

# Chronicle of Exogenous Factors Influencing Infrastructure Maintenance in Residential Core of Akure, Nigeria

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## Abstract

The thrust of this study is to reveal exogenous factors limiting effective infrastructure maintenance in the core of Akure. In the course of the study, 425 questionnaires were administered and retrieved from residents in this locale. Variables in this set of questionnaire were investigated analytically using Excel and SPSS software. Findings from the study revealed that attitude of misuse of facilities, ignorance, indiscipline, insufficient fund and age of facilities were the major antithetical factors affecting infrastructure maintenance in the core of Akure. It was equally unveiled empirically that bureaucratic reporting process, lack of discernible maintenance culture and poor response to maintenance request contributed to infrastructure maintenance challenges in the area. In view of this, the study recommends public enlightenment program for residents in this area to make judicious use of infrastructure assets in their domain. It equally advocates creative synergy between government and the governed through public-private partnership (PPP) initiative for effective maintenance and prompt repairs or replacement of ageing facilities in this locale.

**Keywords:** exogenous factors, infrastructure maintenance, poor attitude, Akure core

## 1. Introduction

Infrastructure has been defined by scholars in various dimensions but with a general consensus that it is the set of interconnected structural elements that provide framework supporting an entire structure of development (Oladapo & Fatuki, 2018). Hence, infrastructure is elemental to the development of every society as it contributes to the economic wellbeing of all and sundry through productivity increase, which in turn enhances quality of life (Akinyosoye, 2010). Thus, when viewed from this perspective, it becomes undisputable to assert that infrastructure is a veritable tool for poverty alleviation and a catalyst for achieving Sustainable Development Goals (SDGs).

In the word of Okeke (2007), maintenance is pictured as functional check put in place to ensure that equipment, structures or materials that belong to organization, government or private individuals are in good condition and in usable form over their expected lifespan. BC-Framework (2019) described it as a situation in which assets can perform the required functions and achieve the intended service delivery objectives throughout the expected life of the asset. It will, therefore, be rational to describe infrastructure maintenance as strategies designed to keep infrastructural projects in good condition as much as possible to their original state. It is in the light of the foregoing that Odediran, Opatunji & Eghenure (2012) argued that one of the ways for sustainability is the maintenance of the existing stock of infrastructural facilities and services.

It is an undisputable fact that optimal use of existing infrastructure will minimize the amount of new investment required while the contribution of such infrastructure to social development and growth will be maximized (Ntjatsane, 2017). The bottom-line of this subject view rested on the fact that prompt and proper maintenance of hard-earned infrastructure assets remained the panacea for sustained economic growth in our rural and urban landscapes. He further argued, in order to achieve effective maintenance, that there must be a strong link between maintenance planning and financing. Quite pathetic to lament with nostalgia that the issue of maintenance in the infrastructure sector in Nigeria from time immemorial has been a neglected adventure. Amplifying this fact,

Magutu & Kanweru (2015) argued that maintenance and rehabilitation of buildings and infrastructure assets are neglected aspects of construction activities in the third world countries including Nigeria. The implication of this unwholesome development is not far-fetched. This is evident in the premature deterioration of infrastructural facilities littered across the nooks and crannies of our urban panorama. Nkrumah, Stephen, Takyi, & Anaba (2017) further contended that the fervor for better maintenance practices is often advocated by all and sundry but with weak or no desire to effect.

It is not an overstatement to posit that the challenge of routine maintenance of infrastructural facilities in Nigeria is the principal impediments influencing her developmental process. Dishearteningly, facilities that are designed to improve the socio-economic wellbeing of the masses were being allowed to waste away as people are not engrossed in making those facilities sustainable (Adedokun, 2011). It is worrisome, therefore, to note that facilities in various spheres of our urban and rural landscapes are in comatose state. The overall effect of this infrastructure maintenance debacle in our national life is obvious in our pitiable airports, hospitals (without up to date medical facilities), dilapidated school buildings, death-trapped roads networks, epileptic power supply, just to mention a few. Disgustingly, agencies established by law to provide, maintain and manage these facilities to ensure effective and efficient functionality are incapacitated by myriads of inexplicable reasons (Tijani, Adeyemi, & Omotenhinse 2016). Therefore, the policy thrust of this paper is to empirically unveil exogenous factors influencing infrastructure maintenance in residential core of Akure with a view to providing suggestive recommendations on how these elements could be tackled headlong.

## 2. Method

### 2.1 The Research Locale

Oral tradition predicts that Akure was founded by Omoremi, the son of Ekun (a prince from Ile-Ife). The city is a traditional Nigerian metropolitan area whose existence predates the colonial escapade into the country. It is the administrative seat of Akure South Local Government and Ondo State respectively. The city lies approximately on latitude  $7^{\circ} 15'$  and  $7^{\circ} 28'$  North of the Equator and longitude  $5^{\circ} 6'$  and  $5^{\circ} 25'$  East of the Greenwich meridian (Bello & Nwosu, 2011). The city is located approximately 420km South-west of Abuja, the Federal Capital of Nigeria and about 350km to Lagos the former capital of Nigeria (Fasakin *et al*, 2018). The population of Akure has been witnessing rapid growth in an exponential fashion; particularly, within the last 25 years, which has made it one of the fastest growing cities in South-western Nigeria (Olajuyigbe *et al*, 2015). According to 2006 National Population Census, the population of the city was put at 353,211. Using 3.2% growth rate, the population of Akure is expected to eclipse about 589,376 in 2020.

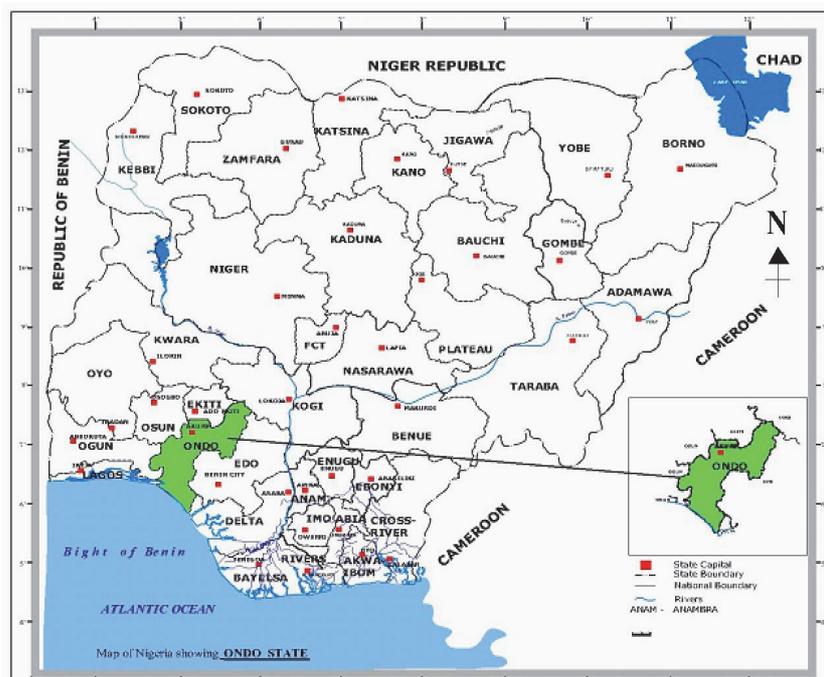


Figure 1. Ondo State in the National Setting

Source: Ondo State Ministry of Physical Planning and Urban Development (2019).

The scope of the study is within the confine of the core residential zone of Akure city. To be specific, seven out of the twenty-two neighbourhoods in Akure core were randomly selected for this survey. They include: Imuagun, Odo-Ijoka, Araromi, Oja-Oshodi, Odo-Ikoyi, Isolo, and Ijomu as represented by 1-7 respectively in Figure 3. The reason for the choice of these localities was simply because the area is encapsulated with slum attributes with high magnitude of infrastructure deterioration. Corroborating this view, Owoeye & Omole (2012) contended that the core of Akure is an epicentre of haphazard development with little or no conscious effort to physical planning. They also affirmed that the infrastructure provision and maintenance in the area is at its lowest ebb. Therefore, the effort to investigate the state of infrastructural maintenance and sustainability in the locale becomes imperative. Figures 1 - 3 show the study location, both in the national and local settings.

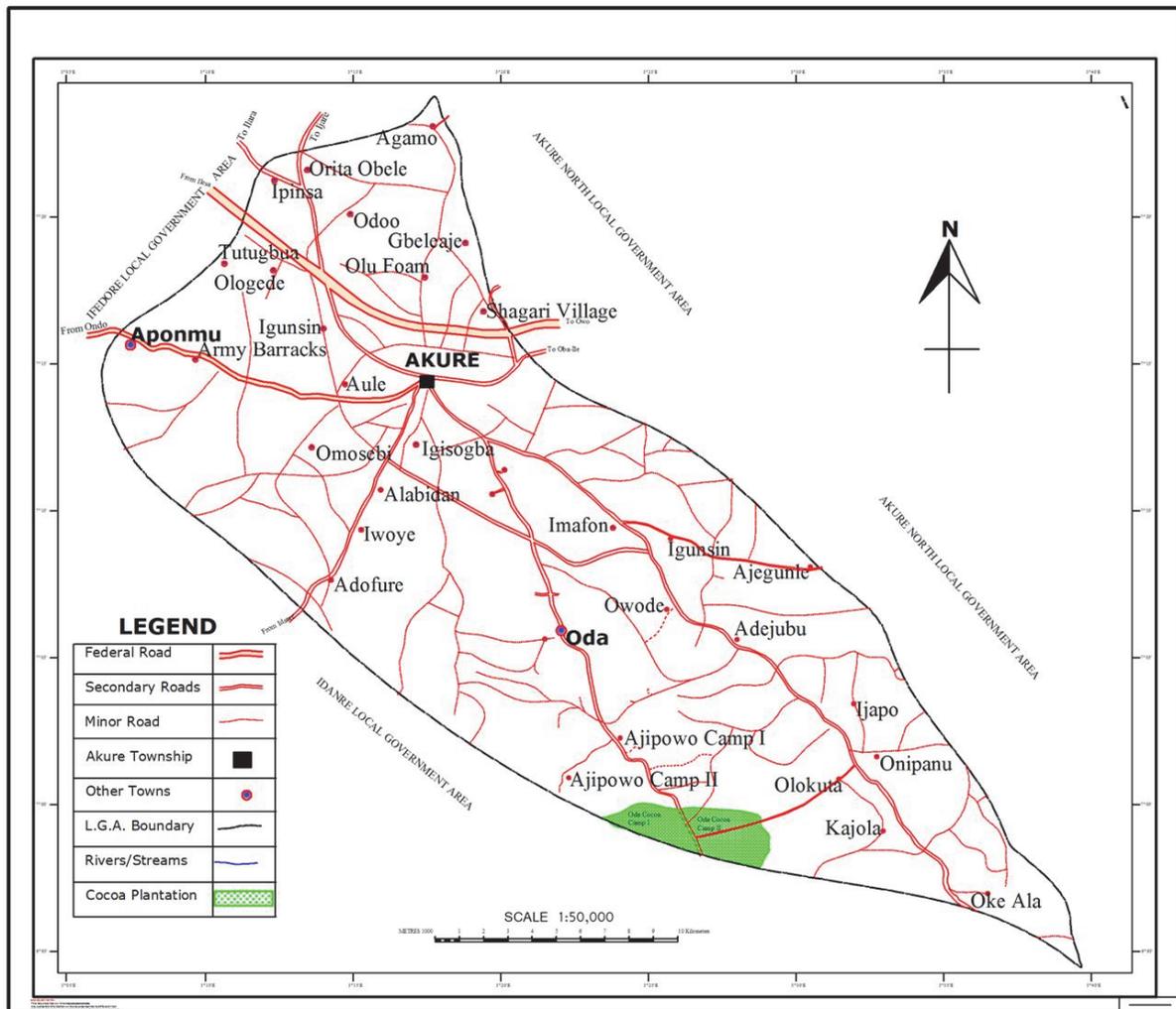


Figure 2. Akure (the State Capital) and other major towns within the Local Govt. Area

Source: Akure South Local Govt. Secretariat, Akure (2019).

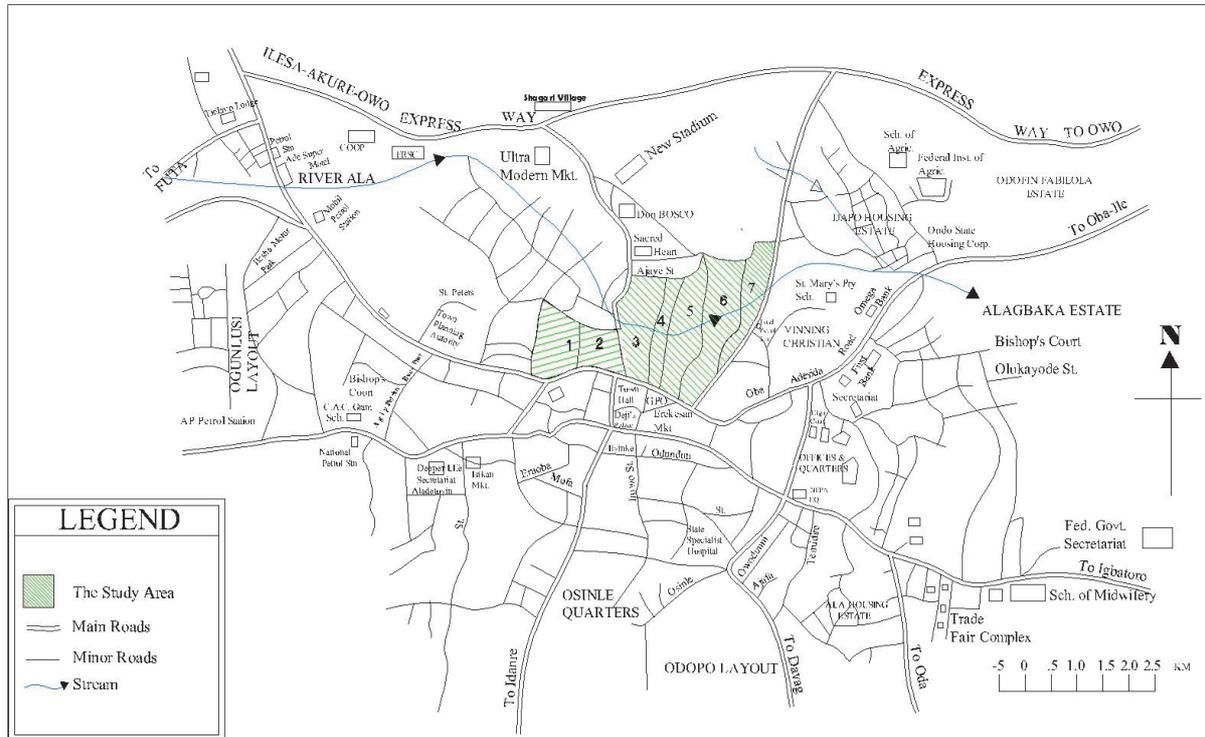


Figure 3. The Study Area - Locational Map of selected streets within the Residential Core of Akure

Source: Adapted from Owoye (2013). Updated by Authors (2019)

## 2.2 Research Database

For the purpose of familiarization, a prior visit to the research locale (Akure core) was carried out to reconcile literature with reality on ground. Having established, through careful observation, that the challenge of infrastructure maintenance was enormous in this area to warrant empirical research, machineries for field survey was set in motion. For the purpose of data collection for this study, building demographic survey was carried out through Google imagery and building digitization using ArcGIS to arrive at 1696 buildings. According to the report of Integrated Household Survey conducted by the Ondo State Bureau of Statistics (ODSBS, 2012), average household size in Akure urban was estimated at five persons per family (5ppf) and five households per building (5hpb). Therefore, the estimated population of the research locale is computed to be 42,400 persons (i.e. 1696 buildings x 5hpb x 5ppf). However, household population was used for questionnaire administration in the study since a household-head is sampled per building; therefore, giving a sum of 8480 household (hhd) population (i.e. 1696 buildings x 5hpb = 8480 hhd). From this, a 1% of the household population, amounting to 425 hhd was adopted as sample size for questionnaire survey. In the words of Enisan (2018), this is considered reasonable taking into consideration the peculiar environmental issues common to all residents in this locale. This set of questionnaires were administered scientifically using systematic random sampling technique with replacement to extrapolate data from residents in the seven selected streets at the interval of twenty buildings. Data collected from the field were analyzed, interpreted and discussed using appropriate statistical tools.

## 3. Results

### 3.1 Causes of Infrastructural Facilities Maintenance Challenges in Akure City Core

The analysis used for the study, as shown in Table 1, reveal exogenous factors influencing infrastructure maintenance, which were designed on a Likert scale of five options; where Strongly Agreed (SA) = 5, Agreed (A) = 4, Undecided (UND) = 3, Disagree (D) = 2, and Strongly Disagree (SD) = 1. These set of options thus served as precision for establishing agreement or otherwise with regards to the element of discourse.

Table 1. Causes of infrastructural facilities maintenance challenges in Akure city core

Causes of infrastructural facilities maintenance challenges	Means	Std
Attitude of misuse of facilities	4.35	1.237
Persistent breakdown thru indiscipline & ignorance of facilities users	4.27	1.057
Insufficient fund for facilities maintenance	4.06	1.279
Natural deterioration due to age and environment	4.08	1.151
Bureaucratic reporting process	4.26	1.279
Lack of discernible maintenance culture	4.14	1.241
Poor response to maintenance request	4.24	1.261

Source: Field survey (2019)

### 3.2 Nexus Between Resident's Disposition to Facilities Maintenance and Condition of Facilities in the Area

Table 2. Nexus between Insufficient Funds and Poor Response to maintenance request

	Poor Response to Maintenance Request					Total
	Strongly Agree	Agree	UND	Disagree	Strongly Disagree	
Insufficient Funds						
Strongly Agree	101 (55.8)	40 (22.1%)	30 (16.6)	10 (5.5%)	0 (0.0%)	181 (100.0%)
Agree	30 (19.9%)	71 (47.0%)	10 (6.6%)	30 (19.9%)	10 (6.6%)	151 (100.0%)
Undecided	0 (0.0%)	10 (47.6%)	11 (52.4%)	0 (0.0%)	0 (0.0%)	21 (100.0%)
Disagree	0 (0.0%)	10 (32.3%)	10 (32.3%)	11 (35.5%)	0 (0.0%)	31 (100.0%)
Strongly Disagree	20 (48.8%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	21 (51.2%)	41 (100.0%)
Total	151 (35.5%)	131 (30.8%)	61 (14.4%)	61 (12.0%)	31 (7.3%)	425 (100.0%)

\*UND = Undecided.

Source: Field survey (2019)

Table 3. Nexus between Ignorance and Indiscipline, Attitude of users and Misuse of facilities

Ignorance and Indiscipline	Misuse of facilities					Total
	Strongly Agree	Agree	UND	Disagree	Strongly Disagree	
Strongly agree	50 (39.2%)	11 (12.2%)	20 (22.2%)	0 (0.0%)	0 (0.0%)	90 (100.0%)
Agree	61 (28.8%)	100 (47.2%)	30 (14.2%)	1 (0.5%)	20 (9.4%)	212 (100.0%)
Undecided	0 (0.0%)	40 (65.6%)	1 (1.6%)	10 (16.4%)	10 (16.4%)	61 (100.0%)
Disagree	10	20	0	11	0	41

		(24.4%)	(48.8%)	(0.0%)	(26.8%)	(0.0%)	(100.0%)
Strongly Disagree	10	0	0	0	11	21	
		(47.8%)	(0.0%)	(0.0%)	(0.0%)	(52.2%)	(100.0%)
Total	131	171	51	31	41	425	
		(30.8%)	(40.2%)	(12.0%)	(7.3%)	(9.6%)	(100.0%)

\*UND = Undecided.

Source: Field survey (2019)

Table 4. Condition of Infrastructure Maintenance

	Level of Maintenance Culture	Cost of Maintenance	State of Infrastructure Maintenance
Level of maintenance culture	1.000		
Cost of maintenance	-0.169 (P = 0.000)	1.000	
Condition of infrastructure maintenance	-0.133 (P= 0.006)	0.967 (P= 0.000)	1.000

Source: Field survey (2019)

Table 5. Multiple Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.968	0.936	0.936	0.314

Source: Computer Print-out (2019)



Figure 4. Non-functioning water-tap due to poor maintenance in Araromi street. Source: Field Survey (2019)



Figure 5. Deplorable condition of Isolo and Ijomu interchange owing to poor maintenance. Source: Field Survey (2019)



Figure 6. Arbitrary urination in the open and condition of drainage facilities at Ijomu and Oja-osodi streets respectively. Source: Field Survey (2019)

## 4. Discussion

### 4.1 Causes of Infrastructural Facilities Maintenance Challenges in Akure City Core

It was revealed empirically in the course of this study that attitude of misuse of facilities was one of the major encumbrances militating against effective and efficient infrastructure maintenance in Akure residential core. This was justified statistically in Table 1 with a high mean score of 4.35. The issue of persistent breakdown of infrastructural facilities was attributed to indiscipline and ignorance of facilities' users, which serves as a major impediment to efficient infrastructure maintenance in the study area. This is explicitly elicited in the table with a mean score of 4.27. The reason for these statistical findings was not unconnected to the erroneous consensus of residents in this locale who believed that infrastructure assets belong to the government and, as such, they are not responsible for their maintenance. Unfortunately, this has resulted in premature deterioration of the facilities which, if well managed, would have stimulated socio-economic growth and development in the area and on the long run improve residents per capita base.

A mean score of 4.06 in Table 1 revealed that residents in this locale lack the financial wherewithal to service infrastructural facilities in their domain. Quite exciting to note from the response of sampled respondents that government at all levels with core responsibility of infrastructure maintenance had abdicated their responsibility owing to lack of sufficient funds. The fact remained that facilities in this area were ageing, requiring repair or replacement as explicated in Table 1 with a high mean value of 4.08, but with no conscious effort put in place by government and the governed to remedy these unfortunate circumstances. Bureaucratic reporting process was also adumbrated by sampled respondents in this locale as one of the inimical factors militating against infrastructural facilities in Akure core with a mean score of 4.26. They lamented that their memos and petitions hardly get to the appropriate government institutions for infrastructure maintenance. It was further revealed from information extrapolated from respondents that few memos that made their way to appropriate quarters of government institutions hardly see the light of the day. This was elicited empirically in Table 1 with a mean score of 4.24.

In the course of this survey, residents were asked whether lack of discernible maintenance culture was responsible for poor infrastructure maintenance in their area and their responses were in the affirmative with a mean value of 4.14. This finding was nothing but categorical and straight to the point. Government at all levels in Nigeria had unfortunately cultivated the ideas of executing new infrastructure projects at the detriment of the existing ones. The resultant effect of this unwholesome development is nothing but economic waste as these facilities are allowed to deteriorate with little or no problem whatsoever. This is unhealthy if the goal and aspiration of achieving sustainability in our infrastructure sector is to be accomplished.

### 4.2 Nexus Between Resident's Disposition to Facilities Maintenance and Condition of Facilities in the Area

Juxtaposition between insufficient funds and poor response to maintenance request, as elicited in Table 2, it was strongly agreed that the first is responsible for the latter. This shows that if the institution in charge of facilities maintenance were not constrained by financial resources, it would not abdicate her responsibility. Residents, on the other hand, who are the direct beneficiaries of these facilities would not have waited for government to maintain these facilities, if they are financially buoyant to service these facilities for utmost functionality.

Table 3 was emphatic with regards to the association between ignorance/indiscipline of residents and attitude of users/misuse of facilities in the core of Akure city. Empirical data obtained from table 3 revealed relationships

between these variables as causes of facilities maintenance challenges in these environs. This was further compounded by the fact that residents in this part of the city were people of low education attainment status requiring massive enlightenments on the need to maintain and sustain public facilities in their locale.

To further establish that relationship actually exist between resident's disposition to facilities maintenance and condition of facilities, a Pearson product-moment correlation coefficient ( $r$ ) was employed to reveal the strength of the association between these element of discourse. The predictor variables for this test include: level of maintenance culture and cost of maintenance while the outcome variable is the condition of infrastructure maintenance. They are illustrated using correlation matrix in Table 4. From the table, it shows that all predictor variables investigated revealed association with one another at significant level of 0.05. There was weak negative relationship that exist between level of maintenance culture and condition of facilities maintenance with a correlation coefficient of -0.133. This simply implies that as residents fails to imbibe good maintenance culture, the issue of facilities maintenance challenges will be on the increase. Likewise, the strong positive relationship of 0.967 between cost of maintenance and condition of facilities maintenance implies that as more funds are expended on facilities management, their level of functionality will be optimally guaranteed. However, the implication of this statistical correlation is predicated on the fact that residents of Akure core are people of low per capital base who could hardly fend for their family let alone incurring cost on facilities maintenance.

Table 5 shows the summary of multiple regression model employed to predict the future implication of the link as it relates to the rate of deterioration and functionality of the facilities vis-à-vis the level of their sustainability. From the table, the  $r^2$  value of 0.936 (93.6%) indicates the contribution of level of maintenance culture and cost of maintenance to achieve steady increase or improvement in the condition of facilities maintenance in the study area. Thus, Figures 4, 5 and 6 illustrate the condition of sampled facilities in the study area as primarily elicited by low cost of maintenance culture, blithe attitude and poor socio-cultural lifestyle of residents towards infrastructural maintenance in the core of Akure.

## 5. Conclusions

It has been established across different line of thought that infrastructure is the bedrock of socio-economic development of a nation. Quite unfortunate to reveal in this study that this engine of growth and development was not accorded routine maintenance needed to ensure its continued functionality, which has regrettably led to their premature deterioration. Attitude of misuse of these facilities, indiscipline, ignorance, lack of funds, and poor maintenance culture has been adduced to be the antithetical factors influencing infrastructure maintenance challenges in Akure residential core. Therefore, all hands must be on deck to remedy this unwholesome development. The following measures are hereby recommended:

- Regular public enlightenment programs through workshops, seminars, conferences and mass media sensitization to orientate residents of this locale on the importance and need to maintain infrastructure assets in their domain.
- There should be synergy between government and the governed through public-private partnership (PPP) initiative so as to garner sufficient funds for effective and efficient all-inclusive infrastructure maintenance.
- Ageing facilities in this locale should be promptly repaired or replaced to ensure their continued functionality.
- The idea of community policing should be embraced to checkmate issues of facilities theft.
- Relevant laws guiding infrastructure maintenance should be enforced to the letter. If need be, it should be reviewed to tackle current challenges in this locale.

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## References

- Adedokun, M. O. (2011). Education for maintenance culture in Nigeria: Implications for community development. *International Journal of Sociology and Anthropology*, 3(8), 290-294.
- Akinyosoye, M. (2010). Infrastructure development in Nigeria: Road map to sustainable development. Working Paper, Green Hill Technical Services Ltd., Lagos
- BC-Framework (2019). The Role of Operations and Maintenance in Asset Management: A Sustainable Service Delivery Primer.

- Bello, V. A., & Nwosu, A. E. (2011). Effects of Urban Renewal on Residential Property Values in two Neighbourhoods of Akure, Nigeria. *FUTY Journal of the Environment*, 6(2), 42-53. <https://doi.org/10.4314/fje.v6i2.4>
- Enisan, O. F. (2018). Effect of Land Prices on Density Mix of Residential Estates in Akure, Nigeria. (Unpublished PhD Thesis). Federal University of Technology, Akure, Nigeria.
- Fasakin, J. O., Basorun, J. O., Bello, M. O., Enisan, O. F., Ojo, B., & Popoola, O. O. (2018). Effect of Land Pricing on Residential Density Pattern in Akure, Nigeria. *Advances in Social Sciences Research Journal*, 5(1), 31-43. <https://doi.org/10.14738/assrj.51.4003>
- Magutu, J., & Kanweru, K. (2015). The Phenomenon of Building Maintenance Culture: Need for Enabling Systems. *Global Journal of Engineering, Design and Technology*, 4(5), 8-12.
- Nkrumah, E. N. K., Stephen, T., Takyi, L., & Anaba, O. A. (2017). Public Infrastructure Maintenance Practices in Ghana. *Review of Public Administration and Management*, 5, 234.
- Ntjatsane, M. C. (2017). Financing of infrastructure maintenance in South Africa. (Doctoral Thesis), Wits Business School, University of Witwatersrand, Johannesburg.
- Odediran, J. S., Opatunji, A. O., & Eghenure, O. F. (2012). Maintenance of Residential Buildings: Users' Practices in Nigeria. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)*, 3(3), 261-265.
- Okeke, E. G. (2007). Poor maintenance culture and administration effectiveness in public sector of Anambra State: A case study of Anaocha Local Government. Unpublished M.Sc Thesis, University of Nigeria, Nsukka; University of Nigeria Research Publication.
- Oladapo, F. O., & Fatuki, A. M. (2018). Critical Factors Affecting Infrastructure Development in Nigeria. *International journal of innovative research and advanced studies*, 5(8), 71-77.
- Olajuyigbe, A. E., Popoola, O. O., Adegboyege, A. S., & Obasanmi, T. (2015). Application of Geographic Information Systems to Assessing the Dynamics of Slum and Land Use Changes in Urban Core of Akure, Nigeria. *Journal of Sustainable Development*, 8(6), 311-325. <https://doi.org/10.5539/jsd.v8n6p311>
- Ondo State Bureau of Statistics (ODSBS, 2012). *Report of Integrated Household Survey in Ondo State*. NSDP/SRF.
- Owoeye, J. O. (2013). A Study on Environmental Habitability of Core Residential Neighbourhood in Akure, Nigeria. *American Journal of Research Communication*, 1(2), 140-153. Retrieved from [www.usa-journal.com](http://www.usa-journal.com)
- Owoeye, J. O., & Omole, F. K. (2012). Built Environment Decay and Health Situation of Slum Dwellers in Residential Cores of Akure, Nigeria. *American Journal of Human Ecology*, 1(2), 33-39. <http://wscholars.com/index.php/ajhe>
- Tijani, S. A., Adeyemi, A. O., & Omotehinshe, O. J. (2016). Lack of Maintenance Culture in Nigeria: The Bane of National Development. *Civil and Environmental Research*, 8(8), 23-30.

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