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Evaluation of the Impact of Impact of Traffic Congestion on Commercial Property Rental Value in Mararaba, Karu LGA, Nasarawa State, Nigeria

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ABSTRACT: The objective of this paper was to evaluate the Impact of Traffic Congestion on Commercial Property Rental Value in Mararaba, Karu LGA, Nasarawa State Nigeria using appropriate standard procedure after collecting data from 127 respondents through a structured questioner administration. The study concluded that the traffic congestion has effect on the commercial property rental value in the study area. The study further established that: the problems including air pollution, crime activities and waste of productive hours were prevalent issues caused as a results of traffic congestion in the study area; main causes of traffic congestion in the study area are proximity of commercial properties (market) to the highway, early morning and evening hours rushing to and from work, and nonchalant attitude (behavior) of road users; traffic congestion has effect on the rental value of commercial properties in the study area hence business activities were found to increase as a result of traffic congestion and Estate Surveyors charged more rent as a result of this; Therefore, the study concluded that the traffic congestion has an impact on commercial properties value in the study area. The study further recommends ensuring effective and efficient traffic management/planning and Improvement of-street parking space, provision of pedestrian facilities.

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Being a necessary component of human activity, transportation is the cornerstone of civilization (Tokula *et al*, 2023) Every year, more vehicles—including cars, buses, bicycles, and pedestrians—use the traffic system, which raises the need for traffic infrastructure. However, over the past ten years, there has been a decline in all levels of investment in new infrastructure, which has led to traffic congestion on major highways (Dasgupta *et al*., 2021). The primary source of transportation for both passengers and freight throughout Nigeria is the estimated 200,000 km long road network. Since the rail system collapsed in the 1970s and 1980s, vehicle transport has become the most popular and significant means of freight transfer. Compared to other developing and developed economies like South Africa, the United Kingdom, and the United States, road transportation currently makes up approximately 95% of all modes of transportation and is anticipated to be worth N200 billion, expanding at a rate of 10% annually (Federal Ministry of Works; Tokula *et al*, 2023) Since some drivers and pedestrians find it convenient to make

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purchases on the side of the road, many commercial activities are noted in close proximity to major thoroughfares, which may cause traffic congestion (Aliyu *et al*, 2015). According to Iroham, *et al* (2019), traffic congestion is a blockage caused by an endless line of cars that clog an entire network of interconnected streets. This results in slower travel times, longer trip times, or even a complete halt to vehicular movement. In the long run, traffic gridlock raises costs and reduces productivity among workers. It also increases transportation costs, lengthens travel times, adds to expenses, and makes pick-up and delivery times less predictable for truck driversIroham *et al*, (2019) opined that the value of real estate is a complex and multidimensional phenomenon that can be explained by a number of variables or factors, including the state of the local economy, the market area's demographics, the ease and convenience of access to essential amenities, the features of the property itself, and proximity to major road. Being close to major roads, properties typically enjoy many significant benefits, like easier access to employment opportunities, convenient mobility options, reduced transportation costs, and easy access to recreational and retail outlets. These relative advantages are expected to positively reflect on property values (Bravo-Moncayo, *et al* 2023). Transportation and property are important in physical and economic development of towns and cities all over the world, Property and land values tend to increase in areas with expanding transportation networks, and increase less rapidly in areas without such improvements (Aliyu *et al*, 2015) Because it makes it easier to access markets, places of employment, city centers, recreational areas, and other key locations that directly affect property prices, transportation has long played a crucial part in the growth of urban development. According to earlier research, locations close to major transportation routes are generally thought to offer relative advantages over those farther away. Additionally, locations near route intersections are thought to offer relative advantages, with locations near the center of the transportation system generally having greater advantages. These benefits are assessed in light of accessibility, which varies depending on the specific location and hence distinguishes between sites in terms of accessibility benefits. (Hoyt, 1939; Lean & Goodall, 1977; Aliyu et al 2015). Hence, the objective of this paper is to evaluate the Impact of Traffic Congestion on Commercial Property Rental Value in Mararaba, Karu LGA, Nasarawa State Nigeria.

The study area: Karu Local Government Area of Nasarawa State is located between latitudes 8° 5’ N and 10° 42’ N and longitudes9° 25’E and 7° 54’E of the Greenwich Meridian while Mararaba is located between latitudes 7° 34’ 40’’ N and 7° 37’ 00’’N and longitudes 9° 0’ 30’’ E and 9° 2’ 00’’E of the Greenwich Meridian. It is a district of Karu Local Government Area, Nasarawa State and is among the towns that make up the Karu urban area, a conurbation of towns stretching to Nigeria's Federal Capital Territory. Its neighbouring towns are: Ado Nyanya, New Nyanya, Masaka Old Karu, New Karu and Koroduma are villages that grew, as a result of the rapid growth and expansion of administrative and economic activities of Abuja into neighboring towns, coupled with the evacuation of tens of thousands of people from Abuja by the Federal Capital Territory administration. Mararaba is an unplanned area covering a spatial extent of about 800sqkm (KAPDA, 2001). It extends from the eastern boundary of the Federal Capital Territory Abuja (Old Nyanya) to Gora about 15 kilometers to Keffi. The area has an estimated population of 10,000 in 1991, and is believed to have grown rapidly to an estimated population of 50,000 and 130,000 by 2001 and 2010 respectively; due to continuous migration of people from other parts of the country to this area. The entire M araraba district has 179 roads consisting of an express way, carriageways, cul-de-sac, lanes, streets, avenue, ways, and crescents. Out of 179 roads in Mararaba, only one is a major high way that links Mararaba to the Federal Capital territory Abuja. This study covered only the major high way serving the commercial area in Mararaba, which links Mararaba and Abuja to the exclusion of inter-city roads that form outlying ring around the study area. There are twelve registered firms of Estate Surveyors and Valuers practicing in Nasarawa State out of which five (about 41.7%) operate in Mararaba area of Karu Local Government. In respect of population of commercial properties in the study area, there are three hundred and seventy one commercial properties located along the express way giving an estimated two thousand occupiers. The number of commercial properties along the express road in the study area was obtained using application of geographical information system while population of occupiers was obtained by direct survey. The population of Estate Surveying firms in the study area was obtained from the register of firms at the Nasarawa State Branch of the Nigerian Institution of Estate Surveyors and Valuers.

MATERIALS AND METHOD

This study utilized qualitative approaches like the use of questionnaire administration and authors’ personal observation to generate the data. Secondary data were obtained from recent journals and theses. The study

followed a survey research design. The survey instrument elicited information on the causes of traffic congestion, effect of traffic congestion on rental value of commercial properties in Mararaba and solution to traffic congestions. Respondents for this survey were obtained from Mararaba market of Karu. The choice of urban districts for this survey is because of high population increase from migration and high traffic due to frequent movement of people and goods to different locations. The target population of respondents were tenants occupying commercial properties within Mararaba Market. Data was obtained from 127 respondents through questionnaire administration. The data was summarized and analyzed using SPSS software and finding were also summarized in tables. Regression analysis was conducted to established the effect of traffic congestion on commercial property rental value.

RESULTS AND DISCUSSION

Table 1 indicates that, risks caused as a result of traffic congestion. The highest of the risk was Air pollution with a mean value of (M=2.1181, SD=0.92251) ranked first, followed by resulting in crime with a mean value (M=2.0709, SD=1.15594) which was ranked second, then waste of productive hours (M=2.0472, SD=1.20750) is ranked third, next was waste of time with (M=1.8189 SD=0.85836) as the fourth.

Table 1: Challenges caused as a result of traffic congestion

	N	Mean	Std. D	Rank
Air pollution	127	2.1181	.92251	1st
Result in crime	127	2.0709	1.15594	2nd
Waste of productive hours	127	2.0472	1.20750	3rd
Waste of time	127	1.8189	.85836	4th
Noise pollution	127	1.7638	1.09441	5th
Increase in cost of transportation	127	1.6299	.82427	6th

Table 2: Causes of traffic congestion

Causes	N	Mean	Std. D	Rank
Proximity of market to the highway	127	2.2441	1.22615	1st
Early morning and evening rush to and from work	127	2.1732	1.30988	2nd
Behavior of road users	127	2.1102	1.05581	3rd
Increase in car ownership	127	2.0315	1.20143	4th
Presence of road side market	127	2.0157	1.19512	5th
Insufficient roads infrastructure	127	1.9449	.91119	6th
Small number of lanes	127	1.9370	.92366	7th

Followed by noise pollution ranked fifth (M=1.7638, SD=1.09441), and lastly increase in cost of transportation with (M=1.6299, SD=0.82427). All these are the challenges caused by traffic congestion in the study area.

Table 2 shows that, among the causes of traffic congestion, proximity of market to the highway with a mean value of (M=2.2441, SD=1.22615), followed by early morning and evening rush hour to and from work with a mean value (M=2.1732, SD=1.30988). Next was behavior of road users ranked third with a mean value (M=2.1102, SD=1.05581), followed increase in car ownership ranked fourth with a mean value (M=2.0315, SD=1.20143). Then presence of road side market ranked fifth with a mean value (M=2.0157, SD=1.11531), Followed by insufficient road infrastructure ranked sixth with a mean value (M=3.7389, SD=1.19512). The least of the causes of traffic congestion was small number of lanes with a mean score (M=1.9449, SD=0.91119).

Table 3: Impact of traffic congestion on commercial rental value

Impact	N	Mean	Std. D	Rank
Traffic congestion negatively affect the value of commercial properties	127	3.8346	1.22645	1st
Traffic congestion influences the value of commercial properties?	127	2.3150	1.28915	2nd
Estate surveyors charge high rent on properties located close to where there is traffic congestion	127	2.1654	1.09663	3rd
Traffic congestion increases the business activities within the highway	127	2.1417	1.26444	4th
Would traffic congestion affect the choice of location of commercial property?	127	2.0236	1.11601	5th
Traffic congestion positively affect the value of commercial property	127	1.7559	.92339	6th

Table 4: Strategies of reducing traffic congestion

Strategies	N	Mean	Std. D	Rank
Installation of traffic light	127	2.5039	1.05314	1st
Proper awareness to road users	127	2.3780	1.06852	2nd
Banning of road side hawkers	127	2.1024	1.06782	3rd
Alternative routes	127	1.9764	1.05005	4th
Road expansion	127	1.8189	.94632	5th

Table 4 shows that, among the strategies of reducing traffic congestion, installation of traffic light is ranked first with a mean value of (M=2.5039, SD=1.05314), followed by proper awareness with a

mean value (M=2.3780, SD=1.06852). Next was banning of road side hawkers ranked third with a mean value (M=2.1024, SD=1.06782), followed by alternative routes ranked fourth with a mean value (M=1.9764, SD=1.05005). The least of the strategies of reducing traffic congestion was road expansion (M=1.8189, SD=0.94632).

Table 5: Questionnaire distribution

	Frequency	Percentage (%)
Returned valid	127	79%
Not returned	33	21%
Total distributed	160	100%

Table 5 shows that a total of 160 questionnaires were distributed accounting for 100 percent of the research questionnaires out of which 127 were returned. The returned questionnaires accounts for 79 percent of the total questionnaires distributed. This takes the response rate for the study to be 79 percent which is considered adequate and above the minimum recommended valid response of 30%

Table 6: Gender of the respondents

	Frequency	Percentage (%)
Male	80	63.99%
Female	47	36.01%
Total	127	100%

Table 6 above shows the gender/sex of the respondents within the study area. It shows that 63.99% of the respondents were male (80) while 36.01% were female (47). This indicates the dominance of male over female in the study area.

Table 7: Ages of the respondents

Years	Frequency	Percentage (%)
15-24	0	0%
25-34	30	23.6%
35-44	54	42.5%
45 and above	43	33.9%
Total	127	100%

Table 7 above shows the ages of the respondents within the study area. It shows that 42.5% of the respondents (54) were within the range of 35 to 44yrs which it's the highest. Followed by 43 respondents with 33.9% within the range of 45yrs and above, then 30 respondents with 23.6% of the range 25 to 34yrs. It also revealed that no respondent with age between 15 to 24 yrs.

Table 8: Education level

	Frequency	Percentage (%)
Bachelors	24	18.8%
Diploma	50	39.5%
SSCE	40	31.5%
Others	13	10.2%
Total	127	100%

Table 8 revealed that, most of the respondents are product of National Diploma awarding institutions (50) with the high percentage of 39.5% of the respondent. Followed by, SSCE (40) represents 31.5% of the respondent, Bachelors (24) represent 18.8% of the respondents lastly others (13) represent 10.2% of the respondent

Table 9: Relation to commercial property

	Frequency	Percentage (%)
Manager (ESV)	5	3.9%
Tenant	70	55.1%
Owner-occupier	52	41%
Total	127	100%

Table 9 above indicated that, most of the respondents are Tenants (70) with highest percentage of 55.1% of the respondents. Followed by owner-occupier (52) represent 41% and lastly managers (ESV) (5) represent 3.9%.

Table 10: Rent passing

(N)	Frequency	Percentage (%)
Below 200,000	0	0%
200,000-500,000	76	59.8%
501,000-800,00	51	40.2%
Above 800,000	0	0%
Total	127	100%

Table 10 shows the rent passing in the area of the study, the rents mostly received by managers or pay by tenants is N200, 000 to N500, 000 (76) with high percentage of 59.8%. Followed by N501, 000 to N800, 00 (51) represents 40.2%. The table also shows that no commercial property is rented below N200, 000 and above N800, 000 in the study area. This implies that the rent being paid on an average is N350, 000 in the study area.

Table 11: Floor where the property situated

	Frequency	Percentage (%)
Ground floor	65	51.18%
Upper floor	62	48.82%
Total	127	100%

Table 11 shows the respondent's property location in terms of whether ground or upper floor of the building. The information above indicated that the commercial properties are mostly located at ground floor (65) with the highest percentage of 51.18% while the properties located at upper floor (62) which represents 48.82%.

Table 12: Period of occupation/managing the property

	Frequency	Percentage (%)
Less than 5yrs	48	37.79%
6-10yrs	33	25.98%
11-15yrs	22	17.32%
Above 15yrs	24	18.91%
Total	127	100%

This table 12 indicated how long managers manage or tenants/owner-occupier use he property in the study area. Most of the properties are occupied or managed in less than 5yrs (48) with the highest percentage of 37.79%. followed by properties between 6 to 10yrs (33) which represent 25.98%, then above 15yrs (24) represent 18.91% and lastly properties within 11 to 15yrs (22) with lest percentage of 17.32%.

Table 13: Distance of the property from main road

	Frequency	Percentage (%)
Close	84	66.14%
Not close	43	33.86%
Total	127	100%

In the table 13 above, it indicated closeness of the properties with main road in the study area. Most of the commercial properties occupied by the respondents are close to main road (84) with highest percentage of 66.14% while commercial properties not close to main road (43) represent 33.86%. A number of deductions were made from the data analysis. These are highlighted as follows: Early morning and late evening rush hours has been a major reason for congestion. It has been found out that lack of parking space contributes to traffic congestion in the study area. It has also been found out from this study that trading activities on parking space in the study area are among the strong variables that constitute congestion and traffic jam. It has also been found out in the study that illegal bus stops and tricycle stops is a causative agent of traffic congestion in the study area. Too many vehicles plying the roads also result in congestion. It has also been found out that too much presence of heavy-duty vehicles on the road attributes to more traffic congestion in the study area. So also, malfunctioning vehicles on the roads has been identified as another means of traffic congestion in the study area. The study also found out that lack of road pavement for trekkers in the study area contributes to traffic congestion.

Conclusion: In conclusion, the findings of the study indicated that the problems including air pollution, crime activities and waste of productive hours were prevalent issues caused as a results of traffic congestion in the study area. The study also concluded that the main causes of traffic congestion in the study area are proximity of commercial properties (market) to the highway, early morning and evening hours rushing to from work, and nonchalant attitude (behavior) of road users. It further indicated that traffic congestion has effect on the rental value of commercial properties in the study area hence business activities were found to increase as a result of traffic congestion and Estate Surveyors charged more rent as a result of this. Therefore, the study concluded that the traffic congestion has an impact on commercial properties value in the study area.

Declaration of Conflict of Interest: The authors of this work declare no conflict of interest.

Data Availability: Data are available upon request from Ayuba, B; Adamu, S; Muhammad KU; Dauda, MK

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