/transports_collec_artisanal_V03ecran_EN.pdf [Accessed 25 January 2019]
- Ferro, P. S., Behrens, R. and Wilkinson, P. 2013. Hybrid urban transport systems in developing countries: Portents and prospects. *Research in Transportation Economics*, 39, pp. 121-132.
- Ferro, P. S. and Behrens, R. 2015. From direct to trunk-and-feeder public transport services in the Urban South: Territorial implications. *Journal of Transport and Land Use*, 8(1), pp. 123-136.
- Gallagher, R. 1992. *The rickshaws of Bangladesh*. University Press Limited (UPL), Dhaka.
- Gauthier, A. and Weinstock, A. 2010. Africa: Transforming paratransit into BRT. *Built Environment*, 36(3), pp. 317-327.
- Goyal, V. and Asija, N. 2015. *Fazilka Ecocabs: World’s First Dial-a-Rickshaw Scheme. Experience and Lessons, Case Studies on Sustainable Urban Transport No. 9*, GIZ.

- Available at:
http://www.ecocabs.org/media/resources/1440157438_5422_CS9_Fazilka_final.pdf
 [Accessed 22 January 2019].
- Guillen, M. D., Ishida, H. and Okamoto, N. 2013. Is the use of informal public transport modes in developing countries habitual? An empirical study in Davao City, Philippines. *Transport Policy*, 26, pp. 31-41.
- Gwilliam, K. 2003. Urban transport in developing countries. *Transport Reviews*, 23(2), pp. 197-216.
- Heinrichs, D., Goletz, M. and Lenz, B. 2017. Negotiating territory: strategies of informal transport operators to access public space in urban Africa and Latin America. *Transportation Research Procedia*, 25, pp. 4507-4517.
- ITDP. 2009. Best Practices on Regulation and Design for Motorized and Non-Motorized Two and Three-Wheelers in Urban Traffic. New York: ITDP. Available at: https://www.itdp.org/wpcontent/uploads/2014/07/Two_and_Three_Wheeler_Regulation_October_2009.pdf [Accessed 18 October 2017].
- ITDP. 2013. The Bike-share Planning Guide. Institute for Transportation & Development Policy (ITDP). Available at: https://www.itdp.org/wp-content/uploads/2014/07/ITDP_Bike_Share_Planning_Guide.pdf [Accessed 15 June 2018].
- ITDP. 2017. The BRT Planning Guide, 4th Edition, Chapter 16 “Informal transit transition to BRT”. Available at <https://brtguide.itdp.org/branch/master/guide/informal-transittransition-to-brt/> [Accessed 25 January 2019].
- Jennings, G. and Behrens, R. 2017. The case for investing in paratransit strategies for regulation and reform. Volvo Research and Educational Foundations (VREF). Available at: https://www.researchgate.net/publication/317357984_The_Case_for_Investing_in_Paratransit_Strategies_for_regulation_and_reform [Accessed 25 January 2019].
- Jiron, P. 2011. Sustainable Urban Mobility in Latin America and the Caribbean. Thematic study prepared for Global Report on Human Settlements 2013. Available at: https://unhabitat.org/wpcontent/uploads/2013/06/GRHS.2013.Regional.Latin_America.and_Caribbean.pdf [Accessed 8 January 2019].
- Kubota, H. and Kidokoro, T. 1996. Environmental traffic management: micro planning approach - creating neighbourhoods for pedestrians, cyclists and buses. UNCRD Proceedings Series, 5, pp. 339-353.
- Kumar, M., Singh, S., Ghate, A. T., Pal, S. and Wilson, S. A. 2016. Informal public transport modes in India: a case study of five city regions. *IATSS Research*, 39, pp. 102-109.
- May, A. D. and Roberts, M. 1995. The design of integrated transport strategies. *Transport Policy*, 2, pp. 97 - 105.
- Phun, V. K. and Yai, T. 2016. State of the art of paratransit literatures in Asian developing countries. *Asian Transport Studies*, 4(1), pp. 57-77.
- Phun, V. K., Lim, I. and Yai, T. 2015. The characteristics of paratransit operation and fare in Phnom Penh. *Journal of the Eastern Asia Society for Transportation Studies*, 11, pp. 1307- 1327.
- Pochet, P., Pivera, L. D., Plat, D. and Adolehoume, A. 2017. Private and Public use of motorcycles in cities of Sub-Saharan Africa, in UITP (Ed.), *Public Transport Trends 2017*, Bruxelles, pp. 103-105. Available at : <https://halshs.archives-ouvertes.fr/halshs01482898/document> [Accessed 18 January 2019].
- Potter, S. and Skinner, M. J. 2000. On transport integration: a contribution to better understanding. *Futures*, 32, pp. 275 - 287.

- Quan, H. 2016. A Study on Travel Intention for the Integration of Mass Rapid Transit with Motorcycle in Developing Country Cities: A Case of Ho Chi Minh City. PhD Thesis, Tokyo University, Japan. Available at: https://toyo.repo.nii.ac.jp/?action=pages_view_main&active_action=repository_view_main_item_detail&item_id=8731&item_no=1&page_id=13&block_id=17 [Accessed 22 January 2019].
- Rahman, M. S. U. 2013. Integrating BRT with Rickshaws in developing cities: a case study on Dhaka City, Bangladesh. PhD Thesis, University of Leeds, UK. Available at: <http://etheses.whiterose.ac.uk/6871/> [Accessed 21 July 2018].
- Rahman, M. S. U., Timms, P. and Montgomery, F. 2013. Suggestions for integration of cyclerickshaws with public transport in Dhaka City. Selected Proceedings of the 13th World Conference on Transport Research (WCTR), Rio de Janeiro, 15-18 July. Available at: <http://www.wctrs-society.com/wp-content/uploads/abstracts/rio/selected/2861.pdf> [Accessed 5 May 2018].
- Rahman, M. S. U., Timms, P. and Montgomery, F. 2012. Integrating BRT systems with rickshaws in developing cities to promote energy efficient travel. *Procedia – Social and Behavioural Sciences*, 54, pp. 261-274.
- Replogle, M. 1991. Non-motorized vehicles in Asia: lessons for sustainable transport planning and policy. Available at: https://www.researchgate.net/publication/228599252_Non-motorized_vehicles_in_Asia_Lessons_for_sustainable_transport_planning_and_policy [Accessed 25 January 2019].
- Sahai, S. N. and Bishop, S. 2010. Multi Modal Transport in Low Carbon Future. Available at: www.dimts.in/download/Multi_Modal_Transport_in_a_Low_Carbon_Future.pdf [Accessed 17 August 2018].
- Samanta, G. 2012. Urban mobilities and the cycle rickshaw. Seminar, 636, pp. 2-5. Available at: www.india-seminar.com/2012/636/636_gopa_samanta.htm [Accessed 28 June 2018].
- Schalekamp, H. 2017. Lessons from building building paratransit operators' capacity to be partners in Cape Town's public transport reform process. *Transportation Research Part A*, 104, pp. 58-66.
- Schalekamp, H. and Behrens, R. 2016. Engaging paratransit on public transport reform initiatives in South Africa: A critique of policy and an investigation of appropriate engagement approaches. *Research in Transportation Economics*, 29, pp. 371-378.
- Schipper, L. 2004. Sustainable urban transport: progress in Mexico city and prospects for China. International mayors forum on sustainable urban energy development, Kunming, China, 10-11 November.
- Stokes, G. and Parkhurst, G. 1996. Change Through Interchange: Making Complex Journeys Easier. Research Report by the Rees Jeffreys Road Fund.
- Tiwari, G. 2003. Transport and land-use policies in Delhi. *Bulletin of the World Health Organization: Special Theme - Health Impact Assessment*, 81(6), pp. 444 - 450. trafficQ et al. 2018. Public transport integration and transit alliances. SUTP Module 3f. Sustainable Transport: A sourcebook for policy-makers in developing cities. Available at: https://www.sutp.org/files/contents/documents/News/2018_March/3f_Transit_Alliances_SUTP_TUMI_GIZ_final.pdf [Accessed 25 January 2019].
- Wipperman, T. E. and Sowula, T. B. L. 2007. The Rationalization of Non Motorised Public Transport in Bangladesh. Available at:

<https://deepinthedesh.files.wordpress.com/2007/08/rickshaw-developmentproposal.pdf> [Accessed 25 October 2017].

Yi, C. S. 2016. Rethinking Sustainable Mobility: Understanding the Use of Boda-boda Motorcycle Taxis in Kampala, Uganda. MSc Thesis, IIIIEE, Lund, Sweden.
Available at: <https://lup.lub.lu.se/student-papers/search/publication/8895390>
[Accessed 20 January 2019].