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Perceived Potentials of Rail Mass Transit in Ibadan

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Abstract

As a strategy to address persistent intra-city transportation challenges in Ibadan metropolis, especially in the face of rapid population increase and urban sprawl, the study explored residents' perceived potentials of introducing intra-city mass rail transport system in the metropolis. Both primary and secondary data were sourced and used for the study. Discontinued skeletal intra-city rail system that was introduced in the metropolis, together with existing major traffic corridors was used in selecting five traffic corridors from which systematic random sampling technique was used in selecting 582 residential buildings from 67,540 residential buildings found within 100 metre cordon created on both sides of these corridors. A set of questionnaire was used in obtaining relevant information, especially on socio-economic characteristics and travel behaviour, from household heads selected at the rate of one per selected building. In-depth interviews were conducted with a cross-section of major stakeholders in the metropolis on their perceived potentials and challenges of mass intra-city rail system. Secondary data were obtained from both published and unpublished sources. Descriptive statistics was used in analyzing quantitative data obtained, while qualitative data were content analysed. The study revealed that intra-city rail mass transit system is perceived to have very high potentials in the metropolis in terms of traffic congestion reduction, reduction in per-capita crash rate, increased modal choice for the residents, enhanced consumer savings, and employment creation. Major challenges envisaged for the mass transit system include, change in transport culture and orientation and huge infrastructure outlay among others. Strategies were proposed to address the identified challenges.

Keywords
Mobility crisis, traffic corridors, mass transit, perceived potentials

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1. Introduction

Owen (1987) once suggested that if the global transport system does grind to a halt, it will be in the cities. Ironically, cities account for only 0.5 percent of world's land area in spatial terms while more than 50 per cent of the world's population already reside in cities by 2010 and about 56 per cent by 2030 (UNPD, 2015). In the last two decades however, many Nigerian towns and cities have doubled their spatial sizes and population (NPC 2007). Incidentally there has been a diffusion of urban centres over the years in several parts of Nigeria, while the rate of urbanization and the rate of urban growth have also been persistently high. Average Annual growth rate in urban areas is about 4.7% as against the national growth rate of 2.8% (World Bank 2006). Various population projections for the major urban centres in the country tend to suggest that there is not going to be an abatement in the rapidity of their growth soon.

Several reasons have been put forward for the unprecedented urbanization process (Egunjobi, 1997; Agbola, 2005). The most disturbing aspect of this rapid population growth and accelerating urbanization lies in the lack of requisite city economy to produce the public and private resources necessary for transport and city development at the scales required. The rapid urbanization trend means that more people will be making more trips in urban areas. More importantly, the movement access to education,

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work places, recreational, business and other land-uses is paramount to the continued existence of the city (World Bank 2006) Indeed, several studies have been carried out by notable scholars in the area of urban public transportation systems in developing countries like Nigeria (Agunloye and Oduwaye, 2011). These studies have propounded innovative and dynamic strategies towards combating the multifarious urban mobility challenges and have also clearly shown the close relationship between the city structure, density and land-use with transportation, the type that makes the transport demand and travel intensity to increase with the size of a city. With increasing economic, political and social activities especially in the developing countries, an efficient urban transport system and comprehensive mass transportation system becomes a necessity. Such a system would move people and freight in large numbers within a given network within a relatively short time.

The railway transport which developed during the steam and locomotive era to automation stage has significant characteristics of having the capacity for bulk movement of goods over long distances more cheaply than any other form of land transport. Itemizing the role of rail transport in cities, Adesanya, (2002) noted the contribution of rail transport to the creation of employment opportunities, promotion of trade and commerce, distribution of freight, movement of passengers as well as facilitation of urban development.

Until now, public transportation in Nigerian urban centres have largely been dominated by para-transit and intermediate modes in the absence of formal public transport technologies such as light rail transit, trams, underground metros, elevated rail transit, sub-urban rail among others as obtained in advanced cities of the world. Adeniji (2000) noted that the absence of a well-organized transportation system in Nigerian cities does incalculable damage to the cities' economy. He itemized three major damages that emanate from the inadequacy of existing transport infrastructural facilities in our cities which favours the road transport sub-sector and invariably a car-oriented urban transport landscape. Firstly, there is a restriction on the mobility of vast majority of urban dwellers who do not have access to or own a car. Secondly, there is an inordinate energy consumption and unmitigated environmental pollution which could be abated when people move in groups rather than individually in cars. Thirdly, the unavailability of adequate space within the core areas of large cities to accommodate all travels by car at an acceptable cost to the general public. Meanwhile, the problems induced by the proliferation of cars and mini-buses as the sole means of public transportation become worse by the day as over-crowding mounts in the cities. The various transport infrastructure and furniture become over-stretched and buckle under intense pressure as more people are thus rendered immobile.

Against the background of urban mobility crisis, emerging facts have shown that city functions and activities are spatially dispersed. Accordingly, city governments have built additional roads but these roads, rather than reducing traffic bottlenecks, have worsened them. Governments have also purchased more fleet of buses and cars for city transport, yet, all these have clogged the city roads, generating more demand for parking facilities. From the foregoing, this study sets out to examine the potentials of intra-urban rail transport development for Ibadan metropolis and recommend such as a viable and befitting mass transit option for such other cities in Nigeria.

2. Theoretical/Conceptual Framework and Literature Review

2.1 Theoretical and Conceptual Framework

Every particular type of land use involves the generation and attraction of an array of movements. These movements are either obligatory or voluntary (Rodrigue, 2008). Consequently, this study is anchored on the Spatial Interaction Theory and the Mass Transit Concept. The adaptation of the Spatial Interaction Theory to transportation studies by Vaughan (1987), states that "the amount of traffic between two zones is proportional to the product of the population or attraction of the zones multiplied by the deterrence factor for travel between the zones". This deterrence factor is based on the travel time, cost or distance between the zones.

In essence, what the spatial interaction model means is that the percentage of trips produced by zone i allocated to destination zone j is dependent upon both the attractiveness of and travel time to that zone, relative to the features of all other attracting zones (Dickey, 1975; Ayeni 1979; Oyesiku 2003). This tends to account for the factors

that govern commuter's choice of movement. Researchers however have identified at least four of these factors which include; travel time, travel costs, comfort and levels of service (volume/ capacity). Ortuzar and Williamson (1990), however broke these factors down further as journey time, distance, monetary cost (such as fuel and others), congestion queues, class of road on which such journeys are made, the scenery, signposts and other behavioural habits associated with the journey.

Travel behaviour of urban residents therefore is the consequence of spatial separation of points of origin and destinations as well as the characteristics of the travellers (Barber, 1995; Oyesiku, 2003). Although the effect of the travellers' characteristics or trip frequency is not inclusive in the theory, the theory nevertheless, provides some explanations on why interaction takes place in space. In essence, the theory is largely theoretical than empirical and having implicit rather than explicit explanations to urban travel patterns. This is why transport planners always attempt to provide means of improving transport systems between areas by upgrading existing modes and networks, rather than relying on the underlying process of observed travel patterns.

The mass transit concept, as operated by the mass transit systems, can be described as an efficient means of moving large numbers of people within a given network with relatively short term headways and reasonable turn-around time in dense urban areas (Adeniji, 2000; Adesanya 2002, World Bank, 2002). This is made possible by various modes of transportation such as the buses, ferries, rails, trams and metros. Transport analysts were of the view that each of these options has its peculiar technical and operational characteristics as well as investment implications. Fadare (1998); and Filani (2005) deposed that any of the options or a combination of any of them can be adopted to suit individual urban centres or inter urban network. The choice of system could be influenced by population size and area extent of the city or regional area, the nature of transport demand, characteristics of land-use pattern and the level of technology.

The concept emphasized that not all forms of public transport are qualified to be called mass transit systems. For instance, mini-buses, taxis, rick-shaws and other para-transit modes are not mass transit systems. The carrying capacity, the effectiveness and the efficiency of the system to relieve congestion in urban traffic situation makes the difference. From available statistics, the rail options have often provided a viable alternative to the buses in congested cities in terms of efficiency, convenience and mass appeal. In essence, the urban masses are no longer content to be moved conveniently in large numbers but also in a fast and appreciable time to their various destinations which only the Mass Rail Transit (MRT) system can guarantee.

The integration of the MRT within the urban fabric however makes some important demands on the planning system. Rights-of-way must be established and protected. Space must be created for stations, platforms and terminals. One of the weak points of MRT system is their structuring effect on central business districts of cities which are likely to be increasingly congested. In another sense, the MRT has been known to exhibit a less polluting factor that benefits the environment when compared with the private road traffic. Innovative bus-propulsion systems, including natural gas, clean diesel, hybrid diesel and electric, and fuel cells, all combine with the electric traction of the rail systems to make the environment cleaner and safer. The choice of MRT technology as dictated by costs and performance may however vary from location to location with a carrying capacity of up to 20,000 passengers per hour in the peak direction at an average speed of 40-60 kilometres per hour

2.2 Literature Review

The development of rail transport in developed countries, with respect to the movement of passengers and goods, followed the pattern of industrial and urban expansions of the 19th century. In Europe for instance, the early industries facilitated rail traffic generation while in America, it was the railways and agriculture that provided the starting point for industrial production (Hillings, 1996). In essence, the profound impact of rail transport in the development of trade and commercial economy, agricultural and mineral resources sector, settlement expansion facilitation and the enhancement of internal cohesion, is indeed of immeasurable significance.

Adesanya (2002), traced the economic prosperity of cocoa belt of Ghana in 1903 to the provision of rail-lines. The subsequent incursion of the rail from the coast of Sekondi to the gold mining

areas of Tarkwa also resulted in a drastic fall in land transport cost per tonne of imported goods from the mines. In Nigeria, it was also observed that within 18 months of reaching Kano, the rail enhanced the production of groundnut to the extent that every available piece of land was devoted to groundnut production. This situation raised the exportation of the commodity from about 10,000 tons in 1912 to an average of 40,000 tons per annum for the next decade.

Filani (1988) also attributed the political and economic emergence of some towns in Nigeria to the rail connection as the colonial administration at that time deliberately linked only centres of production in Nigeria. Towns like Enugu, Jos and Kafanchan emerged as 'new towns' while older towns like Kano, Kaduna, Ibadan, Port-Harcourt and Lagos were equally rejuvenated by the rails. The coming of the rails to Ibadan, for instance, was largely responsible for the prominence of the Old Gbagi- Lebanon street commercial axis and the city expansion that was witnessed along Apata- Odo-Ona and Dugbe sector of the city.

Rail contemporary advantage today, revolves around the provision of intra as well as inter-urban passenger travel and freight movement. With the advancement of technology, rail travel can now substitute air travel in terms of speed and distance covered. Private cars and other automobile congestion, as recounted by Filani (2005), becomes more self- defeating as city sizes increase and the heart of these cities become in- accessible by auto – cars. Railway has always been called to the rescue. This is made possible by its inherent characteristics which allow large volumes of passengers to be carried over short distances within the city. In cities like London, Liverpool, Paris, Moscow and Tokyo, underground rail systems served this need. The future prospect, according to Filani (2005), shows that rail travel will eventually become more widely used for intra – urban travel, even in smaller cities than those mentioned above. However, the symptoms of a malfunctioning urban traffic system are manifested by traffic congestion, parking problem, traffic delays and crowded terminals among others. All these are attributable to absence of an effective transportation planning that can meet the upsurge in urban travel demand. Ogunsanya (2004) painted a graphic picture of the urban transport problem when he noted that in Nigeria, very few cities have designated bus stops and lay-bys with no lanes reserved for buses and para-transit vehicles. The organization of existing bus stops is poor and this is a major cause of urban traffic congestion problems. He further noted that different public transport vehicles park at will, competing to pick and drop passengers while the major roads are partly occupied by roadside traders and across roads are used for domestic waste disposal. Most urban roads are indeed in very deplorable conditions and induce a lot of traffic congestion.

Traffic congestions, according to Hoyle (1994), occurs when urban transport network are no longer capable of accommodating the volume of movements that use them, thus leading to delays in journey time. He identified these delays as 'fixed' and 'operational' in nature. Fixed delays occur mainly at road intersections. Together with traffic control at road junctions, they account for 40 percent of the total delay time. Operational delays are accounted for by parking problems, road factor, human factor, traffic mix and accidents totalling over 50 percent. The cost of traffic congestion, according to Ogunsanya (1986), may be looked at from its economic and psychological effects on the urban dwellers. It also leads to wastage of valuable time and reduces manpower productive hours of the residents.

Winston and Langer (2004), averred that both motorist and truck congestion cost decline in a city as rail transit mileage expands. Also, Garret and Castelazo (2004) found that traffic congestion growth rates declined in several U.S cities after light rails services was established. Baum-Snow and Kahn (2005) found significantly lower average commute travel times in areas near rail transit than in otherwise comparable locations that lack rail.

Complementing the foregoing studies, Litman (2004) shows that per capita congestion delay is significantly lower in cities with high quality rail transit systems than in otherwise comparable cities with no rail services. He discovered that rail transit service reduces congestion costs in three ways. First, the comfort provided by the rail with passengers having a seat with clear vehicles and stations is capable of reducing travel time costs to people who shift modes. Second, grade-separated transit, common with the rail, reduces delays on parallel roadways as various studies have indeed shown that travel times taken by door-to-door

modes equates with those of grade separated transit (Mogridge, 1999, Lewis and Williams, 1999; Vuchic, 1999). Third, rail transit has been known to stimulate transit oriented development (TOD) where people drive less because they have mobility options such as the 'park and ride'. Podobnik (2000), observed that households have significantly reduced their vehicle travel each time they move to transit-oriented locations. Market surveys conducted in the US indicated that transit-oriented development will increase in the future, thereby making rail transit provide significant future benefits (Reconnecting America, 2004).

In a more comprehensive analysis, the potentials of the rail is again brought to the fore in a cost effective manner in the areas of energy conservation and pollution emission reduction. Road transport has been known to contribute more than 60 percent of the carbon emissions produced by the poorly maintained and sometimes unserviceable vehicles. Filani (2000) also noted that transport is one of the worst defilers of environment, its effect on health of the people, community values and environmental ecology is unimaginably deplorable. Ameyan (2002) gave reasons why Nigeria is more polluted than the industrialized countries simply as:

> *"the fact that many vehicles are in poor conditions following the economic downturn of the 1980s, a barrage of vehicles which are unable to meet the emission standards in Europe and elsewhere have flooded the country."(p.14).*

Rail transit, according to him tends to reduce per capita vehicle ownership and use thus removing drastically the amount of lead concentrations which motorized transport infuses into the bloodstream of urban dwellers.

3. The Study Area

Udo (1996), traced the origin of the sustained growth of Ibadan over the years to its emergence as the largest urban centre in Nigeria in 1860 through 1963, when its population was estimated at 627,780. This figure rose to 1.2 million in 1991 and 2.55 million in 2006 (NPC, 2007). Corroborating the narration of Udo, Fouchard (2003) recalled the creation of Ibadan in 1829 as a war camp on a forest site with several ranges of hills and valleys which offered strategic defensive opportunities. Its location at the fringe of forest and savannah regions culminated in its emergence as a market centre for goods from both the grassland and forest regions. The economy of Ibadan, as at this period, primarily rested on agricultural products such as yam, maize, vegetables, palm oil, kolanuts and the manufacture of weaponry through smithery because of its militant environment. Most of the trading activities at this time centred on Oja-Oba market which really marked the city limits to the north (Mabogunje, 1962).

By 1896, when the British colonialists established their presence in the city, expansion of the initial city core began with the Agodi hills residency and the connection of the core with road networks. After an initial boom in rubber production between 1901 and 1913, cocoa became the main produce of the region which attracted the European and foreign interest. The influx of the European traders led to the construction of rail services in 1901 to facilitate evacuation of cocoa products and the emergence of Gbagi market in 1903.

The colonial period witnessed phenomenal development of the city and reinforced the position of the city in the Yoruba urban network. Ibadan was looked up to as the centre of activities and political development. The proximity of the city to Lagos facilitated its link by road and rail and eventually when the Western Region Secretariat was established in 1946, the emergence of the city as the centre of the Yoruba nation became irreversibly acknowledged. This development was followed by the establishment of the University College which later transformed into the University of Ibadan in 1948 with its teaching hospital. Also established were the first television station in Africa in 1959 and some government reservation areas for residential, industrial and agricultural purposes.

The post-colonial era witnessed further growth and development of the city. The construction of Ijebu-Ode bye-pass in 1963 opened further the southern part of the city and extended the residential quarters of Oke-Ado and Molete. The location of the railway headquarters at Dugbe facilitated the emergence of Gbagi as a commercial zone, so also was the establishment of the Yemetu residential quarters to cater for the civil servants at the Secretariat (Mabogunje,1968).

The objectives of the First to the Third National Development Plans of 1960 to 1980 were the

acceleration of industrialization; but incidentally, the level of industrialization remained low in Ibadan city as small scale activities dominated the industrial landscape.

By 1973, the Ibadan-Lagos expressway generated the greatest urban sprawl east and north of the city. This was followed by the Eleiyele expressway on the west, spiralling the city-spread further into the outlying local government areas of Egbeda, Ona-Ara, Akinyele and Ido respectively. Transportation system in Ibadan has been greatly influenced by the continuous sprawl of the city. The commuting distance from the traditional city core has continued to increase in an almost radial pattern as new activity centres are currently located outside the city limits thus promoting longer journeys by residents between homes and new activity modes. The expansion of the city is direction – specific and continuous over time. Movements within the urban centre involve trekking, and the use of private automobiles, motorcycles, tri-cycles, taxis and mini-buses. Adeniji (1983) noted that between 1964 and 1976, Ibadan city had a skeletal intra-urban bus system (publicly owned) originally plying 12 routes. The bus system eventually collapsed due to inadequate mass transport planning and regulation; lack of inter-governmental cooperation; poor maintenance, inadequate financial subsidy; dearth of qualified personnel and operational devices, among others (Filani 1994). Also, the city benefitted from the financially assisted Oyo State Mass Transit Programme of 1978 which later transformed into the Trans-City Transport Company (TCTC). Currently, public transportation within the city is undertaken by para-transit operators.

4. Methodology

Both primary and secondary data were sourced for the study. Systematic multi-stage sampling technique was adopted in collecting primary data with the use of a set of pre-tested questionnaire. The establishment of the traffic corridors strewn across the metropolis in different directions provided a very strong basis for the household traffic survey for this study, since surveys of this type requires only a representative sample of the commuting public. To achieve this, a 100-metre cordon was established on either side of five identified major transit corridors where a substantial number of households reside. The household identification and sizes was determined by a field registration count undertaken by research assistants.

The first corridor is a 40-kilometre stretch of rail line from Omi Adio through Apata/Odo-ona, Dugbe/Jericho, Sango/Bodija, Ashi/Powerhouse, Akobo/Olodo and Erunmu. These are clustered but discontinuous communities both urban and suburban in composition with an estimated 18,000 households. The second corridor is a 22-kilometre highway stretch traversing the city from Podo/ Challenge area through Molete, Bere/Oje, Idi-Ape/ Basorun terminating at Akobo/Oju-Irin where the highway crosses the rail line. This stretch contains an estimated 25,000 households. The third traffic corridor starts from the former Lagos-end toll plaza through Iwo road intersection to Ojoo on the expressway and terminates at Moniya on the old Oyo road; a distance of 26 kilometres with an estimated 6,950 households. The fourth, is a 15-kilometre traffic corridor that takes off from Mokola through Agodi/Gate and passes through the Old Ife road and terminates at the former Toll plaza on Ife road. It contains an estimated 1,670 households. The last of the identified corridors takes off from Beere through the mid-section of the city to Elekuro, Aperin, Olorunsogo, Amuloko, a sub-urban locality and terminates at Akanran, a distance of 16 kilometres and an estimated 15,920 households.

Salter's 1983 corridor sampling technique was employed in the determination of the sample size and the locality distribution of respondents as reflected in Table 1.

$$\text{Sample } n = \frac{P(1-P)N^3}{E\left[\frac{2}{1.96}\right](N-1) + P(1-P)N^2}$$

Where, N = total no of household within the study area
E = the required accuracy expressed as a number of household.
P = the proportion of households with the attribute of interest.
n = sample size to be determined.

Table 1: Locality Distribution of Respondents

S/N	Locality	No. of Respondents	% of total sample
1	Omi-Adio/ Erunmu	147	25,3
2	Podo/Akobo	258	44.3
3	Lagos Express Toll/Moniya	57	9.8
4	Mokola/ Ife Road Toll	18	3.1
5	Beere/Akanran	102	17.5
	Total	582	100.00

Source: Field Survey 2013

5. Findings and Discussion

5.1 Socio-economic Characteristics of Respondents

Table 2 contains socio-economic profile of the respondents. The age of respondents varied from 16-72 years with 93.1% of the respondents falling between the range of 16 and 60 years, the most active ages for movement and travels. Of these respondents, 360 (61.9%) were male while 213 (36.6%) were female. This distribution is a typical reflection of the traditional setting in the study area where the male usually constitute the majority of household heads (Fadayomi, 1988; Akinola, 1997). Most of the female household heads were incidentally widows/divorcees and those whose husbands were not around at the period of interview. However, 492 (84.5%) of the respondents were married while 72 (12.4%) were single. Widows/widower and the divorced, were only 18 (3.1%). The distribution of respondents by household size showed that households with 5-6 members constitute the highest percentage at 219 (37.6%); households with 7-8 and 3-4 members each had 129 (22.2%); while households with 9-10 and 1-2 members, respectively had 36(6.2%) and 24(4.1%). However, this assertion was not put to test due to the explorative nature of this study.

Educational status of respondents can be considered as 'average' because close to two-fifths [222(38.1%)] of the respondents had secondary school education; 144(19.6%) had tertiary education and only 54(9.3%) have no formal education. Observed general high literacy level among the respondents could have significant implications on their ability to comprehend issues relating to intra-urban rail transport development in Ibadan.

The dominant occupation of residents is trading in which 195 (33.5%) were engaged as self-employed. It was discovered that apart from those who had their shops in distant locations from their residences, most of the houses along the major streets performed dual functions of residential cum commercial, to satisfy the occupation needs of some of the households. Next to traders were the self-employed artisans and craftsmen such as mechanics, vulcanizers, panel-beaters, bricklayers, painters and welders that collectively constituted 180 (30.9%) of the respondents. Others were, civil servants [99 (17%)], retirees [39(6.7%)], farmers [15(2.6%)], students [36 (6.2%)] and apprentices/applicants [12 (12.1%)]. Each of these groups, however, constitutes a highly mobile number of commuters, who will normally go to their workplaces everyday within the city.

In this study, respondents were classified by into high, medium and low income earners. The respondents earning below N20,000 monthly, [201(34.5%)], were classified as low income earners while those earning above N50,000 monthly [93(16.0%)] were classified as high income earners. Level of income has been adjudged as another potent factor that determines trip generation (Okoko, 2006; Guliano and Narayan, 2003).

Table 2: Socio-economic Profile of Respondents

S/N	Variables	Characteristics	Frequency (N=582)	Percentage
1.	Age of Respondents (yrs)	Below 25years	37	6.4
		25-35years	165	28.3
		36-45years	185	31.8
		46-55years	134	23.1
		56-60years	21	3.6
		Above 60years	40	6.8
2.	Gender	Male	360	61.9
		Female	213	36.6
		No Response	9	1.5
3.	Marital Status	Married	492	84.5
		Single	72	12.4
		Divorced	12	2.1
		Widow	6	1.0
4.	Household Size	1-2 members	24	4.1
		3-4members	129	22.2
		5-6members	219	37.6
		7-8members	129	22.2
		9-10members	36	6.2
		Above 10	12	2.0
		No Response	33	5.7
5	Educational Attainment	No Formal Educ.	54	9.3
		Primary School	144	19.7
		Secondary School	222	38.1
		NCE/OND	147	25.3
		Tertiary	42	7.2
		No Response	3	0.5
6.	Monthly Income	Below N20,000 (low income)	201	34.5
		N20,000-N50,000 (middle income)	249	58.8
		Above N50,000 (high income)	93	16.0
		No Response	39	6.7
7.	Auto-Ownership	Motor-cars	104	17.8
		Buses	55	9.4
		Pick-up vans	30	5.1
		M.cycles/tricycles	120	20.6
		None	273	47.1

Source: Field Survey, 2013

Auto-ownership is another strong factor of trip-making by households (Fadare, 1989; Ogunjumo,

1989). From the available literature, auto-ownership has been known to increase the propensity for trip making. Automobile ownership includes households that possess vehicles ranging from motor cars, buses, pick-up vans to motor cycles. Ownership of the listed means of transportation is known to enhance mobility of the whole family (Okoko, 2006). More than a halve [309 (53.1%)] of the respondents were auto-owners, 259 (44.8%) relied on public transport and other informal means. Fourteen (2.3%) of the respondents did not disclose their auto-ownership status.

5.2 Distance between Workplace and Residence

In Table 3, the distance commuted to workplace by some respondents from their residence had extended over the years with the continuous urban expansion. Many residential locations are in the peri-urban areas of the city where land is still affordable, thus increasing the trip-distance to work places located in the city centre. In this survey, the commuting distance of about 18km recorded by Olatubara (1995) has shifted to more than 35km (Agbola et al., 2014), thus, implying that more intra urban journeys have to be made by workers. Table 3 shows the distance of workplace to residence of households. The bulk of household heads [423 (72.6%)] resided within 10km of their workplace.

Table 3: Distance of workplace to residence and usual mode of transport of respondents

Distance (km)	Frequency	Percentage
0.00 – 5.00	309	53.0
5.01 - 10.00	114	19.6
10.01- 15.00	51	8.8
15.01- 20.00	9	1.5
20.01- 25.00	24	4.2
25.01- 30.00	12	2.1
30.01- 35.00	15	2.6
Above 35.00	28	4.8
No Response	20	3.4
Total	582	100.0

Source Field Survey, 2013

5.5 Respondents' Usual Mode of Transport

Table 4 revealed while 104 household heads claimed to have motor cars, only 63 (10.8%) used their cars on their daily trips. Most of the respondents [390 (67%)] relied on public buses; 57(9.8%) use motorcycles; and 67(11.5%) split their transportation modes.

Table 4: Respondents' Usual Mode of Transport

Transport Mode	Respondents	Percentage
Motor Cars	63	10.8
Danfo Buses	390	67.0
Motor Cycles	57	9.8
Mixed	67	11.5
No Response	5	0.9
Total	582	100.0

Source: Field Survey, 2013

5.3 Perceptions on Rail Transport Patronage in the Metropolis

Respondents' opinions were sought on the general notion that intra-urban transport system, especially as practiced at skeletal level in the city some the past, was time wasting, was generally rejected by overwhelming majority 453 (77.8%) of the respondents (Table 5). Observed overwhelming assertion that intra-city rail transportation is not time wasting is a major pointer to the fact that re-introducing this mode of mass transit has very high potentialities in the metropolis. General consensus among the sampled respondents was that the skeletal intra-city rail transport that was practiced in the metropolis in the past brought about a lot of relief in terms of road congestion and vehicular access to the city centre. It was also to break the monopoly of the mini-bus operators and the taxi-cabs in addition to moving large number of commuters and freight haulage along its corridor.

Table 5: Public perception of rail's commuting time and cost

Response	Frequency	%	Lower Cost	%
Time wasting	129	22.2	564	96.9
Not time wasting	453	77.8	18	3.1
Total	582	100.0	582	100.0

Source: Field Survey, 2013

Another major benefit of intra-city mass rail transportation system in the metropolis, highly valued by the respondents, was its ability to free commuters from various discomforts they usually suffer from the existing rickety bus service in the metropolis, notable among which are: bruises inflicted by the vehicles, wet clothes from leaky vehicle roofs, insecure windshields during the rainy seasons, and the accident-prone nature of the buses and other road-based transport modes in conveying commuters from and to their various origins and

destinations. General consensus among the respondents was that mass rail transport system would provide intra-city mobility that is safer, cheaper and more comfortable than other existing trans-city transportation modes in the metropolis. They generally affirmed that introduction of intra-city rail mass transit in the metropolis would stimulate their urge to travel and socialize more, as they are encouraged to make more trips within the metropolis.

In-depth interviews conducted with a cross section of stakeholders in transportation in the metropolis – directors in federal and state ministries, heads of government parastatals, academia, politicians, middle level civil servants, representatives of traders' associations and the like - identified potentials of intra-city rail mass transit system in Ibadan metropolis to include: traffic congestion reduction, reduction in per capita crash rate, increased modal choice for the residents, enhanced consumer savings, and employment creation. All these views were corroborated by Litman (2004) in his evaluation of rail transit in the United State of America. However, the greatest challenges of rail mass transit in Ibadan are that of pubic orientation towards its patronage, the huge capital outlay and level of cooperation it most receive from existing transport system (Omirin, 2014).

6. Conclusion

The study, though exploratory in nature, has been able to provide evidence of residents' perceived high potentials of introducing rail-transport, in spite of its high take-off costs. Apart from its potentials to relieve urban roads of their congestion by moving people in large numbers, no other form of transport can be more economically efficient in the use of urban land space. Almost all the important cities of the developed world are connected with an efficient rail-transport network that facilitates the ease of movement of goods and services in a sustainable manner. Since Nigeria is aspiring to join the league of most developed economy by the year 2020, it is now more imperative to have an effective urban transportation policy that is infrastructure-driven rather than by ordinary documentation, so that all the essential modes that are critical to the development of our cities are captured and integrated. The integration of the transport system according to Robins (1977), is the best investment to improve the personal mobility and the quality of life of the people.

This study cannot come at a more auspicious time when hundreds of thousands of city dwellers depend virtually on road transport alone. The current rate of urban sprawl gives room for so much concern as it kept traffic congestion beyond tolerable limits. Intra – urban rail system must surely come to the rescue. This research is intended as a pilot-study which, when effectively utilized, will serve as a model for some other cities in Nigeria where rail assets are currently idling away.

The bus mode which appears to be easier to handle and manage, presents a short term measure to a long term urban transport problem. As the cities continue to grow, the bus system becomes eventually inadequate. A long term solution lies in effecting appropriate mass transit option using all existing railway corridors and creating more in all the cities. As Ogunsanya (2004) also observed, a pragmatic urban transit policy has the potentials of effecting the required positive change in our urban centres. Investment in urban transportation in Nigeria is also an investment in the country's future since these cities are the centres of industrial, commercial, educational, recreational, social and political activities.

Of the various mass transit options, the urban rail transit is of tremendous mass appeal. Apart from its exhibiting an unrivalled city centre to city centre connection, it is particularly cost effective for long distance and heavy freight. The World Summit on Sustainable Development (WSSD) held in Johannesburg, South Africa in 2002 commended the environmental friendliness of rail transport in mass movement of commuters in cities as well as the minimization of urban transportation externalities like air and noise pollution, energy consumption, accidents and road traffic congestion problems.

The Summit report also emphasized the problems of global warming and ozone layer depletion in which the transport sector alone is responsible for about 25 per cent of the world wide carbon dioxide emission. The share of the rail in this emission is almost negligible compared to the dominant proportion of 80 – 90 per cent exuded by private cars and haulage trucks alone. Modern and efficient rail system properly integrated into the

urban system is no doubt required for a city like Ibadan in the attainment of an even socio – economic growth (Odeleye, 2004).

By patronizing the rail, the density of traffic would have been taken off the roads, thus reducing the cost of road infrastructural repairs on a perennial basis. The movement of people in groups rather than individually in auto- cars is altogether more transport efficient and cost saving. Connecting urban rail in Ibadan to such an important location like the proposed Dry Port site at Erunmu is bound to affect the trade and commercial environment from a local outlook to a regional pre-eminence and importance.

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