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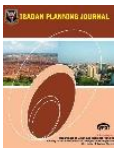

Assessment of Problems Associated with the Management of Public Infrastructure in Ondo West LGA, Ondo State, Nigeria

Ayodeji Solomon Olatunji[1], Aderinsola Dorcas Olarotimi[2], Adeyemi Adewumi Adedeji[2], and Lukman Opeyemi Ayoola[2]

Abstract

One of the factors that militate against effective management of infrastructure is poor maintenance culture, as most infrastructural facilities deteriorate rapidly and are left to rot away within a very short number of years after their installation, thereby shortening their effective life span. This study examined the problems associated with the management of public infrastructures in Ondo West LGA with a view to proffering sustainable methods of managing infrastructures in Ondo State. Data for the study were obtained from both primary and secondary sources. A total of 230 households were sampled. The data collection process involved field surveys and personal observations of the existing infrastructure in the study area. Both descriptive and inferential statistical tools were used in data analysis. Data were obtained based on the objectives and the hypothesis of the study through the use of a structured questionnaire. The finding revealed that educational infrastructure is the most prominent, cited by 36.5% of respondents, followed by electricity at 28.3%, while other infrastructures are inconsistently distributed. The majority of infrastructures, accounting for 36.1%, are located within a distance of 6-10 km from the respondents. The study concluded that there is a significant relationship between the management agencies and the associated problem of attitude, indicating that the nonchalant attitudes of both the agencies and the community towards maintenance play a crucial role in the declining service quality. The study recommends that there is a need to foster a stronger maintenance culture among both the management agencies and the community. Also, community engagement initiatives should be introduced to involve residents in the care and monitoring of public facilities.

Keywords
Management, Problems, Public infrastructure

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Contact
Ayodeji Solomon Olatunji
solomon.olatunji@fuoye.edu.ng

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1. Introduction

Infrastructure refers to national physical assets, which are the basic structures and facilities necessary for a country or organisation to function efficiently, whereas the management of these assets, which include transport, water, electricity, etc., is to preserve the new state and good appearance of the facilities as far as it is economically viable and practicable, so that it can effectively serve the purpose for which it was built (Proag and Proag, 2021). Public infrastructure is referred to as the basic facilities and services essential to both rural and urban societies and to economic and social development (Olatunji *et al.,* 2024). The infrastructures encompass transportation facilities, water supply, power supply, waste system, sewage disposal, telecommunication facilities, education, health, and recreational facilities, as well as housing and schools (Olatunji *et al.,* 2021).

The state of civilisation of the inhabitants and the efficiency of workers within an area is reflected by the extent to which their neighbourhoods have been provided with infrastructural facilities as well as the state of maintenance of the available infrastructures. The importance of infrastructure management cannot be overemphasised. Therefore, any defect in the facilities within an area would negatively impact human beings and result in a loss of the area's value (Barrett *et al*., 2019). The performance or effectiveness of an infrastructure also depends on the nature of its management: where the management is efficient, one can expect a good performance from the infrastructure and vice versa (Obateru, 2003). One of the factors that militate against effective management of infrastructure is poor maintenance culture, as most infrastructural facilities deteriorate rapidly and are left to rot away within a very short number of years after their installation, thereby shortening their effective life span.

[1]*Department of Urban and Regional Planning, Federal University Oye-Ekiti, Nigeria.*
[2]*Department of Urban and Regional Planning, Wesley University, Ondo, Nigeria*

According to environmentalists Altinigne and Bilgin (2015), it is critically explained that the nonchalant attitude of people toward these infrastructures is another problem. People often approach maintenance with an incorrect mindset. Beneficiaries use or handle facilities carelessly, mistakenly believing they belong to the government and are not responsible for their maintenance. Reported cases of vandalism of facilities such as telecommunications and electricity power infrastructures have been on the increase.

Another critical problem confronting effective management of infrastructures is a lack of adequate funds and materials. A lot of projects have been abandoned due to insufficient funding, while the responsibility for maintenance of the existing facilities has, in many cases, been neglected (Jacob *et al.,* 2020). Additionally, the necessary spare parts, materials, and equipment for maintenance work may be unavailable locally due to their high foreign exchange rates. This usually leads to the use of low-quality materials. However, this study assumes that unless public infrastructure provision in the country (Ondo West) addresses the management issue, the purpose for which they were built will not be fulfilled.

In this line of thought, this study therefore tries to look at the various problems associated with the maintenance of public infrastructures in Ondo West LGA in order to look at the possible measures that can be put in place to improve the maintenance culture towards public infrastructures, especially in Ondo West LGA.

Hypothesis

Ho: There is no relationship between infrastructure management agencies and the associated problems in Ondo West LGA.

H1: There is a relationship between infrastructure management agencies and the associated problems in Ondo West LA.

2. Literature Review

2.1 Public infrastructures

Several authors have defined infrastructures from different perspectives. Infrastructures are synonymous with facilities. The meaning of infrastructure, according to Collins English Dictionary, is "that which includes buildings, structures, and apparatus by which services essential to the development and use of land are provided". The World Health Organisation (WHO) also defined it as "all necessary services, facilities, equipment, and devices needed or desired for the physical and mental health and social well-being of the family and individual" (Ojo, 2020).

Omuojine (1997) described it as the stock of fixed capital assets in a country, for example, roads, railways, airports, waterways, hospitals, and telecommunication networks. All these with the attendant transportation network and electricity supply. Infrastructural facilities invariably include telephone services, a clean water supply, and medical services. It serves as a slender thread that weaves together human needs and values with those of the environment. It refers to fixed facilities or installations traditionally provided by the public sector. It is the systematic framework that underpins a community's ability to fulfil its mission of providing a base for its citizens to be productive and nurture social equity. Infrastructure, by nature, is better provided by the government for its respective communities (Adama, 2018).

Obateru (2003) expounded on the definition and extent of infrastructures, asserting that they are synonymous with public utilities, community facilities, and services. Public utilities include water, electricity, gas, sewage, stormwater drainage, and telephone services. Social (community) facilities include educational facilities, health facilities, post offices and postal agencies, and shopping areas. Recreational areas and facilities, religious buildings, and cultural facilities like libraries, art galleries, and museums. Social (community) services are police protection, fire protection, street cleaning, maintenance, and disposal.

According to Wikipedia, 2015, January 7th modification, infrastructure is the basic physical and organisational structure needed for the operation of a society or enterprise, or the services and facilities necessary for an economy to function. It can be generally defined as the set of interconnected structural elements that provide a framework supporting an entire development structure. It is an important term for judging a country or region's development.

It further explains that the term typically refers to the technical structures that support a society, such as roads, bridges, tunnels, water supply, sewers, electrical grids, telecommunications, and so forth, and can be defined as "the physical components of interrelated systems providing commodities and services essential to enable, sustain, or enhance societal living conditions."

According to the online Etymology Dictionary, the word infrastructure has been used in English since at least 1927, originally meaning "the installations that form the basis for any operation or system". The Oxford English Dictionary traces the word's origins to earlier usage, initially applying it in a military context. The word was imported from French, where it means subgrade, the native material underneath a constructed pavement or railway. The

word is a combination of the Latin prefix "infra," meaning "below," and "structure.". The military use of the term achieved currency in the United States after the formation of NATO in the 1940s and was then adopted by urban planners in its modern civilian sense by 1970.

The term 'infrastructure' came to prominence in the United States in the 1980s following the publication of America in Ruins, which initiated a public-policy discussion of the nation's "infrastructure crisis," purported to be caused by a decade of inadequate investment and poor maintenance of public works. This crisis discussion has contributed to the increase in infrastructure asset management and maintenance planning in the US (Latham and Layton, 2019).

Public infrastructures are subject to forms of public control and regulation ranging from local community-based groups to state-wide government monopolies. The term "infrastructure" can also refer to a set of services provided by these organizations that are consumed by the public: electricity, natural gas, water, and sewage. Telephone services may occasionally be included within the definition (Aworinde and Akintoye, 2019).

From all the definitions, one can see that infrastructures refer to the basic facilities and services essential to institutions, economic, and social development. They constitute the main fabric of what may be called an institutional physical system linked to property development and use. They encompass transportation and infrastructure such as roads and bridges, education, health services, water supply, power supply, telecommunication facilities, waste disposal system, recreational facilities, etc.

2.2 Urban Infrastructure Management

Urban infrastructure management pertains to the efficient and prudent use and maintenance of essential services and structures in towns and cities for the enhancement and sustenance of living standards in such cities and towns.

Lafioune *et al.* (2024) asserted, "Infrastructure refers to our national physical assets, which are the basic structures and facilities necessary for a country or organisation to function efficiently, e.g., buildings, transport, water and energy resources, and administrative systems. Investment in infrastructure improves the financial and commercial position of a country. They stated further that "infrastructure management means the work necessary to preserve it with its finishes and fittings in its near-initial state so that it continues to provide the same facilities and amenities as it did when it was first created." In this sense, management implies the renewal of infrastructure components through repairs, servicing, replacement, decoration, and cleaning. They also observed that the effects of changing legal, social, technical, and economic infrastructure frameworks over time can render an infrastructure policy in its original condition worthless.

Infrastructure management is the practice of coordinating the physical workplace with the people and work of the organisation. It integrates business administration, architecture, and the behavioural and engineering sciences (Dipeolu *et al.*, 2022). It is a customer-oriented integrated management service that deals with complex decision-making bases for the optimum planning and use adaptation of building installations, equipment, and services, all while providing strategic support for corporate management and value-adding workplaces. The primary function of facility management is to plan, establish, and maintain a work environment that effectively supports the goals and objectives of the organisation (Breen *et al*., 2020).

Infrastructure/facility management is an interdisciplinary field devoted to the coordination of space, infrastructure, people, and organization. It is often associated with the administration of office blocks, arenas, schools, convention centres, shopping complexes, hospitals, hotels, etc. However, facility management encompasses more than just business services. In a 2009 Global Job Task analysis, the International Facility Management Association (IFMA) identified eleven core competencies of facility management. These are: communication, emergency preparedness and business continuity; environmental stewardship and sustainability; finance and business; project management; quality real estate and property management; and technology. All these are referred to as non-core functions, but they do vary from one business sector to another (Brian and Adrian, 2009).

2.3 Problems Associated with the Management of Public Infrastructure

The disintegration or deterioration of established infrastructures such as roads, electricity supply, telecommunication, recreation centres, etc., could be gradual over time but has now become a festering sore that is growing monstrously beyond the handling capabilities of the state (Wang *et al.,* 2018; Memish *et al.,* 2019). The factors that mitigate effective management of the infrastructure are:

i. Poor Maintenance Culture: There is a complete absence of maintenance culture as most infrastructural facilities deteriorate rapidly and are left to rot away within a very short number of years after their installation, thereby shortening their effective life span.

ii. Nonchalant Attitude of People: A Higher percentage of beneficiaries have the wrong attitude

toward maintenance. How facilities are used or handled carelessly by beneficiaries with erroneous beliefs that the facilities belong to the government, and they are not responsible for their maintenance. Reported cases of vandalism of such facilities as telecommunication and electricity infrastructures have been on the increase.

iii. Lack of Adequate Fund: A lot of projects have been abandoned due to insufficient funding, while the responsibilities for maintenance of the existing facilities have, in many cases, been neglected.

iv. Lack of Expertise: Sometimes, the expertise required for the maintenance of an infrastructure is not available locally. The process of importing the expertise could be long, cumbersome, and expensive.

v. Wrong Selection of Contractor: Selection of Contractors for the execution of works is usually based on reasons like political influence rather than competence and experience. Therefore, the necessary works are not carried out properly. The available professionals are not often considered appropriately for management.

vi. Lack of Quality Materials: The spare parts, materials, and equipment required for maintenance work may sometimes not be available locally when they are required. The available ones are usually very expensive due to the high foreign exchange rates. This usually leads to the use of low-quality materials.

3. Research Methodology

The adopted research methodology for this research work is the survey research method. This method was chosen for this study because the direct respondents were members of the general public. The management agencies were also given questionnaires to get information about their establishment. A simple random sampling method was used to administer a questionnaire to the selected sample size from the total population. The reason for this type of sampling technique is to give each member of the total population an equal chance of being selected. The purposive sampling technique was used to administer a questionnaire to the agencies in charge of public infrastructure management in Ondo. A total of 230 households were sampled. The data collection process involved field surveys and personal observations of the existing infrastructure in the study area. Also, questionnaires were structured to convey information on the relevant aspects of the research. Both descriptive and inferential statistical tools were used in data analysis. Data were obtained based on the objectives and the hypothesis of the study through the use of a structured questionnaire.

4. Results and Discussions

4.1 Types of Infrastructure

The survey results, depicted in Figure 1, show an uneven distribution of infrastructures in the study area, with no location having all the necessary amenities for a good standard of living. Educational infrastructure is the most prominent, cited by 36.5% of respondents, followed by electricity at 28.3%, while other infrastructures are inconsistently distributed. These findings imply significant disparities in access to essential services, potentially leading to unequal living conditions and social inequalities. This unevenness may hinder economic growth and development in underserved areas, highlighting the need for targeted policies to ensure balanced infrastructure development and equitable access in the study area.

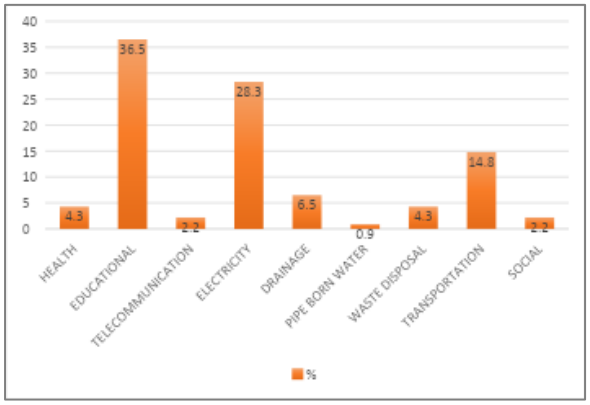

Figure 1: Type of infrastructure
Source: Field Survey, 2023

4.2 Infrastructure Distance

Figure 2 reveals that most infrastructures are located within a distance of 6-10 km from respondents, accounting for 36.1%. The nearest distance, within 1-5 km, covers 30.9% of the respondents, followed by 11-15 km at 27.4%, and only 5.7% of respondents have infrastructures located 16 km or more away. This distribution suggests that while a significant portion of the population has relatively easy access to infrastructure, over 33.1% still face considerable distances, potentially affecting their access to essential services and impacting daily life and economic activities.

4.3 Infrastructure Condition

Figure 3 indicates that most of the infrastructures are in good condition, with 117 respondents (12.2%) reporting this. Additionally, 17.4% and 19.6% of respondents also noted the condition of infrastructure, reflecting varying levels of maintenance and usability. This suggests that while a majority of the infrastructure is perceived as being in good condition, there is still room for improvement in maintaining and upgrading other facilities to enhance their quality and reliability.

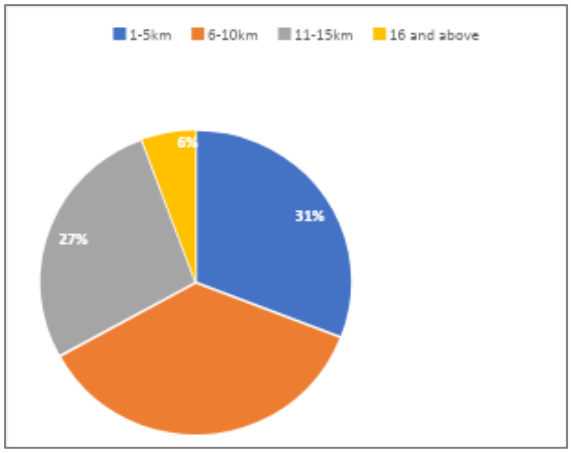

Figure 2: Infrastructure distance
Source: Field Survey, 2023

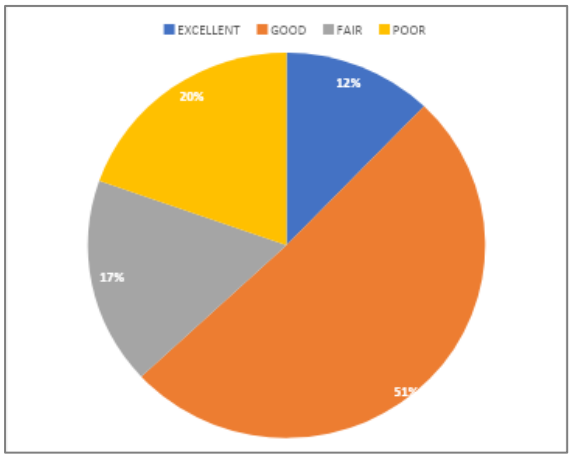

Figure 3: Infrastructure condition
Source: Field Survey, 2023

4.4 Level of Satisfaction

Figure 4 reveals that most respondents are not satisfied with the service provided by the infrastructure, despite its generally good condition, as indicated in Figure 3. Only 34.8% of respondents expressed satisfaction with the infrastructure services. This suggests that while the physical state of the infrastructure may be adequate, issues such as service efficiency, accessibility, or adequacy in meeting the community's needs may be contributing to the overall dissatisfaction.

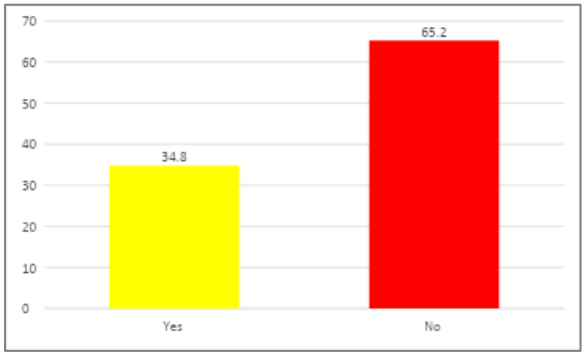

Figure 4: Level of satisfaction with infrastructure
Source: Field Survey, 2023

4.5 Hypothesis Testing

The Pearson correlation analysis reveals a strong positive and statistically significant relationship between infrastructure management agencies and associated problems, with a correlation coefficient of r = 0.610 and a p-value of 0.000 (significant at the 0.01 level, 2-tailed). This indicates that as the effectiveness or presence of infrastructure management agencies increases, the association with perceived problems also rises or vice versa. The strength of this correlation (above 0.6) suggests a moderate-to-strong linear association between the two variables, as shown in Table 1

Table 1: Correlations

		Infrastructure management agencies	Association problems
Infrastructure management agencies	Pearson Correlation	1	.610**
	Sig. (2-tailed)		.000
	N	230	230
Association problems	Pearson Correlation	.610**	1
	Sig. (2-tailed)	.000	
	N	230	230

**. Correlation is significant at the 0.01 level (2-tailed)

5. Conclusion and Recommendations

The study highlights significant issues regarding the management and distribution of public infrastructure in Ondo West LGA, Ondo State, Nigeria. The findings revealed uneven distribution of essential infrastructures, leading to disparities in access and quality of life among residents. While a majority of the infrastructure is in good condition, there is a considerable gap between physical state and service satisfaction, suggesting inefficiencies in service delivery and management. The chi-square analysis confirms a significant relationship between the management agencies and the associated problem of attitude, indicating that the nonchalant attitudes of both the agencies and the community towards maintenance play a crucial role in the declining service quality.

1. There is a need to foster a stronger maintenance culture among both the management agencies and the community. Regular maintenance schedules should be enforced to prevent rapid deterioration of infrastructure.
2. Educating the public about the importance of proper usage and maintenance of infrastructure can help in reducing vandalism and negligence. Community engagement initiatives should be introduced to involve residents in the care and monitoring of public facilities.

3. Adequate funding should be allocated to ensure timely repairs and upgrades of infrastructure. This includes securing funds for high-quality materials and skilled labour necessary for maintenance.

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