

CHALLENGES AND
OPPORTUNITIES
FOR THE
INTEGRATION OF
COMMUTER
MINIBUS
OPERATORS INTO
THE DAR ES
SALAAM CITY BRT
SYSTEM

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Challenges and Opportunities for the Integration of Commuter Minibus Operators into the Dar es Salaam City BRT System

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Abstract

Public transport in Dar es Salaam city, Tanzania, is currently provided by about 5,000 licensed, small capacity and privately owned commuter minibuses commonly known as 'Daladala'. The service offered is generally poor and unsafe, lacking professionalism, efficiency, quality and safety for the commuters. Daladalas have also largely contributed to the increasing traffic congestion in the city and have failed to provide efficient transport for the growing population in the city. These factors compelled the City Council to consider the introduction of a Bus Rapid Transit (BRT) system in the city, namely DART system, which is being implemented by the Dar Rapid Transit Agency (DART). The DART system is planned in six phases to cover the six major corridors/ arterial roads in Dar es Salaam City and Phase One, which is currently under construction, will cover about 21 km of trunk route. There is therefore a need to plan on what to do with the Daladalas that will be affected by the implementation of the DART system and as much as possible facilitate for their integration into the system. This paper aims at identifying the challenges and opportunities for the Daladala operators to participate in the provision and operation of DART buses and as a result shed light on how best existing operators can be integrated into the new system or catered for otherwise.

Keywords: BRT, integration, public transport, minibus transport, paratransit

1. Introduction

1.1 Background to the Dar es Salaam BRT System (DART Project)

Dar es Salaam is the largest City in [Tanzania](#) with a population of about four million people. It covers an area of about 1,800 km², comprising of 1,393 km² of land mass and offshore islands. Dar es Salaam is made up of three local government areas or administrative districts namely Temeke, Kinondoni and Ilala municipalities as summarised in Table 1. The three municipalities in Dar es Salaam are responsible for local issues such as managing the waste while the Dar es Salaam City Council (DCC) addresses cross-cutting issues like transport.

Table 1: Dar es Salaam municipality area distribution

Municipality	Land Mass Area (km ²)	Per cent
Ilala	210	15
Kinondoni	531	38
Temeke	652	47
Total	1,393	100

Dar es Salaam roads have a total length of 2,094 km out of which 494 km (24%) are under the supervision of Tanzania National Roads Agency (TANROADS) while 1,600 km (76%) are under the supervision of the three Dar es Salaam municipalities. Each municipal council has an obligation of maintaining roads that are in its area of jurisdiction (except trunk and arterial roads). The types of roads, lengths and supervising authorities are summarised in Table 2.

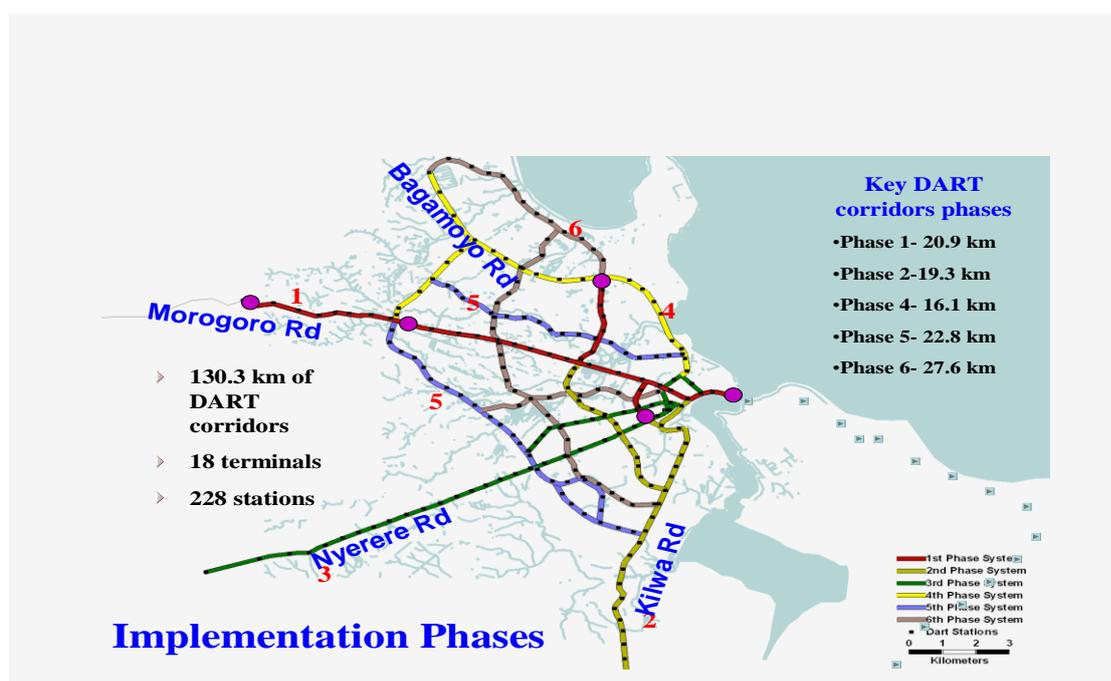
Table 2: Dar es Salaam road network

Supervising authority	Length (km)	Surface type		
		Paved	Gravel	Earth
TANROADS	494.3	211.4	282.9	
Ilala	429.0	132.0	80.0	217.0
Kinondoni	692.7	114.7	315.3	262.7
Temeke	478.4	67.0	411.4	
Total	2,094.4	525.1	1,569.3	

Public transport service in Dar es Salaam city has for many years been unsatisfactory although most people depend on it for their travel. The public transport in the city is currently provided by about 5,000 licensed, small capacity and privately owned minibuses commonly known as ‘Daladala’. The service offered is generally poor and unsafe, lacking professionalism, efficiency, quality and safety for the commuters. In 2003, DCC came up with the idea of introducing a Bus Rapid Transit (BRT) system in the city, which is currently being implemented by the Dar Rapid Transit Agency (DART). The system is also branded “DART”.

The project comprises of six phases which cover the six major corridors/ arterial roads in Dar es Salaam City. Phase one, currently under construction, will cover about 21 km of the main Morogoro road and the two branches of Magomeni-Morocco and Fire-Kariakoo. Other phases to follow will cover Kilwa road, Ali Hassan Mwinyi road, Bagamoyo road, Nyerere road, Nelson Mandela-Sam Nujoma road and Kawawa road. The six DART Phases are shown in Figure 1.

Figure 1: The DART implementation phases



Source: Logit (2006)

1.2 Requirements for Phase One

Table 3 summarises the operational requirements for phase one.

Table 3: DART Phase One operational requirements

Item	Articulated Buses	Feeder Buses
Fleet size (number)	145	221
Investment cost (US \$ per bus)	275,000	70,000
Length of buses (m)	18	12
Capacity of buses (passengers)	140 - 160	50 - 60
Drivers	362	552
Conductors	-	552
Maintenance staff	72	110
Administrative staff	48	74
Depots (one per company)	2	
Companies (number)	2	

Source: Logit (2006)

The design for phase one projects a total of 406,000 commuters per day and 122 million trips annually to be served by seven trunk lines linking 15 feeder lines. Funding for infrastructure development and its maintenance is the responsibility of the DART Agency but DART will engage private companies (two) to procure and run buses in the system and another private company for fare collection.

1.3 Significance of the Study

The first DART buses for phase one are expected to be on the road by 2013. Taking into consideration the nature and mode of operation of the DART system, the Daladala which currently operate along the proposed DART Phase One corridor will have to be integrated, re-routed or phased out. Experience from other countries such as South Africa, India and Colombia where BRT projects have been implemented show a lot of challenges emerged from both the former service providers and their employees. This study highlights the expected challenges as well as opportunities to facilitate for a smooth take-off of the system. The review also aims at avoiding/mitigating the negative impacts of these changes to the system itself and stakeholders.

The review also recognises that the Daladala industry is a struggling industry operating and surviving on the lowest common denominator of cost and quality, and that the insecurity and vulnerabilities faced by the players must be considered in order to develop the necessary solution.

2. Review of the existing public transport

2.1 Dar es Salaam Public Transport

The present system is characterised by poor standards of comfort and safety, convenience and dignity for bus travellers, with a very negative impact on city traffic through competitive behaviour by Daladala drivers (speeding, over-crowding and accidents) causing aggravation at all levels. Daladala buses stop at any location to catch passengers, they drive on the sidewalks when traffic is congested and they stop even on the exclusive left-turning lane at the intersection. Most buses are second-hand and are likely to break down at any moment, which might cause interruption to ordinary traffic on roads. The Surface and Marine Transport Regulatory Authority (SUMATRA) has been aware of the deficiencies caused by Daladala bus operation, however, actual enforcement in the field is lacking due to lack of staff (JICA 2008).

The transport demand generated by residents in Dar es Salaam is estimated at 2.9 million trips per day. The modal share of public transport is 61% when “walk” trips are included and 82% when “walk” trips are excluded (JICA 2008). Other modes include bicycle, motorcycle, passenger car and taxi. Daladala carry approximately 1.4 million passengers per day (Logit 2006). The average travel time per trip is estimated at 77 minutes and waiting time mainly for transfer to another mode is estimated at 35 minutes. The average travel distance ranges between 10 and 20 km under the assumption that the average travel speed of Daladala is 10 to 20 km/hr in peak hours. The result of the household and attitudinal surveys by JICA (2008) indicated that: about 98% of Daladala passengers have no car or driving license and are captive to Daladala for their travel needs and only 0.7% indicates a preference for Daladala over a car; about 80% of passengers judge the current system as either unacceptable or at an unsatisfied level; nearly 90% of passengers evaluated the routing and comfort level of Daladala to be unacceptable or not satisfied at all; and the waiting time at the bus stops, on board security and

conductors manner also scored negatively.

There is a multiple of stakeholders that are in charge of urban transport: the Ministry of Transport in the area of transport policy and planning; Tanzania Roads Agency (TANROADS) and Dar es Salaam City Council (DCC) and its municipalities in project implementation and road maintenance; Traffic Police for traffic control and enforcement of the traffic regulations; and the Surface and Marine Transport Authority (SUMATRA) for regulation of public transport. Each institution is faced with problems of lack of staff, lack of technical capacity and low funding. There has also been little coordination between the institutions resulting in functional gaps.

The fragmented ownership in the bus industry and the inability to regulate causes the industry to be unmanageable and this is a primary cause of poor service delivery. Further to this is the structural flaw where a high level of risk is carried by the operators and together with the inefficiency of small bus operations for large passenger volumes, creates marginal returns and an inability to invest in larger vehicles. The insecurity of the driver and conductor employment situation is a major cause of attracting low skilled workers which is an underlying factor in the poor standard of customer service offered. The precarious financial condition for drivers and bus owners means that vehicles are poorly maintained and often suffer breakdowns. There is also a prevalent practice of Daladala drivers to cut trips short, forcing passengers to alight and pay another fare to complete the journey on another bus. In the survey of drivers by JICA (2008), all respondents indicated a preference for reliable work arrangements over the uncertain employment arrangements they presently experience.

2.2 Ownership of Daladalas

2.2.1 Companies ownership of Daladalas

There are 27 licensed commuter bus companies owning a total of 67 buses, which accounts for only about 1% of the 5,000 currently licensed commuter buses in the city. The company bus ownership profile as of 2009 is summarised in Table 4.

Table 4: Dar es Salaam commuter bus ownership profile

Number of buses	No. of companies	Per cent
One bus	18	66.7
Two buses	6	22.2
Three buses	0	0.0
Four buses	1	3.7
Five buses	0	0.0
Six buses	1	3.7
Seven buses	0	0.0
More than Seven	1	3.7
Total	27	100

2.2.2 Individual ownership of Daladalas

Thirty two (32) licensed individual operators own five or more commuter buses resulting in a total of 241 buses out of about 4,950 commuter buses that are licensed to individual operators. The remaining individual operators own less than five buses with the majority owning and operating a single bus. About 85% of commuter buses licensed to operate in the city have a carrying capacity of less than 30 passengers.

2.3 Management of Daladalas

Daladala owners are required to submit legal contracts between them and the drivers to SUMATRA in order to get operating licences but this requirement is in most cases not complied by the owners. Salaries of the drivers and conductors range between Tanzanian Shillings (TZS) 40,000 and 150,000 per month but the majority of drivers work under a lease agreement where they have to pay the owner a fixed amount per day. Drivers and conductors work for up to 17 hours a day contrary to normal working hours of either six or nine hours specified in the Tanzania Employment and Labour Relations Act of 2004 (NIT 2010a). As a result, drivers and conductors have poor health resulting in safety problems and poor customer care. In most cases Daladala owners are the managers of the buses but they sometimes engage supervisors under special agreements.

2.4 Public Transport (Daladala) Routes in Dar es Salaam City

2.4.1 Registered routes

The shortest registered route covers about 15 km and charges TZS 250 per trip for a tarmac road and 350 per trip for a rough road, while the longest trip is about 35 km charging TZS 450 for a tarmac road and 600 for a rough road. About 775 km of the city's roads are served by registered Daladalas (NIT 2010a). The remaining parts of the city, especially the suburbs, are served mainly by unregistered public transport. All Daladalas operating in the registered routes are marked with specially coloured stripes that identify their origin and destination.

2.4.2 Unregistered (informal) routes

There are unregistered routes which depend on unlicensed Daladalas and other means of transport like motorcycles, saloon cars and light trucks operating illegally. Most unregistered routes begin where registered routes end, going farther into the interior mostly serving informal settlements. The poor road condition and the unsafe means of transport on these routes endanger the lives of commuters but the routes provide the much needed transport to the population on these areas which would otherwise be inaccessible. Most of the buses that operate in unregistered routes would not qualify for re-registration as Daladalas.

2.4.3 Routes management and supervision

Municipal councils are responsible for the development and management of the public transport infrastructure like roads, terminals and bus stops while SUMATRA assigns routes in collaboration with the Dar es Salaam Commuter Bus Owners Association (DARCOBOA). There is however no effective and organized coordination between municipal councils and SUMATRA on the development of the infrastructure along designated routes and the general management of the routes and the bus stops. As a result, it is currently not clear which institution is responsible for managing the routes and bus stops.

3. Challenges to the integration of Daladalas into dart system

The proposed operating system and management style of the DART is going to be different from the way current Daladalas operate. There will be specific companies that will operate the buses of specific design and size and fare collection will be done by a special company as well. The new arrangement will affect the bus routes, Daladalas owners, drivers and conductors. This study has observed the following as being the major challenges to the integration of Daladalas to the DART system. The alternative of re-assigning the Daladalas to other non-DART routes with business potential has also been considered.

This second option of re-routing all affected vehicles to other parts of the city retains the current Daladalas and the employees. It is a relatively cheaper option administratively but it has long-term negative impacts to the environment and does not provide current operators with an opportunity to participate directly into the BRT system.

3.1 Poor and Uncoordinated Institutional Setup

The current public transport institutional setup is neither clearly defined nor well coordinated as each institution works independently resulting in gaps/overlap in responsibilities and ineffective management of the city public transport. This situation makes the integration of Daladalas into the BRT system much more challenging.

3.2 Fragmented Ownership of the Business

It has been difficult to bring together Daladala operators due to their varied background and categories of ownership. Daladala operators are individuals owning mostly one bus. In addition, most of the individual operators are preoccupied with other businesses not related to public transport which negatively impacts on the management and supervision of its operations. Uniting them for the purpose of forming companies therefore becomes a daunting challenge.

3.3 Capital Gap and Mistrust among Commuter Buses, Intercity Buses and Truck Operators

It has been established that intercity buses and truck owners have more capital than Daladala owners. Daladala owners have however rejected the idea of forming companies with intercity buses and trucks owners fearing that the business they consider theirs will be taken over by trucks and intercity buses owners who have more capital. The lack of adequate capital by Daladala owners and their resistance to include other transport operators makes the participation of locals difficult. About 35% of the Daladala owners have indicated that they do not have enough capital to form companies and/or take part in the DART system (NIT 2010b).

3.4 Lack of Strategies by the Government to Empower Current Operators to Participate in DART Project

Despite the draft bidding documents specifying that foreign companies will have a maximum of 60% share in bus operation business (reserving 40% to locals), there are so far no deliberate efforts by the Government to empower current commuter service providers to participate in the DART project.

Priority on shares to the would be DART operating companies need to be given to current Daladala owners, who would need such guarantee and access to capital or conversion of their vehicles into

capital. There is a need to enable current operators form companies and/or access capital to fully participate in the DART project.

3.5 Lack of Adequate Promotion of the Project and Awareness by Stakeholders

About 60% of Daladala owners do not have enough information on the envisaged DART operations (NIT 2010b). Such projects usually need continous promotion/ campaigns using different media to reach the public and key stakeholders including current operators. Awareness among the public will enhance support for and participation in the project.

3.6 Lack of Knowledge on Formation of Companies and Experience in Operating Public Transport Systems

Given the financial, technical, managerial and organisational situation of the local transport industry (bus and truck operators), it is difficult for them to build a corporate structure suitable for operating the DART system without the cooperation of investors and international companies with proven experience on BRT systems. As a result, current operators have been advised to form companies or enter into joint venture either with local or foreign companies to meet the standards required to operate in the DART system.

Apart from lack of experience and capital, Daladala owners lack the knowledge and understanding on how to form associations, companies and partnerships. It has also been observed that majority of the operators (more than 90%) are not organised managementwise and are not transport professionals, making it difficult for them to understand the advantages of participating in the DART project (NIT 2010b).

3.7 Lack of Professionalism

Operators consider the Daladala business only as an income generation activity. Out of the 27 companies, only two are specialised in commuter services. In addition, there is little commitment by companies to improve and provide quality commuter services (NIT 2010b). Daladala operations are currently carried out by non-professionals and anyone who could invest in this industry is allowed to regardless of the expertise that is required. This makes integration into the BRT system or operation on feeder routes difficult.

3.8 Prolonged Implementation of the DART Project

Stakeholders have been anxiously waiting to witness operation of the DART system since the idea was conceived in 2003 and the long wait has made them lose confidence in the project. As a result, operators have hasitated to team up and form companies and have even been apprehensive of the idea of buying shares in relevant companies (NIT 2010b).

3.9 Taxes, Levies and Fees

Import duty and valued added tax (VAT) are charged on buses because they are considered non capital goods while this is not the case with trucks which are considered to be capital goods (although the investment is relatively lower). The situation makes it even more difficult for existing operators, with a low capital base, to take part in the DART project through acquisition of buses.

3.10 Poor Road condition

Daladala plying along Phase One routes which are in good condition would wish to continue along the same routes. As only 525 km (25%) of the city roads are paved and most are in poor condition in which case not comfortable/ profitable to operate in, resistance to relocation to these routes should therefore be expected. The situation is critical as most of the roads that have been earmarked as feeder roads to DART Phase One are in poor condition and some do not have terminals/ bus stops.

3.11 Loss of Jobs

Daladala owners and their association (DARCOBOA) are concerned about the gradual phasing out of their operations. The concern is whether new jobs will be created to absorb those who will lose their jobs once Daladala buses are eliminated or phased out. There are currently over 5,000 commuter buses in Dar es Salaam and Phase One will result in replacement of about 3,295 commuter buses (NIT 2010b). This is one of the major grievances likely to come from affected people and is of strategic importance for the smooth take off of the system.

3.12 Lack of Skills by Drivers and Conductors

The number of drivers and conductors that will be affected by the implementation of DART Phase One is estimated at 3,295 each. Since the estimated total number of personnel required in the project is just 1,770; only a small fraction of the affected drivers and conductors will secure such employment. Most affected drivers and conductors lack the necessary skills to allow them to be absorbed in the BRT system and they will need to be trained to attain professional driving qualifications to be eligible for employment into the DART system. The remaining drivers and conductors will need to be deployed elsewhere where they will need to acquire other skills for redeployment. Furthermore special entrepreneurial skills could be provided to the affected drivers and conductors as a survival strategy for those who will not be able to be absorbed in the related transport activities.

3.13 Old and Polluting Bus Fleet

The city is looking for a public transport system that would minimise/reduce increasing air pollution, traffic congestion and accidents. The DART project is expected to cut down pollution caused mainly by Daladala buses. According to JICA (2008), 90% of commuter buses operating in the city are more than 10 years old, 54% are more than 15 years old while 19% are 20 years old. It therefore implies that only 10% of the fleet is less than ten years old. Retaining the old fleet of vehicles through relocation to other routes, through convenient, may therefore not be environmentally preferable.

3.14 Poorly Designed Network Routes

Current Daladala operating routes are characterised by very long trips, some up to 35 km long (NIT 2010a). Other routes have been observed to be too short and others are a duplication of similar routes serving the same demand. The common problem of route cutting is also a manifestation of a poorly designed routes network. The number of currently operating Daladalas does not reflect the actual demand; consequently there has been a lot of congestion on bus stops and fare fluctuation because many Daladalas are scrambling for the few commuters which is a sign of over-supply. What is likely to happen is that some Daladalas re-routed to other routes may face stiff competition with already operating Daladala buses. A demand-based route assignment would avoid this stiff competition in the

market.

Daladals change or shorten routes especially during peak periods. The situation results in over-concentration in short distances and lack of supply in longer distances, making relocation of affected Daladals into such routes difficult since a clear picture of the balance between demand and supply does not emerge. An intensive demand analysis is important to determine where re-location is optimal and to re-design the network routes.

3.15 Identifying Affected Drivers and Conductors

By the nature of operation of Daladals, it is difficult to exactly identify those who will be affected as drivers and conductors. A sample of the files from SUMATRA containing contracts between the owners and drivers has very different drivers' names from those found on field (NIT 2010b). Furthermore, drivers are changed so frequently that it is difficult to clearly know who will finally be affected by the project. Unless done close to the start of DART system, those actually affected may be left out by considering people who are no longer involved.

3.16 Identifying Affected Owners

Ownership of Daladals changes so frequently with no formal change in the motor vehicle registration card which is the legal document of vehicle ownership. As a result, owners that appear in official documents at SUMATRA are different from the actual owners. This informal ownership of the buses makes identification of affected owners rather complicated.

3.17 Potential for Lack of Interest by Financial Institutions

Despite all initiatives or measures, many if not most financial institution are likely to choose not to participate in the scheme. This is for the reason that the BRT is an unknown endeavour and it is notoriously difficult to predict the demand for transport (being a derived demand) and therefore income. This will negatively affect current Daladala operators who have very little capital.

4. Opportunities for integration of Daladals into dart system and other benefits

4.1 Availability of Routes for Re-routing Affected Daladals

With the implementation of the DART system Phase One, Daladala buses will be eliminated along the Morogoro road corridor. In 2006, SUMATRA indicated that there were 181 Daladala routes whereas Logit (2006) found out that there were actually 255 routes (NIT 2010a). There is therefore an adequate number of routes where affected Daladals from Phase One corridor could be re-routed to, provided they are as promising financially.

4.2 Re-routing Daladals to Unregistered Routes

If the condition of the roads on unregistered routes were improved by the respective municipalities and officially registered by SUMATRA, the affected Daladals could be shifted or relocated to the routes as a cost-effective option for dealing with the affected Daladals. This by itself is able to accommodate a big portion of the affected Daladals.

4.3 Scrapping the Current Old Fleet

Given the current condition of the commuter bus fleet (90% of Daladala fleet is more than ten years old), consideration should be given to the option of scrapping the vehicles instead of re-routing them as retaining them in operation means increased pollution which affects the health of the city dwellers and contributes to climate change. It will be possible to attract compensation funding from international institutions such as Global Environment Fund (GEF).

In addition, the money received by operators would enable them buy shares in Bus companies that would participate in the DART project thus providing an opportunity for them to be integrated in the operations of DART. If funding for scrapping could be found, the DART project presents a great opportunity for reducing pollution and enabling the participation of current operators.

4.4 Improved Public Transport Network and Bus Sizes

To minimize the negative impacts of the DART system on Daladalas, SUMATRA has been advised to stop issuing new licenses to all proposed DART Phase One routes (a strategy previously adopted in phasing out small minibuses from the CBD). The authority is also advised to only issue licenses to standard buses that when DART project takes off they can be used as feeder buses to the main trunk. The introduction of BRT system has therefore provided an opportunity for improving the existing public transport through re-design of the network routes in line with the demand and introduction of buses of right sizes.

4.5 Relatively Formal and Regulated Paratransit/ Mini-bus Public Transport

Compared to the operational management practices of most paratransit/ minibus public transport in the world, Daladalas are relatively more formalised and regulated. They are licensed, assigned routes and have an owners association (DARCOBOA) which makes it easy for the Government to negotiate with them. The regulation status makes it easy for the integration or relocation processes to take place.

4.6 Cooperative Alliances

With the emergency of cooperative societies in the form of savings societies in Tanzania, there arises an opportunity for creating (through the operator associations such as DARCOBOA), cooperative alliances to consolidate operators into community groups or companies. This will improve their representation and develop structures of managerial authority and accountability necessary for the integration into the DART trunk corridor or feeder system.

Individual minibus operators forming associations or cooperatives can gain route contracts or access to finance. In Samarkand and Bukhara (Uzbekistan), independent minibus operators formed associations at the initiative of the municipalities. This gave them access to operating permits and to maintenance and shared purchasing facilities (Gwilliam et al. 1999). In Tbilisi, in 2001, about 3,500 minibus operators consolidated into 64 companies to gain operating franchises from the municipality for 223 lines. In Dhaka, minibus operators formed into cooperatives to be collectively responsible for loan repayments on minibuses made available under a vehicle-leasing scheme sponsored by the government (IBIS 2008).

5. Conclusion

This paper has reviewed the challenges and opportunities for the participation of commuter minibus (Daladala) operators in Dar es Salaam city into the BRT (DART system) through integration into the system or by being offered equally promising alternative routes. This review provides the basis for proper planning to make sure that existing operators are integrated or provided with alternative sources of income.

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