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Sanitary, Health And Safety Management Of Intra -City Transport Terminals Of Ghana..

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A study was conducted with the aim of exploring and understanding intra-city transport terminals and their impacts on users. The research specifically studied the Old Tafo Lorry Park in Kumasi, Kaneshie Station in Accra, and Anaji trotro Lorry Park in Takoradi, examined their location, sanitary, health and safety management problems. A literature review focused on exploring transport terminals, interviews, questionnaires and personal observations were used in the study. The study discovered that the terminals at Old Tafo and Kaneshie in Kumasi and Accra respectively are sited next to markets, where various economic activities including vibrant buying and selling occur, while, the Anaji trotro terminal in Takoradi is found within residential areas located in streets, clearly suggesting that no consideration was given to the development of public transport terminals. The study also noted that with the exception of the at Old Tafo terminal there are no sanitary facilities at the other two terminals under study. Seventy four percent of the respondents described the facilities at the terminal as poor yet they are of the view that the location of the terminals be maintained due to their proximity to markets. The large number of vehicles that use the terminals in the morning and evening peak hours result in congestion at the terminals. The study concluded that the vehicular-pedestrian conflicts at the terminals could be controlled if adequate infrastructure and services are provided at the terminals. The study increased awareness of the managers of the terminals on the need to provide security at the terminals, comfort to patrons and to reduce vehicular and pedestrian conflict.

Keywords: *transport, terminals, intra-city, commuters, Ghana*

I. INTRODUCTION

Road transport is Ghana's main means of travelling, accounting for about 45% of the nation's socio-economic growth (Agyemfra, 2003). Majority of daily commuters in Ghana do not have personal vehicles. Available statistics indicates that only 35% of road users use private cars, the other 65% travel on foot or make use of public transport (mass transit system) to meet their travelling requirements (MRT 2006b).

Urbanik (2007) defines public transport as "transportation service that is available to the general public and carries passengers to common destinations for a fee". Public transport systems require spaces to operate. The spaces allow people and vehicles to assemble and disperse. These spaces are known as terminals. A transport terminal is a facility or location where freight and passengers assemble and disperse on a journey. It is any point of interchange involving some mode of transport (Rodrigue et al., 2006). The main functions of all terminals are to provide spaces for convergence and dispersal; however, the mode of movement and the type of cargo handled there define the differences. The focus of this study is on road transport and intra-city movement of people from bus terminals. These bus terminals in Ghana are known as lorry parks, lorry stations or simply 'stations'. A lorry park is a bus terminal involving different kinds of vehicles including taxicabs, minibuses (known locally as 'trotro') and Metro Mass Transit (MMT) buses.

In Ghana, most settlements are developed without the necessary provisions of certain social services like public transport terminals. In cases where such provisions are made, developers violate Town and Country Planning regulations in that, the terminals may be sited without compliance to regulations. Many of these sites are no longer suitable for use as terminals because of the changing trends in road construction and population growth. Prospective users are repelled by the problems of location, lack of facilities, poor management and unsafe working environment. They therefore resort boarding vehicles at unauthorised places along the length of the roads.

The aim of this study was to explore and understand intra-city transport terminals and their impact on users. The research specifically studied the Old Tafo Lorry Park in Kumasi, Kaneshie Station in Accra, and Anaji *trotro* Lorry Park in Takoradi, examined their location, facilities and security issues. Old Tafo transport terminal is located outside Kumasi central business area and is a satellite station that serves a large number of commuters from Mampong and surrounding communities and therefore needs the attention of the local authorities on the need to upgrade the place. Kaneshie station which is the satellite station for travellers from the Western and Central Regions of Ghana also serve a large concentration of people and aid in commercial activities that take

place at the terminal's market area. Stations located on roads are common in the Sekondi-Takoradi Metropolis and Anaji Trotro Station is one of them. Anaji Trotro station was selected because among the stations located on the road it is the station with large number commuters and has no room for expansion hence increasing the awareness of the need to relocate the station is important. The study intended to find out the level of congestion, based on traffic generated on a daily basis at the terminals. The research examined as well the infrastructure and services provided at these stations and assessed how adequate or otherwise they were and their effect on the environmental health of users. Safety of passengers and how security issues were handled at the stations were also examined.

Finally, the study proposed solutions to the identified problems with the aim of enhancing the image of the road transport terminals in the study areas and how best the solutions can be adjusted and applied to other intra-city terminals in Ghana.

II. PREVIOUS RESEARCH

Public transport in Ghana

Private car ownership was not very common in Ghana in times past. The history of public transport in Ghana dates back to 1927 when the first public bus company, the Omnibus Services Authority (OSA) started. It was government owned and contributed a lot to the society until its decline in the 1980's. This caused the privately owned public transport industry to boom. The assets of OSA were put into divestiture in 1995. In 1961, the Government of Ghana introduced a bus company, the Government Transport, to link people in the country. The company's name changed to State Transport Corporation (STC) in 1966. The company was diversified in 2000 and finally privatised. It is now known as Intercity STC with Social Security and National Insurance Trust (SSNIT) as its main shareholder (MMT 2006a). Present day public transport systems operating on intra-city basis are taxis (shared taxis), minibuses (*trotro*) and metro mass transit buses (MRT 2006b). In Ghana, the legal seating capacity of taxis is four passengers while *trotro* range in size from twelve (12) to thirty (30) seats (Kwakye et al., 1997). The vehicles are not metered, but fares for normal journeys are fixed (Grieco et al., 1996). This strategic change in the transport sector has increased the number of lorry stations, which has made accessibility to transport terminal easier than before. However, facilities at these terminals do not merit the status of a modern transport terminal. This calls for the need to upgrade most terminals especially in the cities to a befitting status.

Location of terminals and level of traffic congestion

Transport terminals are defined by their spatial as well as a functional character. By virtue of where they are found, their functions are specific going a long way to influence the environment in which they are located. The major factor influencing the location of a transport terminal is that it must serve a large concentration of population and/or industrial activities which forms the terminal's market area (Rodrigue et al., 2006). It also serves as a focal point for clusters of other specialized services including brisk trading. The various activities that go on and thus draw people to a terminal include boarding and disembarking from the following types of vehicles – Metro Mass Transit (MMT) buses, minibuses (*trotro*), taxis and private cars, and carrying of goods and luggage either personally or with the assistance of porters to or from vehicles. Other activities performed are queuing to purchase tickets, if needed; waiting in sheltered areas and lounges if vehicles are not ready for departure or expected ones have not yet arrived and trading.

The safety and security in terminals

A major concern when managing terminals is about safety and security of the people and goods that are handled there on daily basis. Rodrigue et al., (2006) identified crowd control and safety issues as the priority matters bothering managers of railway terminals and airports due to the dense numbers of passengers there. They advanced a proposition that accesses to terminals be well monitored and controlled while movement of passengers is channelled along pathways that provide safe access to and from platforms and gates (Rodrigue et al., 2006). Safety and security of goods and passengers in road transport terminals is also of major importance. In places here dark alleyways and obscure corners abound, crime rate is higher and safety of users can be compromised. After the September 11th, 2001, terrorists' attacks in the US, new and improved systems of monitoring airports have been put in place. They include restricted accesses to airports and freight terminals, presence of more security personnel and fortifying cockpits of aeroplanes. Extensive screening of passengers both manually and with electronic gadgets as well as rigorous inspection of their luggage are some of the means employed at ensuring safety in airports (Nolan, 2007). These same systems if incorporated into road transport terminals will go a long way in helping with the safety and security of the users. In addition to monitoring systems, planning arrangements done in such a way as to minimise obscure and dark areas are necessary to ensure safe and secure terminals.

Workers safety and theft are also of primary concern at terminals. There arises the need to put in stricter measures to ensure that terminal workers are safe and secure while on duty. However, these stricter safety

measures have their negative consequences. Cost of installing high-tech security devices and paying of more security personnel are some problems managers of terminals have to deal with. In addition, when tighter security measures are employed, it becomes an inconvenience, which delays the movement of people and goods (Rodrigue et al., 2006).

III. RESEARCH METHOD

Both primary and secondary sources of data collection were used in this study. The primary sources used were interviews, questionnaires and personal observations. Literature review of publications, books, journals and magazines from libraries and the internet were used as a secondary source of information.

Interviews and Questionnaires

This survey was carried out using self-administered questionnaires that had open-ended and closed questions. The population involved in this survey (i.e. the stakeholders in the transport terminal) is heterogeneous – different people from different backgrounds with different purposes. Due to the busy nature of the terminals and the nature of the population, the stratified random sampling method was used in selecting the people to be interviewed and to be served with questionnaires. The sample size was 500 people drawn from the population in Accra, Kumasi and Takoradi. The population was divided into three subgroups. These are:

Group A: Patrons of the terminal. This category includes the administrative body working at the terminal, drivers, conductors, passengers, vendors, porters, shop owners as well as hawkers

Group B: Managers of terminals in the cities and statutory bodies managing the three cities, that is, Accra, Kumasi and Sekondi-Takoradi Metropolitan Assemblies, Town and Country Planning Department and the Department of Urban Roads, in the three regions

Group C: The management of Greater Accra, Ashanti and Western Regional Secretariats of the Ghana Private Road Transport Union (GPRTU) as an agency operating vehicles that make use of transport terminals in the regions.

The interviews that took place at the Kaneshie Station in Accra, Old Tafo Lorry Park in Kumasi and Anaji trotro station in Takoradi were done over a period of two months. Between December 2011and February 2012, the terminals were visited daily for the first two weeks. This was reduced to once a week for the rest of the period.

Field survey

i. Personal Observation and Photographs

Extensive personal observations of the situation on ground at various terminals were undertaken as a data source for this project. The observation focused on the general layout of the structures in relation to other facilities around, the activities that go on at the terminal, circulation patterns of humans and vehicles, fabric, structure and aesthetics of any building, safety and security as well as ground treatment. Relevant pictures of the terminals and daily activities that go on there were taken and used as a source of information.

ii. Traffic Density

Traffic density (both human and vehicular) was measured during the studies through field survey. Traffic counts at regular intervals during peak and off-peak hours were conducted to determine congestion levels and their impact on the activities at the terminals. Traffic counts were taken between the hours of 6:00 a.m. and 10:00 a.m. for morning peak densities and between 4:00 p.m. and 8:00 p.m. for the evening peak densities. It was also done during the daytime off-peak hours between 11:00 a.m. and 2:00 p.m. The results were used in the analysis.

IV. RESULTS AND DISCUSSION

Respondent Rate

Averages of 100 persons from each of the three terminals were interviewed in a one-on-one manner. Those interviewed were drivers, conductors, hawkers and porters. This was because they were busy going about their duties, also majority of them were not literate enough, and thus they did not like the idea of filling questionnaires but preferred to answer the questions in a one-on-one-dialogue manner. Besides the interviews 100 people from each terminal were served with questionnaires. Out of the 300 people who were served with questionnaires, 210 (Accra=76, Kumasi=70 Takoradi=64) valid responses were received, representing a response rate of 70%. In all a total of 510 respondents (from both questionnaire and interview) were used in the analysis. The details are in Table 1

Table 1. Questionnaire and interview conduction details

Terminals	Total no. of questionnaires	Total no. of valid questionnaires	Total number of people interviewed	Total number of respondents used in the study
KS	100	76	100	176
OT	100	70	100	170
AT	100	64	100	164
Total	300	210	300	**510**

All the 300 people interviewed belonged to subgroup A. One hundred and twenty of the valid questionnaires were received from subgroup B and ninety valid questionnaires were received from people from and subgroup C.

Group A: Patrons of the terminal. This category includes the administrative body working at the terminal, drivers, conductors, passengers, vendors, porters, shop owners as well as hawkers

Group B: Managers of terminals in the cities and statutory bodies managing the three cities,

Group C: The management of Greater Accra, Ashanti and Western Regional Secretariats of the Ghana Private Road Transport Union (GPRTU)

Location of the terminal

When asked about their opinions of the location of the station, 60% of responded were of the view that the location of the terminals be maintained due to their easy accessibility and proximity to market centres. Table 2 shows the distribution of the responses on location of the terminals.

Table 2: Commuters responses on location of the terminal

Commuters' Opinion	No. of People				Percentage of respondents
	KS	OT	AT	Total	
Good – should be maintained	156	150	0	306	60
Not good – should be relocated	0	0	160	160	31
Location is not important	20	20	4	44	9
Total	176	170	164	510	100

All the respondents from Takoradi suggested that the terminal be relocated if it must to be developed into a satellite terminal with improved facilities that would bring in more people and vehicles to the terminals. While, 9% (44 respondent) were indifferent to the location of the terminal.

Level of traffic generation

In determining the traffic densities of vehicles and people at the terminals, traffic counts were conducted between the hours of 6:00 a.m. and 10:00 a.m. To determine morning rush hour densities and between 4:00 p.m. and 8:00 p.m. for the evening peak densities. It was also done during the daytime off-peak hours between 11:00 a.m. and 2:00 p.m. Table 3 shows average vehicular densities recorded at each of the three terminals.

An average of 103 vehicles use the lorry parks between morning hours of 6:00 a.m. and 10:00 a.m. Out of these vehicles 25 were taxis, 65 were buses and 10 were private vehicles. The private vehicles consist of all non-commercial saloon vehicles that use the terminal. It was depicted that the average total number of people that use the terminals were 10412, 3322 and 2620 for Kaneshie, Old Tafo and Anaji trotro terminals respectively as indicated in Table 3.

Table 3: Number of people using the terminals

	KS	OT	AT	Average
Morning peak hour	3776	1186	824	1928
Afternoon	2672	680	580	1310
Evening peak hour	3964	1456	1216	2212
Total vehicle	10412	3322	2620	5450

Facilities at the terminal

All the respondents complained about lack of shelter at the terminals. Three hundred and seventy seven out of the 510 respondents (74%) described the available facilities as bad. Emphasis was laid on the deplorable state of the terminals and inadequate facilities available. Only 28% described the facilities at the terminal as average. It was also discovered that some passengers wait for sometime before having access to vehicles, especially in the evenings. It was also observed that there were few snack bars and local restaurants at the terminals. Facilities like waiting room for passage, common room for drivers were not available at the case study terminals. Basic services in the form of electricity and regular water supply were found to be inadequate at the terminals. Also there were few refuse disposal bins at the terminals. As could be seen in Figure 1 ground treatment was very poor. Table 4 display the responses of the patrons to the terminals.

Figure 1. stages of lorry terminals under studies

Table 4: Commuters response to facilities provided at the terminal

Facilities provided	**No. of respondents**				**% of respondents**
	KS	**OT**	**AT**	**TOTAL**	
Very bad	101	70	88	259	74.0
Bad	49	14	0	63	18.0
Average	0	28	0	28	8.0
Good	0	0	0	0	0.0
Very good	0	0	0	0	0.0
Total	150	112	88	80	100

Preferred Means of Public Transport

Two hundred and fifty commuters were randomly selected and interviewed from the stations on their preferred means of transport. It came out that, 200 of them representing 80% use public transport as their daily means of travel. Of the remaining 20%, own private cars and prefer to travel in them.

Table 5: Commuters public transport preference

Type of vehicle	**No. of People**	**% of commuters**
Taxis	55	22
Minibuses	100	40
MMT buses	45	18
Private means	50	20
Total	250	100

A list of the three kinds of public transport systems, namely taxi, minibus (trotro) and Metro Mass Transit (MMT) bus were presented to commuters to indicate their preferences and reasons (Table 5). It was indicated that majority (40%) of the respondents, preferred minibus also known in Ghana as trotro due to it low fare charged.

V. DISCUSSION

The findings from the research calls for the need to address the short falls relating to location, facilities, as well as safety and security issues at the transport terminals in the study areas and in Ghana as a whole.

Location of the terminal

In this study, it was clear that, 60% of the respondents preferred that the locations of Old Tafo and Kaneshie transport terminals be maintained at their present locations but with improved facilities. The preference of the locations by majority of the respondents might be due to the fact that these terminals are located at vantage points and this makes them able to serve a large concentration of population, which is in line with the submission of Rodrigue et al. (2006). Kaneshie and Old Tafo terminals with upgraded facilities would serve as a focal point for clusters of other specialized services including brisk trading. A modern satellite transport terminals at the current location, would also help patrons to and from the Kaneshie and Old Tafo markets have easy means of transportation for themselves as well as their goods.

On the contrary, all the respondents from Takoradi were of the view that Anaji Trotro and other stations in Takoradi which are located on the road should be relocated. Relocation of the Anaji and other stations in the Sekondi Takoradi Metropolis would ease traffic congestion on roads used as lorry station and also minimize vehicular pedestrian conflict.

Facilities provided at the terminal

Information from literature revealed that standard terminal should have basic infrastructures like, ticket booths, arrival and offloading bays, and vehicle boarding bays. Others are sheltered waiting areas for passengers (both open and enclosed) and washrooms. None of the above mentioned facilities were found at any of the terminals under study. There was also inadequate lighting system and poor sanitary facilities at these terminals.

Inadequate lighting, absence of sheltered waiting areas for passengers and rest rooms for drivers at the terminals, compel passengers to stand in the open (sun or rain) or in the dark in the evenings while waiting to board a vehicle as depicted in Figure 1. This situation exposes passengers to all forms of harm, such as pick pocketing, snatching of mobile phones, hand bags, etc. To prevent these vices there must be the need to provide facilities such as waiting room where passengers, could rest while waiting for Lorries to their various destinations.

The authors observed in all the three terminals that drivers rest in their lorries, while waiting for their turn to load, which in effect make drivers restless and look tired. Provision of rest room for drivers would reduce the incident of accidents due to tiredness on our roads, since driving tired can cause accident. The Ghana National Road Safety Commission (NRSC) statistics show that between 2002 and 2008, 13,166 people were killed in road accidents. Of that figure, 42% were pedestrians, 23% were passengers in buses, 12% were car occupants, while the remaining 23% consisted of riders and passengers of bicycles, motorcycles, and occupants of heavy goods vehicles and pickups. And just last year, 2011, the MTTU (Motor Traffic and Transport Unit), reported that 2,330 Ghanaians died in road accidents alone with 13,572 road accidents being recorded. And is not just human lives that are lost to road accidents – an average of 1.6% of Ghana's GDP is lost every year to road accidents. At least in the authors opinion, provision of facilities that would encourage drivers to rest while waiting for their turn would go a long way to reduce the alarming rate of accidents on our in Ghana (NRSC, 2012; MTTU, 1012).

Again it was observed that there were inadequate waste disposal bins at these terminals. This makes users of the terminals indiscriminately litter waste and create filth on the untreated ground, making it difficult for cleaner to tidy up the place, since sweeping is always accompany with dust causing dust pollution..

The Safety and Security at the terminal

From the study, it was observed that there were no safety and security facilities provided. Because, the terminals are close to markets, there is movement of people between the markets and the terminals during the day. This evokes a sense of security in users during the day. This then implies that, in the late evenings and night, criminal activities at the terminals are increased, since there are less or no activities at the market during those times, hence less people moving between the markets and the terminals making the dark terminals insecure. Maximum security at night is of paramount importance. This could be achieved by providing security lights around the terminals at Kaneshie and Old Tafo, while streetlights are to be provided around the terminal periphery for full night lighting at the Anaji Trotro station. Besides secondary security systems such as closed circuit cameras and televisions (CCTV) monitoring activities all over the facility and alarm systems should be employed. Fire hydrants are to be located at vantage points of the terminals for easy access by fire engines, since none was found there.

VI. CONCLUSIONS

This study explored intra-city transport terminals and their impact on users in Accra, Kumasi and Takoradi, using Kaneshie, Old Tafo and Anaji Trotro terminals as case study areas. From the findings and their implications it can be concluded that:

Poor lorry park location of Anaji trotro affects optimum use of public transport systems, as people do not wish to patronise badly located terminals.

Lack of facilities like security light, engineered waiting areas, washrooms, fire hydrants and inadequate waste disposal bins at the terminals, expose users to robbery especially during the night and insanitary conditions. Provision of facilities that would encourage drivers to rest while waiting for their turn would go a long way to reduce the alarming rate of accidents on our in Ghana.

The practical implication of this research was that awareness of the managers of the terminals was increase on the need to provide security at the terminals, comfort to patrons and to reduce vehicular and pedestrian conflict. The study recommends that Anaji and other stations in the Sekondi-Takoradi Metropolis be relocation to ease traffic congestion on roads used as lorry parks and also to minimize vehicular pedestrian conflict. Also enough lightening, waiting rooms for passengers, rest rooms for drivers and proper sanitary facilities must be provided at the terminals to enhance the image of the terminals under this study.

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