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Gridlock and Onitsha Metropolitan Economy: A Case for Strategic Shift

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Abstract:- Traffic gridlock has remained aftermath of urban growth and expansion across the globe. Gridlock arises from the urge to migrate to diverse destinations simultaneously given the place of roads as a link between homes, work and leisure places. This paper was thus motivated by the zeal to evaluate and find the nature, magnitude and sizes of the costs associated with gridlock and proffer solutions. To this end, the study chooses the entire metropolis of Onitsha which has now sprawled into sub-urban areas like Nkwelleezunaka, Nsugbe, Ogidi and Ogbunike, etc. and is geopolitically housing six local government areas-Onitsha North and South, Ogbaru, Idemmili North and South and Oyi. The System theory was adopted as the theoretical framework of the study. Being qualitative, it adopted the questionnaire as an instrument of data collection while using Statistical Package for Social Sciences (SPSS) Version 22 for analysis. Using the stratified random sampling technique 120 respondents were selected for the study. Their analyses indicate that 88% of the road users in the study area have experienced gridlock with 81% agreeing that it occurs frequently and 85% agreeing that it lasts for more than four hours which is about half of the daily work hours in the economy. On the other hand, it was also found that gridlocks positively affect the revenue of 83% of traffic hawkers in the metropolis. The study thus recommends that concerted efforts must be made at employing the water bodies within and around Onitsha to serve as an alternative.

Keywords:- *Gridlock, Onitsha metropolis, Urbanization, Road transportation, Traffic.*

I. INTRODUCTION

To distinguish between residential, commercial,and other spaces.Traffic gridlock has remained inevitable aftermath of urbanization and the expansion of metropolitan areas across the countries of the world. It arises from so many people wanting to move to different destinations and achieve different goals all at the same time. Roads have remained the link connecting producers to markets, consumers to goods, workers to their jobs, students to schools, and even the sick to hospitals. Hence no meaningful economic or social development can materialize without functional roads and road networks. Hettige (2006). This accounts for the many interventional roles The World Bank is playing towards the construction and rehabilitation of roads than it has done for other social services in recent years(Berg; 2015). From the demand side, increasing economic interdependence among countries has created webs of trade and social interconnection among them (mainly businesses), especially through roads. No wonder Afolabi, Oluwaji, and Fashola (2017) and Iroham, Okubanjo, Okagbue, Emefere, Akinjare, and Akinwale (2019) strongly linked overall development or otherwise of most economies to the free movement of people and goods.

Roads have become the most utilized means of transportation because it is relatively cheaper. Vencataya, Pudaruth, Dirpal and Narain (2018). Though, Komb (1988) had earlier posited that improvement in its network will result in gridlock-free traffics. This reality has been confirmed by Amin (2008), Aldagheiri (2009), Worku (2010) Somenahalli, Taylor&Susilawati (2016) for different countries with its resultant positive multiplier effects as found by Rodrigue (2020).

II. PROBLEMS STATEMENT

The popularity of the road as a means of transportation has left most cities across the world with the problem of traffic gridlock which frustrates the free movement of road users and goods. Weisbord and Fitzroy (2011) found traffic gridlock as the major setback that lead to unreliability in the delivery of goods and services. Secondly, job and man-hour losses have been associated with gridlocks. It leads to delay in arrival at workplace, environmental pollution due to prolonged combustion of fossil fuel, wastage of perishable goods and fall in their market value, increase in operating /transportation costs, and subsequent increase in the price of goods and services. These gridlock problems have constituted severe challenges to economic prosperity and threaten the viability of the aspiration of transport-led growth in Nigeria.

Rao and Rao (2012) posits that there are two main categories of factors that trigger gridlock. These include micro-level factors that relate to traffic on the road. For instance, too many people, vehicles, and freight trying to access the road at the same time. limited road space, poor traffic signals, vehicle breakdown, and mass gathering. The second is the macro-level factors. These factors contribute to the severity of congestion. They include land use pattern, employment pattern, car ownership, economic dynamics prevalent in a particular region, etc. Vencentaya etal (2018) further identified other factors as population growth rate, inefficient public transport service, inefficient road traffic management, poor road network, unforeseen conditions like weather,and a high rate of rural-urban drift. The nature of traffic gridlock presents its consequences as both social and economic problems. Hence, this study.

Gridlock experiences in the southeastern region are not different from that of most urbanized cities of Nigeria. However, this study will concentrate on the experience of the Onitsha metropolis of Anambra State. The area has been

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chosen for this study essentially because of its metropolitan nature and relevance in the southeastern region of Nigeria. Onitsha is a gateway to other parts of the southeast and the southwestern parts of the country leaving it with great geopolitical relevance.

Onitsha is known to be one of the foremost cities in Nigeria. It all started with the advent of the foreign missionaries and merchants into the pre-colonial Nigeria in 1857 when the trade expedition led by Macgregor Laird with Reverend Samuel AjayiCrowther on the Niger arrived at Onitsha. Onitsha expands only towards the inland because it is bordered at the south by the River Niger. This has led to the development of residential and commercial along and beyond major arterial roads including Awka Road, Oguta Road, New and old Market Roads, etc.

The indigenous people reside mostly in Inland town (the historical and traditional section of Onitsha). Onitsha has her major central business district around the main market, which is one among many markets therein. The multi-diverse nature of activities within the city has forced it to grow in line with almost all the models of urban structure especially the zonal, sectoral and multi-nuclei models.

Influx of merchants from all parts of Nigeria and some West and Central African countries has inadvertently constituted a major factor to the growth of Onitsha and has kept it as one of the commercial hub of the sub region. This commercial nature presently leaves the city with a day time population of about 2.2 million people with its obvious implications on vehicular traffic therein. The rise in population in Onitsha has forced it to sprawl into the sub-urban areas like NkwelleEzunaka, Nsugbe, Ogidi and Ogbunike, etc. Geopolitically, the area called Onitsha has her presence in six local government areas in Anambra state which includes the Onitsha North and South Local Government Areas, Atani in Ogbaru LGA, Idemmili North and South local government areas and Oyi local government areas. This ascribes the metropolitan status to the area. No wonder in the judgment of Ikegbunam (2008), the rapid growth of population in the city can be ascribed to its nature as a commercial hub.

The transportation system in Onitsha has also grown with the population and may not have done to desired levels. The development of roads grew in Onitsha from 4 arterial roads in 1925 to about 7 arterial roads in 1966 (Okoye 1996 &Okeke 2014) However, by 2008 it has about 239 access roads, 14 arterial roads with two lanes, 34 collectors roads, and 2 freeways which are Onitsha-Owerri express road and Onitsha-Enugu expressway. However, the mixed land use prevalent in the city has affected its roads usage on almost its whole network. This usage has equally made it difficult.

The city faces gridlock problems during the morning and evening peak periods mainly due tothe inflow and outflow of traffic in and out of the metropolis and the internal movement of its residents. The same road spaces that were provided since 1966 (especially in Onitsha inner city)and used by the fewer population of about 175,000 are still in use by the current population of about 1.6 million (Macro Trend 2018). As of 1967, Onitsha city had an internal traffic flow of about 3,000 vehicles per day indicating the heaviest traffic in the then Eastern region. This traffic rose to about 90,000 vehicles per day and has remained on the increase. (Ikegbunam, 2008). Presently, with more than 1.6 million people in the area by the day trying to find their way in the 1,965 km^2 (759 sq. mi) area of the metropolis, it presents that the gridlock in Onitsha could be getting worse with its socio-economic consequences.

Presently, Anambra is the second smallest state by landmass in Nigeria after Lagos, and given the entrepreneurial nature of her people, the state houses the largest market in West Africa in Onitsha. This implies that a lot of bulk/ wholesale transactions take place in the area and will also necessitate the inflow of heavier axle trucks and articulated vehiclesinto the metropolis leading to gridlocks.

Furthermore, the gateway nature of Onitsha also makes it susceptible to traffic gridlock. Given that the area serves as a thoroughfare into the southeast and most of the south-south geo-political zone from the south-western region.

The mixed land use in Onitsha and the unplanned inhabitation of its sprawled up areas also aggravate itsgridlock problem.Other ancillary issues experienced therein include traffic robbery (Bourdillon;2001) and wastes from traffic hawking. The major concern here is that most of these wastes are non-biodegradable wastes like wrappers/containers of hawked goods that pose more environmental challenges.

The gridlock challenges in Onitsha have also been worsened by the underutilizationof her waterways especially for the people traveling out/into the metropolis to/from the Niger Delta and North Central regions. The economic consequences of these gridlocks reflect on the man-hour loss to them. For instance, the traffic gridlock on the Apapa-Costain route has been estimated to waste as high as $5(N1800)/skilled man hour while on the average workers wastes about 12 hours in gridlocks accruing to $60(N9000). This loss is relatively higher for private car commuters due to cost of fuel.

Similar to man-hour loss is its effect on prices especially that of imported goods and loss to exporters. Presently it costs between ₦800,000 to ₦900, 000 to move a container from China to Nigeria. (9,923 Kms) and unfortunately, between N600, 000 to N700, 000 to move the container within 20kms in Lagos and between N1,000,000 and N1,200,000 to move same to Onitsha and some other parts of the Southeast. (Anagor-Ewuzie;2019, Eze;2020). This has obvious implications on the market price of these goods and the few goods to be exported since they will travel on these same routes to the wharves.

Gridlock also presents some environmental challenges. The major one is from vehicular carbon emission. Zakka,Permana&Majid (2017) in studying vehicular carbon emission in Kaduna city concerning urban spatial pattern and interconnectivity found that interconnection between the city center and residential areas resultsin high traffic volumesat peak periods on working days. It found that

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carbon emission at points along major routes in the city ranges between 1169 to1884 PPM (parts-per-million) far above a normal of 400-1000 PPM (1000- 2000 PPM considered to be a poor air and can cause drowsiness). This nature of interconnection can also be seen (even higher) in Onitsha given its interconnection with many places and its sprawls from where people come in for business.

Egbedi, (2017) conducted a more detailed test for Onitsha as it concerns the extent of pollution and air quality especially as it concerns vehicular carbon emission. In the Nwangene area of Onitsha, the air monitor shows 667µg/m3 (micrograms per cubic metre) for PM10s – a reading in excess of the 594 annual figures that gave Onitsha its title of the world's most polluted city. Furthermore, the smaller more dangerous particulate (PM2.5) which comes mainly from vehicular carbon emissions has a reading of 290 which is over the WHO's annual guideline limit figure of 66. Inthe Ochanja area, the study equally found air quality to be also bad with PM10s of 586 micrograms and PM2.5s at 266. Unfortunately, in all these areas most people do not show any sign of protecting themselves from the dangers these states of being portended.The study also looked at the very busy Okpoko market area and found air quality to be equally poor and hazardous at 140 for PM10s and 70 for PM2.5s though this seems nothing when compared to the values obtained at other parts of the city and their heavy traffic.

The foregoing lends credence to the fact that gridlocks adversely affect businesses and the environment. (Weisbord& Fitzroy;2011, Egbedi;2017) Zakka, Permana&Majid;2017).Poor outcomes from the dynamics of the economies of southeast states support this position. Report by, Nairametric (2019) shows that none of the southeast states made the top 10 list of states by their size of internally generated revenue.

III. EFFORTS IN THE PAST

However given the incentive of transport-led growth hypothesis, the government has made efforts in a bid to ensure that the roads are gridlock free or reduced to the barest minimum free. These efforts include the installation of traffic management devices on some of the arterial and freeways that usually experience gridlocks, construction of overpass bridges "flyovers" on some busy roads, dualization of some arterial roads and freeways linking metropolis, the establishment of specialized agencies FERMA (Federal Road Maintenance Agency) and ARMA(Anambra state Road Maintenance Agency) by the federal and state governments respectively for the maintenance of the busy roads that transverse the metropolis.

The state had also played a direct intervention role by establishing mass transit schemes and partnering with the private sector to expand its fleet. This aims at transporting people enmass and reducing the number of cars on the roads per time especially for intercity travels. There was also the federal assisted urban mass transit scheme, efforts at the development of a wharf at Onitsha, etc. The present realities indicate that these efforts have not given rise to desired outcomes given the level of gridlock that Onitsha metropolis still battles with.

This paper intends to extend its scope beyond that by Okeke (2013) that limited its self to only Onitsha North and Onitsha South Local Government Areas. It intends to cover the entire Onitsha metropolis which also houses other local governments which include Oyi, Idemmili North and South, and Ogbaru. The paper will then strive at unraveling the causes of these gridlocks,their socio-economic and environmental effects and seek solutions to the adverse ones to find ways of making life and work in the metropolis most rewarding.

A. Conceptual Review

a) Gridlock: An overview.

Gridlock is one of the peculiar problems that most urbancentersface. According toIroham (2019) gridlock is an incessant traffic blockage that createsa queue for various automobiles which consequently slow speed, hinder outright movement, and lead to time wastage. This shows that gridlock comes with the congestion of vehicles that prevent or delay mobility from one location to another. The causes of gridlock range from an increase in the number of vehiclesthat ply a particular route at a time, poor road network, land use pattern, population, poor traffic management facilities, and incessant breakdown of vehicles. Traffic congestion otherwise gridlock has a socio-economic effect. Gridlocks militate against the movement of goods and services from one location to another. Consequently, leading to a decline or slowed pace of economic activities. In contrast, the social implication of gridlock is the time waste, nasty behavior of drivers that can potentially lead to abuse of the roads among drivers, reckless driving which most times lead to accidents and sometimes deaths.

b) Onitsha**:** Modern history

Onitsha has gradually over the years grown to become an important trading center from the mid1850s when the Royal Niger Company made inroadsinto the hinterlands with the abolition of the slave trade.This commercial importance of Onitsha was also followed by the coming of the Christian mission into the town. (Taylor;2010) This made the town the route into Igbolandand saw the establishment of early churches, missionary schools, and hospitals. The construction of the River Niger bridge in 1965 also facilitated the growth of trade routes with other parts of the country and has equally helped in increasing the population of the new metropolis.However, Onitsha was heavily destroyed during the Nigeria – Biafra civil war of 1967 – Jan.1970. The economic tenacity of the people occasioned the speedy post-war reconstruction of the town. By the following oil boom era of the 1970s the city has once again become the destination of many migrants.

Presently, Onitsha metropolis is now a multi-political jurisdiction metropolis, (now comprising of other local governments -Oyi, Idemmili North and South and Ogbaru). Unfortunately, infrastructural support has not followed pace with this rate of urbanization. This accounts for somewhat unplanned growth of the metropolis, leading to a congested

city and traffic gridlocks. These notwithstanding, the metropolis have eked astonishing growth and still attract businesses in many industries.

B. Theoretical Review

a) Three-Phase Traffic Theory

This theory dwells on traffic flow and the physics behind its free flow till it gets to congestion leading to gridlock on highways. Here, Karner (2002) described traffic congestion in three phases. This includes free-flow (F), synchronized flow (S), and wide moving jam (J). In (F), there is a positive correlation between vehicle per unit of time which is the flow rate and vehicle density. If the maximum is reached the free flow will stop. The (J) reflects the characteristic feature of the jam to propagate through any bottleneck while maintaining the velocity of the downstream jam front. The (J) was seen as the congestion experienced on the localized structure of the road.

The (S) reflects a continuous flow but at a reduced speed with no significant stoppage ("go slow"). Synchronized flow often occurs on freeway roads and is caused by factors like poor visibility or traction due to weather conditions, a large number of vehicles plying simultaneously, etc. The theory, however, noted that any category of traffic may still lead to gridlock and congestion thereby limiting the mobility of road users.

b) The System Theory

System theory was developed by Louis Von Bertallany in 1950. Bertallany (1950) saw a system as a set of components that are interconnected with each other to achieve a defined objective. Ikegbunam (2014) posited that in a system, all things are interconnected with many others whose interconnection is necessary for solving problems.

Given the foregoing, the Onitsha traffic system becomes a typical instance. The traffic system is linked with the interconnection of roads(creating a network) and traffic management to solve the complex problem of gridlock. The transportation system consists of the flows of people and material goods from one location to another. A distortion from any part of the system will trigger reactions from other parts of the system and may lead to system sub-optimization or collapse.

C. Empirical Literature Review

a) Evolution and development of road transport in Nigeria.

The coverage and nature of road traffic draw mainly from the pattern of human settlements in any given area. Road transportation in Nigeria accounts for up to 90 % of the contribution of the entire transportation sub-sector to the country's GDP. (Ekanem, Okolisa&Aboh;2017)

Olubomehin (2015) found that at independence, the road network in the country grew from 6,500km in 1960 and got to 10,000km by 1970. It improved to 29,000km in the following ten years (1980). Presently, Nigerian roads now cover about 195, 000kms out of which about 32,000kms belong to the federal government and 31,000kms are under the state's control and management. Unfortunately, out of these numbers, just about 60,000kms of them are paved. Greater percentages of these paved roads are in deplorable condition because of the low level of investment in this area. This situation concerning gridlock has been that of steady growth in the level of road congestion as car ownership was equally on an upward trend both internationally and locally within the same period. (Ukpatu and Etika;2012, CNBC;2019)

b) Major causes of gridlock in Nigeria

The extent of traffic gridlock in some areas has been seen to be dependent on the population of the area.(Aliyu,Abubakarand Adamu;2015). Sweet (2012) also added that extent of economic activity is equally a strong determinant.Other reasons attributed to traffic gridlock in Nigeria has been also attributed to other causes which include, the non-dynamic nature of spatial planning in most metropolitan areas, inadequate traffic planning, (Atubi;2008, Igwe;2011, Haruna;2011, Momoh;2011)

For commercial centers, Aderamo&Atomode (2011), and Olaogbebikan, Ikpechukwu, Akinsulire and Enosko (2016) blamed gridlock on quality of service from traffic wardens, parking problems, street trading, narrow road, incapacity of concerned agencies to remove dilapidating or crashed vehicles on time, loading and off-loading of passengers and their goods at undesignated places on the road, as the major causes of traffic gridlocks on the roads. Other causes of gridlock also go to include, a poor carrying capacity of roads and the road network to accommodate the quantity of traffic that pours into it. (Aworemi, Abdul-Azeez, Oyedokun, and Adewoye; 2009, Zhou, Murphy and Corcoran; 2018). Inadequate road infrastructure, broken down roads, lack of a transport system that is closelyintegrated and attitude of road users especially motorists, (Bello;1993).

Furthermore, Ukpata and Etika (2012) identified reckless driving as a major factor in gridlock formation coupled with other factors that have to also do with poor road networks, inadequate parking facilities, drainage issues, poor designing of major junctions/roundabouts, inefficient mass transit system.

D. Vehicle ownership and gridlock

The prevalence of gridlock in major cities across the world has been partly blamed on high vehicular ownership and dependence. Global car demand has been seen to be on the increase over the years and hitting up to about 80.5 million in 2017. (CNBC;2019) In the USA for instance, the majority of the people moving at the rush/ peak hours do so using their private vehicles. This according to Downs (2020) can arise because majority of Americans now live in low-density residential areas wherein public transport systems cannot serve efficiently and that people have started viewing private vehicles as being more comfortable and fasterin trip timing. It (Downs;2020) argues that it facilitates doing multiple tasks on a particular journey because of its flexibility.

In Nigeria, the rate of vehicle ownership has remained on the increase within the last few decades. The period of 1970 to 2010 occasioned a 693% increase in the rate of

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vehicle ownership among Nigerians. Conversely, the rate of road construction was moving in the opposite direction at the later part of the period under review. The report showed that states like Lagos, Abuja, Enugu, Kaduna, and AkwaIbom had vehicle ownership growth averaging as much as 134% (NBS;2017). These values have remained on the increase over time with their adverse implications on traffic congestion in the country. (Olukemi&Akindutire;2010, Raheem, Olawoore, Olagunju, &Adeokun; 2015, Olagunju;2015).

Some other studies literature in this subject area held some other related views drawn through different approaches. Ventcataya et al (2018) examined the impact of traffic congestion on workers' productivity, economic growth, Commuter health and safety, travel reliability, and the environment in Mauritius. The study adopted the qualitative approach to achieve its set objectives administering 100 questionnaires as an instrument of data collection for the cities of Ebene and Port Louis using the convenience sampling technique. Post analysis results of SPSS revealed that traffic congestion hasa negative impact on the individual, the economy, and the environment.

Iroham et al (2019) investigated the impact of traffic gridlock on the values of residential properties in Apapa, Lagos Nigeria. Placing the Student-T test of significance at 95% the study foundthat gridlock does not have a significant distorting effect on the rise in value ofresidential properties in the area.

Oluwaseyi (2017) investigated the socio-economic impact of road traffic congestion on urban mobility in Ikeja, Lagos Nigeria. Distributing 92 questionnaires to road users in the area and adopting the descriptive method of analysis, the study revealed that about 79.1 percent of the respondent view the traffic congestion as severe that consequently leading to business and job losses due to late arrivals.

Sweet (2013) examined the nexus between traffic congestions and economic growth in the United State of America's 88 metropolitan areas using panel data. The study estimates show that congestion draggedemployment growth from 1993 to 2008 and productivity growth per worker from 2001 to 2007. Using instrumental variables (IV) the study reveals that congestion retard job growth and slowed productivity.

Ikegbunam (2014) studies Onitsha urban road transport system and its implication on urban transport planning. The key parameters of the study are the routeways or travel ways, stocks, and other related road facilities. Direct field observation and measurement technique was adopted for the study. Using stratified random sampling technique 8 arterial roads and 2 freeways were selected while 11 hours of traffic count were undertaken from 7a.m from Monday through to Saturday. Pearson's product-moment correlation was used to validate the strong positive relationship between traffic congestion and hourly flow of traffic for seven roads and a negative correlation for three roads.

Summarily, most of the studies indicate the negative effect of gridlock on road users, communities, the environment, and the economy. However, this study seeks to contribute to the existing literature as there is no literature/ study that covered the entire local government areas of Onitsha metropolitan city.

IV. METHODOLOGY

A. Theoretical Framework

The System theory as was developed by Louis Von Bertallany in 1950 will be adopted as the theoretical framework upon which the motivations of this study will be achieved. This is because the theory looked at a system as that which is driven by its various cohesive components that are interconnected. Ikegbunam (2008 and 2014) equally justified the use of this theory in explaining the dynamism of the transportation system especially in an area like Onitsha given sequential arrangement of its roads in order of carriage.

B. Research Design

According to Eboh (2019) research design is the process of gathering, analyzing, interpreting and reporting data in research work. The study aims at establishing the nexus between gridlock and economic activities in the study area. The research is qualitative and will adopt a questionnaire as its data collection instrumentto make informed decisions. To analyze the data collected, Statistical Package for Social Sciences (SPSS) Version 22 will be used. This will enable the researcher to generate the frequency distributions and as well as the socio-economic characteristics of the respondents.

C. Study Area

The study is interested in ascertaining the impact of gridlock onthe Onitsha metropolis. This is because of the strategic position and economic relevance of the metropolis. According to Ikegbunam (2014), Onitsha city is the gateway to other cities in the southeast and a commercial hub of the region. Onitsha lies within the coordinates of latitudes 6'49N and 6'86N and longitudes 6'47E and 6'49E with an area of 50 square Kilometers. Macro trend (2018) estimated the population of Onitsha to be about 1.3million people. The city is known for its commercial activity and has the largest market in West Africa based on geographical area.

D. Sample Size and Sampling Procedure

Sampling is the selection of study units from the study population. A stratified Random sampling technique will be adopted to select 120 respondents. The first stage will involve the purposive selection of 2 freeways in Onitsha, 5 Arterial ways, and 3 collector roads in the Onitsha metropolis. The second stage will involve random sampling of 12 motorists and street hawkers in each of the 2 freeways and 5 Arterial ways and 3 collector roads. Hence the total number of respondent for this study will be 120.

V. PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

Data ware obtained from motorists, road users, and street hawkers in the Onitsha metropolis using structured questionnaires. All the 120 administered questionnaires were returned.

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A. Presentation of Results

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	72	60.0	60.0	60.0
	Female	48	40.0	40.0	100.0
	Total	120	100.0	100.0	

Table 1: Sex of the respondents

Source: Field Survey 2021

Table 1 above shows the sex distribution of the study observation. 72 males (60%) with 48 females (40%) of our respondents.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	20-29	33	27.5	27.5	27.5
	30-39	32	26.7	26.7	54.2
	40-49	23	19.2	19.2	73.3
	50-59	20	16.7	16.7	90.0
	60 and above	12	10.0	10.0	100.0
	Total	120	100.0	100.0	

Table 2: Age of the respondents

Source: Field Survey 2021

Table 2 shows that about 27.5% of our respondents are between 20-29years, 26.7% are 30-39years,19.2% are 40-49 years, 16.7% are 50-59 years and 10.0% are 60 years and above.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Farmer	8	6.7	6.7	6.7
	Trader	31	25.8	25.8	32.5
	civil servant	9	7.5	7.5	40.0
	Others	72	60.0	60.0	100.0
	Total	120	100.0	100.0	

Table 3: Occupational distribution of respondents

Source: Field Survey 2021

Table 3, indicatesthat 25.8% of the respondents are traders, 7.5% are civil servants, 6.7% are farmers while about 60.0% of the respondents belong to other forms of occupation such as mass/commercial transit drivers, artisans, etc.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	100,000-199,000	33	27.5	27.5	27.5
	200,000-299,000	21	17.5	17.5	45.0
	300,000-399,000	19	15.8	15.8	60.8
	400,000-499,000	13	10.8	10.8	71.7
	500,000 and above	34	28.3	28.3	100.0
	Total	120	100.0	100.0	

Table 4: Estimated annual income

Source: Field Survey (2021)

Table 4 shows that 28.3% of the respondents earn N500,000 and above per annum while 27.5% of them earn N100,000-N199,000 per annum with those earning between N200,000 and N499,000 are 44.2% of the respondents. This divergence inthe income of respondents can be attributed to occupational distribution.

a) Gridlock Experience by the Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	11	9.2	9.2	9.2
	Yes	106	88.3	88.3	97.5
	Indecisive	3	2.5	2.5	100.0
	Total	120	100.0	100.0	

Table 5: Traffic congestion experience

Source: Field Survey 2021

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From Table 5, 88.3% of respondents indicate have experienced gridlock in the study area. 9.2% indicated otherwise while 2.5% of them are indecisive.

		Frequency	Percent	Valid Percent	Cumulative Percent
	Agree	56	46.7	50.5	50.5
	strongly agree	43	35.8	38.7	89.2
Valid	Disagree	10	8.3	9.0	98.2
	strongly disagree	2	1.7	1.8	100.0
	Total	111	92.5	100.0	
Missing	System	9	7.5		
Total		120	100.0		

Table 6: Does traffic congestion occurs frequently?

Source: Field Survey 2021

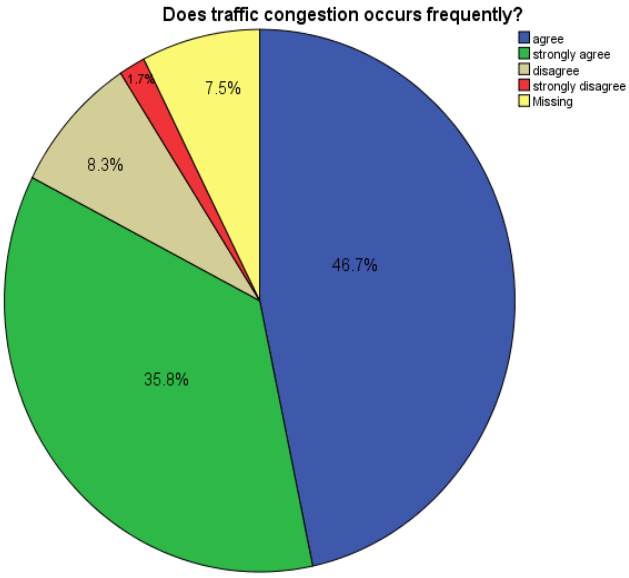

Fig 1: Response tothe frequency of gridlock

Source: Field Survey 2021

Table 4.7 and Fig1, show that 46.7% of respondents agreed that gridlock occurs frequently with 35.8% strongly agreeing. However, 8.3% of the respondents disagreed with 1.7% of them doing so strongly. Meanwhile, 7.5% of the respondents neither agree nor disagree on this frequency.

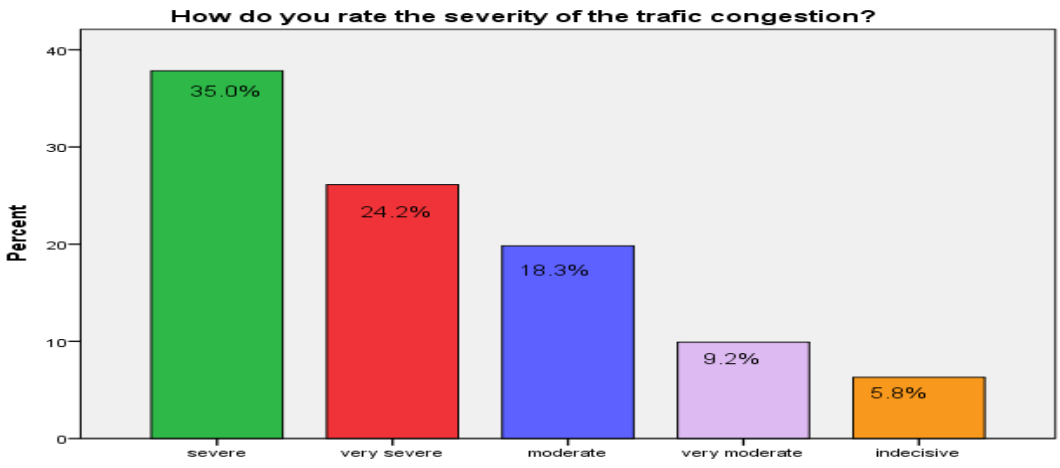

Fig 2: Severity of gridlock

Source: Field Survey 2021

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From fig 2, 35.0% of the respondents indicate that gridlock in the area is severe while 24.2% indicated very severe. 18.3% and 9.2% of them equally indicated that gridlock is moderate and very moderate respectively in the area with 5.8% being indecisive on this severity.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1h < 2h	30	25.0	27.0	27.0
	2h < 3h	44	36.7	39.6	66.7
	3h < 4h	29	24.2	26.1	92.8
	4h and above	8	6.7	7.2	100.0
	Total	111	92.5	100.0	
Missing	System	9	7.5		
Total		120	100.0		

Table 7: Duration of gridlock

Source: Field Survey 2021

Table 4.8 shows36.7% of the respondents indicated that gridlock in the area lasts for at least 2hours, 24.2% indicated at least 3hours, 25.0% indicated an hour while 6.7% indicated that it lasts for at least 4hours or more in the area.

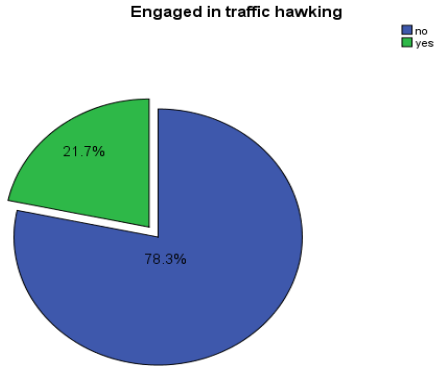

Fig 3: Traffic Hawking Activities

Source: Field Survey 2021

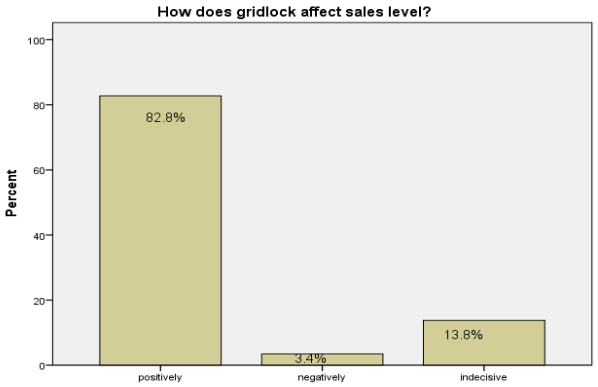

Fig 4: Gridlock and level of sales

Source: Field Survey 2021

Fig 4 shows that 82.8% of the respondents that engaged in traffic hawking, pointed that gridlock positively affects their sales level which increasestheir revenue and 13.8% of them were indecisive on whether gridlock positively or negatively affects their sales. Only 3.4% showed that gridlock negatively affects their sales.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	19	15.8	17.9	17.9
	Yes	87	72.5	82.1	100.0
	Total	106	88.3	100.0	
Missing	System	14	11.7		
Total		120	100.0		

Table 8: Motorist and Gridlock

Source: Field Survey 2021

Table 8 above shows that about 72.5% of the respondents for this study are motorists while 15.8% indicated that they are not the motorist.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mass/commercial	30	25.0	34.5	34.5
	Corporate	17	14.2	19.5	54.0
	Private	40	33.3	46.0	100.0
	Total	87	72.5	100.0	
Missing	System	33	27.5		
Total		120	100.0		

Table 9: What category of the motorist?

Source: Field Survey 2021

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Table 4.10 indicates that among the motorists, 25.0% are commercial motorists, 14.2% are corporate motorists,and 33.3%are private motorists.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Positive	2	1.7	6.7	6.7
	Negative	17	14.2	56.7	63.3
	Neutral	11	9.2	36.7	100.0
	Total	30	25.0	100.0	
Missing	System	90	75.0		
Total		120	100.0		

Table 10: What is the impact of gridlock on mass/commercial motorist turnover?

Source: Field Survey 2021

Table 4.11 shows that 56.7% of commercial motorists indicate that gridlock negatively affects their daily turnover. 6.7% pointed that gridlock affects their turnover positively while about 36.7% of commercial motorist do not consider gridlock to affect their daily turnover.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	12	10.0	70.6	70.6
	very poor	3	2.5	17.6	88.2
	good	2	1.7	11.8	100.0
	Total	17	14.2	100.0	
Missing	System	103	85.8		
Total		120	100.0		

Table 11: How can you rate the demand for your organization's product due to gridlock?

Source: Field Survey 2021

From table 11, 10.0% of corporate motorists indicated that demands for their product were poorly affected by gridlock. The implication of this is that some of these corporate organizations may lose their market share to low patronage. This will have a far-reaching effect (loss of revenue and job loss) on the organization and the general economy.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	9	7.5	22.5	22.5
	Yes	31	25.8	77.5	100.0
	Total	40	33.3	100.0	
Missing	System	80	66.7		
Total		120	100.0		

Table 12: As a private motorist have you been late to work due to gridlock?

Source: Field Survey 2021

Table 12 shows that about 25.8% of private motorists pointed that they have been late work due to gridlock problems.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Query	15	12.5	55.6	55.6
	salary cut	10	8.3	37.0	92.6
	Suspension	1	.8	3.7	96.3
	outright sack	1	.8	3.7	100.0
	Total	27	22.5	100.0	
Missing	System	93	77.5		
Total		120	100.0		

Table 13: The outcome lateness to workplace

Source: Field Survey 2021

Table 13 above shows that 12.5% of private motorists have received queries due to lateness to work arising from gridlock while about 8.3% of them have had salary still due to lateness.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	15	12.5	36.6	36.6
	Yes	26	21.7	63.4	100.0
	Total	41	34.2	100.0	
Missing	System	79	65.8		
Total		120	100.0		

Table 14: If self-employed and a private motorist, does gridlock affect your productivity?

Source: Field Survey 2021

Table 14, shows that 63.4% of self-employed/ private motorists indicated that gridlocks have negative effects on their productivity while about 36.6% of them think otherwise.

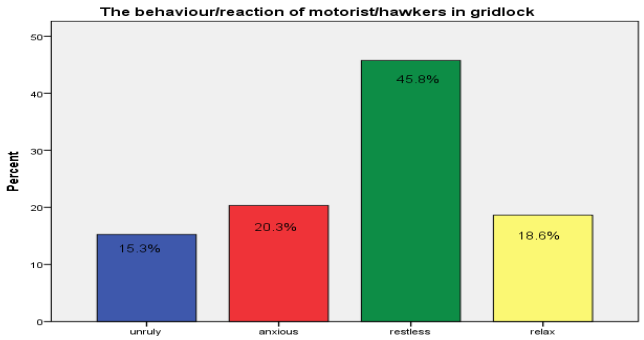

Fig 5: General Behaviour of Motorist in Gridlock

Source: Field Survey 2021

Fig 5 above indicates that 45.8% of the respondents accepted being usually restless when caught up on gridlocks. 20.3% are always anxious and 15.3% are unruly. 18.6% claim to be always relaxed when caught in a gridlock. The behavioral finding regarding the attitude of motorists is in line with that of Vencataya et al (2018) and Afolabi et al (2017).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bad road	30	25.0	25.0	25.0
	Inadequate traffic signs	19	15.8	15.8	40.8
	Inadequate parking facilities	17	14.2	14.2	55.0
	Inadequate traffic personnel	24	20.0	20.0	75.0
	Human factors	30	25.0	25.0	100.0
	Total	120	100.0	100.0	

Table 15: Major causes of gridlock

Source: Field Survey 2021

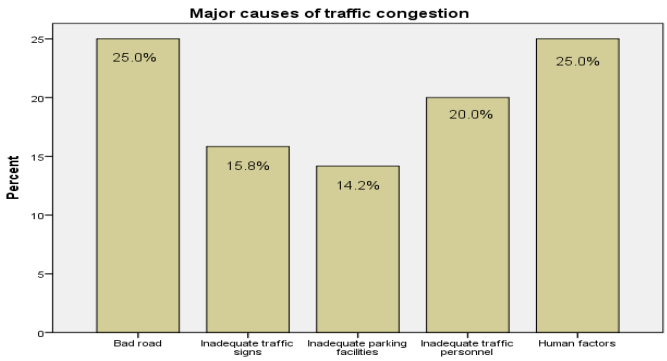

Fig 6: Causes of gridlock

Source: Field Survey 2021

Table 15 and Fig 6 show that 25.0% of respondents blamed bad roads asa major cause of gridlock in Onitsha Metropolis. Likewise,25.0% blamed it on human factors. 15.8% ticked inadequate traffic signs as the major cause and 14.2% of respondents blamed it majorly on inadequate parking facilities. 20.0% of them indicated that it is due to inadequate traffic personnel. This finding is equally similar to the findings of Afolabi et al (2017) on the major causes of gridlocks in Lagos state.

VI. SUMMARY, CONCLUSION, AND RECOMMENDATIONS

A. Summary Of Findings

This study examined gridlock experiences in Onitsha and their possible consequences on the economy. Given the qualitative nature of the study, 120 questionnaires were administered to traffic hawkers and motorists grouped into commercial motorists, private motorists, and corporate motorists. All the administered questionnaires were returned due to the help of response assistance. The post analysis result shows that out of the total 120 respondents 72 are male and 48 are female this represents 60% and 40% of the respondents respectively. The study shows that people between 20-39 years of age dominate the respondents (45.9%) indicating the youthfulness of the population. The study further shows that about 27.0% of the respondents are traffic hawkers while about 72.5% are motorists. In the same vein, 46% represent commercial motorists while 34% and 19% represent commercial motorists and corporate motorists respectively.

Furthermore, 88% of the road users in the Onitsha metropolis have experienced gridlock at one time or the other while about 81% agreeit occurs frequently. On its duration, 85% agree that it lasts for more than four hours. This is about half of the duration of the conventional work hour in the economy. Hence it can be deemed to be widespread.

Gridlock positively affects the revenue of about 83% of the traffic hawkers in the metropolis. Thus it may encourage youths to opt for hawking with its resultant dangers and hazards.

Gridlock was seen to adversely affect the turnover of the majority (about 60%) of commercial motorists in the Onitsha metropolis. It has also reduced the demand for the products of most corporate motorists like van salesmen by 10%.

About 20% of those who are on paid employment have had queries, salary surcharges /cuts due to lateness to work arising mainly from gridlock while about % of the self-employed motorists accepted that they have had productivity losses due to gridlock.

There is also the psychological part of it too, about 46% of those who have been caught in gridlocks at one point or the other accepted to have suffered restlessness, while 20% and 15% have had different degrees of anxiety and unruly behaviors respectively. These have devastating economic and psychological implications.

B. Conclusion

Given the importance of the road transportation system in driving economic growth and the possible effects associated with gridlock, the study explores the impact of gridlock on the economy of the Onitsha metropolis. This is due to its strategic position asa metropolis in the South-Eastern region of Nigeria.

The findings of the study underpin the fact that gridlock constitutes a negative phenomenon in the metropolis of Onitsha. This position draws on its negative impact on turnover of commercial motorists, salary, and productivity of road users and motorists. Though it has thrown up a not so attractive opening for the youths (traffic hawking with resultant dangers on the environment and safety of lives and future of these youths). Hence, gridlock is capable of posing serious economic and socioeconomic challenges in the metropolis.

C. Recommendations

Presently there have not been serious concerted efforts that have been made to employ the water bodies within and around Onitsha to serve as a link between the part and other parts of the southeast and beyond. These may have accounted for the heavy traffic and gridlock in the metropolis.

It thus recommended that committed traffic wardens should be redeployed to the metropolis while ensuring that adequate parking facilities are provided (for the heavy and light axle trucks that haul goods in and out of Onisha) especially around the plethora of markets in the metropolis.

Federal, state, and various local governments that exercise fiscal and geopolitical powers within the metropolis should invest heavily in road /flyover construction, rehabilitation, and maintenance to curb this menace of gridlock in Onitsha which has far-reaching effects in the region.

Existing traffic laws and their penalties at about 30 years are obsolete. They need to be reviewed with more stringent and deterring penalties introduced to deter road users from causing “man-made/ avoidable” gridlocks.

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