

AN ANALYSIS OF MINIBUS TRANSPORT OPERATIONAL PROBLEMS IN DAR ES SALAAM

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ABSTRACT

The problems of public transport are varied and more evident in developing cities such as Dar es Salaam, which are experiencing rapid demographic and economic growth. The minibus sector continues to provide public bus transport services, dominating every route in Dar es Salaam city. Minibus transport service provision in Dar es Salaam city has been characterised by a very harsh operational environment which has contributed to unreliable, uncomfortable and unsafe transport services in the industry. This paper is focused on identifying the existing minibus transport operational problems, analysing the cause of these problems and suggesting possible ways of mitigating them. Basically, there is limited regulatory/institutional effectiveness and lack of a clear and comprehensive policy on public transport in Dar es Salaam. Minibus operators are subject to poor; regulation, standards of operation, and standard of maintenance of vehicles and related emissions. In addition, fares are controlled in a manner, which tends to satisfy social rather than economic factors. General traffic congestion and lack of enforcement of traffic laws/regulations creates a disorderly environment for operators to conform to acceptable standards and regulations. Policy reforms in the sector need to be directed towards; strengthening the institutional and regulatory framework in which public transport thrives, formalising the operators including the technical know-how necessary for orderly service sustenance and reforming the public bus transport system by introducing the direct competitive tendering regime where operators compete to operate. These can bring quality operation with commercial benefits at minimal social problems.

1 INTRODUCTION

1.1 Background to minibus transport in Dar es Salaam

Public transport in Dar es Salaam city, Tanzania, is provided by about 5,000 licensed, small capacity and privately owned commuter minibuses commonly known as “*daladala*”. Daladala minibuses provide public transport services, dominating every route in Dar es Salaam city. The minibus modal share of public transport is 61% when “walk” trips are considered as a separate mode; and about 82% when only vehicle trips are considered (DCC, 2008). According to the JICA study of 2008, the total transport demand generated by the residents in the Dar es Salaam is estimated at 2.9 million trips per day, of which 2.1 million trips are produced by vehicles. Daladalas carry approximately 1.4 million passengers per day, being the most often-used transport mode in Dar es Salaam.

Dar es Salaam is the largest city in Tanzania. With a population increase of 5.6 percent per year from 2002 to 2012, the city has become the third fastest growing in Africa (ninth fastest in the world), third to Bamako and Lagos, respectively (City Mayors, 2012). The

recent population census (2012) found a population of 4.4 million (NBS, 2013). It is projected that by 2030, Dar es Salaam city will have grown to 6.8 million inhabitants who will generate 9 million trips per day (DART, 2011). There is therefore a need for an adequate and reliable public transport system.

It is assumed that Dar es Salaam city's economy will grow faster than the national average. The per capita income in Dar es Salaam will also grow faster than the national average. Accordingly, the per capita income of Dar es Salaam will increase 2.65 times between 2003 and 2030 in real terms (DCC, 2008).

2 MINIBUS TRANSPORT OPERATIONAL ENVIRONMENT

Minibus transport business, like any other business, is bound by rules and regulations and requires proper managerial practices for profitable and sustainable business practices. Minibus operation in Dar es Salaam has been affected by several internal and external factors that, to some extent, characterise their operating behaviour and emerging problems. These factors are socio-economic, political and institutional.

2.1 Socio-economics of minibus transport users

The necessity of people to meet socio economic needs often results in increasing transport demand (Sohail et al, 2005). The urban transport problems in Dar es Salaam started with increasing urbanisation, population and industrial development which increased the demand for public transport. The majority of daladala users are captive (minibus being their only essential and major means of transport) and having no other choice than to board these vehicles regardless of the quality of service offered. Citizens located on the outskirts of Dar es Salaam city have been suffering from inadequate access to public transport which further reduces their ability to access income generation/employment opportunities, education, markets, health services and social relations (cultural and family links).

2.2 Institutional arrangements of minibus transport operations

There are multiple stakeholders that are in charge of urban transport; the Ministry of Transportation (MoT) which is responsible for transport policy and planning, Tanzania National Roads Agency (TANROADS) and Dar es Salaam City Council (DCC) and its municipalities responsible for construction and maintenance works, Traffic Police Department responsible for traffic control and enforcement of traffic regulations, and the Surface and Marine Transport Regulatory Authority (SUMATRA) responsible for regulation and operation of public transport. Each organisation is faced with problems of lack of staff, lack of technical capacity, lack of funds, lack of coordination with other stakeholders and overlapping responsibilities.

2.3 Introduction of BRT system

Dar es Salaam city is generally faced with a number of public transport challenges. Realising these challenges, in 2003 the Dar es Salaam City Council (DCC) decided to provide a Bus Rapid Transit System with the incentives to offer affordable mobility, sustainable urban environment and better quality of life to the urban population. The central government policy was to eliminate all minibus operations on main routes and replace them with BRT corridors. But since only phase one out of the six phases is currently under construction, minibuses will still be required to serve areas not yet covered

by the BRT system for some time. It is planned that the minibuses that will be phased out from the BRT corridor will be relocated to remaining minibus routes or integrated into the BRT feeder system.

3 MINIBUS OPERATIONAL PROBLEMS IN DAR ES SALAAM CITY

Minibus operations in Dar es Salaam city are faced with many problems affecting all stakeholders in some ways. The following are operational problems which have been observed to mostly affect the daladala minibus transport.

3.1 Low level of affordability

The majority of people served by daladalas are poor with low level of income. The study by Logit and Interconsult (2006) showed that 90.8 percent of Dar es Salaam citizens have monthly income not exceeding US\$ 200, with majority of these captive users earning below US\$ 100. Fares are low and are set mostly considering the affordability aspect as opposed to the actual operating costs, and still passengers complain that they are unaffordable. Some minibus crews engage in fare cutting as an initiative to woo passengers to board their vehicles with no consideration for the actual operating costs.

3.2 Low level of safety and security

The user requirement survey conducted by the African Centre of Excellence for Studies in Public and Non-motorised Transport (ACET) in 2012 found that security was the first and safety was the second concern of respondents. Daladala operations are generally viewed as unsafe; with accidents mainly caused by poor driving and, to a lesser extent, poor vehicle condition. There is aggressive and often dangerous on-road driver behaviour including overloading, cutting-off competitors and ignoring traffic regulations and signals. Other studies have shown a high percentage (about 93%) of fatal accidents in Dar es Salaam is a result of minibus daladalas (Rizzo, 2002). Security is generally poor, especially at night; minibus terminals have no lights and so are the bus stops. Passengers at bus stops have been depending on highway and street lights, but most of these are not functioning.

3.3 Inadequate service supply

The insufficiency in service supply can be seen in the degree of vehicle overloading, particularly during peak hours and the waiting time that passengers typically experience. During the peak hours a small (15 passenger capacity) minibus carries an average of 22 passengers while larger ones (25 passenger capacity) carries an average of 34 passengers (Logit and Interconsult, 2006). The situation is worsened by the concentration of supply on main routes and lack of it on peripheral and unpaved routes, ineffective enforcement of regulations by the Police, and poor frequency due to traffic congestion during peak hours. Waiting time is another service indicator as passengers spend a considerable amount of time on terminals and bus stops. The operating speeds are slower in wet weather and peak hours further increasing waiting times. The supply problem is further caused by the poor route allocation of buses which is not based on comprehensive demand analysis.

3.4 Excessive journey times

Traffic congestion, which is also increased by poor on-road behaviour, is one of the major problems affecting mobility in Dar es Salaam city. Since there are no exclusive lanes for public bus transport, the journey times are usually long and tiresome (considering that most passengers stand during peak hours). Journey times are also elongated as some passengers make a number of unnecessary transfers to avoid congested routes. Table 1 shows the average commuting times on three main roads in Dar es Salaam city with a significant proportion of time lost in traffic congestion.

Table 1 Average commuting times in Dar es Salaam

Road	Route	Distance (single trip) (km)	Unconstrained time (return trip) (min)	Actual time (return trip) (March 2010) (min)	Average daily time loss (return trip) (min)	Average Speed (Km/h)
Nyerere	Airport - Posta	11	54	158	104	8.4
Bagamoyo	Mbezi (tankibovu) - Posta	16	60	163	103	11.8
Morogoro	Mbezi (Louis) - Posta	20	60	192	132	12.6

Source: Centre for economic prosperity (2010)

3.5 Poor institutional setup and capacity

The regulation by public transport institutions is generally viewed as unsatisfactory. There are overlapping responsibilities and lack of coordination and capacity by the institutions. With the highly fragmented minibuss transport sector and inadequate attention by the authorities concerned, the laws necessary for the proper performance of the transport system have not been adequately observed and system monitoring is a challenge. There is no institution that is responsible for the collection of relevant statistics and updates of prevailing operational conditions, progress and outcomes of existing or newly introduced systems.

3.6 Inefficient operating procedures

The type of entry regulation to minibuss operation in Dar es Salaam is the route quantity based licensing by the Surface and Marine Transportation Authority (SUMATRA). In this regime, a fixed number of fleet is allowed on a particular registered route. The typical pattern of operation of daladalas, at terminals, is for the vehicle to be fully loaded before being despatched. The practice results in long passenger waiting times at the terminals and passengers tend to board the fully-loaded bus to avoid wasting time by waiting for another bus to get full. The observed consequence of such practice is that, it becomes virtually impossible to board a vehicle along the route close to the terminal (as it is already overloaded). The practice of daladala passenger loading "rotation" leaves the customers with a little choice. As a result, there is no real incentive for individual owners to improve the attractiveness of their vehicle, as they will receive customers regardless.

3.7 Low frequency

Daladala transport has its comparative advantages of being readily available; reactive to market demand, flexible, and providing on-demand and close-to-door service (Lomme, 2010). However, the inefficient operating practices reduce frequency and increase

departure time. The frequency of daladala operation is lower during peak hours. The general traffic congestion is also a contributing factor to low frequency and operational speed of daladala services as seen in table 1. Low daladala operating speeds result in low productivity by operators, reducing their gross revenues and recovery of their operating costs. Daladalas also depart from the bus stop only when they are satisfied by the number of on-board passengers, further affecting frequency.

3.8 Poor quality of service

Almost 90 per cent of the daladalas offering city transport services in Dar es Salaam do not meet the minimum standards for the service (SCCC, 2012). The passengers are dissatisfied in terms of passenger waiting times, comfort, security and safety. In-vehicle problems are centred on their general cleanliness, the condition of their seats, water leaks during the rains and the attitude of the crew. The field survey conducted by ACET identified that the general condition inside the vehicles was very bad. Poor passenger customer care by daladala crew with their rude verbal expressions and isolation of some passenger groups (the elderly and students) was common. The operators' initiatives in maximising the income has therefore been the practice of overloading passengers, speeding and making unofficial stops to pick passengers anywhere along the route. Passengers have also been overcharged especially during peak hours, or ejected from the bus before their destination.

3.9 Poor vehicle condition

The daladalas are typically small, unkempt with torn out seat covers and protruding sharp objects, broken sight mirrors, some missing passenger windows (inconvenient to passengers in rainy days) and are often old and unroadworthy. Some have been retired from other countries or other uses domestically, so that the capital investment necessary to enter the business may be small (Mfinanga, 2008). The majority (90%) of daladalas are more than 10 years old, 54% are more than 15 years old, 19% are 20 or more years old (NIT, 2010a). Many vehicles have damaged lights and worn out tyres, and some release dense exhaust smoke. The end result is the poor standard of vehicle condition widely observed.

3.10 Poor environmental compatibility

Daladalas are major contributors to air and noise pollution in Dar es Salaam city. The main causes of pollution by daladalas are poor vehicle maintenance, inadequate inspection and enforcement of rules and regulations on minimum pollution standards, and inappropriate vehicle age, type and size. Most vehicles are more than 10 years old with some being very old (up to 20 years of age), and a large number being small minibuses with about 84% of buses having a carrying capacity of less than 30 commuters (NIT, 2010a). The poorly maintained daladala buses contribute to environmental pollution.

3.11 Poor working conditions

Daladala drivers and conductors work in a hostile and difficult environment. The daladala crew mostly operate under a fixed daily fee regime payable to the owner and have to gain sufficient revenue to pay the owner; pay for fuel and various fees/ fines when they occur and reach a basic take-home salary. They work very long hours from early morning to late evening and often carry stress from operating in the difficult circumstances and economic hardship (Madinda and Mfinanga, 2010). The bus operators are rarely consulted when

new rules are made or have any input to the decision-making process, e.g. the case where regulations required them to wear uniforms that are incompatible with the hot weather were introduced. The crew also feel they receive little respect from society and believe that passengers look down on them as they have little education. Extortion by the Police is also a common situation. As a result of these relationships which are set in an economically hostile environment, the work on the daladala becomes a conflict-ridden situation.

4 ATTRIBUTED CAUSES OF MINIBUS OPERATIONAL PROBLEMS

4.1 Lack of professionalism and skills

Daladala business owners have a poor understanding of financial issues, and basically operate at a short-term cashflow level like daily fixed hire charge. 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). Major daladala repairs are generally taken to 'repair garages', but these lack suitable premises and have little workshop equipment; even their tools are limited in quantity and are often in poor condition. Skills displayed by the mechanics to whom vehicle repairs are entrusted fall well below levels of good industry practice. Most mechanics are not qualified but rather use experience acquired at garages.

4.2 Lack of enforcement and unacceptable on-road behaviour

The traffic police department is responsible for vehicle control and enforcement of the traffic regulations. This is a very difficult task as the regulations are often in discord with on-road realities. Police are therefore subjective in enforcement, and often turn a blind eye to obvious infringements, or make arbitrary decisions as they see fit.

An ACET observation study indicates a relatively low level of driving standards in the road passenger transport industry. Drivers' violent and illegal behaviour has impacts not only within the sector but also affects the general traffic congestion. There is a degree of on-the-road competition between vehicles on common sections of routes. This involves the incentives for blocking other daladalas at the stops and aggressive driving in order to reach these first. Traffic police officers are also blamed for being owners of daladalas allowing them to get away with unacceptable on-road behaviour.

4.3 Lack of route planning and supporting institutions

Current Daladala operating routes are characterised by very long trips, some up to 35 km long (NIT 2010a). The common problem of route cutting is a manifestation of the poorly designed routes network. Many daladalas are scrambling for the few passengers during off-peak hours, which is a sign of vehicle over-supply, but falling short of supply during peak hours.

The current public transport institutional setup is neither clearly defined nor well coordinated as each institution works independently resulting in gaps/overlap in responsibilities for effective transport planning and management of the city public transport.

4.4 Poor minibus management practice

The management of minibus by owners and operators is generally poor. In most cases the minibus owner hands over the vehicle to a trusted driver for a fixed daily hire charge. Preventive maintenance to ensure a proper vehicle condition is usually disregarded by both owners and minibus crew, rather, the practice is for the crew to arrange (and pay) for any minor repair needed during the course of the day's operation, and for the owner to take responsibility for major repairs as the need arises. ACET found that the daladala breakdowns were common with an average of four (4) breakdowns per month with some operators experiencing daily breakdowns as part of their operations.

4.5 Lack of profitability

The bus fares have been regulated by the concerned authorities to favour the transport users, but they do not really reflect the changing inflation and other constantly rising costs to make the daladala transport sustainable. The price of spare parts has been rising due to increasing inflation and devaluation of the Tanzanian shilling. The vehicle purchase cost has also gone up due to change in vehicle revenue policy which increases the vehicle clearance costs and tax. Increasing traffic congestion also increases fuel consumption having a negative effect on profitability. Operators complain that Traffic Police Offices have made a scheme of imposing high unofficial payments to them resulting in increased operational costs. A study by ACET found the daladala operating ratio of around 1.2 (around 20% of profit by daladalas). However, it has to be noted that this profit margin is obtained through providing a low level of service, disregarding regulations and making no provision for major repairs. Moreover, the operators have been maximising revenue by overloading passengers and speeding.

4.6 Fragmented ownership structures

There are 27 licensed conventional commuter bus companies owning a total of 67 buses, which accounts for only about 1% of the 5,000 licensed commuter buses in the city (NIT, 2010b). Only 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. Generally, the owners of daladala buses are mostly; i) retired people, ii) people with low-incomes, and iii) civil servants (Kanyama et al, 2004). Fragmented ownership makes management of the industry an impossible task.

4.7 Inadequate transport infrastructure and traffic management

Dar es Salaam is subject to severe congestion, especially at peak times, resulting in low operating speeds for public transport vehicles as well as the general traffic. Congestion is a result of many private vehicles on road, mixed road use and poor traffic management. The infrastructure-related reasons for congestion include the radial route structure, inadequate roadways which are in poor condition and the road capacity being low (Madinda and Mfinanga, 2010).

In recent years, ring roads have been gradually improved as a strategy to reduce congestion on main arterials but intersection management and design standards remain a problem. Observations have revealed that most traffic signals at intersections are not working, and traffic police take turns to control these intersections during peak hours even

where the signals are working. Poor timing of signals and the inappropriate use of fixed time signals is a major problem at such intersections.

Daladala themselves are often perceived to be a cause of traffic congestion or at least a contributory factor. Most buses are second-hand (used) and are likely to break down on the road at any moment. It is also a common behaviour for daladala operators to block the two nearside lanes of a dual-carriageway around the bus stop while waiting for passengers to board, which impinge the traffic flow, causing congestion around the bus stops.

5 PROPOSED IMPROVEMENTS

There have been some short term measures to address the problems of minibus transport operation with little prospects for improving the service. A study by ACET has suggested the introduction of limited competitive regime for the right to offer specified transport services through an open tender. The planned objective of the reforms is to increase sector efficiencies both in the demand and supply of minibus transport.

Competition for the right to supply services offers a way of improving operators' technical performance and so reduces their costs. This would enable an enhanced level of profitability for operators whilst preserving current levels of affordable fares. Through these means, it should be possible to attract appropriate investment to improve the quality of service to match expressed customer desires. At the same time, the reforms offer the potential for elimination of wasteful duplication on prime routes to support poorly served peripheral areas where problems of affordability are highest.

The competitive/regulatory regime of open competition can be achieved through 'Competition for-the-market' and 'Competition in-the-market' and involves contracted service (gross cost/net cost/management), franchising/concession, and regulatory licensing (quality/quantity). The effectiveness or potential of different regimes will depend on local operating environment, institutional capacity and the priorities of the public transport stakeholders. An ACET, it study observed that stakeholders in Dar es Salaam consider the following attributes to be of highest priority (in descending order): (1) Cost (operational, capital and implementation) and profitability; (2) Sustainability (affordability, availability, and environmental and energy efficiency); and (3) Level of Service (quality, frequency, travel time, safety and security). The reform alternative that optimises these stakeholders' requirements will have the highest potential for success.

6 CHALLENGES TO IMPROVEMENT

Major challenges to introducing the proposed reform measures are the poor institutional setup and capacity, and the potential opposition by the existing private operators. The competition must be favoured by public policy but there is neither a clear policy in which competition has a place nor administrative and institutional capacity to promote, direct and regulate competition. There is no enough financial or expert capacity available for the system to work as it requires close monitoring by the concerned authority.

Daladala owners, with fragmented ownership, lack the knowledge and understanding on how to form associations, companies or partnerships, and the experience in operating a formal public transport system. These together with lack of adequate capital by Daladala owners make participation in implementation of limited competitive regime difficult. Therefore, changing the operating regime of a fragmented industry like the daladala minibus sector to competitive tender operation will require commitment, effective participation and consolidation framework designed to deliver mutual benefits to all stakeholders, including the operators, passengers, regulators and the community.

7 CONCLUSION

This paper has re-examined the problems facing the minibus transport system, analysed the attributed causes and proposed strategies to improve the bus transport operation in Dar es Salaam city. This analysis provides the starting point to a planned competitive operational regime in order to enhance the quality of minibus services.

ACKNOWLEDGEMENT

The research presented in this paper was funded by the Volvo Research and Educational Foundations, and forms part of a broader research programme conducted by the African Centre of Excellence for Studies in Public and Non-motorised Transport (ACET, www.acet.uct.ac.za).

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