

# Maintenance Culture and Socio Economic Development in Enugu State Nigeria

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<i>Abstract</i>	<i>Journal of Policy and Development Studies (JPDS)</i>
<p><i>Maintenance culture refers to the act of regularly or promptly carrying out intermittent checks and repairs on assets or infrastructures to allow the facility to be sustained over a considerable period. Hence, the broad objective of this study was to investigate how maintenance culture affects socioeconomic development in Enugu state. The study adopted the descriptive research design and survey method for data collection. The population of the study was 278. The study adopted census study because the population is manageable. The instrument for data collection was a structured questionnaire. Hypotheses were tested using t-test. The result revealed that the nature of maintenance culture significantly affects positively the life span of facilities, and is highly impeded by corruption, poor patriotism; poor budgetary allocation for maintenance etc. That maintenance culture has a significant positive effect on quality of lives and sustainable development, ensuring optimum functioning of public facilities, fostering sustainable socioeconomic development, and creating a conducive environment for residents and businesses. And that government maintenance policies and programmes do significantly affect positively maintenance culture in Enugu state as it plays a pivotal role in shaping proactive maintenance culture. The study, therefore, recommends that; Enugu state government should invest in training and empowering maintenance personnel through building technical skills to enhance their ability to independently and effectively contribute to infrastructure upkeep; shun corrupt practices; and increase maintenance budgetary allocation;</i></p>	<p>Vol. 15. Issue 1 (2024) ISSN(p) 0189-5958 ISSN (e) 2814-1091 Home page <a href="https://www.ajol.info/index.php/jpds">https://www.ajol.info/index.php/jpds</a></p> <p><b>ARTICLE INFO:</b> <b>Keyword:</b> Maintenance culture, sustainability, state, corruption.</p> <p><b>Article History</b> Received 5<sup>th</sup> February 2024 Accepted: 23<sup>rd</sup> March 2024 DOI: <a href="https://dx.doi.org/10.4314/jpds.v15i1.12">https://dx.doi.org/10.4314/jpds.v15i1.12</a></p>

*both government and ministries should promote community/public involvement in maintenance initiatives by encouraging citizens to take ownership of public space to foster a collective responsibility and thereby contributing to sustained infrastructural optimum performance and sustainable development; and that Enugu State, should fortify maintenance policies, ensuring clarity, enforcement strategies, and public awareness with a clear guideline to instil a sense of responsibility, fostering a proactive maintenance culture among the residents and government in the state.*

## **1. Introduction**

Maintenance culture is the most treasured attitude or perception cultivated by individuals or groups for the sustenance of the functionality of facilities. Maintenance generally is a habitual comprehensive attitude that has existed for the care of facilities since the creation of man for the satisfaction of human needs. During the days of our forefathers in the Pre-Industrial Revolution era; public roads, markets, recreation sites (village squares), etc., were commonly maintained to be in good state to continually serve its purpose. But as development expanded and the need for more facilities to meet human demand surface, this era gave way to the emergence of the Industrial Revolution era which advocated for maintenance's importance, particularly with preventive safety concerns in types of equipment. Afterwards, the Post-World War II era of proactive maintenance, emphasised reliability and system availability. Currently, human beings and technology now are the major drivers of maintenance which is seen in their attitude and its applications.

In this regard, maintenance is the act of carrying out intermittent checks and repairs on something such as to either avert a system or structural failure or to allow the infrastructure to be sustained over a considerable period. The promptness or regularity in attitude and mindset in carrying out this maintenance culminates into a culture called maintenance culture. Therefore, maintenance culture according to Suwaibatul-Islamiah *et al* (2012), entails the individual's values, way of thinking, behaviour, perceptions, and the underlying assumptions that regularly guide their daily maintenance actions and practices in their life. It is the collective attitude and behaviour of a particular group or individuals towards the regular care for existing facilities within their domain of existence. Tijani *et al* (2016) posit that maintenance culture is the habit inherent in a person of regularly and consistently keeping a building, machine, facilities, types of equipment, infrastructures etc. in good and working condition. It is a process which results in the transformation of social and economic institutions in a manner to improve the capacity of society to enable them to fulfil their aspirations (Adam, 2015).

It is therefore instructive that the collective maintenance culture/attitude of individuals, the general public and governments be propelled to the positive side as regards public infrastructures; to maintain the already provided facilities, improve on its life span to sustain the value of assets for citizen's well-being. These will improve assets' efficiency and effectiveness, reliability, accuracy in performance etc., for socioeconomic development. It is against this backdrop that the researcher seeks to investigate the strategies for improvement of maintenance culture/attitude in Enugu state.

## **1.2 Statement of the Problem**

Maintenance culture among individuals and government in Nigeria and Enugu state in particular should aim to sustain the life span and quality of assets to enhance its optimum performance and for the wellbeing of the general public. This imbibed culture should have the capacity to propel

socioeconomic development and can be visible in good quality of life of people, increase in investment level, proper accountability and transparency, reduction in abandoned projects, seamless road, rail and air movement, strong institutions, increase investors confidence, quality service delivery, efficient and effective performance of other social facilities etc. for optimum satisfaction of citizens of the state.

Unfortunately, maintenance culture is outrageously poor in Nigeria and the case of Enugu state is pitiable in that regard. It is a common fact that the deplorable state of public facilities noticeable in Enugu state poses a great concern to individuals, government and the general public and undeniably a threat to the effective performance of these facilities.

Taking the Enugu state Ministry of Works and Infrastructure that I am studying which has the core mandate to provide, monitor and sustain public infrastructure into observation, some critical infrastructure in the state shows serious rot. A visit to part of New Haven, Abakaliki Road, Trans-Ekulu, Abakpa, Emene, Uwani, etc., in night is horrible as most of the street lights are far from giving the expected quality services due to minor repairable damages. Also, that Enugu as the oldest city in Eastern Nigeria does not enjoy a good supply of water is quite unfortunate, except for the intervention of His Excellency, the Governor of Enugu State, (Barr) Peter Mbah, who took the bull by the horn in that sector. The water reticulation in the city in 50s and 60s was allowed to rot without care by subsequent administrations. Public water in Emene, Uwani, Gariki and a few parts of Enugu and its suburbs has been forgotten as they have the tap without water. Again, connecting Independence layout, Maryland, Kenyatta etc., from New Haven, Emene or Abakpa is a strenuous journey and remains a big task, all because the roads are full with potholes and movement are always at snail's speed which inhibit the free flow of traffic.

### **1.3 Objectives of the Study**

The broad objective of this study is to investigate maintenance culture as it affects sustainable socioeconomic development in Enugu state between (2007–2022). The specific objectives are as follows:

- i. Determine the nature of the maintenance culture of public facilities in Enugu State, Nigeria.
- ii. Ascertain how has this culture affected the quality of lives and sustainable development in Enugu state, Nigeria
- iii. Find out what policies and programmes can be adopted by the government to improve on the maintenance culture of public facilities in Enugu state, Nigeria

## **2. Conceptual Review**

### **Maintenance Culture**

Maintenance is the process of protecting or preserving something or the processes of keeping something in good condition while culture is what defines a person's attitude towards something. As posited by Suwaibatul *et al*, (2012), maintenance culture defines the values, way of thinking, behaviour, perception, and underlying assumptions of any person or group or society that considers maintenance as an important matter, that is; prioritizing and practices the culture in their everyday life. In the view of Suwaibatul *et al*; when a person or group has developed a maintenance culture, they would have the attitude to maintain, preserve and protect the public facilities in their care consistently. Uma, *et al*, (2014) opined that maintenance culture brings to bear the adoption of a certain attitude of ensuring regular servicing, repairs and maintenance of working assets or established systems to guarantee their continuous usefulness.

Maintenance culture as advanced by Onwuka (2015) is concerned with the planning and control of construction resources to ensure that necessary repairs and renewal are carried out with maximum efficiency and economy to enhance the quality of life of the property. Maintenance culture as conceived by Florence, (2011) is not universal, it is usually derived or learned through a person making maintenance a natural daily practice that can be followed and emulated by others. Therefore, it is a passion-driven activity imbibed and repeatedly adopted by persons for life sustenance and effectiveness of something

### **Socio-economic Development**

Socio-economic development is the process of social and economic improvement in society and is measured with life expectancy, quality lives, literacy level, rate of employment etc., as its indicators. Sustainable socio-economic development is the ability to ensure continuous social and economic growth without undermining humans' interests and to meet their needs without harming nature. According to Robert Tweheyo (2021), Sustainable socioeconomic development is the progressive reinforcement of the socioeconomic state's quantitative and qualitative dimensions towards a higher level of efficiency, well-being, justice and democracy at all levels. It is about sustained improvement in the well-being of the individuals, groups, families, community and society at large for effective performance, functioning, and satisfaction derivable from all infrastructures, facilities and activities put in place by the state for the well-being of the citizens. Socioeconomic development is the sum of social and economic transformation towards achieving growth in society by making sure that all activities that propel the satisfaction of the citizens are in place and functional.

### **Maintenance Culture and Life span of facilities**

The main purpose of investing in facility maintenance is to ensure effective and efficient functionality but when the facility is poorly maintained you will likely have a shorter useful life span and the society will not be satisfied. As posited by Uma, *et al* (2014), the life of man, animals, plants and non living things needed for life sustenance require regular maintenance to sustain their usefulness and ensure their contributions to the transformation process for output production. Maintenance encapsulates positive efforts, actions and activities aimed at sustainability of the life of any infrastructure. According to Madusanka *et. al* (2016), proper maintenance can extend the life time of a physical asset and propel satisfaction to the users.

Therefore, for the life of public facilities to achieve longevity, there must be a positive culture of regular maintenance of such facilities cultivated by the individuals, and government. When a facility is poorly maintained, it will likely have a shorter useful life span. In fact, the useful life of the asset depends on how often it is used, the conditions it is exposed to and the quality of maintenance throughout its span. It is noteworthy, that the essence of maintenance is to return or keep infrastructure in a functioning or operational condition, and that the culture of adequate maintenance enhances the life span of items (Maduka, 2021).

### **Maintenance Culture and Quality of Lives**

Naturally, when an individual or government traditionally posses a positive maintenance culture of facilities in his/her environment, the quality of life of the facility in question will be enhanced which will also enhance the quality of lives of the citizens by giving needed services. But when negative, it allows the facility not to deliver the expected satisfaction due to obsolesce and malfunction. Suwaibatul *et al.* (2012), is of the view that, if a state must develop, which invariably involves improvement in quality of lives of its citizens, it is of the essence that installations as well as maintenance of its existing facilities must be given priority attention through the development of a certain culture of maintenance among the citizens.

Okafor Endurance (2018) summarized the concept this way, that a poorly maintained facility in deplorable condition depresses the quality of life and contributes in some measures to anti-social behaviour which threatens socio-economic and political environment of the state.

### **Maintenance Culture and Socioeconomic Development**

Maintenance culture entails the individual's values, way of thinking, behaviour, perception, and the underlying assumptions that guide his/her daily maintenance actions and practices. It is the shared attitude and behaviour of a particular group or individuals towards the care of available facilities within their domain of existence. Sustaining the optimum state of public infrastructures remain a priority for sustainable socioeconomic development, and it requires concerted and collaborative efforts, strategic planning of the citizens to develop certain level of ownership. When facilities or other public installations are not maintained, there is frequent breakdown and the cost of corrective maintenance or

replacement as the case may be is high due to neglect. Johnson (2023) posits that the facilities we keep today will continue to serve us as long as we keep maintaining them appropriately. The main thrust of socio-economic development is to improve the general well-being of the citizens and these involve the effective functionality of the public facilities provided by the state and their well-being that could only be achieved through a positive culture.

Maintenance culture of individuals, government or the general public may be positive or negative. It is positive when one has developed innate passion of taking good care of facilities within his/her domain of existence which helps in keeping the facilities life longer and improving on the quality of its life etc. This no doubt will enable socioeconomic development through services deliverable to the general public for their optimum satisfaction and well-being. But when the culture is negative, it will lead to 'I don't care attitude' which reduces the passion for maintenance; impede the life span of the facility, and its quality reduced when not fully maintained. Tijani *et al* (2016), posit that the attitude of the people 'that nobody owns government property' brings a negative impact on the facilities

### **Nature of Maintenance Culture of Public Facilities in Enugu state**

Maintenance culture suggests the habit of regularly and consistently keeping a facility, infrastructure etc., in good and working conditions. In Enugu state, the condition of the public facilities like street lights, water, roads, building etc., are in deplorable conditions due to the nature of maintenance culture practiced in the state, which remains poor. According to Ajayi O., (2014), Nigeria has no maintenance culture and these can be seen in all sectors of the society from the government down to the citizens. These attitudes in Enugu State have been noticed in area of blocking water ways, breaking water pipes in search of water, dumping of wastes on water ways, burning of tyres on the road, canalization of public assets and the total detachment and lack of ownership of public facilities as normal. The 'I don't care' disposition in the mindset of the citizens of the state is a clear indication. This mindset is buttressed by Tijani *et al* (2016), that the attitude of the people that 'nobody owns government property' brings a negative impact on the facility maintenance.

This above concept was collaborated by the statement from the former Enugu state commissioner for works, Engr. Patrick Ikpenwa, in 2017 when he admonished Enugu residents to imbibe a maintenance culture in order to optimally benefit from government infrastructure and ensure durability of such projects. Lamenting the poor maintenance culture in the state in 2023; Chief Nick Udonsi; a former LG boss stated that, Artisan Bridge collapsed is a clear indication of poor maintenance culture by those involved in maintenance domain. In line with Udonsi also, the SSG Prof. Chidi Onyia complained of poor maintenance attitude by citizens of Enugu which prompted sabotaging government developmental efforts through vandalism, care-free-attitude over public infrastructure etc. Therefore, the maintenance culture in Enugu like every other state in Nigeria is corrective and reactive in nature; that is, carrying out maintenance when the facilities are totally out of function. These gave room to a lot of dilapidated and abandoned assets. These poor maintenance culture as observed in Enugu State is inhibited by certain challenges such as: lack of commitment and dedication of maintenance personnel; poor leadership; corruption; poor maintenance budgetary allocation; poor supervision; poor control and monitoring; lack of patriotism; total citizens' alienation from public facility and laize faire attitude etc. seen in the maintenance domain.

### **Maintenance policies and programmes for improvement**

The fundamental concept of transformation as it concern maintenance culture is to evolve a mindset towards maintenance itself which the right policy is the driver. Historically, Nigeria and Enugu state has been involved in practicing corrective or reactive maintenance plan; that is only carried out following detection of anomaly or malfunction and aimed at restoring the facility to normal operating condition. This approach is cost-effective but may lead to catastrophic condition of public facilities. Therefore, it is necessary there is paradigm shift towards proactive, preventive, predictive and condition-based approach to sustain the life of public facilities in the state for sustainable socioeconomic development.

These policies allow for maintenance at predetermined intervals, integrating analysis, measurement and periodic task activities, regular equipment performance monitoring and control of corrective actions. It reduces in long run the cost of maintenance. These policies are expected to be propelled by a well communicated and understood detail of work to be done on facilities as contained in their Standard Operation Procedure (SOP) accordingly. These policies and programmes are to enhance overall system reliability, reducing downtime, and optimizing resources utilization and improvement in the quality lives of people.

### **Strategies for improvement of Maintenance Culture**

The best strategy to extend the useful life of public assets and facilities is by building a strong maintenance culture in an organization. It is expected that you care for your maintenance personnel as much as for your facilities. The culture will help the citizens to develop the necessary skills to effectively perform. Therefore, the strategies for development of maintenance culture are highlighted below:

**Maintenance policies and programmes** – The basis of maintenance culture are to be clearly outlined in the organization’s maintenance policies. Therefore, for effective maintenance culture to be in existence, government should produce maintenance policy and procedure, that is; Standard Operating Procedure (SOP) and accompanied by maintenance checklist and communicate the maintenance mission, vision, goals, and responsibilities with all stakeholders. In doing that, each person knows what they’re expected to do and why. These helps in the standardization of maintenance work according to best practices, life of facilities improved and performance enhanced.

**Training and development** – It is instructive that maintenance thrives with technical knowledge embedded in the personnel and the richness of the programme. With good training strategies, it is better to look for people with right attitude but with less experience and impart in them the right training rather than engaging people with experience but with bad attitude. They will then corrupt the good ones and propel negative maintenance culture.

**Attitudinal re-orientation** – The nonchalant attitude of people always leads to neglect, allowing minor repair work of facilities to evolve into more serious condition and colossal damage. Individuals, government and general public need a prompt revolutionary attitudinal shift from the concept that government facilities belongs to nobody and that developing maintenance attitude to it is not necessary. This strategy will make every individual develop ownership attitude for public facilities (positive maintenance culture). So attitude is central to maintenance.

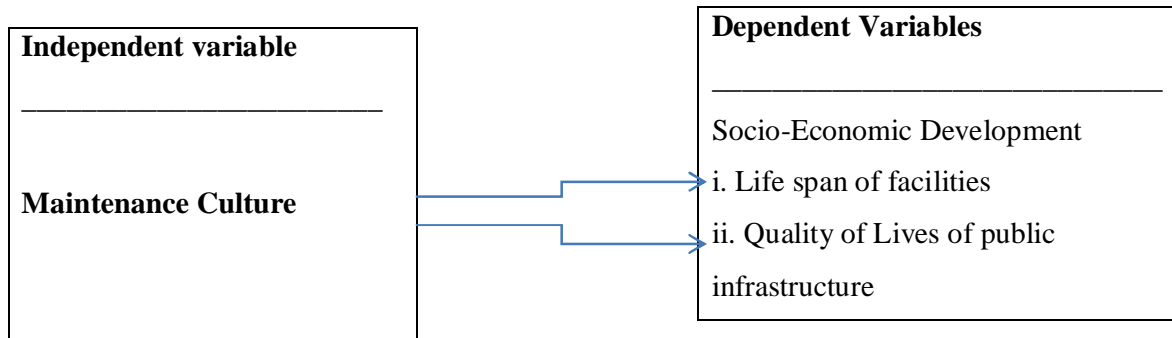
**Funding facility maintenance** – It is hard to care about the quality of service or performance of public facilities if the government doesn’t even bother to provide resources needed for prompt maintenance when noticed. Maintenance stakeholders (individuals, government and general public) should make sure that enough budgets is made; necessary tools/parts are available to complete the maintenance process. This could be achieved through Public Private Partnership (PPP) and government improved maintenance budget.

### **Development and tracking of relevant maintenance Key Performance Indicators (KPIs)**

Maintenance culture is a critical process and not something that can be described with a single key performance indicator (KPI). Performance indicators remain a great way to track and measure whether your maintenance unit is moving towards set goals. This is done by always keeping an eye on maintenance KPIs and metrics like; Mean Time to Repair, Mean Time between Failures, and the volume of planned verses unplanned work. You can then assess the organization’s current maintenance arrangement and subsequently identify where you need to make improvements.

Therefore, a strong proactive maintenance culture by the stakeholders will result in well-maintained facilities that work and serve the purpose it is made for.

## Conceptual Frameworks



**Figure 1 Sketch of Maintenance Culture and Socio-economic Development**

**Source: Authors Conceptualization, 2024**

## Theoretical Framework

### Systems Theory (Ludwig von Bertalanffy 1901 – 1972)

System theory is based on the principle that the component parts of a system can best be understood in the context of the relationships with each other and with other systems, rather than in isolation. Systems theory was first introduced in the 1940s by biologist Ludwig von Bertalanffy (1901 – 1972) and furthered by W. Rose Ashby (1956) and George Bateson (1979). It posits that a system is more than the sum of its parts by expressing synergy or emergent behaviour and may be possible to predict these changes in patterns of behaviour. That is, the real systems are open to, and interact with their environments. The theory's main focus is on the arrangement as well as the complex interrelationships among its constituent parts which connect them into a whole. For systems that learn and adapt, the growth and the degree of adaptation depend upon how well the system is engaged with its environment and other contexts influencing its organization and the extent of indoctrination into a specific culture.

Systems theory attempts to explain how different parts of the system are interconnected and how they influence each other. Feedback loops, closed systems, and the role of components in larger systems are key concepts that help elucidate this interconnectedness (Skyttner 2005). The main focus of the theory is its attention on the whole, its concepts includes: system environment boundary, input, output, process, state, hierarchy, goal-directedness and information is based on individualism, competition, training for a specific profession,

In the context of application of Systems Theory to maintenance culture and socio-economic development, people are seen as parts or subsystems that make up the society and the sum total or collective intrinsic attitude of these individuals influences and defines the societal attitude. When an individual as a subsystem are propelled to produce positive attitude or culture within his/her domain of existence, it will definitely influence others in the subsystem and the continuous expansion of such imbibed attitude will shape the entire system. Consequently when the individuals and government work together to produce positive and strong culture of maintenance individually on themselves as the passion is ingrained, the life of public facilities will be sustained and the entire system will enjoy the optimum performance of such facilities, but when the interactions of the parts that makes up the system produce high percentage of poor/negative or I don't care attitude toward maintenance, the facility will definitely not leave out its life-span.

Consequently, individuals using the public facilities and the government providing such facilities should interact as part of the whole system positively to model and produce a compact societal culture of maintenance to enhance the performance condition of the facilities for the well-being of the general public. Therefore, for the public facilities to enjoy longevity or to always perform at its peak and provide the expected services for socioeconomic development, the individuals and government within the society must develop this strong passion so as to apply the imbibed culture while performing their

function in facility maintenance domain for perfect functioning of the society. Failure of the sum total of individual's attitude to shape the societal attitude to positive side leads to poor maintenance culture observable in the society now. Summarily, when I positively change; you change; and we change collectively our culture of maintenance, the society will then bear a new culture of ownership of public facilities and care for it will come seamlessly.

### **Empirical Review**

#### **Maintenance Culture and Life Span of facilities**

A study was carried out by Norfarahayu *et al* (2020) to identify the factors influencing the life expectancy of generic house components and the life expectancy of each component through preliminary reviews. The study adopted qualitative and exploratory research designs and used Multi-layered thematic process for data analysis. The study found that in general, there are various life expectancy factors including weather and climate condition, design, maintenance and replacement, the intensity of use, quality of materials and products, technological obsolescence, workmanship, and insects damaged.

In empirical study by Kofi *et al* (2014), to investigate the maintenance culture of SMEs in the Kumasi Metropolis to ascertain the relationship between maintenance culture and productivity. A Survey methodology was applied. The results indicated that; most SMEs undertake maintenance only when there is a breakdown, maintenance culture is measured by training; management involvement; resource availability; and workers awareness, has a significant positive effect on organizational productivity. The key drivers of maintenance culture are productivity, safety and reliability.

Sani *et al* (2021) assessed the attributes and level of housing conditions in Coral Barracks, Nigeria. The study adopted quantitative survey method for data collection and analyses were descriptive statistics and parametric measurement. Findings reveal housing conditions in Coral barracks are in the condition that requires rehabilitation and maintenance to revitalize the standard of the housing condition.

#### **Maintenance Culture and Quality of Lives**

In empirical study was conducted by Anakwe Ikechukwu (2023) to assess the impact of improving maintenance culture and quality of public properties in Akwa Ibom International stadium, Nigeria. The research design used for this study was the descriptive research design with various analytical tools and software such as pie charts, bar charts, tables and statistical package for social science (SPSS) to analyze the data. The result showed that Nigerians exhibit poor maintenance culture for public properties.

An investigation was carried by Effiong & Wokekoro (2018) on the impact of property maintenance on property rental values in D/line Housing in Port Harcourt. Data were analyzed using percentage, mean and chart. The result showed that preventive maintenance practices are adopted in property maintenance to enhance its value and funding is very significant in the maintenance process and the rental value of well-maintained properties are higher than the poorly maintained properties.

Ankeli *et al* (2015) carried out an empirical study focusing on housing condition and residential property rental values in Ede, Nigeria. They adopted systematic random sampling techniques in data collection using both descriptive and inferential analytical techniques for analysis. The research study reveals that properties with better conditions in terms of infrastructures and physical soundness command higher rental values.

Fuanekwu & Eniola (2016) in their empirical study examines the impact of poor maintenance culture on the full utilization of residential properties in Nasarawa. Data analyzed using mean ratings. The findings indicate that poor maintenance culture has impacted negatively on the full utilization of residential properties in the study area.

#### **Maintenance policies and programmes for improvement**

Simranjit *et al* (2022) carried out an empirical investigation to assess the contributions of maintenance practices and extract various significant factors that influence the implementation of maintenance practices in Northern Indian Small and Medium-Sized enterprises (SME) business. Survey design was adopted. ANOVA was used to statistically validate the hypotheses. Finding shows that strategic



maintenance practices like corrective, general, preventive maintenance issues and predictive maintenance initiatives have enhanced overall equipment effectiveness, business performance, quality cost optimization, safety, delivery and morale in SMEs.

In Mad Lazim (2010), the study aims to investigate the extent of Total Productive Maintenance (TPM) practices in Malaysian Manufacturing Companies, as TPM practices have been shown to lead to better performance. A survey design was adopted and data analysis with correction analysis. Finding indicates that there is a positive relationship among TPM practices.

Adegoke *et al* (2019) in their study to examine the objectives and benefits of building maintenance using Phase I housing estate, Lokogoma, Lokoja as a case. The study adopted survey research design method with questionnaire for data collection and analyzed the data using tables and charts. The findings revealed that there is high level of ignorance of regulations on maintenance, negligence and wrong approach to the practice of maintenance as causes of poor maintenance culture.

### 3.Methodology

#### Research Design

The location of this study is Enugu state in South-East, Nigeria and adopted the descriptive survey design. This was deemed appropriate for the study because it allows for easy determination of the behaviour of people in a natural setting and compares variables. The study made use of primary and secondary sources of data. The population of the study is 278. The purposive sampling technique was used to draw the individual respondents such that different cadres of staff were considered. A sample of 278 respondents was selected. The collected data was analyzed through the use of a Mean score while a t-test was used to test the hypotheses.

#### Data Presentation and Analysis

The data are presented for easy interpretation and understanding. A total of 278 copies of the questionnaire were distributed while 263 were returned showing 95% instrument return rate.

**Research Question One:** What is the nature of maintenance culture of public facilities in Enugu State, Nigeria?

**Table 1:** The nature of maintenance culture of public facilities in Enugu state

S/N	ITEM	SA (5)	A (4)	U (3)	D (2)	SD (1)	Total	Mean	Decision
1.	Public facilities often face inadequate budgetary allocations, leading to insufficient funds for regular maintenance	123	115	5	10	10	263	4.2	Accepted
2	The prevailing approach to maintenance tends to be more reactive than proactive.	103	120	20	10	10	263	4.1	Accepted
3	Many public facilities in Enugu State are aging, requiring more extensive maintenance efforts.	93	100	10	40	20	263	3.8	Accepted
4	Vandalism of public facilities and total alienation undermine the intended outcomes of maintenance efforts.	103	100	10	25	25	263	3.8	Accepted
5	The adoption of modern technology for maintenance practices is not uniform.	110	103	10	20	20	263	4.0	Accepted
<b>Grand Mean Score</b>								<b>3.9</b>	<b>Accepted</b>

**Source:** Field Survey 2024

Table 1 shows the distribution of the opinion of the respondents on the nature of maintenance culture of public facilities in Enugu State, Nigeria. Based on the responses, it can be seen that the respondent

affirmed that all the questions from 1 to 5, with mean scores of 4.2, 4.1, 3.8, 3.8 and 4.0, respectively are the challenges defining maintenance culture. The grand mean of 3.9 indicates that the respondents overwhelmingly agreed that the options are true reflection of maintenance culture in Enugu State.

**Research Question Two:** How has this culture affected the quality of lives and sustainable development in Enugu state, Nigeria?

**Table 2:** The manifest maintenance culture in Enugu State affects quality of lives and sustainable development to which extent?

S/N	ITEM QUESTIONNAIRE	SA (5)	A (4)	U (3)	D (2)	SD (1)	Total	Mean	Decision
1.	Poorly maintained roads, public buildings, and utilities hinder transportation, access to essential services, negatively impacting the quality of lives	83	110	20	20	30	263	3.7	Accepted
2	The economic burden of extensive repairs, hinder the state's ability to invest in critical sectors, impeding sustainable economic growth	103	110	20	20	10	263	4.0	Accepted
3	Compromised safety standards affect the well-being of residents, potentially leading to accidents, health issues, and a diminished overall quality of lives.	93	90	30	30	30	263	3.6	Accepted
4	Poorly maintained public facilities negatively impact the delivery of education and essential services	80	103	20	30	40	263	3.7	Accepted
5	Environmental challenges, such as pollution and inadequate waste disposal, affect the state's overall sustainability and the well-being of its residents.	83	109	11	40	20	263	3.7	Accepted
<b>Grand Mean Score</b>							<b>3.7</b>	<b>Accepted</b>	

**Source:** Field Survey 2024

Table 2 shows mean rating of the effect of maintenance culture as it affects quality lives in the area of investment level, income level, quality service, standard of living, efficiency and effectiveness of facility for sustainable development as above 3.0 and was accepted. This indicates that the respondents agreed that the manifest nature of maintenance culture in Enugu has significant effect on all the measured variables.

**Research Question Three:** What policies and programmes can be adopted by the government to improve on the maintenance culture of public facilities in Enugu state, Nigeria?

**Table 3:** The maintenance policies and programmes that can be adopted by Enugu state have improved maintenance culture on public facilities in the following areas

S/N	ITEM QUESTIONNAIRE	SA (5)	A (4)	U (3)	D (2)	SD (1)	Total	Mean	Decision
1.	Enact policies that prioritize maintenance in budgetary allocations.	86	97	20	30	30	263	3.6	Accepted
2	Facilitate partnerships with private entities for the maintenance of specific infrastructure projects, leveraging external expertise and resources	74	108	10	51	20	263	3.6	Accepted

3	Implement policies to raise awareness about the importance of maintenance.	89	92	15	37	30	263	3.7	Accepted
4	Adopt performance-based contracts for maintenance contractors.	62	116	10	43	22	263	3.5	Accepted
5	Develop policies that prioritize preventive maintenance over reactive measures.	83	100	10	50	20	263	3.7	Accepted
	<b>Score</b>	<b>Grand Mean</b>						<b>3.6</b>	<b>Accepted</b>

**Source:** Field Survey 2024

In table 3 above, the mean rating of the impact of the government adopted maintenance policies and programmes on public facilities as regards assets life span and detection of malfunctioning symptoms is above 3.0 while monitoring and use of maintenance personnel and tool are below 3.0. The grand mean score is above 3.0 indicating that government policies and programmes adopted have impact on public facilities but much effort geared towards monitoring, personnel and tools.

## 2 Test of Hypotheses

The research hypotheses were put to the test to see if they were true or not. However, each hypothesis was evaluated independently to determine its significance in light of the data acquired and analyzed in this study. The t-test was used to test the hypotheses.

### 2 Test of Hypothesis One

- i. The nature of maintenance culture does not significantly affect the life span of public facilities in Enugu state, Nigeria

**Table 4: Maintenance culture and life span of public facilities**

Null hypothesis (Ho)	Tcal	Ttab	Df	Decision
Public facilities often face inadequate budgetary allocations, leading to insufficient funds for regular maintenance	7.39	2.776	4	Reject Ho and Accept Hi

**Source:** Field Survey 2024

**Decision Rule:** The decision rule in this case is to reject Ho if T-calculated exceeds T-table ( $t\text{-cal} > t\text{-tab}$ ). As a result, the t-calculated is 7.39, while the t-table is 2.776 in the previous table. This proves that the nature of maintenance culture does significantly affect the life span of public facilities in Enugu state, Nigeria. As a result, the null hypothesis (Ho) is not accepted, whereas the alternative hypothesis (H1) is accepted.

### 2 Hypothesis Two

Ho: Maintenance culture has no significant effect on quality of lives and sustainable socioeconomic development in Enugu state, Nigeria

**Table 5: Maintenance culture and quality of lives**

Null hypothesis (Ho)	Tcal	Ttab	Df	Decision
Poorly maintained public facilities negatively impact the delivery of education and essential services	6.93	2.776	4	Reject Ho and Accept Hi

**Source:** Field Survey 2024

**Decision Rule:** The decision rule is that if t-calculated is more than t-table ( $t\text{-cal} > t\text{-tab}$ ), Ho is rejected. As a result, the t-calculated is 6.93, while the t-table is 2.776 in the preceding table. This affirmed that Maintenance culture has a significant effect on quality of lives and sustainable socioeconomic development in Enugu state, Nigeria. As a result, the null hypothesis (Ho) is discarded, whereas the alternative hypothesis (H1) is accepted.

### 3 Hypothesis Three

**Ho:** Government maintenance policies and programmes do not significantly affect maintenance culture in Enugu state, Nigeria.

**Table 6: Government Maintenance Policies and Maintenance culture**

Null hypothesis (Ho)	Tcal	Ttab	Df	Decision
Implement policies to raise awareness about the importance of maintenance.	11.20	2.776	4	Reject Ho and Accept Hi

**Source: Field Survey 2024**

**Decision Rule:** The decision rule is that if t-calculated is more than t-table ( $t\text{-cal} > t\text{-tab}$ ), Ho is rejected. As a result, the t-calculated is 11.20, while the t-table is 2.776 in the preceding table. This proves that Government maintenance policies and programmes do not significantly affect maintenance culture in Enugu state, Nigeria. As a result, the null hypothesis (Ho) is discarded, whereas the alternative hypothesis (H1) is accepted.

### 3 Discussion of Findings

The findings were deliberated in accordance with the objectives, the result of the research questions and the hypotheses formulated.

#### 1 Maintenance Culture and Life Span of facilities

The number one objective of the study was to determine the nature of maintenance culture of public facilities in Enugu State, Nigeria. The results of the hypothesis one test discovered that the nature of maintenance culture does significantly affect negatively the life span of public facilities in Enugu state, Nigeria. From the t-test analysis in Table 4.4 above where t-calculated value of 7.39 is higher than the t-table value of 2.776. The finding is in line with the findings of Kofi Poku & Lamptey Ivy Dedorah (2014), to investigate the maintenance culture of SMEs in the Kumasi Metropolis to ascertain the relationship between maintenance culture and productivity. The results indicated that; most SMEs undertake maintenance only when there is a breakdown, maintenance culture is measured by training; management involvement; resource availability; and workers awareness, has a significant positive effect on organizational productivity. The key drivers of maintenance culture are productivity, safety and reliability.

#### 2 Maintenance Culture and Quality of Lives

The study is to ascertain how this culture has affected the quality of lives and sustainable development in Enugu state, Nigeria. The result of the test of hypothesis two revealed that Maintenance culture has a positive significant effect on quality of lives and sustainable development in Enugu state, Nigeria. From the t-test analysis in Table 4.5, where the t-calculated is 6.93, while the t-table is 2.776, are statistically significant at a 5% level of significance. The finding follows the findings of Anakwe Ikehukwu (2023) who assessed the impact of improving maintenance culture and quality of public properties in Akwa Ibom International stadium and showed that Nigerians exhibit poor maintenance culture for public properties.

#### 3 Maintenance policies and programmes for improvement

The third objective of the study was to find out what policies and programmes can be adopted by the government to improve on the maintenance culture of public facilities in Enugu state, Nigeria. The result of the third hypothesis test revealed that Government maintenance policies and programmes do not significantly affect maintenance culture in Enugu state, Nigeria. From the t-test analysis in Table 4.6, the t-calculated is 11.20, while the t-table is 2.776, are statistically insignificant at a 5% level of significance. The finding is in agreement with the findings of Simranjit, Kanwarpreet and Ahuja (2022) that carried out an empirical investigation to assess the contributions of maintenance practices and extract various significant factors that influence the implementation of maintenance practices in Northern Indian Small and Medium-Sized enterprises (SME) business. Their finding showed that strategic maintenance practices like corrective, general, preventive maintenance issues and predictive

maintenance initiatives have enhanced overall equipment effectiveness, business performance, quality cost optimization, safety, delivery and morale in SMEs.

### **Summary of Findings**

The following were the findings from the study.

- i. That the nature of maintenance culture does significantly affect positively the life span of public facilities in Enugu state, Nigeria with observed challenges such as poor leadership, corruption, lack of commitment and dedication on the part of maintenance personnel; poor budgetary allocation for maintenance; lack of patriotism etc . This implies that regular upkeep and timely repairs enhance durability, ensuring that public infrastructure serves its intended purpose effectively and for an extended period.
- ii. Maintenance culture has a significant positive effect on quality of lives and sustainable development in Enugu state. This goes to show that a robust maintenance culture in Enugu State improves the quality of lives by ensuring well-functioning public facilities, fostering sustainable socioeconomic development, and creating a conducive environment for residents and businesses
- iii. Policies and programmes adopted by Government do significantly affect positively maintenance culture in Enugu State, Nigeria. This is an affirmation that Government maintenance policies and programs in Enugu State play a pivotal role in shaping maintenance culture. Clear, proactive policies can foster a culture of responsibility, ensuring sustainable infrastructure upkeep.

### **Conclusion**

In conclusion, the nexus between maintenance culture and socioeconomic development in Enugu State is evident. A robust maintenance ethos ensures the longevity and functionality of public infrastructure, directly impacting the quality of life for residents. Government policies and programs play a pivotal role in shaping this culture, influencing the level of responsibility citizens' exhibit toward public assets. Enugu's commitment to fostering a proactive maintenance culture is integral to sustaining infrastructure, creating a conducive environment for businesses, and bolstering overall socioeconomic development. These could only be achieved when those in maintenance domain and leaders shun corrupt practices, negligence, develop a spirit of patriotism etc. As the state continues to prioritize and invest in maintenance, it is poised to realize long-term benefits, ensuring resilience, efficiency, and a high standard of living for its populace.

### **Recommendations**

Based on the findings of the study, the researcher recommended the following:

- i. Both government and ministries should promote good leadership; community involvement in maintenance initiatives; shunning corrupt practices; increased maintenance budgetary allocation; develop high commitment and dedication to facility maintenance by maintenance personnel, high level of patriotism etc. Encouraging citizens to take ownership of public spaces, fosters a collective responsibility and reintroduction of Public Works Department (PWD) for their promptness in effecting repairs of public facilities, immediately it occurs, so as to contribute to sustained infrastructure functionality and socioeconomic development.
- ii. The state government should invest in training and empowering maintenance personnel. Building technical skills within local communities will enhance their ability to independently and effectively contribute to infrastructure upkeep.
- iii. Enugu State should fortify maintenance policies, ensuring clarity, enforcement, and public awareness. Clear guidelines will instill a sense of responsibility, fostering a proactive maintenance culture.

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