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SOCIO-ECONOMIC AND ENVIRONMENTAL IMPLICATIONS OF ROADSIDE AUTOMOBILE WORKSHOPS IN OTA CITY, NIGERIA

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Abstract. Roadside Automobile Workshop (RAW) activities remain principal components of the informal sector in many Nigerian cities. Its emergence is attributed to the advent of automobiles and their use in easing urban mobility. Expectedly, unlike the formal auto-workshops, the RAW are located across the available spatial places where, motorists find solace to immediately respond to maintenance and other mechanical faults/malfunctions of their vehicles. However, the spatial locations and operations of RAW, along with the accompanying adverse effects, are recurring issues of concern in many cities in Nigeria. In this regard, this study assessed the socio-economic and environmental implications of RAW in the city of Ota, Nigeria. A cross-section survey research is adopted in this study, while 400 residents were sampled using multistage sampling technique. Major findings show that most of the residents have spent over four years in study area. It also revealed that increase loss of green area, noise pollution, and land vibration are the top-ranked environmental implications, while increase road traffic congestion, untrained technicians, and disruption of traffic flow are top-ranked economic implications. However, improve access to maintenance workshop, reduce vehicular breakdown on roads are top-ranked social implications of RAWs. This study concludes that the indiscriminate location of RAWs in the study area is detrimental to socio-economic development of study area ($F_{389}^{10} 23.851, p=0.000 < 0.05$), and recommends policy implications and strategies to improve the activities of RAW in the study area.

Keywords: Cities, informal sector, perception analysis, transport operations, urban mobility.

Rezumat. Activitățile Roadside Automobile Workshop (RAW) rămân componente principale ale sectorului informal în multe orașe nigeriene. Apariția sa este atribuită automobilelor și utilizării acestora în facilitarea mobilității urbane. Spre deosebire de atelierelor auto oficiale, RAW sunt amplasate în locurile spațiale disponibile unde șoferii își găsesc consolare să

răspundă imediat la întreținere și la alte defecțiuni mecanice/defecțiuni ale vehiculelor lor. Cu toate acestea, locațiile și operațiunile spațiale ale RAW, împreună cu efectele adverse însoțitoare, sunt probleme recurente de îngrijorare în multe orașe din Nigeria. În acest sens, acest studiu a evaluat implicațiile socio-economice și de mediu ale RAW în orașul Ota, Nigeria. În acest studiu este adoptată o cercetare în secțiune transversală, în timp ce 400 de rezidenți au fost eșantionați folosind tehnica de eșantionare în mai multe etape. Majoritatea rezidenților au petrecut peste patru ani în zona de studiu. Studiul a arătat pierderi ale zonei verzi, poluare fonică și vibrații ale terenului - implicațiile de mediu de top, în timp ce creșterea congestionării traficului rutier, tehnicienii nepregătiți și perturbarea fluxului de trafic sunt implicații economice majore. Cu toate acestea, îmbunătățirea accesului la atelierul de întreținere, reducerea defecțiunilor vehiculelor pe drumuri sunt implicații sociale de top ale RAW-urilor. Acest studiu concluzionează că amplasarea fără discernământ a RAW în zona de studiu este dăunătoare dezvoltării socio-economice a zonei de studiu ($F_{(10/389)}23,851$, $p=0,000<0,05$) și recomandă implicații politice și strategii pentru îmbunătățirea activităților RAW.

Cuvinte cheie: orașe, sector informal, analiza percepției, operațiuni de transport, mobilitate urbană.

1. Introduction

The development and introduction of automobiles of various categories has not only been a unique succor to socio-economic development of nations across the globe, but also facilitates spatial interaction of people and activities by ensuring ease of movement and comfortable overcoming of spatial barriers. Therefore, the advent of automobiles and its adoption in facilitating movements across spatial location has brought mechanics into limelight and the corresponding establishment of automobile workshops. Mechanics is a relative term with varying meanings. However, the term, mechanics is not only scientifically defining and described by [1] as a branch of physics that is concerned with the motions of objects and their response to forces, but also professionally seen as a skilled worker who is employed to repair or operate machinery or engines in Nigerian context. In this regard, mechanic involves in the application of technical knowledge of mostly acquired informally to solving daily needs of people in automobile maintenance and repairs, most especially in the Roadside Automobile Workshops (RAW).

The RAW no doubt, are spatially located to ensure regular maintenance of various forms and types of automobiles [2]. These workshops, which can be organized/formal or unorganized/informal have been an integral part of land use since the advent of automobile and motorization in the built environment [3]. The automobile or mechanic workshop, as the terms are used interchangeably in literature, is critical to successful operations and maintenance of vehicles, as collision and engine repair, oil change, car wash, and other services are performed there to ensure optimal performance of the vehicles for the owners and other users [4,5]. Therefore, vehicle technicians or mechanics usually attend to faulty vehicles for one form of attention or the other at the workshop. Most importantly, vehicle maintenance, which is the practice of servicing vehicles to prevent major breakdown and repair of damaged or malfunctioning components of a vehicle, is being attended to at such workshop. With increasing demand for vehicles couple with increased vehicle ownership and introduction of other categories of automobiles in the country, the need to patronize automobile workshop become necessary. Thus, visiting or patronizing auto-technicians at

automobile or mechanic workshops has always be a precondition for successful and efficient operations of vehicles since its introduction in Nigeria and other Sub-Sahara African countries.

Apart from maintenance, an automobile service workshop performs several functions, which include sales of automobile parts and vehicles; providing after-sales services and rendering technical advice to customers who patronize their workshops; and having a specific location in the cities where these activities are carried out. Peculiar to Nigeria, the location of formal or government approved automobile workshops are not only few or scanty in number, their location are far from the activities centre and equally characterized by poor condition of access roads, low patronage, insecurity and crime activities [4]. The attributed challenges to organised or formal automobile workshops in the Nigeria gave birth to the proliferations of roadside automobile workshops across various activity centres in Nigeria. Worthwhile, The RAWs are usually located conspicuously along or adjoining roads and streets for easy accessibility and identification by those demanding their services on varying aspects of vehicle components. Interestingly, the spatial location of RAW has been a major concern for many adjoining land use activities considering their adverse effects. Therefore, the location and proliferation of RAW in Nigeria cities deserve urgent attention; hence, this basis for this study with specific focus on the residents perception of the socio-economic and environmental implications of the location and activities of RAW in Ota, Nigeria.

It is worth knowing that the importance of RAW to users of automobiles, and socio-economic development of the country cannot be underestimated. In fact, RAW are part of the Nigeria service industry which meets the immediate and remote needs of various categories of automobile users in the country. This is due to the fact that road transport accounts for the highest share of the modal split with the predominant use of automobile vehicles that rely on petroleum products such as prime motor sprit [PMS] and automotive gas oil [AGO] in the country. Meanwhile, the operational efficiency of these automobile vehicles continue to deteriorate in performance due to the wear-out of spare parts and other related mechanical and electrical faults caused by frequent use, which necessitates repair or replacement. However, the indiscriminate location of automobile workshops and the concomitant release of chemical-related waste, including engine and brake oil, metal scraps, fuel, grease, and radiator steam etc., due to the operational activities of RAW into the surrounding environment are of immense detriment to residents, socioeconomic functions and environmental quality. These consequential effects are of notable disaffection and matter of concern, as attributed hazardous waste in particular are not biodegradable, but toxic and injurious to health as well as other aquatic lives. Meanwhile, the activities of the RAWs in cities have also contributed to the growing urban degradation, slum and sprawl creation. For instance, [5] state that the activities being carried out by auto mechanic operators at different locations of their workshops which are not in compliance with any known standards have resulted in various geo-environmental damage and consequences. In addition, the activities of RAW have not only infiltrated residential areas, but also causing disaffection to residents in such adjoining areas.

The aesthetic quality and arrangement of most urban centres in the country including Ota City, Nigeria is adversely being impacted by uncoordinated existence, and locations of RAW. With this, there is high rate of littering the immediate and adjoining environment with many waste metals and other non-biodegradable substances which ultimately and adversely affect environmental quality of the surrounding in numerous ways. This is in addition to noise

and environmental pollution attributed to workshop operations. Meanwhile, the operators of the formal automobile workshops across Nigeria communities are been encourage to move out of the organized location to start operations in the core urban area where patronage are high but compounding the existing cities challenges especially socioeconomic and environmental adverse effects. As such, the study assessed the perceived socio-economic and environment implications of RAW in Ota City, Nigeria. In achieving this aim, the objectives examined include: the socio-economic status of residents living close to the RAW in Ota City, Nigeria; the nature of the activities of RAW and waste attributed to the operation of RAW in the study area; the social, economic and environmental implications of the operation of RAW; the impacts of RAW activities on socio-economic development; and appraised the statistical locational impact of RAWs on the socio-economic development of Ota City, Nigeria.

1.1 Conceptual and literature review

1.1.1 Conceptual clarification

This study is based on the idea of the informal sector, which is also known as the shadow economy, subterranean economy, on-corporate firms, micro-enterprises, or tiny producers. Furthermore, the informal sector is an unregistered commercial enterprise without a formal structure and organization that includes a significant number of self-employed individuals working in developing nations on small-scale, intensive projects like tailoring, food preparation, trading, and shoe repair, among others. Despite being extremely productive and making a sizable contribution to national GDP, the industry is rarely included in the national employment figures. The informal sector is typically characterized by a low capital output ratio, or a low ratio of capital to production in terms of equipment level.

According to reference [6], the informal sector is a diverse phenomenon that includes a wide range of economic activities that are sometimes ignored by statistics. These activities include all kinds of manufacturing, construction, trade and commerce, repair, and other services. Workers in the informal sector are typically those who do tasks in small businesses run and managed by one or a few people with minimal capital; these tasks are frequently labor-intensive and produce goods and services of low quality but at reasonable prices. In contrast to the formal sector, which consists of larger and more productive manufacturing and commercial enterprises, government departments, education, and public sectors, the informal sector is made up of intermittent part-time workers, hawkers, petty traders, sidewalk barbers, casual workers, and handicraft workers.

Reference [7] asserts that because informal sector operations use old, labor-intensive production methods that result in low productivity, they are consigned to the background and classified as a traditional or retarded sector in developing economies. According to [8, 9], the informal sector has grown quickly in most developing countries as a true source of livelihood for between one-third and three-quarters of the urban economically active population. This is because the formal sector has virtually collapsed in many countries, including Nigeria, and employs a sizeable portion of the labor force and maintains the economy. Despite the important function roadside mechanics play in Nigerian urban areas, they are also linked to detrimental environmental effects.

The automotive repair activities has been haphazardly situated within our neighbourhood, so hurting the aesthetic quality of urban vista. This concept is relevant to this study since roadside mechanics are part of informal sector whose service is contributory to the economy of the nations.

1.1.2 Literature review

Cities have always been places that offer better access to services than rural communities since the advent of machines. Specifically, since the 19th century, the automotive industry as well as related industries have expanded quickly over the globe. As automobile industry grows and vehicle ownership increases, the demands for vehicle servicing will correspondingly increase. According to [1], the economic sector is expanding due to the operations carried out in mechanic workshops, which include vehicle repairs, fabrication and paneling of worn-out automobile metal parts, vulcanizing, and painting etc. Additionally, [10] note that the motor vehicle repair and service industry (MVRSI) is a thriving sector with a number of small open-air garages, while the majority of vehicle maintenance and repair work is done by roadside mechanics who also play a significant role in the socioeconomic development of the society by helping car owners keep their vehicles operational at all times. Auto-mechanic workshop clusters play very significant roles in ensuring availability of one-stop shops for automobile repairs as artisans specializing in repairs of various aspects and types of automobiles usually conglomerate within specific geographical locations from where they render different automobile-related repairs and services [11].

Automotive workshops fall under the category of small industries, and they contribute to vehicle maintenance because efficient motor vehicle maintenance is crucial to the economy of any country and improves the effectiveness of transportation services. The requirement to provide services for moving automobiles, which can unexpectedly develop problems and demand immediate attention from specialists, gave rise to the need for auto mechanic workshops in Nigeria. Thus, it is necessary that repair workshops will be built close to the side of the road to provide services to the automobiles. With increasing number of vehicles, many informal auto mechanical workshops are set up. Therefore, automobile repair sector is a major component of informal activities characterizing Nigeria cities. It is worthy to note that, auto mechanic workshops can be divided into medium vehicle repair workshops that deal with the repair, servicing, and maintenance of all medium sized vehicles, such as mini-buses, delivery vans, land rovers, etc., and heavy vehicle repair workshops that deal with the repair, servicing, and maintenance of all heavy vehicles. [10] noted that urban land uses have always been left to the dictates of artisans and technicians who take decision on where their activities locate and function even at the expense of other land users. As a result, the automobile artisans that can be found in every nook and cranny of cities portend environmental problems that must be recognized and addressed. This is due to the fact that, despite the flaws of automobile technicians and RAW, they are essential informal sector service activities that are desirable in urban settings.

In the same vein, [12] observe that a typical auto shop employed a range of craftspeople, including mechanics, panel beaters, battery chargers, and spray painters in addition to a number of semi-autonomous car shops that ran in concentric circles and each specialized in one or more vehicle or component brands. The historical background development of formal automobile repair and maintenance industry dated back to 1920 in Lagos. Its expansion started with the creation of the Vehicle Assembly Plant (VAP) in 1959, which is now known as General Motors Limited, to assemble trucks from semi-knocked down components. After that, several businesses, including Leventis, RTB, Briscoe, and SCOA, made investments in Nigeria's auto industry. The private sector made some haphazard attempts to construct cob on truck chassis during this time using flat sheets of metal and wood. When it

supported the establishment of Nigeria's first two auto assembly plants, Volkswagen of Nigeria (VWON) in Lagos and Peugeot automobile Nigeria (PAN) Limited, in Kaduna, in 1970 as part of the Second National Development Plan (1969-1974), the Federal government made its first direct investment in the automobile industry. The Third National Development Plan came next (1975-1980). This includes the National Truck Manufacturers (NTM) Limited Kano, Leyland Nigerian Limited Ibadan, Steyr Nigerian Limited Bauchi, and Anambra Motor Manufacturing Company (ANAMCO) Limited Enugu. These were in charge of educating car mechanics in Nigeria, who went on to become industry professionals in servicing and maintaining of automobiles in the country. For effective operation on Nigerian roads, broken down vehicles were repaired by Nigerian experts between the latter half of the 1970s and the middle of the 1980s, according to [2], but the auto repair industry only really took off in the 1980s, when the country's economy started to suffer for many Nigerians. For client convenience, businesses have been setting up shop along the sides of the road. Since there are no formal procedures for repairs of reported flaws, the rising activities of roadside mechanics have resulted in significant patronage by many Nigerians.

Giving the deterrent nature of RAW, [13] examined the effects of informal auto-mobile mechanic workshops activities on groundwater quality in Ibadan, Nigeria and found the existence of detrimental effect of such activities through the contamination of groundwater sources; hence, the indiscriminate location of such activities become a major public health concern. Also, the study of [12] revealed the concentrations of heavy metals in the soils and high pollution of the surrounding environment of the workshops with heavy metals such as lead and copper among others. In further and related study, [11] found that high contamination of the soil and therefore, call for regular monitoring the activities of auto-mechanics as part of remedial measures.

According to reference [4], there are clusters of auto-repair employees in Ibadan, Oyo State, with three of these clusters located in Ibadan North, two in Ibadan Southwest, and one in Oluyole. Although the properties on which these clusters are located are rented from either public (such as the Nigerian Railway Corporation) or private entities, the clusters themselves are privately owned. In light of this, the distribution pattern is consistent with the local government areas' populations, and there are no known concentrations of mechanics and other vehicle repair personnel in the city's local governments of Ibadan North-East and Ibadan South-West. This is due to a 1984 instruction that auto-repair employees should relocate to the existing clusters, which caused a lot of mechanics in these local governments' territories to do so.

2. Materials and Methods

2.1 Study area

The geographical scope of this study is restricted to the city of Ota in Ogun State, Nigeria. Importantly, the study is restricted to informal automobile workshops known as roadside mechanic workshops in which perceived socio-economic and environment implications of RAW in Ota City, Nigeria was studied as a strategy to evolve required data for planning for mechanic workshop in the study area and other large urban centres in the country. The city of Ota, which has an area of 878 square kilometers and is located between latitudes 6° 41'N and 6° 68'N and longitudes 3° 41'E and 3° 68'E [14], has been one of Ogun State's fastest-growing regions and is included as one of the state's Development Pressure Areas by the Ogun State Regional Plan. Ota, which is in Ogun State, is the third-most

industrialized city in the Nigeria due to its industrial concentration, behind Ikeja and Apapa in Lagos State. Notably, the industrial concentrations in Ota have served as an enticing magnet for people as a result of their closeness to Lagos and the Nigeria/Benin Republic border as well as their concentration of industrial businesses (Figure 1).

The traditional core area, the transition area, and the growing suburb areas make up the three divisions of the Ota built-up area. The traditional core area is divided into four quarters: Ijana, Otun, Osi, and Oruba. It is bordered to the north by Idiroko Road, which splits it in half, and to the south by Iganmode Road. Housing Corporation Estate, the Industrial Estates, and Sango are all part of the transition area, which is the newly constructed region to the north and west of the bypass (grow as residential area for the non-Yoruba community, particularly the Hausas and Ebiras). However, it is noteworthy that some former separate villages that include Ijoko, Ijako, Iloye and Iyesi etc. have merged into one built-up area of Ota [15].

The rapid growth of population is one of the major environmental issues not only in Ota city, but in all major towns and urban centres in Ogun State and other states in the country. This has been the prime cause of other environmental concerns and issues generally in the country as it has multiplier impacts on other socio-economic and environmental variables. The difficulty of sustainable development arises from both the growing population and the deteriorating environment since the presence or absence of advantageous natural resources can hasten or impede the process of socioeconomic growth. Three fundamental demographic factors—the birth (fertility) rate, death (mortality) rate, and human migration (emigration or immigration)—have been creating small variations in RAW population size, composition, and distribution in the city of Ota. The proximity of the City to Lagos region, concentration of tertiary institutions, industries and factories and the linkages with Benin-Republic have also been a cogent contributory factor aiding the spatial location of RAW in the study area.

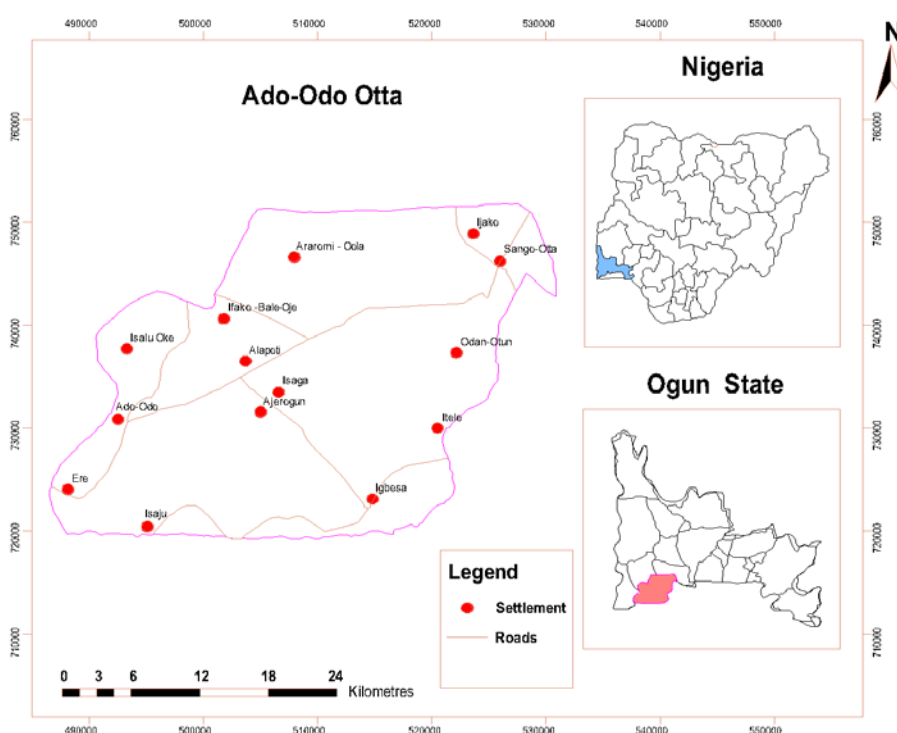


Figure 1. The city of Ota within the context of Ogun State, Nigeria [16].

2.2 Methods

A cross-sectional survey research design was used for the investigation. To implement the cross-sectional research design, this study utilized quantitative research approach which combines both descriptive and inferential statistics. Both primary and secondary sources are used to gather data for this investigation. The study's principal primary sources include two sets of questionnaires administered to household representatives who live around the RAW and the automobile technicians who are representatives of the RAWs in the study area. In other words, two groups of respondents were engaged to achieve the study objectives. The first set of questionnaire administered on the residents or household representatives adjoining the RAWs addressed four study objectives that include: the socio-economic status of residents living close to the RAW in Ota City, Nigeria; the social, economic and environmental implications of the operation of RAW; the impacts of RAW activities on socio-economic development; and the statistical locational impact of RAWs on the socio-economic development of Ota City, Nigeria. While the objective on the nature of the activities of RAW and waste attributed to the operation of RAW in the study area was addressed by the second set of questionnaire administered on the representatives of the RAWs in the study area.

The study population include the total number of people residing in Ado-Odo/Ota LGA, estimated at 247,601 people (both male and female) and the RAW (estimated as 33) found in all sixteen political wards (Ota I, Ota II, Ota III, Sango, Ijoko, Atan, Iju, Ilogbo, Ado Odo I, Ado Odo II, Ere, Alapoti, Igbesa, Agbara I, Agbara II and Ketu based on the 2006 National Population Census results). Both probability (multistage sampling technique) and non-probability (purposive sampling techniques) were employed in this study. The multistage sampling technique the combine stratified, random, and systematic sampling techniques was used in sampling the residents. First, the human population of study area "Ota City" was divided into political wards authorized by the Federal Government of Nigeria based on the 2006 population census using stratified sampling. In this regard, the sixteen political wards in the study area formed the stratus and only the residential housing units found within 1000 meters adjoining the RAWs in each strata were captured for this study. In this study, a representative of a household was chosen as the respondents from the selected residential buildings. At the second stage, random sampling was used to select the first building in each strata "political ward", ensuring that each building had an equal chance of being chosen. At the third stage, systematic sampling was used to select every tenth building after the first was randomly selected until the sample size for the study was reached. In other words, residents living within 1000 meters of RAW were sampled using Taro Yamani's Sample Formula [$n = \frac{N}{1 + N(e)^2}$] based on Ado-Ota's 2020 population (247,601). However, a total of 400 residents who are landlords or household representative that live within 1000meters radius of the RAW makes up the sample size for the first group of respondents. On the hand, two (2) topmost technicians in each of the 33 RAWs as representatives in the study area were purposively sampled and a total of sixty-six (66) accounted for the sample size for the second group of respondents who are RAW technicians.

The methods of data analysis employed in this study include both inferential analytical and descriptive methods. The descriptive methods include frequency percentage tables, charts and Relative Mean Index (RMI) appropriately and in relation to the data obtained with the questionnaires. Specifically, data collected through 4 -point Likert's scale was analysed descriptively by using the Sum of Weighted Values (SWV) to estimate the RMI for individual dataset. The RMI value for each variable was thus calculated by dividing SWV by the total

number of responses, whereas the SWV for a variable is then calculated by adding the product of the number of responses to each aspect and the respective weight value attached to each rating [17]. The analysis is mathematically expressed as follows:

$$SWV = \sum_{i=1}^4 X_i Y_i, \quad (1)$$

where:

SWV = Summation of Weight Value.

X_i = number of response rating i .

Y_i = the assigned weight value ($i = 1, 2, 3, 4$).

$$RMI = \frac{SWV}{\sum_{i=1}^4 i=X_i} \quad (2)$$

Inferentially, the hypothetical statements which states that the location of RAW does not have a significant impact on the socio-economic development of Ota was analysed using Regression Analysis towards establishing the extent of relationship between dependent and independent variables. Nevertheless, for the hypothesis testing, the dependent variable (location of RAWs) was measured using quantitative data while the independents variables (socio-economic development factors) were measured using quantitative data which was transform from the qualitative data based on the perception of the residents. However, the qualitative data was transformed to quantitative data using binary dichotomous (0 and 1) variable in other to allow the model application in testing and analyzing the study hypothetical statement. In other words, Statistics Package of Social Science SPSS IBM version 21 was engaged for analysis and presentation of data.

3. Results

3.1 Socio-economic status SES of residents living close to the RAW

The results of data analysis and presentation on various issues relating to the study objectives are presented this sub-section. It is in this view that this subsection presents the results of data collected and analysed on many socioeconomic parameters including respondents' sex, age, highest educational qualification, income, occupation, and household size among others are mostly explained in descriptive format. It is interesting to state that close to three-quarter (73.8%) of residents administered with the questionnaires are female as presented in Figure 2. Also, almost a quarter (26.2%) is male. With this, it is not a co-incident that females who were met at home responded to the administered questionnaires than their male counterparts who are mostly out of home in order to cater for their families.

With respect to the age distribution of residents in the adjoining areas to RAW, the results of data collected and analyzed presented in Figure 3 shows that only 4.2% are below 20 years of age, slightly less than a quarter (21.1%) is between 20 and 30 years, while more than one-tenth (18.8%) is between 31 and 40 years. Likewise, more than one-third (35.2%) is between 41 and 50 years, more than one-tenth (15.2%) is between 51 and 60 years, while the remaining 5.5% accounts for

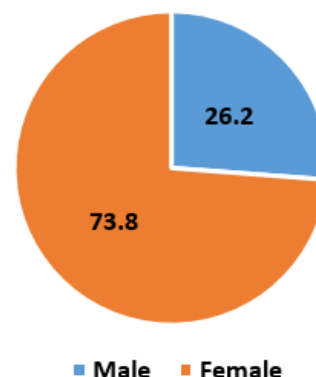


Figure 2. Gender distribution of residents.

Source: Authors' field survey, 2021.

those that is above 60 years of age. It can be deduced from this results that the residents within the working age dominated areas adjoining RAWs and as such, are capable of expressing their views on the implications of the activities in the workshops on their livelihood in the area.

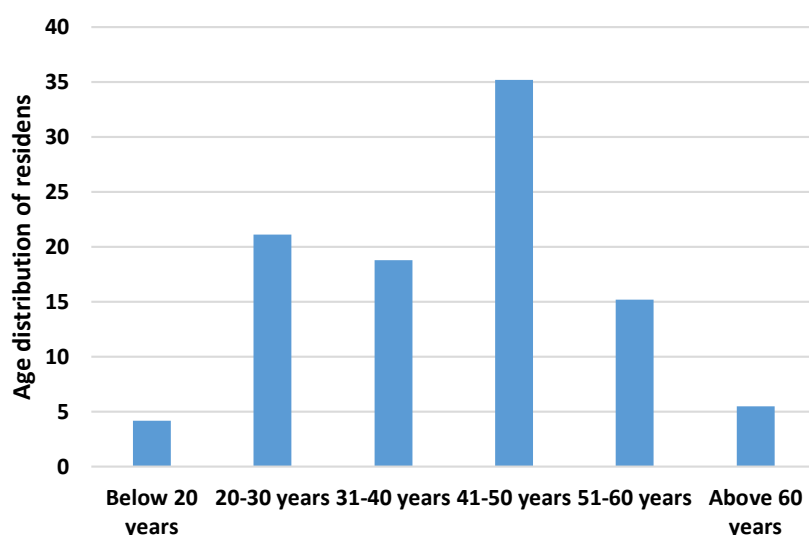


Figure 3. Age distribution of residents.

Source: Authors' field survey, 2021.

On the highest educational attainment of residents, Figure 2 shows that only 4.2% do not has formal education among the sampled residents. Also, slightly more than one-third (32.8%) has education at primary level, while exceedingly greater than one-third (39.2%) has secondary education. In addition, residents with tertiary level accounts for 19.2%, while 4.5% has other unclassified educational level (adult education) among the residents surveyed in the area of study. With this, it can be deduced that residents are mostly literate and dominated by those with formal education level as only a less significant of them has no formal education experience.

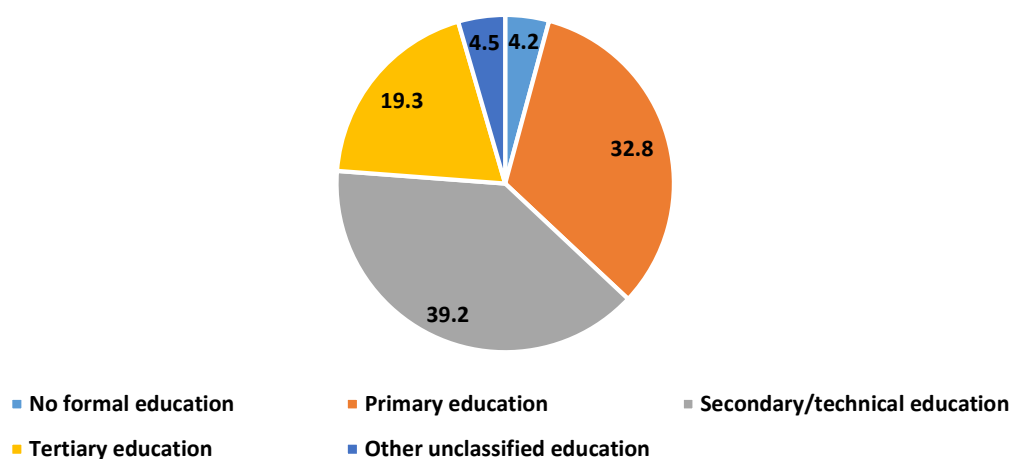


Figure 4. Highest educational qualification.

Source: Authors' field survey, 2021.

The data obtained and analyzed on marital status of respondents revealed in Table 1 that more than one-tenth (18.2%) is single, while close to three-quarter (73.8%) is married.

Furthermore, while 7.0% is not living with their partners as they are divorced, the remaining 1.0% is widow. It can be deduced from this analysis that respondents in the study area are mostly married and possibly has accompanying socio-economic engagements being carried out to cater for their families.

Table 1

Respondents' marital status		
Status	Frequency	Percentage
Married	295	73.8
Single	73	18.2
Widow	4	1.0
Divorced	28	7.0
Total	400	100.0

Source: Authors' field survey, 2021.

With respect to the household size of respondents, Table 2 shows that less than a quarter (17.5%) has less than 2 persons as household size, while close to half (47.8%) has between 2 and 4 persons as household size. Also, less than one-third (28.5%) has between 5 and 8 persons in their household, while the remaining 6.20% has more than 8 persons as household size. This result shows that respondents are not only married but also have dependents to cater for as household size varies and exceed three persons in most instances.

Table 2

Household size of residents		
Range of size	Frequency	Percentage
Less than 2 persons	70	17.5
Between 2 and 4 persons	191	47.8
More than 8 persons	25	6.2
Between 5 and 8 persons	114	28.5
Total	400	100.0

Source: Authors' field survey, 2021.

The occupational characteristics and engagements of respondents vary significantly as Table 3 reveals that only 15.8% are dependents inform of being students/apprentice, while close to half (44.5%) engages in personal businesses. In addition, the civil/public servants account for 5.2% among the respondents, while almost one-third (32.5%) engages in private employment and the remaining 2.0% belong to other unclassified occupation for being inactive in public services as they have retired for government works. This analysis revealed that residents are engaging in socio-economic undertakings that bring varying rewards for the sustenance of their families.

Table 3

Occupational characteristics of residents		
Occupation	Frequency	Percentage
Apprentice/student	63	15.8
Personal business	178	44.5
Civil/public servant	21	5.2
Private employee	32.5	32.5

Continuation Table 3

Others (retiree)	8	2.0
Total	400	100.0

Source: Authors' field survey, 2021.

The information on average monthly income of respondents presented in Table 4 revealed that close to one-tenth (9.0%) earns below NGN 18,000, while slightly more than one-tenth (11.5%) earns average income of between NGN 18,000 and NGN 40,000 per month. Likewise, slightly more than one-third (34.8%) received between NGN 41,000 and NGN 60,000 as monthly income, while 22.2% earns between NGN 61,000 and NGN 80,000. The remaining 22.5% are those who earn more than NGN 80,000 per month on average basis among the sampled respondents. With this result, it is clear that sampled resident is among the acclaimed low income people in the city.

Table 4

Respondents' monthly income (Nigerian Naira NGN)

Range	Frequency	Percentage
Below NGN 18,000	36	9.0
Between NGN 18,000-NGN 40,000	46	11.5
Between NGN 41,000-NGN 60,000	139	34.8
Between NGN 61,000-NGN 80,000	89	22.2
More than NGN 80,000	90	22.5
Total	400	100.0

Source: Authors' field survey, 2021.

Residents are not stranger to the happenings in their adjoining environment as the data analyzed of period of residing in the area as Table 5 shows that only 16.2% is below 4 years in the area. Also, less than one-quarter (20.2%) have been staying in the city for a period between 4 and 8 years, while close to one-quarter (23.5%) has between 12 and 16 years of living experience in the area. The remaining 2.5% has spent beyond 16 years in the area of study. This result established the fact that residents are not stranger, but have been living in the study area for a longer period that exceeds 4 years denoting their ability to x-ray the happening in the city of Ota with respect to the implications of the operations of road side mechanics.

Table 5

Period of residency in the area

Period	Frequency	Percentage
Below 4 years	65	16.2
Between 4 and 8 years	81	20.2
Between 9 and 12 years	150	37.5
Between 13 and 18 years	94	23.5
More than 18 years	10	2.5
Total	400	100.0

Source: Authors' field survey, 2021.

3.2 Nature of the activities of RAW and waste attributed to the RAW operations

Nature of the activities of RAWs at close proximity to them were asked, and the type of waste generated to the adjoining environment. With respect to the nature of activities of

the RAW, Table 6 revealed that vehicle technician dominates the workshops accounting for close to three-quarter of the activities of the RAW (60.6%). Also, 9.1% of respondents sampled are involved in pane beating/fabrication, while one-tenth (10.9%) is into automotive wiring/rewiring. Also, it is observed that less than one-tenth (7.6%) involved in the repairing of fuel injector/carburetor of different vehicles, while the remaining 12.1% involves in vehicles' upholstery and related activities. In this vein, there seem to be general misconception on what constitute RAWs. Based on this finding, it is clear that a typical RAW is a collection or aggregation of various technicians with each specializing in different component of vehicles, but embraced the principle of agglomerations.

Table 6

Nature of work of the sampled mechanics		
Nature	Frequency	Percentage
Vehicle technician	40	60.6
Panel beating/fabrication	6	9.1
Automotive wiring/rewiring	7	10.6
Injection/carburation	5	7.6
Upholstery	8	12.1
Total	66	100.0

Source: Authors' field survey, 2021.

In addition, data obtained on the nature of waste associated with waste from the activities of RAWs were analysed on four point Likert's scale with gradation consisting of Very High (VH= 4), High (H=3), Low (L=2) and Very Low (VL=1). Using "Eq. (1)" and "Eq. (2)", the SWV is estimated to be 22.2475 for the seven indicators, while the RMI is 2.3889 with the detailed result presented in Table 7. Accordingly, scrap metals and used tires are the most disturbing issue associated with the mechanic workshops in the study area as its relative index value of 3.2121 exceeds the mean index value [MIV] of the entire analysis. Also, paint and spray materials are ranked second with MIV of 2.9545, while used oil and oil filters (2.7727) are ranked third among the waste products identified. In addition, abandoned vehicles and vehicle parts (2.7576) are another waste product that has substantial adverse implications not only within the premises of the workshop but extending to the adjoining streets and area of mechanic workshops, while rubber/plastic and other ignitable waste (2.667) cannot be excluded among the nature of waste associated with RAWs in the study area. However, stripping compound and wastewater, wire and toxic metals, grease and solvent wastes, diesel/petroleum distillates are other waste products associated with mechanic workshop but of less significance to this study since their RIM are far less than MIV of the entire analysis.

Table 7

Nature of waste associated with waste from the activities of RAWs								
Variables:	VL	L	H	VH	TWV	RMI	MIV	RK
Scrap metals and used tires	0	6	138	68	212	3.2121		1
Used oil and oil filters	9	24	90	60	183	2.7727	2.3889	3
Grease and solvent waste	38	56	0	0	94	1.4242		8
Diesel/petroleum distillate	49	34	0	0	83	1.2576		9
Abandoned vehicle/vehicle parts	4	36	102	40	182	2.7576	2.3889	4
Paint and spray materials	1	24	126	44	195	2.9545		2

Continuation Table 7

Wire and toxic metals	17	64	42	16	137	2.0758	7
Rubber/plastic and other ignitable waste	3	38	123	12	176	2.6667	5
Stripping compounds/wastewater	15	28	102	12	157	2.3788	6

Source: Authors' computation, 2021.

Note: VL- Very Low, L- Low, H- High, VH- Very High, TWV- Total Weight Value, RMI- Relative Mean Index, MIV- Mean Index Value, RK- Rank.

Data collected on the residents' perception of the operators of RAW method of waste disposal was analysed and result presented in Table 8. In this respect, it is observed that nearly half of respondents (48.5) allowed scavenger to pick the waste materials in their workshops, while more than one-third (35.4%) dumps waste into available open spaces. Likewise, 3.0% of respondents make use of landfill created by them for piling their waste, while the remaining 12.1% makes use of government waste disposal facility and approved landfill. This result shows that little attention is being accorded to waste disposal and hygienic environment in the mechanic workshops; hence, the need to evolve strategy to improve general sanitation practices at RAWs in the area.

Table 8

Waste disposal method in the mechanic workshops		
Methods	Frequency	Percentage
Scavenger/waste pickers	32	48.5
Open dump	24	35.4
RAW created landfill	2	3.0
Government waste disposal facility	8	12.1
Total	66	100.0

Source: Authors' field survey, 2021.

Note: RAW – Roadside Automobile Workshop.

In other words, residents were asked about the performance of the regulating bodies in charge of monitoring and regulating the activities of the automobile engineers and workshops.

The results which were measured on four point Likert's scale with gradation values that consist of Always (A= 4), Sometimes (S=3), Rarely (R=2), and Never (N=1) in line with "Eq. (1)" and "Eq. (2)" produced SWV of 10.465 for the six indicators RMI of 1.744166.

The detailed information on these findings are presented in Table 9 revealed that the operators of the RAWs always addresses the residents' complaint based on the activities of RAWs in their residences considering the highest relative index of 2.9125 of this source. Follow by the community association (2.2250), National Automobile Technicians Association (NATA) and nearby Town Planning Authority in their jurisdiction.

In the same vein, Police formation and National Environmental Safety Regulation and Enforcement Agency (NESREA) were never ready to address the complaints lodged by the residents based on the excesses of RAWs.

With this, it is evident that majority of the possible regulators in-charge of monitoring and regulating the activities of RAWs failed to respond to the resident complaints on the unpleasant externalities associated with informal mechanic workshops in the study area.

Table 9

Response by residents' complaints by the regulating bodies' in-charge of monitoring and regulating the activities of the RAW

Variables:	N	R	S	A	TWV	RMI	MIV	RK
Town Planning Authority	281	170	69	44	564	1.4100		4
NESREA	335	84	66	4	489	1.2225		6
Operators	52	36	729	348	1165	2.9125	1.7442	1
Police/NSDC	335	76	81	0	492	1.2300		5
Community association	86	318	402	84	890	2.2250		2
NATA	230	308	64	0	586	1.4650		3

Source: Authors' computation, 2021.

Note: N- Never, R- Rarely, S- Sometimes, A-Always, TWV- Total Weight Value, RMI- Relative Mean Index Mean, MIV- Mean Index Value, RK- Rank; NESREA – National Environmental Standards and Regulations Enforcement; NSDC – Nigeria Security and Civil Defence Corps; NATA - Nigeria Automobile Technicians Association.

3.3 Social, economic and environmental implications of the operation of RAW in Ota City

The social implications of the operations of RAW activities in Ota city were examined from the perspectives of residents in the adjoining area. The data was evaluated on 4-point Likert's scale with gradation value that consist of Very High (VH= 4), High (H=3), Low (L=2) and Very Low (VL=1). In line with "Eq. (1)" and "Eq. (2)", Table 10 shows the detailed results of the analysis in which the SWV and RMI estimated were 19.0025 and 2.7146 respectively for the seven variables measured. A critical evaluation of the results in Table 10 revealed that improved access and nearness to automobile workshops (3.4275), reduction in vehicular breakdowns on the roads (3.1875) and prompt response to malfunction vehicles on transit (2.9025) are the top rated social implications of the operations of the RAW in the city. Also, the results also revealed the encouragement of crime and fear of crime (2.6700) and encouragement of security breaches (2.6100) which deserve urgent attention are social consequences of the RAWs activities in the study area.

Table 10

Social implications of the operation of RAW in Ota City

Variables	VL	L	H	VH	TWV	RMI	MIV	RK
Improve access and nearness to automobile workshop	3	50	510	808	1371	3.4275		1
Reduce vehicular breakdowns on roads	49	66	336	824	1275	3.1875	2.7146	2
Encourage crime and fear of crime	55	284	249	480	1068	2.6700		4
Encourage security breaches	53	320	231	440	1044	2.6100		5
Prompt responses to malfunctioning vehicles on transit	95	110	132	824	1161	2.9025		3
Encourage prompt vehicular maintenance and services	217	46	219	348	830	2.0750		7
Enhances operational efficiency of vehicles	208	46	234	364	852	2.1300		6

Source: Authors' computation, 2021.

Note: VL- Very Low, L- Low, H- High, VH- Very High, TWV- Total Weight Value, RMI- Relative Mean Index, MIV- Mean Index Value, RK- Rank.

However, the findings showed that the operations of RAW do not encourage prompt vehicular maintenance and services and has less impact on the operational efficiency of vehicles. Considering these results, it can be deduced that various activities of Raw in Ota city has substantial social implications on the adjoining residents in the area.

Another analysis of the study is on the economic implications of the operations of RAW activities in Ota city. This was also assessed from the perspectives of residents in which he collected data was analyzed in line with “Eq. (1)” and “Eq. (2)” presented in the methodology. The results of this analysis presented in Table 11 has a total weighted sum value of 20.4175 and Mean Index Value of 2.9168 for the seven variables assessed. Accordingly, the results revealed that the top rated economic implications of RAW include encouragement of road traffic congestion and safety (3.3425), encouragement of untrained technicians (3.2250), disruption of free flow of traffic (3.0950) and facilitation of ancillary commercial activities (2.9700). However, the remaining variables which consist of improved annual expenditure of transport (2.7725), improved vehicle maintenance cost (2.6075) and encouragement of road traffic crash are of fairly reported economic implications. With these analysis, it can be deduced that the operations of RAW in the City has substantial economic consequences and implications on the city and the residents.

Table 11

Economic implications of the operation of RAW in Ota City

Variables	VL	L	H	VH	TWV	RMI	MIV	RK
Disruption of free flow of traffic	71	50	297	820	1238	3.0950		3
Facilitation of ancillary commercial activities	86	6	444	652	1188	2.9700		4
Improve vehicles maintenance cost	91	102	546	304	1043	2.6075	2.9168	6
Encourage untrained technicians	49	64	297	880	1290	3.2250		2
Improve annual expenditure on transport	134	2	261	712	1109	2.7725		5
Encourage road traffic congestion and delay	24	78	339	896	1337	3.3425		1
Encourage road traffic crash	94	144	616	88	962	2.4050		7

Source: Authors' computation, 2021.

Note: VL- Very Low, L- Low, H- High, VH- Very High, TWV- Total Weight Value, RMI- Relative Mean Index, MIV- Mean Index Value, RK- Rank.

Furthermore, the environmental implications of the operations of RAW activities examined from the perspectives of residents was analyzed in line with “Eq. (1)” and “Eq. (2)” presented in the methodology. Details of this analysis are presented in Table 12 and the findings revealed a total weighted sum value of 22.6975 and Mean Index Value of 2.8372 for the eight indicators used. In other words, the results of the analysis shows that the five (5) environmental variables that highly significant are encouragement of loss of vegetation and green area (3.4825), increased noise pollution (3.3025), increased land vibration (3.2250), encourage land encroachment (3.0950), and increased vehicular emission (2.8450). In slight variation to the above results, it is also observed that increasing released of toxic compounds and greenhouse gases (2.7450), encourage poos sanitation (2.5225) and increased water contamination (1.4825) are of less environmental consequences occasioned by the operations of RAW in Ota city.

Table 12

Environmental implications of the operation of RAW in Ota City								
Variables:	VL	L	H	VH	TWV	RMI	MIV	RK
Increases noise pollution	15	136	294	876	1321	3.3025		2
Increases the release of toxic compounds and greenhouse gases	69	14	843	129	1098	2.7450		6
Increase vehicular emissions	105	0	441	592	1138	2.8450	2.8372	5
Increase water contamination	272	150	126	44	592	1.4800		8
Encourage loss of vegetation and green area	13	0	504	876	1393	3.4825		1
Encourage poor sanitation	143	36	378	452	1009	2.5225		7
Increases land vibration	49	64	297	880	1290	3.2250		3
Encourage land encroachment	71	50	297	820	1238	3.0950		4

Source: Authors' computation, 2021.

Note: VL- Very Low, L- Low, H- High, VH- Very High, TWV- Total Weight Value, RMI- Relative Mean Index, MIV- Mean Index Value, RK- Rank.

3.4 RAW activities and socio-economic development of Ota City

This sub-section presents the analysis on perceived impact of RAW activities on the socioeconomic development of the study area. Residents adjoining RAWs are asked about the proximity of their house to RAW and their perception of the possible contribution of the activities of the roadside automobile workshop on the socio-economic development of Ota City were analysed. Findings presented in Table 13 shows that most (55.0%) of the sampled residents live within 1km to 3km radius of the RAW, 37.5% of the residents reside within 3.1km to 5km radius, less than one-quarter of the residents live within the proximity of less than 1km radius of RAW and the remaining 12.5% residents reside in a proximity of above 5km radius of the RAW. By implication, most of residents found the activities of RAW in close proximity to them.

Table 13

Proximity of residents to RAW		
Location	Frequency	Percentage
Less than 1km radius	80	20.0
1km - 3km radius	220	55.0
3.1km - 5km radius	150	37.5
Above 5km radius	50	12.5
Total	400	100.0

Source: Authors' field survey, 2021.

Analysis on the contribution of the RAW activities on the socio-economic development of Ota City were achieved based on the principles of "Eq. (1)" and "Eq. (2)" in the methodology and the estimated SWV and RMI presented in Table 14 revealed 22.3 and 2.2300 respectively. Accordingly, the results shows that RAWs have positive impact on the trade and commerce in various dimensions in the adjoining area with highest RIM of 3.1875. This is closely followed by insecurity and crime which has index value of 2.8875 denoting the adverse impacts of the activities of RAWs in the adjoining area as residents are of the opinion that such workshop is capable of compromising their safety and security in the neighbourhood. In addition, the tendency of increasing waste accumulation in the adjoining community is ranked third (2.8225) considering the facts that mechanic workshops do generate substantial

but unquantified waste of various forms and nature. However, the results of the analysis equally underscores the importance of roadside mechanic to industrial productivity (2.4300) as industries in Ota equally benefit from such services rendered by RAWs most especially, for emergency repair of malfunction vehicles in transit.

Also, continuous mobility and access to transport services is another positive socio-economic and environmental implications of RAWs as this is ranked fifth with index value of 2.4050. In contrast, it is regrettable that RAWs failed to promote peaceful coexistence and interpersonal relationship with residents in adjoining communities as this has index value of 2.2025, thereby ranked sixth. More so, operators of RAWs rarely leave their workshops to attend to breakdown vehicles (service responsiveness) on the road as shown by the index value of 1.8800 estimated for this variable. Also, attraction of labour force to the area which has index value of 1.777 and housing demand (1.5525) as the workshops rarely increase housing demand in the adjoining area. Last, it is regrettable that roadside mechanics do not add value to aesthetic quality of the area. In this wise, the workshops and the ways vehicles are parked on the streets and adjoining areas are eyesore to the residents and those passing by.

Table 14

RAW activities and Socio-economic development of Ota City								
Variables:	P	F	G	VG	TWV	RMI	MIV	RK
Housing demand	228	238	159	0	625	1.5625		9
Trading & commerce	49	66	336	824	1275	3.1875		1
Peaceful coexistence	101	234	546	0	881	2.2025		6
Labour force	199	266	87	156	708	1.7700		8
Mobility & accessibility	94	144	636	88	962	2.4050	2.2300	5
Insecurity & crime	46	98	627	384	1155	2.8875		2
Industrial productivity	114	102	552	204	972	2.4300		4
Waste accumulation	46	126	621	336	1129	2.8225		3
Service responsiveness	143	326	297	4	752	1.8800		7
Community aesthetic	339	121	0	0	461	1.1525		10

Source: Authors' computation, 2021.

Note: P-Poor, F-Fair, G-Good, VG- Very Good, TWV- Total Weight Value, RMI- Relative Mean Index, MIV- Mean Index Value, RK- Rank.

3.5 Hypothesis testing (regression analysis of locational impact of RAWs on socio-economic development of Ota, Ogun State)

Table 15 reveals the results of regression analysis of the extent of locational impact of RAWs on the socio-economic development of the study area. The F-ratio of ANOVA in the regression analysis reveals 23.851 and the calculated significant value as 0.000 (Table 14). It is clear from the results presented that the calculated significant value ($p=0.000$) is less than the table significance value (0.05). Therefore, we reject null hypothesis (H_0) and accept alternative hypothesis (H_1). By implications, there exist a relationship between of the location RAWs and the socio-economic development of Ota. Furthermore, the regression model through the result of the Adjusted R square shows about 40% explained variation. This means that the socio-economic development factors (independent variables) were able to moderately (about 40%) predict and explain the location of RAWs (dependent variable). The unexplained variation might be due to nature of the data used.

Table 15

**Result of the regression analysis of locational impact of RAWs
on socio-economic development of Ota, Ogun State**

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.617 ^a	0.380	0.364	0.35129

a. Predictors: (Constant), community aesthetic, trade and commerce, peaceful coexistence, labour production, industrial output, insecurity and crime, accessibility, waste accumulation, service responsiveness, housing demands

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	29.433	10	2.943	23.851	0.000 ^b
	Residual	48.004	389	0.123		
	Total	77.437	399			

a. Dependent Variable: nearest location of workshops

b. Predictors: (Constant), community aesthetic, trade and commerce, peaceful coexistence, labour production, industrial output, insecurity and crime, accessibility, waste accumulation, service responsiveness, housing demands

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	1.903	0.168		11.297	0.000
	housing demand	-0.220	0.033	-0.358	-6.774	0.000
	trade and commerce	0.066	0.019	0.155	3.441	0.001
	peaceful coexistence	-0.160	0.023	-0.296	-6.964	0.000
	labour production	0.082	0.022	0.177	3.656	0.000
	mobility and accessibility	-0.120	0.022	-0.248	-5.565	0.000
	insecurity and crime	-0.015	0.021	-0.031	-0.727	0.467
	industrial output	0.178	0.019	0.418	9.224	0.000
	waste accumulation	0.024	0.022	0.049	1.085	0.278
	service responsiveness	-0.057	0.028	-0.099	-2.074	0.039
	community aesthetic	0.100	0.058	0.082	1.718	0.087

a. Dependent Variable: nearest location of workshops

The results also showed that out of the nine predictors, seven (7) predictors (independent variables) best predicted the model. That is, housing demands ($p=0.000$), trade and commerce ($p=0.001$), peaceful coexistence ($p=0.000$), labour production ($p=0.000$), mobility and accessibility ($p=0.000$), industrial output ($p=0.000$), and service responsiveness ($p=0.039$) significantly determine and predict the existence of mechanic workshops in the study area (dependent variable). Hence, this finding implies that every unit change in the location of RAWs would be about unit change in the socio-economic development and thus the overall socioeconomic development of the study area "Ota".

4. Discussion

There are obvious socio-economic and environmental implications of RAW observed in the city of Ota. In a bid to justify that, major findings were discussed with reference to the literature. On the socio-economic status, residents sampled at home are observed to be characterized by different gender structures with the female gender dominated the responses received, indicating that female gender at mostly found at home when the male counterpart

are always found away from home in search of resources to cater for the family in a typical Nigerian communities. This finding supported the study of [17]. Education wise, only 4.2% do not have formal education denoting that more than three-quarter has varying levels of educational attainment especially, primary, secondary and tertiary level denoting most of the respondents are literate with high possibility of comprehending the research questions. In the same vein, the main occupational engagement for sustenance of household are personal businesses or household petty trades which perhaps justifies the reason why female gender dominated the sampled respondents for this study. In addition, most residents have spent more than 4 years in the area, with ability to x-ray the implications of the activities of road side mechanics. This findings corporates the study of [2, 3].

With respect to the environmental implications of RAW, aside from contamination of underground water sources by heavy metals, the study revealed that noise, traffic delay, and vibration among the most prominent implications being infused various activities that take place in the workshop which has spillover effects in adjoining neighbourhood aside from the obstruction cause by encroachment to the streets and other access roads. This is similar to the findings of [11-13, 17]. Similarly, the prominent externalities resulting from the nature of waste based the activities of RAWs is in descending order consist of noise, offensive odour, oily surfaces, abandoned vehicles and rubber/plastic. Others are steam/ waste water, wire/pins, grease and diesel/petrol. This finding is novel. Invariably these externalities contribute to discomfort of residents, distort the city image and also, reduce the aesthetic quality of the affected environment which are at variance to only economic benefits reported by [3]. On the method of waste disposal by the operators of RAW, it is observed that the activities of scavenger and open dumping dominated the practice, while only few makes use of waste drum for piling their waste, while very few male use of government waste disposal facility which is at variance to previous findings. This result shows that little attention is being accorded to waste disposal and hygienic environment in the mechanic workshops; hence, the need to evolve strategy to improve general sanitation practices at roadside mechanic workshops in the city of Ota. Also, the operators of the RAWs and the community development association always addresses the residents' complaint based on the activities of RAWs in their residences. By this, it is evident that the possible regulators in-charge of monitoring and regulating the activities of RAWs failed to respond to the resident complaints on the unpleasant externalities associated with informal mechanic workshops in the study area. This finding is novel.

On the effect of RAWs on the socioeconomic development of Ota, Ogun State, findings revealed that RAW, have positive impact on the trading and commercial activities as well as increase industrial productivity as industries in Ota equally benefit from such in the emergency repair of malfunction vehicles in transit; enhance continuous mobility and access to transport service. These findings also corroborate the findings of [2, 3]. In contrast, the operations of RAW do compromise aesthetic quality of the area, led to crisis and confrontation with the host and adjoining community and neighborhood, compromise safety and security in the neighborhood, while also increase the rate of waste accumulation and housing demand in the adjoining community. This finding is supported by the findings of [4]. Meanwhile, the results of the statistical locational impact of RAW on the socio-economic development of the study area which revealed that there is a relationship between of the RAW and the socio-economic development of Ota as the socio-economic development factors is novel. By

implication, the results implies that every unit change or improvement in the location of RAW will positive influences in the socio-economic development of Ota City, Nigeria.

5. Conclusions

Automobile workshops are very important in the efficient operations and maintenance of vehicles. They can be broadly divided into three groups: filling stations that sell fuel and perform minor maintenance tasks like oil and lubricant changes, wheel balancing and alignment, etc.; modern/standard workshops, which are organized motor repair service workshops with advanced technical skills and equipment, higher servicing costs, and formal servicing procedures; and roadside/wayside workshops (i.e. which arise due to collapse of the standard workshop and operates on sole proprietorship basis in urban areas). Specifically, RAWs have been integral part of land use in urban centres and cities since the advent of automobile.

It is interesting that such workshops are found across major cities and urban centres. In fact, the spatial location of automobile service workshops has been a major concern for many residents of cities and their adjoining areas considering their accompanying adverse effects. It is on this basis that the location and proliferation of roadside mechanical workshops in many Nigerian cities deserve urgent attention; hence, the basis for this study in assessing the perceived socio-economic and environmental implications of roadside automobile workshops in Ota City, Nigeria. This study established that the location and activities of RAWs which offers multitask operations including vulcanizing, battery charging, electrical repairs or rewiring, automobile upholstery, motor cycle repairs, and maintenance of all types of light vehicles, among others significantly contributes to the socio-economic development of Ota city, but it also attracts several social, economic and environmental consequences due to its nature of operation which is informal. It is on this basis that this study therefore, concludes that there is indiscriminate location and activities of RAWs in the study area like any other typical Nigerian cities. As such, the informal activities of RAWs are contributory to many adverse effects such as increase in crime and security beaches as well as poor aesthetic quality of their domain aside from traffic related delays congestion, noise and vibration which are associated with their operations. Sadly, relevant statutory government agencies most especially, Town Planning Authority and National Environmental Standards Regulation and Safety Agency are found wanting in checkmating the perceived proliferation of the RAWs in many Nigerian cities.

In order to enhance location impacts and socio-economic implications of the roadside mechanics in the study area and other cities and urban centres in the country, the following recommendations are made include the need for relevant government agencies such as Town Planning Authorities and National Environmental Standards Regulation and Safety Agency to conduct detail appraisal of the location and environmental impacts studies of roadside mechanics in major cities and urban centres of the country. This shall avail government, the necessary and required information towards integrating them into society and critical components of the informal sector of the economy as well as minimizing the proliferations of RAWs in the study area.

There is need for organizing workshops on spatial and environmental planning implications of the RAWs for the operators in order to improve their knowledge and create awareness on environmental safety for the practitioners. This workshop shall underscore the need to ensure free flow of traffic and minimize noise and other environmental hazards

associated with mechanical workshops in the society. Also, regular and consistent policing of the environment by statutory government agencies becomes indispensable. By this, formulation of spatial and operational guidelines and acceptable standards of operations and locations for RAWs must evolve. This shall include regular and periodic site inspection, monitoring and compliance to stipulated standards and guidelines by statutory regulatory agencies.

Finally, RAWs as a critical component of the informal sector of the economy have to improve aesthetic quality of the area. In this wise, the workshops and the ways at which vehicles are parked on the streets and adjoining areas must be in conformity with stipulated guidelines and standards.

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