



# Level of service delivery of public transport and mode choice in Accra, Ghana



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## ABSTRACT

Worsening traffic congestion and air quality has been associated with the proliferation of informal operation of private microbus and minibus in African cities. It is recognised that large buses hold the promise of relieving the growing congestion of African cities if they are managed efficiently and sustainably.

It is in line with this that this study seeks to explore the reasons behind commuters' non-preference of Metro Mass Transit (MMT) for intra-city commuting in Accra, Ghana. A revealed preference survey was administered to 134 commuters to find out the reasons behind their non-preference and their perception of the level of service (LOS) delivery of the Metro Mass Transit.

The Study revealed that though Metro Mass Transit was 20% cheaper in terms of price, commuters perceived its service delivery as poor. Over-crowding of buses, non-adherence to time schedule, long in-vehicle time, perception of not getting access to seats, non-availability of bus at respondents' origins and destinations, accessibility of alternative modes and long waiting times for buses accounted for the major reasons for non-preference.

Metro Mass Transit Limited's improvement in its service attributes especially in-vehicle time, waiting time, comfort, reliability and accessibility is a means of increasing its modal share. Adherence to these is the surest way to achieving the objective of promoting mass transit in Accra by shifting people from the use of unsustainable modes such as mini-buses and taxis to the use of efficient high capacity systems as Metro Mass Transit.

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## 1. Background of study

The contributions of the transportation sector to the sustainability of cities have been widely recognised. It has been inseparably linked to the climate-change challenge since it is currently responsible for 13% of Greenhouse Gas (GHG) emissions worldwide and 23% of total energy-related GHG emissions (UN Habitat, 2011, cited in Cervero (2013)). Worsening traffic congestion and air quality have been associated with the proliferation of informal operators, such as the private microbus and minibus in most African cities. These mini-buses have been said to be typically composed of second-hand vehicles which are inadequately maintained; operated for long hours at low speed as well as characterised by unpredictability of routes, schedules, and fares. This presents clear disadvantages from the perspective of public interest. However, twice as many trips

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are taken by mini-buses than by large buses in most African cities (Kumar and Barrett (2008)). The way forward has been a shift towards more sustainable modes of transport such as public transport and the integration of non-motorised transport.

In Accra, Ghana, the vast majority of public transport services are provided by the informal sector; a mix of buses, mini-buses (trotro) and taxis (IBIS Transport Consultants Ltd., 2005). These privately operated public transport services provide about 95% of the bulk of urban bus passenger transport in cities like Accra (Kumar, Kwakye, Girma, 2004). The only formal bus transport being provided in Ghana is by the Metro Mass Transit (MMT) Limited (IBIS Transport Consultants Ltd., 2005).

The mandate of MMT is to carry on the business of mass transportation in Ghana; in all its aspects and other businesses incidental to it, including provision of contract bus services and school bussing services. The MMT was established in response to public concerns about increasing traffic congestion and transport fares posed mostly taxis and mini-buses which dominate public transport in Ghana. In addition to this, the establishment of the Company was to bring instant relief to travellers especially in Metropolitan and Municipal areas by promoting mass transportation by re-introducing high occupancy vehicles to maximize the person-carrying capacity (Salifu, 2004). It also aims at providing services that are effective and satisfy the needs of its users through reduced travel times, journey delays and waiting times as well as travel comfort and efficiency at affordable prices. In support of government's pro-poor policy therefore, the Company charges lower fares ensuring affordability to the poor, run on routes generally considered unattractive and unprofitable by private transport operators (in terms of state of road and patronage), implantation of free bus ride for school children in uniform up to Junior High School level, as well as influencing and stabilizing transport fares throughout the country (Unpublished Report, 2011).

With the inauguration of the MMT and its provision of intra-city bus services in Accra since 2003, one would expect a change in the modal preference or choice of minibuses as the primary public transport for trips. However, Abane (2011), in a study on travel behaviour in Ghana, observed that mini-buses (trotro) operating under the umbrella of the Ghana Private Road Transport Union (GPRTU) is still the most preferred mode for trips in major cities of the country such as Accra. The Study therefore explores how the Level of Service (LOS); a quality measure describing operational conditions within a traffic stream, generally in terms of such service measures as speed and travel time, freedom to manoeuvre, traffic interruptions, and comfort and convenience (Ali, 2010) of MMT affects passengers' mode choice in Accra. Specifically, the study aims to find out reasons why commuters do not prefer the MMT buses as their primary mode of transport in Accra. The study also explores the differences in the perceptions of LOS of MMT in;

- (i) Frequent-users, Occasional-users and Non-users,
- (ii) Males and females,
- (iii) Age of travellers and,
- (iv) Average monthly income.

It must be noted that though Non-users do not use the system, they have been included in further analysis. This is find out their reasons for non-usage. As asserted by Beirão and Cabral (2007), citing Fujii and Kitamura (2003); though travel behaviour is influenced by the service level of the transport system, the dependence is not directly related to the objective service level, but is influenced by psychological factors such as perceptions, attitudes and habits. Therefore to attract more users to the public transport system, it is important to know more about the psychological factors that influence mode choice. Also asking Non-users their perceptions about public transport is important in understanding the reasons for non-use, how they would feel if they had to use public transport and what would make them switch to alternative modes (Beirão & Cabral, 2007).

The socio-demographic characteristics of a trip maker are some of the well-known factors in transport literature which has influence on mode choice. Carrion et al. (2011) observe that travellers' characteristics have been incorporated in mode choice models in order to control for (observed) heterogeneity. They also assert that the evaluation of attributes may differ across travellers, and thus the inclusion of travellers' characteristics allows for market segmentation. They also give credence to the importance of income, gender, auto ownership, age, occupation, number of licensed drivers in the household, among others. It is in line with this that the study explores the differences in the socio-demographic characteristics of respondents.

## 2. Methods

### 2.1. Participants and procedure

This study measured level of service based on variables which include reliability, frequency, accessibility, travelling time, ease of transfer, price, vehicle condition, safety, comfort and aesthetics. These 10 variables were broken down to cover a total of 19 indicators on which MMT's level of service was measured. On a Likert scale of excellent to poor, commuters assessed the level of service of MMT based on how they perceived it. This assessment was done by three categories of commuters; Frequent-users of MMT, Occasional-users and Non-users of MMT.

The MMT has four terminals (Achimota, Madina, Accra Central and Kaneshie) in Accra where all journeys start or end. Data was collected at these four main geographical areas of the city which have been revealed by Abane (2011) to control 80% of passenger traffic in the Accra metropolis. These terminals also possess most vehicles plying various destinations in and around the Metropolis.

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