



Full Length Research

An Evaluation of the Impact of Road Management Policy Determinants on the Patronage of Public Transport in Urban Locations in Ghana: A Case of Accra Metropolis

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Abstract

Public transport service is a critical component of a nation's development. It deals with the conveyance of individuals and goods from one location to another. The transportation network of a country therefore has mammoth benefit on the growth and development of several economies. In this regard, the development of the transport sector creates immense impact on household income of the citizenry since it is labour intensive. The fundamental role of transportation in the economy of a country has government playing some pivotal roles in the enactment of policies that are geared towards the provision of smooth bus services to enhance the movement of goods and services from one location to another. In view of this, the study endeavors to evaluate the impact of road management policy determinants on the patronage of public transport in urban locations in Ghana using the Accra metropolis as case. The study used a filed survey to collect data from the populace and key informants in the urban roads department. The research made use of a total of 137 individuals who were involved in the data collection process. A correlation test was conducted to investigate the relationship these variables have in the patronage of public transport system. Although all variables had a relationship with the dependent variable, an access to transport, access to mass transit system and duration of trip are the critical factors and had correlation coefficient value of 0.763, 0.523 and 0.703 at $p > 0.01$ (2-tailed) respectively. Suggesting that if policy makers want to encourage individuals' patronage of public transport, it is proper to have in place an effective traffic management system to ease congestion on the road. Aside the provision of access to bus rapid transport system, one essential factor is the income of commuters. The disposable income of commuters plays a critical role if citizens would patronize public bus services.

Key words: Transportation, Urban Road, Road Management, Rapid Bus Transport, Public Policy

INTRODUCTION

Road and transport infrastructure enables the carriage of people, goods and services from one location to another. In addition the development of this sector has impact on household income of citizenry since these projects are labour intensive. There-by providing source of employment for several individuals in various localities. Several studies acknowledge the positive impact road and transport development on the economy of a particular nation (International Transport Forum, 2008; Peden et al, 2004; WHO, 2004; NRSC, 2010). To achieve economic development, it is imperative of any nation to have a proficient transportation system that is reliable. It is a key simulator of economic growth and major source creating direct and indirect jobs. Public transport plays a social role in the urban environment, it improves access to work places, services and infrastructure at the same time, reduces travel expenses. Since public authorities and transport operators have different goals, regulation therefore plays an essential role, especially, failing competition (Dube et al. 2011; Gatta & Marcucci, 2007). Although the transport network plays critical role in the development of any given nation, in Ghana road transport happens to be the most preferred choice of transport. Studies have shown that road transport forms part of the day to day activities of most individuals in Ghana. Therefore how effective this sector operates is of essence to both entrepreneurs and policy makers. The issue of a transport system that provides high quality to its clients has been a central theme for several studies (Ali, 2010; dell'Olio et. al., 2010; Randheer et al. 2011).

The public transport development options that the Government of Ghana is now considering attempt to

make the best use of the unions' capabilities, while reducing dependence on union powers. The "trotros" system of Ghana have been the mainstream of Ghana's public transport system for many years, notwithstanding concerned attempted by succeeding Governments to develop and maintain publicly organized stage-bus services. Attempts to use the Public-owned transport companies to provide a feasible alternative to the trotros have foundered in the usual drawbacks of state ownership. Road transport provides lots of merits to both citizens and national economy through job creation and revenue generation. Despite this fact, studies have shown that there are some externalities that affect the performance of the sector. These externalities have a negative influence on the sector thereby resulting injury, loss of precious items, air pollution and severe damage (Govinda et al. 2010). A number of these studies do not extend the study to include the damages these externalities have on the government regarding revenue generation and an increase in unemployment ratios.

In Ghana, the transport sector is not different when it comes to external pressures. In recent times survey from the National Road Safety Commission (NRSC) has indicated several challenges such as road accidents, road congestions and emission of carbon dioxide as some of the externalities affecting the sector. There has been a surge in road accidents and damages over the period of 2012–2017. The losses accrued as a result of these accidents have had a negative effect on household income and national tax targets. Public transport is perceived to be cheap and provide individuals with convenience to transport goods and persons from a location to a given location in timely manner. A study conducted

by Cullinane (2002), showed that when public transport provides citizens with good affordable service that meets the expectation of clients it has the propensity to reduce the number of private car users and vice versa. According to Awasthi et. al. (2011) managing service quality is vital to retain customer satisfaction and augment revenues for any business organization. Also, understanding the behavioral intentions of public transport passengers is important, because, customer loyalty is seen as a prime determinant of long-term financial performance (Chen and Lai, 2011). In addition gaining loyal customers aid in the sustainable development of such a sector for both short and long run (Ackah et al, 2014).

To promote the usage of public transport in Ghana, several initiatives have been implemented by governments over the past decades that includes the construction of new road networks, reduction on commercial vehicle tax system (as a means to attract individuals to use public bus as opposed to private cars) and specialize regulatory agencies to monitor and sanitize the road sector. The Ghana road network is 64,323 km and road transportation is the most dominant choice of transportation in Ghana. Road transport infrastructure in Ghana can be used throughout to facilitate the exchange of commodities and enable regular school attendance and fast access to health facilities in Ghana. There has been an increased investment and expansion in the road transportation of Ghana, GHC1 billion (US\$500 million) in 2012. There is a Ghanaian Bus Rapid Transit, known as Metro mass Transit L.T.D, and a Taxicab system connecting the Ghanaian big cities among themselves, and a Minibuses system, known as “trotro” that connects the big cities with the country's rural areas and small towns (Min. of Transport, 2010).

Notwithstanding the feat the Ghana transport system has achieved over the years, there is still more room for improvement thereby prompting the researcher to examine the impact of these policies and its impact on the choice of urban dwellers when it comes to transport selection. The study examines if factors such as tax cuts, improved bus design, affordability and service quality of public transport has an impact on urban individuals patronage of public transport. Hence the essence of the title “Impact of Road Management Policies” The study has both policy and academia implications. On the side of public policy it would enable policy makers ascertain which aspects of the policy is not functioning well so as to make appropriate revision based on empirical findings. For thrift reasons the study focuses on the capital of Ghana (Accra). The objectives and questions that holds this study includes:

- To identify the conditions that simulates individual’s interest in usage of public transport in the Accra metropolis.
- To ascertain the factors that promotes the adoption of public transport services in the Accra metropolis.
- Point out factors that influence the patronage of public transport to policy makers in formulating and implementing road management policies.

What factors simulates individual’s interest in patronizing public transport?

To what extent do individuals utilize public transport system/service?

Transport is in nature an unsustainable activity for the following two reasons. First, the infrastructure

and many factors (such as land, architecture materials and petroleum) dealing with transport operations use non-renewable resources. Second, the transport process is responsible for great pollution, damages irreplaceable resources and also leads to long-term environmental change (Buchanan et al., 1997). It is believed that policies on transportation are far from being achieved, especially in developing countries. In most of these countries, policies have not been considered as an important issue either in transport or in transports planning (Mao, 1996). A transport policy may therefore be achieved only when economic development and long-term environmental and ecological considerations have been combined in the transport decisions. As countries grow and each city within it begins to develop, the need for regulatory organizations to monitor and regulate the movement of the citizenry is very important. It is this reason that led most countries to make policy decisions to regulate the road sector of the transport ministry.

The significance of this study would bring out the most significant ones to serve as a yardstick for future policy makers in the road sector. This research will provide information on how best policies on road help to reduce traffic congestion to promote effective and efficient transport system. Again the relationship will help to develop an international approach through by identifying ways by which policies diffuse among the various stakeholders. In addition, it is hoped that this study will provide findings that will be useful to various stakeholders such policy makers, public managers, and public organizations on how successful transport system help in promoting a result oriented society to eventually foster national development. This paper delves into the impact of road management policy on the patronage of public transport in urban locations in Ghana. It will also bring out conditions that

influence policies, and point out those that are good and worthy of emulation. This paper seeks to delve further and bring out factors that are appropriate and capable of influencing the choice of the pedestrians in the patronage of public transport. It also seek to identify if any, road management policies whether good or not have a direct or indirect impact on citizens. Road management policies are very essential on the heart of governments around the world. It is for this reason that attention needs to be given to road management policies in the Accra metropolis, so that lessons can be learnt from policies of municipality in the area of road management.

Though there have been several literatures about road management policies in Ghana, none has been able to delve into the factors that influence the choice of the type of transport to patronize.

LITERATURE REVIEW

Transportation and its Significant

Road transport grew rapidly after World War II and is now the dominant form of transport in sub-Saharan Africa (SSA). Roads carry 80 to 90 percent of the region's passenger and freight transport and provide the only form of access to most communities. To handle this traffic, African countries expanded their road networks considerably during the 1960s and 1970s. Ghana is examining the option of operating five trunk roads under private sector concession agreements. Mauritius is examining a similar arrangement for a major trunk road in Port Louis, and Mozambique is planning a build operate-transfer (BOT) toll road between Komatipoort on the South African border and Maputo. Although tolls are collected on high-density roads in some other countries, toll revenues are

generally treated as general tax revenues (as in Nigeria). Only rarely, as in Chad, Ghana, and Rwanda, is road toll revenues used to support road maintenance. These roads carry light traffic, usually less than 100vpd, and consist mainly of two-lane, all-weather gravel roads and seasonal earth tracks. They connect the main agricultural areas to local market towns and the main road network. These roads play a particularly important role in Africa, since agriculture accounts for 33 percent of Africa's GDP, 66 percent of its labor force, and 40 percent of its exports. About 70 percent of Africa's population lives in rural areas.

Transportation System and Economic Development

Theories are accepted propositions and statements use in explanation or interpretation of observed regularities or patterns (Gregory et al., 2009, Bryman, 2012). In my search for a theory or theories that can inform my research problem two debates came to mind. First is the debate on transport and development. Concerning this debate one school of thought known as the positive school argues for transport as the key to development (Owen 1964; Addo, 2006). The pessimistic school indulges us to look at the type of economy involved and the level of development of a place before providing roads. This implies that, road transport facilitates the growth of other sectors such as industry, health, mining, trade and agriculture which all tend to increase the per capita income. McKinnon (2006) however, adds that while the economy grows, there is a need for an accompanying high capacity, high speed and reliable transport network that can accommodate the increasing number of vehicles that ply the road.

Transportation Systems in Urban Areas of Ghana

Until the recent last two decades of the twentieth century, Accra like many other urban areas in Ghana had a well-planned and managed public transport system that was owned by the state. This public transport system operated using big and comfortable buses which were not only safe and regular, but were reliable as well. However, this state-run urban transport system collapsed due to poor performance of the economy and associated mismanagement (Addo, 2002). This provided the impetus for the growth and development of the famous “trotro” system which has become the major public transport provider in many urban centers like Accra and Kumasi. Besides this system, a greater number of residents in the city own and use private cars for their daily transportation needs. Not only are the vehicles used under the trotro system old and poorly maintained, but they also account for the acute traffic congestion experienced in the cities.

Therefore, Philip J. et al, (2007) propose a shift to the use of larger vehicles such as buses in order to overcome traffic congestion. Again, it is said that a system of bus service which is convenient, accessible, comfortable, reliable and operating within acceptable levels of noise, vibration and pollution would be such welcoming news to the majority of the people (Guohua et al., 2007). Following from the above and against the backdrop of Ghana's desire to achieve a middle income status by the year 2020, the nation has sought to establish an efficiently and modally complementary and integrated transport network for the movement of people and goods at a least cost throughout the country” (Kwakye and Fouracre, 1998). In line with this agenda, the Metro Mass Transit system was introduced in October 2003 with a vision to provide

an efficient urban mass transport system in Ghana through the use of buses.

The Metro Mass Transit Limited was tasked with the operation of this bus services. The Metro Mass Transit Limited introduced what was referred to as the Bus Rapid Transit System (BRTS) on a pilot basis in Accra, in September, 2005, to mitigate the traffic congestion phenomenon in the city. Following an overwhelming success that was chalked by the pilot project in the initial phase of its implementation, as seen by the massive public ridership, one would have thought that the operator of the scheme—the Metro Mass Transit Limited – would now be basking in the glory of being the pacesetter in implementing a BRTS in the whole country. However, in just after two years of its operation, the company reverted to the traditional “trotro” system of stopping at unauthorized portions of the road to solicit for passengers thereby compounding the traffic situation in Accra. What this simply means is that their buses can now hawk for prospective passengers, just like the private commercial drivers.

Impact of Poor Road Management on Road Maintenance

The management of property in Ghana, especially roads, is not very well regulated (Agyepong, 2011). An example of this unregulated nature of management can be seen in how roads are managed under the Ministry of Roads and Highways. Within this ministry, there are three different authorities that are tasked with the management of roads; that is the Ghana Highways Authority, Department of Urban Roads and Department of Feeder Roads. While the Ghana Highways Authority manages highways, the Department of Urban Roads and Department of Feeder Roads manage urban and feeder roads

respectively (Aidoo, 2011). The current condition of the Ghanaian roads sector indicates that some property management practices are performed, but it is not giving back its optimum contribution to the economy. An article from the Ghana News Agency (2011), buttresses the insufficient return from the Ghanaian Road Sector. The article states that Ghana over a period has been accumulating huge debts on road construction, and currently has to rely on “long term financing options in-order to carry out maintenance works”. In addition to the debts being incurred by the country as a result of the poor management of funds allocated for road maintenance, the country also loses economically her potential income from other sectors. Such a sector is the agricultural sector which suffers the immobility of its agricultural resources and produce like cocoa beans and food stuffs to the market centers (Duffour, 2009).

Transport Patronage

Public transport services shape their own patronage characteristics. These characteristics are vital in order to better comprehend the factors that affect the patronage (Polat, 2012). According to Matas (2004), “the public transport environment is vigorous and even interactive. It includes a combination of substitute transport modes, several types of passengers (e.g., students, workers and leisure travelers) and passengers with different travel purposes, different travel frequencies and different travel times. The existence of various transport modes makes it available transition between those modes for passengers. In such environment, the patronage is also dynamic and volatile”. Commuters are perceived to act as rational beings, choosing travel modes most likely to offer them maximum utility. There is little doubt that a wide

range of factors influence the patronage of one public transport service provider to the other. Polat (2012) has identified the following as public transport demand determinants: fare, travel time (walk access time and accessibility of transport, waiting time, in-vehicle (journey) time, service quality, comfort, reliability, availability and costs of alternative travel modes, time of travel, purpose of travel and lastly the level of public transport dependency. It could be perceived that other factors aside these enumerated above play significant roles in this respect. People believe the perception that safety and security orientation of a transport service provider by travelers may also play active role in the decision of which service provider to patronize.

Availability of Mass Transit System

Rapid urbanization in Ghana over the decades in particular is straining the capacity of the cities to provide basic infrastructure, demeaning the quality of life and impoverishing the urban environment. In Accra, an obvious lack of coordinated land-use planning and the enforcement of appropriate regulations have made the challenges in the transport sector very frightening, with traffic congestion growing by the day. The situation has compelled some commuters to adopt strategies to navigate themselves in the city in order to avoid the traffic menace. This plan holistically has displaced the urban system and indeed led to a virtual infrastructural systemic breakdown, compelling frustrated commuters to find adaptation strategies, well planned policy intervention, such as the Rapid Bus Transit therefore when adopted and efficiently implemented will be beneficial to the commuters. Rapid urbanization is a global phenomenon, and like all human induced changes, it is a response to socio-economic, political or environmental conditions,

characterized by an unprecedented concentration of humans in cities (Satterwhaite, 1996, Masek et al., 2000, Songso, 2003).

Negative Externalities of Road Transport

Often city planners view urban planning as a very distinct issue from transport planning, transport planning as very different from environmental planning, public transport as very different from radiations control etc. One widely used and long-established approach for radiation analysis is to view radiations in relation to travel volume, fuel efficacy, and vehicle stock (Schipper et. al 2000). In this framework, radiations are viewed as vehicle delinquencies, mostly technical in nature. This pulls policy makers in developing countries for instance Ghana towards interim solutions, which often serve the comfort zones of the political establishment. Understanding the urban transport-energy-environment challenge is more multifaceted than it may seem. The issues to be addressed range from urban planning to radiations control, present to future, local to global environmental issues, technical to human behavioral issues, guideline to volunteerism, and a complex chemistry of stakeholders from regular citizens to the private sector to different levels of government. Measures that fail to capture these issues are likely to encounter policy resistance.

METHODOLOGY

This study explores the current laws on public transport patronage in Ghana (Accra metropolis). It includes the analysis of the demography, economic and educational background of the respondents. Primary and secondary data was useful in investigating how existing policies influences the

Table 1. Variance Inflation Factor

Variables	VIF
Availability of Mass transit system (AMTS)	1.567
Income of commuters (IOC)	1.328
Duration of Trip (DOT)	2.936
Access to Transport (ATT)	3.191
Traffic Management (TM)	2.344
Emergency Management (EM)	1.816

pedestrians and commuters in the choice of transport. Quantitative data obtained from useful sources help in providing basis for a well-informed argument juxtaposing the existing policies on public transportation and actors involved in the patronage. Figures and tables were used where important to expatiate findings.

In order to address the research questions and objectives stipulated for this study, the following constructs were used to design the questionnaire for data collection purpose. The scales used to examine the relationship between determinants of road management policy (dependent variable) and patronage of public transport (independent variable) is adopted from established scales by researchers in different studies. The variables or constructs adopted includes; the availability of mass transit bus system (Anin, Annan and Alexender, 2013); stability of transport fares (Carruther, Dick, Suarkar, 2005); income of commuters (Transport Research laboratory, 2004); duration of trip, access to transport (Urban Roads, 1995; 2004); Traffic management (Godwin, Hass, Klau and Cairns, 1998;

Purcher et al. 2005) and management of road emergency situation by authorities (Baffour, 2011). These adopted scales are used in the development of the survey questionnaire.

Variance Inflation Factor Test

Although the data acquired proves to be reliable and valid, the researcher went a step further to examine the variance inflation factor to examine the error in measurement. Table 1 shows the result of VIF for the variables. From the table it can be seen that all the variables have an acceptable VIF value that is less than 10.

ANALYSIS AND FINDINGS

Demographic of Respondents

This section presents the empirical analysis and findings of the study. In the data collected, 66% were male and 34% females. Table 2 indicates the type of transport used often by respondents. Responses comes from pedestrians of diverse

Table 2. Type of Transport used often

Type of Transport used	No. Of Respondents
Private Transport	76
Public Transport	30
Other	31

educational background, therefore their ability to understand the questionnaire items thereby dealing with the issue of biases in answering of the questions has been minimized. Furthermore scrutiny into the table indicates that the numbers of the respondents who patronize private transport are greater and therefore are in the right capacity to give vivid response to the issues of essence to the demands of this study. The table clearly state that 76 respondents often use private transport, 30 use public transport while 31 use other forms of transportation. This signifies that most people in the sample area are not ardent users of public transport as means of locomotion from one place to another. It must be stressed that most of the respondents have stayed in the area under study for a longer period, and therefore helped to make a fruitful generalization with the responses given. 30% of respondents stayed in the environs of the study for 5 years and below. 70% of the respondents stayed in the environs for 5 years and above and therefore have the right capacity to describe the transport situation in the environs of Accra metropolis.

Descriptive Statistics

Table 3 shows the descriptive statistics of the variables such as range, mean, standard deviation, minimum and maximum value of the data. In addition the sample size of the study is included.

The statistics shows the factors that influence individuals to patronize public transport in the urban areas of Accra. From the table it could undoubtedly observed that Transport Patronage (TP) recorded a mean and standard deviation value of 5.04 and 1.823 respectively, Availability of Mass transit system (AMTS) a mean of 5.75 and a standard deviation of 1.32, Income of commuters (IOC) recorded a mean of 2.43 and a standard deviation of 1.41, Duration of Trip (DOT) a mean of 6.07 and a standard deviation of 0.944 Access to Transport (ATT) a mean of 5.34 and a standard deviation of 1.633, Traffic Management (TM) recorded a mean of 4.93 and a standard deviation of 1.858 and finally Emergency Management (EM) has recorded a mean value of 4.55 and standard deviation 2.156. Among the determining factors examined, is seen that availability to mass transit system (AMTS) and

Table 3. Descriptive Statistics

Descriptive Statistics										
	N	Range	Minimum	Maximum	Mean		Std. Deviation	Variance	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error
AMTS	137	5	2	7	5.75	.112	1.316	1.732	-.866	.207
IOC	137	6	1	7	2.43	.120	1.408	1.982	.834	.207
DOT	137	3	4	7	6.07	.081	.944	.892	-.679	.207
ATT	137	5	2	7	5.34	.140	1.633	2.668	-.609	.207
TM	137	6	1	7	4.93	.159	1.858	3.451	-.514	.207
EM	137	6	1	7	4.55	.184	2.156	4.647	-.408	.207
TP	137	5	2	7	5.04	.156	1.823	3.322	-.384	.207
Valid N (listwise)	137									

duration of trip(DOT) plays a critical role as determinants in the choice by pedestrians in patronizing and the usage of public transport system, therefore critical attention is needed to be paid to it. Aside the provision of measures to manage the traffic flow to avoid congestion on the road, individuals also suggested that their disposable income level to some extent also plays a critical role in the patronage of public transport system.

Correlation

This section investigates the relationship that the dependent variables have on the patronage of public transport system. Result of the correlation is presented in Table 4. The outcome suggests that all the variables have a relationship with the dependent variable. It shows that access to transport (ATT) had the highest correlation coefficient with the dependent variable at .763 at $p < 0.01$ (2-tailed) and duration of trip (DOT) at 0.703 at $p < 0.01$ (2-tailed). Also variables such as availability to mass transit

system (AMTS) and traffic management (DOT) had a correlation coefficient of .523 at $p < 0.01$ (2-tailed) and .394 at $p < 0.01$ (2-tailed) respectively. Inferences that can be made from the statistical figures is that, despite almost all the variables had a significant correlation with the dependent variable it is important to point out that traffic management (TM), Emergency management (EM) are key issues that needs urgent attention and key steps needs to be taken to overcome this menace in the country. Traffic Management (TM) especially on weekends and holidays needs to be dealt with as a matter of importance. Appropriate mechanisms needs to be in place in other to overcome these challenges, suggesting that if policy makers want to encourage individuals to patronize public transport system, it is essentially right to have in place an effective traffic management system with access to transport within meaningful rips to ease congestion on the road. Congested roads contribute negatively to the

Table 4. Result of Correlation Analysis

		TP	AMTS	IOC	DOT	ATT	TM	EM
TP	Pearson Correlation	1	.523	-.053	.703	.763	.394	.205
	Sig. (2-tailed)		.000	.537	.000	.000	.000	.016
	N		137	137	137	137	137	137
AMTS	Pearson Correlation		1	-.315	.346	.375	.579	.411
	Sig. (2-tailed)			.000	.000	.000	.000	.000
	N			137	137	137	137	137
IOC	Pearson Correlation			1	-.206	-.093	-.353	-.427
	Sig. (2-tailed)				.016	.277	.000	.000
	N				137	137	137	137
DOT	Pearson Correlation				1	.761	.460	.508
	Sig. (2-tailed)					.000	.000	.000
	N					137	137	137
ATT	Pearson Correlation					1	.587	.347
	Sig. (2-tailed)						.000	.000
	N						137	137
TM	Pearson Correlation						1	.519
	Sig. (2-tailed)							.000
	N							137
EM	Pearson Correlation							1

** Correlation significant at 0.01 level (2-tailed)

*Correlation significant at 0.05 level (2-tailed)

productivity at the firms economically and also at the national level when it comes to the economic development of a nation. Having proper traffic management system enables commuters to get to their intended location in a timely manner. If policy planners could consider access to transport on holidays and weekends, commuters will have luxury of patronizing public transport which in effect will

lead to a boost in national development as well as growth in productivity.

Emergency management on the other hand needs prompt attention policy makers must have plans to input in policies swift measures that will help commuter in matter of emergencies, there should be quick emergency points at vantage points that will quickly attend to emergencies in the metropolis in

Table 5. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.866 ^a	.750	.739	.932	.750	65.098	6	130	.000

a. Predictors: (Constant), EM, ATT, IOC, AMTS, TM, DOT

Table 6. ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	338.931	6	56.489	65.098	.000 ^b
	Residual	112.806	130	.868		
	Total	451.737	136			

a. Dependent Variable: TP

b. Predictors: (Constant), EM, ATT, IOC, AMTS, TM, DOT

order to clear the roads of congestion and also save lots of lives of commuters who might die as a delay in these emergencies. The income of commuters on the other hand however needs essential attention as it has a negative correlation with the dependent variable with a coefficient value of -.053 this will mean that policy makers must have a robust policy system that will encourage people to leave their individual vehicles (private transport) in pursuit of public transport in their choice of transportation.

Table 5 presents the Model summary while Table 6 shows the ANOVA.

Regression

Regression was conducted to examine the extent to which these variables influence the outcome of the dependent variable. The outcome of the regression test indicates that all variables have to some extent an impact on the patronage of public transport.

Table 7. Linear Regression Analysis

Model	Coefficients ^a						Collinearity Statistics	
	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Tolerance	VIF	
	B	Std. Error	Beta					
(Constant)	-4.089	.705		-5.799	.000			
AMTS	.573	.076	.414	7.542	.000	.638	1.567	
IOC	.054	.065	.042	.831	.407	.753	1.328	
1 DOT	.725	.145	.376	5.001	.000	.341	2.936	
ATT	.575	.087	.515	6.578	.000	.313	3.191	
TM	-.191	.066	-.194	-2.894	.004	.427	2.344	
EM	-.182	.050	-.216	-3.650	.000	.551	1.816	

a. Dependent Variable: TP

Table 7 indicates that the study used a regression model which is based on an analysis: $Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_n X_n$ where: Y is the dependent variable (Patronage of Public Transport), “ α ” is a regression constant; β_1 , β_2 , β_3 and β_n are the beta coefficients and (X_1 , X_2 , $X_3 \dots X_n$) are the independent variables. The dependent variable can be predicted as: $Y = \alpha + 0.414 X_1 + 0.515 X_2 + 0.376 X_3 + \dots + \beta_n X_n$ where X_1 , X_2 , and X_3 are AMTS, ATT and DOT respectively.

The outcome of the regression test indicates that model 1 has a R-square value of .750 and an adjusted R-square value .739 indicating that the independent variables has a greater percent influence on the outcome of the dependent variables. Other individual variables like AMTS and ATT are really essential individual variables as they could be seen to have influence on the dependent variable to a significant extent hence having an impact on the usage of public transport system.

To argument the findings from the regression analysis the t-statistics test is conducted to identify which of the factors have an impact on public transport patronage. To have an acceptance t-value of the variables, the needed value to be obtained must be a value equal to or greater than 1.96. Judging from the outcome of the t-value it can be seen that AMTS, DOT and ATT variables had appropriate t-value values. Indicating that these variables examined contributes to the well-being of the commuters except variables like IOC which recorded a 0.831, TM which recorded a -2.894 and EM which recorded a -3.650. IOC had a lower t-value of .831 showing that it is not a variable that contribute to the well-being of commuters in their decision of choice of the type of transport to use. The variables TM and EM had negative t-values inferring that their influence or contribution to the well-being of the commuters has a negative effect and therefore needs critical attentions.

Discussion

This paper investigates the impact of road management policy on the patronage of public transport in urban locations in Ghana using the Accra metropolis as a case study. With the help of the objective of the study, the research sort to answer the following question 1) to identify the condition that simulate interest of individuals to patronize public transport and 2) to ascertain the factors that promotes the adoption of public transport services in the Accra metropolis. To address the research question and objectives of the study, the study targeted key informants in the urban road department and also selected individuals across three (3) different bus terminals in Accra metropolis. Data acquired was analyzed using a correlation and linear regression analysis. The outcome of the study shows that most of the variables examined to a greater extent have a direct influence on individual's choice patronage of public transport services.

It furthermore stipulates that individuals would patronize public transport system if they had the availability of public mass transit, if there is access to transport and if the duration of the trip to embark upon is reasonable, if emergency situations are managed swiftly with much seriousness. And this finding contributes to other studies that agreed to the allusion that access to public transport services is a key determinant if citizens would engage the services of public transport. A study conducted by the Urban Roads Department (1994; 2002) rates access to public transport service such as rapid bus transit as key in encouraging the populace to adopt public transport for their various mobility activities.

Conclusion and Further Research

The purpose of the study is to evaluate the impact of road management policy on the patronage of public transport in urban locations in Ghana using Accra metropolis as a case study. The study utilizes a mix method approach to explore the research question understudy. Data was collected using a field survey process with the aid of close-ended questionnaire. The questionnaire items are measured on a 7-point like scale. A total 137 respondents were surveyed for the study. And this included staff of urban road department and commuters from three heavy pedestrian bus terminals in Accra. The data is examined for mixing values and initial reliability and validity test. Furthermore regression and correlation analysis conducted to ascertain the extent to which these variables relate to the dependent variable. Data analysis is conducted using SPSS version 21.

The findings of the study indicates that access to mass transit transport system, stable transport fare that is proportionate to individuals income and traffic management happens to be the most critical determinant in determining if populace (commuters) would patronize the usage of public transport services or public buses. Despite that this study makes some significant strive in the area of road management and transport patronage; there are other shortcomings that need to be addressed in further research studies. Therefore the researcher suggests future studies should consider using a longitudinal approach to examine how these factors change over the time been. In addition future studies should add some control variables to the constructs to deal with the issue of omitted variable biases. Also the sample size needs to be increased to reflect the number of people who patronize the public transport services.

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Appendices

Questionnaire

Department of Public Administration

School of Public Administration

University of Electronic Science and Technology of China

Dear Participant,

This questionnaire is from a graduate student of the University of Electronic Science and Technology of China and wishes to invite you to help complete it as part of a study been conducted to identify the factors that influence individuals to patronize public transport buses or systems in Ghana. Should you agree to take part in this survey you will be asked questions pertaining to your gender, marital status, work experience, the extent you utilize public buses and the factor that influence your patronage of public Transport. The information you provide during the session will be kept confidential and only the researcher will have access to it and would be used for no other purpose but to complete this study. Personal information such as name will not appear in our records. This information you provide would serve as with a whole new perspective on the issues under study therefore we suggest respondents should be objective and feel at ease to draw our attention to any point that needs clarification.

SECTION I: Basic information

1. Demography of Respondents (Please tick (✓) only one in this section)

1.1 Gender

Male

Female

1.2 Marital Status

Married

Single

Divorced

1.3 Work experience (How long have you been working)

0-5 years

6-10years

11-16years

17-20years

21-25years

1.4 Educational Background

PhD Master's Degree

Bachelor's Degree other (Please specify).....

1.5 Type of transport used often

Private transport Public Transport

Other (Please specify).....

1.6 Place of Abode

Do you live in the environs of Accra?

Yes

No

If (No) go to section II

1.7 Duration of stay in the environs of Accra

0-5 Years

5Years above

Section II: In What Way Does These Factors Influence Your Decision to Patronize Public Transport

To what extent do these factors influence your patronage of public transport system (1=Strongly Disagree, 4=Neutral, 7=Strongly Agree)	Strongly Disagree				Strongly Agree		
1. The availability of Mass Transit buses	1	2	3	4	5	6	7
2. The income level of commuters(higher income)	1	2	3	4	5	6	7
3. The duration of trip	1	2	3	4	5	6	7
4. The ability of public authorities to manage traffic flows	1	2	3	4	5	6	7
5. The capacity of public agencies to manage road accidents and emergencies on a timely manner	1	2	3	4	5	6	7
6. Access to transport	1	2	3	4	5	6	7
1. How often do you use public buses in your daily commute?	1	2	3	4	5	6	7

List of Abbreviations

NRSC	National Road Safety Commission
SSA	Sub-Saharan Africa
WHO	World Health Organisation
VPD	Vehicle per Day
BOT	Build Operate-Transfer
RTA	Road Traffic Accident
BRTS	Bus Rapid Transit System
GHA	Ghana Highways Authority,
RTI	Road Traffic Injuries
GNA	Ghana News Agency
GDP	Gross Domestic Product
RMI	Road Maintenance Initiative
HMC	High Motorized Countries
LMC	Low Motorized Countries
GNP	Gross National Product
MAC	Motor Accident Cases
ACT 567	Local Governance Act, 1999
MTTU	Motto Traffic and Transport Unit
TP	Transport Patronage
AMTS	Availability of Mass Transit System
IOC	Income of commuters
DOT	Duration of Trip
ATT	Access to Transport
TM	Traffic Management
EM	Emergency Management