



JOURNAL OF EVENT, TOURISM AND HOSPITALITY STUDIES

<https://e-journal.uum.edu.my/index.php/jeth>

How to cite this article:

Faniran, G. B., Afolabi, H., Ojo, D. B., Alalibo, I. R. T., Badiora, A. I., & Adeyemi, T. R. (2026). Environmental Quality of an Ecotourism Destination: Evidence from Erin Ijesha Waterfalls, Nigeria. *Journal of Event, Tourism and Hospitality Studies*, 6, 68-84. <https://doi.org/10.32890/jeth2026.6.5>

ENVIRONMENTAL QUALITY OF AN ECOTOURISM DESTINATION: EVIDENCE FROM ERIN IJESHA WATERFALLS, NIGERIA

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Received: 1/11/2025

Revised: 9/6/2026

Accepted: 9/7/2026

Published: 31/7/2026

ABSTRACT

Environmental quality is crucial at any ecotourism site, and tourism locations that neglect these responsibilities risk losing the chance to attract tourists. A sure way to ensure satisfactory environmental quality is to regularly assess the condition of environmental amenities or services. However, the literature has documented only a few studies on Nigerian ecotourism destinations. This study, therefore, evaluates the condition of environmental characteristics at Erin-Ijesha Waterfalls, Osun State, Nigeria, to gain insight into improving environmental quality of ecotourism destinations. An on-site assessment was conducted by experts through direct observation using an assessment instrument developed from empirically adapted standards in the literature. A purposive sampling technique based on tourists' willingness to participate was adopted, and data were collected from 35 tourists over two weeks using questionnaires on the condition of environmental amenities and services, as well as their availability. Findings revealed that environmental amenities in the study area appeared desolate, as the site was not perceived by the management to be under any serious environmental threat, thus resulting in limited government intervention over the past decade. The availability of amenities was uneven, with critical facilities such as electricity, health services, sports infrastructure, nightlife, and traffic management notably lacking. The mean index of 3.326 and average Relative Condition Index (RCI) of 59.3% indicate that environmental quality does not meet the required standards and reflect a reliance on outdated amenities. The study provides empirical evidence on environmental quality in Nigerian ecotourism destinations within the Global South.

Keywords: Environmental quality; ecotourism; tourism amenities; destination management; Nigeria.

INTRODUCTION

The topic of tourism development is multidisciplinary, involving specialists from several academic fields (Adeniji, 2020). Tourism involves travelling to and staying in places outside of one's normal surroundings for a maximum of one year in a row. This could be for business, pleasure, or other reasons unrelated to engaging in any activity that requires payment from the location visited (UN Tourism, 2010). Tourism is a collection of activities, services, and industries that deliver a travel experience (Ajake, 2012). Among these are accommodation, entertainment, and retailing (Parks and Recreation Management, 2012). Smith (2009) identifies various types of tourism, including religious tourism, adventure tourism, cultural tourism, and ecotourism.

Ecotourism, also known as *ecological tourism*, is a form of tourism focusing on visiting natural destinations and promoting conservation efforts while minimising adverse effects on the environment and supporting local communities. Ecotourism involves activities such as nature walks, wildlife observation, hiking, bird watching and other nature-based experience activities. Typical examples of ecotourism destinations in Nigeria are Ikogosi Warm Spring in Ekiti State, Obudu Cattle Ranch mountain resort in Cross River State, and Erin Ijesha waterfalls in Osun State.

In Nigeria, tourism has contributed significantly to environmental and community development, providing essential amenities like electricity, schools, safety, and well-maintained roads (Spenceley, 2008). The authenticity of the environment is an important component of the quality of life reflecting the environmental state of a locality relative to human needs or goals (Ibrahim & Jaftar, 2016). Tourists demand high quality natural attractions, and environmental quality is one of the key components (2004). Consequently, the competitiveness of many tourism destinations in Nigeria depends on maintaining a high standard of overall environmental quality (Inskeep, 2017). Maintaining comprehensive environmental quality in a tourism destination requires a critical assessment of the environmental characteristics that make the destination functional. Landgigan & Fuller (2017) reveal how social and economic activities affect the totality of the environment. Likewise, the totality of the environmental characteristics affects the tourism destination.

A tourist centre with high environmental quality should possess characteristics that make it supportive, accessible, and functional (Pacoiné, 2003). In light of these environmental characteristics, a supportive tourist centre refers to ones that provide adequate amenities and services. These include regular water supply, electricity, proper sanitation and waste management systems, education, availability of functional health care facilities, security, and sufficient parking space, among others. All these amenities must be managed effectively to maintain serenity and promote safety and security. Such environment supports sustainable development goals. From the above, it can be deduced that the environmental quality of a tourist centre, such as Erin Ijesha, refers to the overall quality of the facilities in the area, which, when properly managed could generate revenue for the local community and attract private investors.

Rapid urbanisation in Nigeria which is a developing nation, has contributed to the growth of tourism, which inevitably advances local and governmental services, including waste management, sanitation, police, energy, and health facilities, among others (Milman and Pizzam, 2020). In these urban settings, various activities, including tourism, can flourish. Many studies have documented the detrimental consequences of tourism on the environment, including uncontrolled transformation, unplanned urban improvement, and poor infrastructure that contaminate water and air quality and ruin the natural world. Furthermore, the qualities of nearby delicate archaeological and heritage sites may be destroyed by

excessive use and inappropriate management practices (Inskeep, 1991; Gee et al., 1997). The costs of destroying the environment and the natural world, as well as the expenses of historical and cultural conservation, are enormous.

Nigeria's tourism sector has a significant and largely untapped potential. According to Honey and Gilpin (2009), who cited Adeleke (2009), Nigeria is essentially perfect for tourism. The country is home to more than 370 ethnic groups, which contribute to the rich cultural legacy, natural wonders, ideal climate, and remarkable wildlife. However, stakeholders have failed to adequately plan for these tourist destinations. Tourism is one of the global industries expanding at a very rapid pace. It serves as an important global generator of income, wealth, and job creation, and its rapid expansion and globalisation have been viewed as encouraging for Nigeria's enduring development and poverty reduction. Nigeria's tourism sector, which seeks to diversify the nation's economy, offers immense economic potential.

Erin Ijesha waterfalls has a high potential to turn into a world-class tourist hotspot due to the favourable climate and appealing scenery as an ecotourism destination (Musa et al., 2018). The waterfall's undeveloped state leaves its potential as an ecotourism centre untapped. Several research works have examined tourism development and its delivery (Fagbohunka, 2014; Srinivaso, 2013; Ibrahim, 2010; Oyedele, 2006), with most focusing on its importance and contribution to economic growth. In developed countries, emphasis is placed on maintaining existing tourism infrastructure, whereas developing countries are still concerned with ensuring the adequate provision of such infrastructure (Fagbohunka, 2014). However, a review of the literature has revealed that no thorough investigation has been conducted, particularly on environmental quality in the study area. This study is therefore a conscious attempt to bridge this gap. In this study, a comprehensive observation and survey were carried out to examine the condition of the provided tourism destination and whether the residents perceive the environmental quality of the tourism facilities provided to be available and in an excellent condition. To achieve this goal, the following questions were answered by the study: What are the available environmental amenities/services that enhance environmental quality in Olumorin Waterfalls, Erin-Ijesha? and What is the condition of the available environmental amenities/services in the study area? Hence, this study assesses the condition of available environmental amenities/services that enhance environmental quality in the study area. This is with a view to providing a basis for decision-makers to develop policies that will improve the environmental quality of the tourism destination.

LITERATURE REVIEW

The Concept of Tourism

Tourism, as a word, takes its root from 'tour', a term traditionally defined as a journey or a circular excursion taken for leisure, education, or company, which involves making stops at various locations (Webster, 1961). Tourism also refers to people's brief, transient travel to locations apart from their usual residences and places of employment, as well as the activities they engage in while being there (Sebahattin & Nur, 2018). The World Tourism Organisation (2010) defines tourism as people visiting or residing in places other than their typical homes or residences for up to a year for pleasure, business, or other reasons. Tourism is thus referred to as the temporary movement of people to places away from their regular habitat or home, together with all of the activities they partake in while being there and the services designed to satisfy their needs.

More recent scholarship conceptualises tourism as the activities of individuals travelling to and lodging in locations other than their regular environment for leisure, business, or other purposes, including the services provided to meet their needs (Sage, 2024). Similarly, Pocinho et al. (2021) argue that tourism extends beyond physical movement to include complex interdependencies between travellers, destinations, communities, and technologies, while Ivanov and Webster (2025) emphasise smart tourism and the role of digital technologies in reshaping visitor experiences, destination governance, and service delivery. Despite this expanded understanding, there remains no comprehensive theoretical framework that integrates traditional mobility with sustainability, technology, and socio-psychological outcomes. Therefore, this study addresses this gap by proposing an integrated framework that synthesises traditional and contemporary perspectives, incorporating technological, environmental, and experiential dimensions of tourism.

Tourism in Nigeria

Early scholars such as Karibo (1999) observed that Nigerians are reputed for being excellent travellers within and outside of their conventional residences, as well as outside of their country for business, pleasure, and cultural events. The first West African empires laid the foundation for tourism. A group of tourism experts founded the Nigeria Tourist Attraction (NTA) in 1962, marking the beginning of organised tourism in Nigeria (Ashikodi, 2010). According to Research & Intelligence (2013), the NTA was a prominent member of the International Union of Official Travel Organisations (IUOTO) in 1964. Later on, the IUOTO changed its name to the World Tourism Organization (WTO). Although these historical accounts offer insightful perspectives on the origins of organised tourism in Nigeria and emphasise the pioneering role of organisations like the NTA and the historical context of international affiliations, much of the existing literature remains dated and largely descriptive. Recent studies by Okonkwo and Ezeh (2018) and Onwuejeogwu (2021) highlight that contemporary Nigerian travellers increasingly engage in diverse forms of tourism, including ecotourism, heritage tourism, and diaspora tourism, driven by both economic opportunities and the reinforcement of cultural identity. Adebayo and Ibrahim (2020), Musa and Oladipo (2022), and Adewumi et al. (2022) have attempted to address contemporary issues such as tourism policy efficacy, destination competitiveness, and the impact of security challenges on domestic travel. However, there is limited empirical investigation into how these early foundations influence present-day tourism governance, marketing strategies, and traveler decision-making.

Following the decommissioning of the Nigerian Tourism Authority, the Nigerian Tourism Board (NTB) took its place. The Nigerian Tourism Board was established in 1976 by Decree No. 54 (Research and Intelligence, 2013). The Nigerian Tourism Board was responsible for such tasks as classifying hotels in the nation and providing consulting and informational services on tourism; supporting and conducting tourism-related research; enhancing the availability of tourist amenities and facilities in Nigeria; and encouraging participation from both Nigerians and visitors from other countries (Research and Intelligence, 2013).

The Nigerian government was even applauded by the United Nations World Tourism Organization for encouraging tourism as a means of enhancing Nigerians' socioeconomic condition and broadening the nation's economic base. However, the long-term viability of Nigerian tourism and the factors that contributed to its development remain uncertain. It is observed that a tourism destination's level, use, or lack of facilities and technology has a major influence on tourists' satisfaction and the quality of their trip experience (Smith, 1994). Furthermore, infrastructure is critical to a tourist's overall impression and

experience of a place (Crouch & Ritchie, 2000). A significant number of Nigerian tourism specialists concur that the industry has the potential to both increase foreign exchange profits and lessen the upsurge of foreign exchange outlets.

More recent studies such as Crouch and Ritchie (2019) and Goh et al. (2020) opined that destination infrastructure, including transport networks, ICT connectivity, and hospitality services, remains fundamental to tourists' overall experience and destination image. Likewise, Li and Jiao (2021) found that smart tourism infrastructure not only improves convenience but also enhances emotional and cognitive aspects of a visitor's experience. Although existing literature highlights the general importance of infrastructure and technology in tourism experiences globally, there is a lack of recent empirical studies focusing on the Nigerian setting that investigate how specific technological innovations and infrastructure improvements affect visitor satisfaction and foreign exchange generation. This study suggests the need for updated research that quantitatively assesses the impact of advanced technological facilities on tourist happiness and economic outcomes in emerging tourism markets such as Nigeria.

Nigeria has a lot of potential for tourism because of the country's endowments with multiple tourism resources, including vegetation, mountains, wildlife, waterfalls, valleys, and beaches. Nigeria's weather, vegetation, and environment make it a unique and varied travel destination. Regardless of favourable weather and surroundings, the primary factor influencing tourism demand in every economy is the number of tourist attractions it can offer. Nigeria is abundantly endowed in this area, with the nation's flora ranging from the thick mangrove swamps in the south and sparse shrubs in the north. Nigeria's tourist attractions are dispersed across the country's six geographical zones and include springs, beaches, cliffs, waterfalls, valleys, lakes, temples, cultural events, shrines, parks, game reserves, gardens, and zoos (Bankole, 2002).

In Nigeria, a nation with a diversified culture and ethnic groups and an economy centred mostly on mining and agriculture, tourism is mostly concentrated on natural geographical locations, including waterfalls, mountains, valleys, rainforests, fishing festivals, and the savannah. The following are some of Nigeria's tourist destinations: Argungu Fishing Festival, Yankari Games Reserve, Olumo Rock, Mambilla Plateau, Durbar Festival, Zuma Rock, Cross-River National Park, Obudu Cattle Ranch, Gashaka-Gumti National Park, Aso Rock, Irin Ijesha Waterfalls, and Gurara Falls. Afi Mountain Wildlife Sanctuary, Okomu National Park, Millenium Park, Chad Basin National Park, Silicon Hill, Oguta Lake Holiday Complex, Idanre Hills, Kajuru Castle, Tawhum Waterfalls, IITA Forest Ibadan, Wikki Warm Springs, Azumini Blue River Rose, and Nok Village are a few more.

Relationship between Tourism and Environment

Tourism is one industry that directly contributes to the growth of the global economy. It can be considered one of the most significant and potent constituents of the economy of a nation. It deploys human capital and provides various useful services (Collins, 1999; UN Tourism, 2023). The environment encompasses nature and its various elements, including geology, hydrography, climate, terrain, animals, and flora. For humans, the environment is where they live and grow, executing various activities and exerting their influence in different ways. Holden (2019) states that the environment is connected to the concept of surroundings because it reflects the context in which an individual lives and society exists within this space for a certain period. It encompasses natural systems that include flora,

fauna, water, soil, and more, and it relates to the perceived surroundings. The environment ensures a habitat for humans and all biodiversity, fostering a sense of belonging.

For psychological health, it is crucial to have access to natural outdoor settings in their unaltered state (Godlee & Walker, 1991). Destinations with poor environmental quality are offensive from a conceptual and visual standpoint. On the other hand, ecotourism sites with high environmental quality provide visitors a set of positive meanings, beliefs, symbols, values, and sentiments. These authors refer to this concept as destination attachment, which is a feeling of unity or belonging with the environment. Equally, contemporary studies highlight that environmental quality shapes the tourists' emotional responses, satisfaction, and revisit intentions, especially in nature-based and ecotourism destinations (Ramkissoon et al., 2013; Prayag & Ryan, 2012). During every outdoor tourism activity, the interaction of human experience, knowledge, expectations, and sociocultural context with environmental elements leads to outcomes that impact both the environment and humans (Pitt & Zube, 1987). Unlike earlier works that largely focused on visual aesthetics and general perceptions, further studies adopt a more holistic perspective, emphasising the interaction between environmental conditions, visitors' socio-cultural backgrounds, and psychological processes in forming place attachment and well-being outcomes (Kim & Thapa, 2018; Lee et al., 2012). Any tourism activity must therefore take into account the aesthetic attributes of landscapes that increase the allure of the destination areas, such as moderate depth and complexity, a moderately level ground surface, occasionally deflected vistas, and mystery elements that do not pose a threat, etc. (Zube et al., 1975; Schroeder & Daniel, 2020).

Consequently, tourism grows on the basis of the natural environment, which serves as both the foundation and the key component of tourist activities. Tourism is a complex activity that takes place in and through the environment (Neacsu et al., 2011). In a similar vein, Sunlu (2003) emphasised how crucial environmental quality, whether fully natural or artificial, is for the growth of tourism. Therefore, tourism and the environment develop a complicated relationship, with tourism having both beneficial and detrimental effects on the environment. Furthermore, contemporary studies demonstrate that while high environmental quality enhances destination competitiveness, visitor satisfaction, and sustainable tourism outcomes, tourism activities can simultaneously exert significant pressure on ecological systems if not properly managed (Buckley, 2012; Hall & Page, 2014; Gössling et al., 2015; Sharpley, 2020). Therefore, there is a need for context-specific research that empirically examines the interaction between environmental quality and tourism experiences to inform sustainable tourism planning and environmental management strategies.

Environmental quality refers to the quality of the natural features of tourism locations that are subject to human influence. These attributes include biodiversity, clean air and water, diverse hydrological structures that maintain their natural character, and natural landscapes, some of which may be influenced by outside factors. In summary, the quality of the environment is a crucial component of the quality of tourist attractions when analysed from the standpoint of visitor demand (Mihalic, 2000).

Maintaining a high standard of environmental quality is crucial to the relationship between tourism and the environment because changes in the environment's structure directly affect how competitive tourist destinations are (Commission of the European Communities, 1994). In his study of the relationship between tourism and the environment, Budowski (2009) identified three interrelated factors between the proponents of environmental preservation and those who advocate for ongoing tourism development which are as follows:

- a. When tourism has a significant impact on the environment and its derived components, it can lead to conflicts between environmental conservation and tourism activities. Excessive tourism can seriously harm the ecosystem, prompting the implementation of various bans or limitations;
- b. The interaction between tourism and the environment can be expressed through cohabitation. Each component's interest in the development of the others fosters their coexistence. Typically, this element is rarely static because tourism expansion causes environmental change. Considering the environmental impact of tourism, their relationship may appear in a favourable way, represented by a symbiosis, or in a negative way, causing a state of conflict between the environment and the tourist activity;
- c. The goal of the mutually beneficial relationship between tourism and environmental preservation is for each to gain a specific benefit. People's concern for environmental preservation and protection tends to contribute to the preservation of natural resources in their primary state and/or to the improvement of the quality of the environment, whereas tourism marketing and development aims to achieve a financial benefit. As a result, the mutually beneficial relationship between tourism and the environment may benefit society overall and raise living standards.

The analysis of the relationship between tourism and the environment revealed a reciprocal influence. This phenomenon can be explained by the strong relationship between the growth of tourism and the environment (Styles et al., 2013). The primary manifestation of this reciprocal relationship is manifested in two principal ways, according to Nistoreanu (2008), is that the environment offers all of its resources for tourism, and tourism's actions have either beneficial or detrimental effects on the natural environment and its constituent parts.

In this intricate interaction between the environment and tourism, tourists are becoming more interested in ecotourism. According to Hawkins and Lamoureux (2001), the growing number of tourists visiting natural tourist destinations worldwide is another reason to keep enhancing the environmental conditions for tourism development. In this context, the majority of tourist destinations with abundant natural potential typically use ecotourism to create these areas of interest. States worldwide have been compelled by the rapid growth of tourism to focus more on protecting and enhancing the quality of the environment to ensure the sustainability of tourism development.

Environmental Characteristics as Indicators of Environmental Quality of Tourism Destination

Culture

Ritchie and Crouch (2010) have described culture as a core resource. Long-term prosperity depends on a destination's cultural history, which also contributes to the locals' feeling of place and civic pride (Chu and Uebegang, 2002). People are more inclined to let visitors into their houses when they are more proud of their hometown. Travellers want to see and experience other cultures. Travelling allows tourists to experience life from other people's perspectives and perceive things as natives would and ignore their troubles and anxieties. A destination has a competitive edge simply by virtue of its distinctive culture. Festivals, art, architecture, and food can all be influenced by culture. For example, religious beliefs influence culinary practices in India, where the cultural significance of cows has contributed to dietary patterns that limit the consumption of beef in many communities. Similarly, historical events and political changes, such as the rise of the Habsburg influence in Europe, have

shaped architectural styles and cultural landscapes. These examples demonstrate how cultural values and historical experiences contribute to the uniqueness of tourism destinations.

Demographics

Tourists' decision-making process may be influenced by demographics such as crime rate, ethnicity, religion, and literacy rate. Comparing a destination with a high crime index and low literacy rate to one with both, the former is probably less competitive. According to Ritchie and Crouch (2010), demographics are a macroenvironmental influence. Additionally, targeting particular visitor segments for various destinations is becoming increasingly crucial. For instance, although older tourists are more interested in leisure, many young tourists can be classified as explorers. McKercher et al. (2006) argue that tourists have diverse motivations for visiting destinations, and these differences influence how they interact with and experience tourism environments.

Infrastructure

Infrastructure has a significant impact on a tourism destination's environmental quality. Ferries, highways, bus services, railroads, and airports are essential to transport tourists to and from their destinations (Ritchie and Crouch, 2011). Nations with advanced infrastructure offer better tourist destinations, as accessibility is enhanced for travellers. Well-developed highways, railroads, seaports, airports, and waterways enable convenient travel. As the number of tourism locations increases, the infrastructure should also improve. A location with potential will attract more foreign direct investments from businesses, which can consequently enhance the destination's infrastructure as a whole.

MATERIALS AND METHODS

Study Area

Erin-Ijesha Waterfalls in southwest Nigeria is the area under study (Figure 1). Erin-Odo, Oriade Local Government Area, Osun State, is home to Erin-Ijesha Waterfalls, sometimes called Olumirin Waterfalls (Figure 2). It is not only a breathtaking sight but also one of the world's greatest wonders. The waterfall is situated between latitudes 7°30' and 8°45' north and longitudes 4°31' and 5°00' east. Located a few kilometres east of the Ilesa-Akure Road, Erin Garden is a dense woodland that is home to the Erin-Ijesha Waterfall. The waterfall's custodian claims that it was established in 1140 AD, following the Ife people's relocation to Erin-Ijesha, by a woman named Akinla, who was Oduduwa's granddaughter (Tourism Magazine, 2009). The tropical belt includes Erin-Ijesha, which experiences hot, dry, and warm, humid seasons. The average annual rainfall is 1500 cm, and the temperature of the atmosphere is between 30°C and 40°C (Tourism Magazine, 2009; Adebayo & Ojo, 2023).

Figure 1

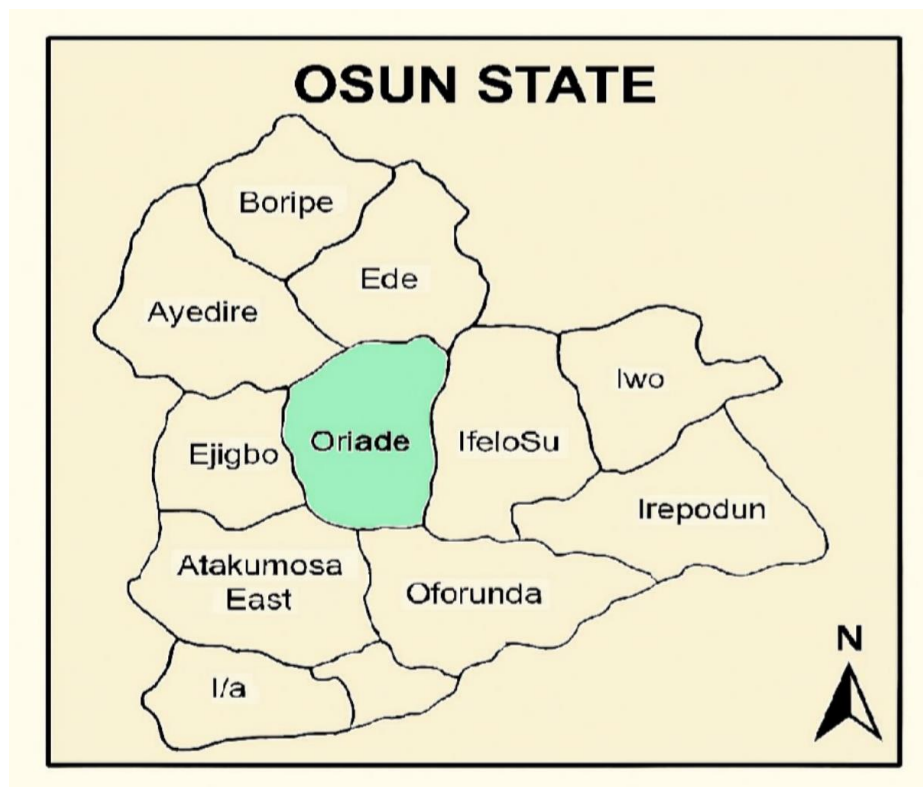
The Map of Nigeria showing Osun State



Source : National Aviation Research and Development Agency (NASRDA), 2024.

Figure 2

Map of Osun State showing the Oriade Local Government Area where Olumirin Waterfall is located.



Source : National Aviation Research and Development Agency (NASRDA), 2024.

Methodology

The study adopted a quantitative research design (Creswell, 2018) and administered a structured questionnaire survey to examine the condition of environmental amenities in Erin-Ijesha Waterfalls. Quantitative design allows for descriptive and inferential analysis (Flynn, 2021). Descriptive analysis such as frequency, tables, percentage and cross-tabulation were applied to determine the variation in the condition of environmental amenities in the area under study.

Data Collection

The study employed primary and secondary sources of data, with field observation and questionnaire administration providing the primary data. The researchers distributed the questionnaire to both visitors and employees at the Erin-Ijesha waterfalls. The questionnaire sought information on the availability of amenities and services and the condition of the available environmental amenities and services at the Erin-Ijesha waterfalls. Secondary data involves obtaining useful and additional information from relevant textbooks, newspapers, journals, articles, magazines, internet. The National Space Research and Development Agency (NASDRA, 2024) provided additional secondary data, including position maps.

The study population comprised the tourists available at Erin-Ijesha Waterfalls at the time the questionnaire was administered. Using non-probability sampling techniques, interviews were conducted for the workers, while both simple random and purposive sampling methods were adopted in selecting tourists based on their age and sex. The target individuals for questionnaire administration were those aged 18 years and above. Therefore, the 35 respondents selected from the tourists and workers constituted the sample size for the study. This included 30 tourists and 5 workers to whom questionnaires were administered in the study area. The purposive sampling method was also used to obtain detailed information on the tourism activities. To acquire the needed information on the state of the amenities and services in the study area, five copies of the questionnaire were administered to the workers at the Erin-Ijesha Waterfalls. The questionnaire addressed the condition of available environmental characteristics in the study area, while the remaining 30 copies were administered to tourists on the availability of environmental amenities in the area being studied. The information collected included electricity supply, accessibility, local transport, recreation facilities, drainage system, and sports facilities, among others.

The rationale for using 35 respondents as the sample size for the study was to adequately represent key users and management stakeholders influencing environmental quality and to generate robust site-specific inferences rather than statistical generalisation. The data collected were analysed using descriptive methods such as frequency, tables, percentages, and cross-tabulation to determine variations.

Furthermore, the analysis of responses was conducted using Relative Condition Index (RCI) and the mean condition of the environmental amenities index was obtained. The RCI was used to assign a weighted value of 5, 4, 3, 2, and 1, respectively to rate the responses on the condition of each amenity/service: Very bad = 1, Bad = 2, Fair = 3, Good = 4, and Very good = 5. RCI measures the relative performance of each amenity in relation to the best and worst observed conditions. It is expressed as a percentage, and it ranges from 0% up to 100%. A higher value indicates better conditions of amenities and services. The mathematical expression of the weighted value assigned to each rating is presented as follows:

$$RCI_i = \frac{X_i - X_{min}}{X_{max} - X_{min}} \times 100$$

Where,

RCI_i = Relative Condition Index of amenity I

X_i = Mean score of amenity I ;

X_{min} = Minimum mean score among all amenities;

X_{max} = Maximum mean score among all amenities.

Overall,

$$RCI = \frac{\bar{X} - X_{min}}{X_{max} - X_{min}} \times 100$$

Where,

RCI_i = Relative Condition Index of amenity

$\bar{X}$ = Overall (grand) mean score of all amenities;

X_{min} = Minimum mean score;

X_{max} = Maximum mean score.

The data collected was analysed using descriptive analysis such as frequency, tables, percentage and cross-tabulation to determine the variation.

RESULT AND DISCUSSION

Assessment of Environmental Amenities and Services based on Availability

The survey assessed the availability and condition of environmental amenities and services at Erin Ijesha Waterfalls, as shown in Table 1. The findings from Table 1 reveal uneven availability of environmental amenities and services at Erin-Ijesha Waterfalls, a pattern consistent with earlier studies on ecotourism destinations in developing countries. The widespread lack of electricity supply (77.1%) and health facilities (71.4%) aligns with Ajake (2012) and Ashikodi (2010), who reported that inadequate basic infrastructure remains a major constraint to tourism development in Nigeria. Although accessibility was rated high by most respondents (68.8%), the uneven access to specific facilities supports observations by Crouch and Ritchie (2000) that physical access alone does not guarantee functional accessibility or tourist satisfaction. The high availability of local transport (85.7%) and recreational facilities (77.1%) corroborates findings by Musa et al. (2018), who noted that local mobility and leisure amenities enhance visitor experience at waterfall destinations. The positive hospitality of local residents and sport facilities (71.4%) is consistent with Milman and Pizam (2020), who emphasised that host-guest interaction is as a key determinant of tourist satisfaction.

However, the limited provision of nightlife opportunities, traffic control systems, and security posts reflects concerns raised by Sharpley (2020) and Mihalic (2000) regarding inadequate destination management and safety infrastructure in emerging tourism areas. Similarly, insufficient parking facilities and the absence of visible traffic control measures contradict sustainable destination standards highlighted by Ritchie and Crouch (2010). While relaxation centres and accommodation facilities were relatively available, their uneven distribution supports earlier assertions by Inskeep (2017) that the partial provision of amenities often results in moderate rather than optimal environmental quality. Overall, the findings confirm that although Erin-Ijesha Waterfall possesses some functional amenities,

critical infrastructure deficiencies continue to limit its environmental quality and competitiveness, consistent with broader empirical evidence on tourism destinations in Nigeria and similar contexts.

Table 1

Environmental Amenities / Services Availability

Amenity	Available (Freq)	Not Available (Freq)	Total (Freq)	Available (%)	Not Available (%)
Electricity supply	8	27	35	22.9%	77.1%
Accessibility	24	11	35	68.6%	31.4%
Local Transport	30	5	35	85.7%	14.3%
Recreational Facilities	27	8	35	77.1%	22.9%
Drainage System	25	10	35	71.4%	28.6%
Hospitality of Local Residents	25	10	35	71.4%	28.6%
Sport Facilities	25	10	35	71.4%	28.6%
Shopping and Purchasing Outlets	26	9	35	74.3%	25.7%
Hospital/Health Centre	25	10	35	71.4%	28.6%
Night Life Opportunity	7	28	35	20.0%	80.0%
Parking Lots	20	15	35	57.1%	42.9%
Security Post	19	16	35	54.3%	45.7%
Relaxation Centre	29	6	35	82.9%	17.1%
Accommodation Facilities	21	14	35	60.0%	40.0%

Condition of Environmental Amenities/Services at Erin Ijesha Water Falls

Table 2 presents the ratings on the condition of environmental amenities/services in Erin Ijesa Waterfalls. The total number of respondents were 35. The ratings on the condition of environmental amenities/services were measured through the Relative Condition Index (RCI). Mean indices were used to decide the condition of the environmental amenities index. Residents' opinions on these variables were expressed on a five-point Likert scale and a list of environmental amenities used to enhance environmental quality in the ecotourism site was provided to residents.

The analysis of the responses was conducted using the Relative Condition Index (RCI). The overall mean condition index of the environmental amenities and services was calculated as 3.326. The grand mean of all amenities was used to determine the overall condition of the environmental amenities and services as follows:

Overall mean ($\bar{X}$) = 3.326

Minimum mean (X_{min}) = 1.886

Maximum mean (X_{max}) = 4.314

$$RCI = \frac{3.326 - 1.886}{4.314 - 1.886} \times 100$$

$$\begin{aligned}
 &4.314 - 1.886 \\
 &= \frac{1.440}{2.428} \times 100 \\
 &= 59.3\%
 \end{aligned}$$

Table 2

Environmental Amenities and Services at Erin-Ijesha Waterfall.

Environmental Amenities / Services	Number of Respondents	Mean	Deviation from Mean (x-x)	Relative Condition Index RCI
Electricity supply	35	1.886	-1.44	0
Accessibility	35	3.228	-0.098	52.2
Local transport	35	3.457	0.131	64.7
Recreational facilities	35	4.2	0.826	95.3
Drainage system	35	3.685	0.359	75.6
Hospitality of local residents	35	4.314	0.988	100
Sport facilities	35	3.371	0.045	61.5
Shopping and purchasing outlet	35	3.371	0.045	61.5
Hospital/Health Centre	35	2.657	-0.669	31.1
Parking lot	35	3.2	-0.126	53.3
Traffic control light	35	2.457	-0.869	24
Security/police post	35	3.171	-0.155	52.2
Relaxation centres	35	3.857	0.531	80.6
Accommodation	35	3.714	0.388	72.4
RCI		3.326		

Summary of Findings

Findings reveal that the amenities/services in good condition are hospitality of local residents (DM=0.988), recreational facilities (DM=0.826), relaxation centre (DM=0.531), drainage system (0.359), and accommodation facilities (DM=0.388). Other amenities with negative deviation from the mean indicate poor conditions. Such amenities include accessibility, electricity supply, health centre, traffic control light and a security post. The findings indicate that the environmental amenities and services in the study area are in a fair to moderately satisfactory condition. This suggests that while some amenities such as recreational facilities, hospitality of local residents, relaxation centres and accommodation are relatively well developed, critical infrastructure, including security services, traffic control, electricity supply, accessibility and health facilities are inadequately provided. Thus, the overall environmental quality of the destination falls below acceptable standards required for internationally competitive ecotourism and sustainable development. The mean Relative Condition Index (RCI) of 3.326 obtained in this study suggests that the condition of environmental amenities/services at the tourism destination is moderate, indicating partial adequacy rather than optimal quality. This result

aligns with earlier studies by Oyedele (2006) and Ibrahim (2010) which observed that while some basic tourism facilities are present in Nigerian tourist destinations, their quality and functionality often fall short of the standards required to significantly enhance environmental quality and tourist satisfaction. Equally, the mean (RCI) of this study corroborates the study by Srinivaso (2013), which noted that tourism infrastructure in developing economies is often focused on accessibility and basic services, with limited attention given to maintenance and supporting amenities, resulting in moderate performance levels.

CONCLUSION

The study assessed environmental quality of Erin Ijesha Waterfalls and examined the management of the site based on the results of the assessment. The findings identified several problems in the study area. It was revealed that the Erin Ijesha waterfalls is managed by the Ori-Ade community, resulting in a localised management approach that does not fully meet international ecotourism standards. Interviews carried out on the workers at the tourism destination revealed that the community pays limited attention to the environmental conditions and the provision of necessary amenities due to the financial constraints. Considering these facts, it can be concluded that the environmental quality of Erin Ijesha Waterfalls is generally fair, and amenities with very high levels of importance such as recreational facilities, accommodation, relaxation centres, sport facilities, and purchasing outlets were not adequately provided or effectively managed.

RECOMMENDATIONS

1. **Adequate Provision of Amenities and Services:** The need for the provision of amenities cannot be overemphasised. A country's economy can improve significantly when amenities are provided adequately. This will in turn improve tourist satisfaction. Amenities like electricity, health facilities, accommodation, sports facilities, and open space will contribute positively to the economy of the host community.
2. **Maintenance of Existing Environmental Characteristics:** Regular maintenance will sustain the lifespan of existing facilities. When maintenance is provided late or not provided at all, it will incur unnecessary cost and reduce the economic lifespan of amenities. When facilities are maintained, tourists get to enjoy their benefits, and the responsible institution (which most residents expect to be the government) can reduce long-term expenditure on repairs and replacements.
3. **Public-Private Participation:** Public-Private sector collaboration will serve as an effective means to improving environmental quality for the tourism destination. While the government works on improving the regulatory environment and initiating infrastructure plans, private investors can contribute through financing and implementing the projects. Due to the profit-making nature of private investors, amenities and services will be delivered efficiently.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

ACKNOWLEDGEMENT

We appreciate the NCMM's permission to utilise Erin Ijesa Waterfalls as a case study. We also extend our gratitude to the employees who volunteered as tour guides and respondents.

AUTHOR CONTRIBUTION STATEMENT

Ojo D. B. and Temitope Ruth Adeyemi conceptualized the study and designed the methodology. Faniran G. B. conducted the fieldwork, collected the data and performed the statistical analysis. Afolabi H., Badiora A. I. and Tams Alalibo I. R. wrote the first draft of the manuscript. All authors contributed to manuscript revision, read, and approved the submitted version.

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