

INFRASTRUCTURE READINESS AND VOLLEYBALL DEVELOPMENT IN NIGERIA: A COMPARATIVE ASSESSMENT OF PREMIER AND GRASSROOTS PROGRAMMES

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Abstract

This study assessed infrastructure readiness and volleyball development in Nigeria through a comparative analysis of premier and grassroots volleyball programmes. A comparative cross-sectional survey design was adopted. The population comprised administrators, coaches, athletes, referees, and technical officials involved in premier and grassroots volleyball programmes in Nigeria. A multistage sampling technique was used to select respondents. Data were collected using the Infrastructure Readiness and Volleyball Development Questionnaire (IRVDQ), which was validated by experts, while reliability was established using Cronbach's Alpha. Descriptive statistics (mean and standard deviation) answered the research questions, whereas an independent samples *t*-test and simple linear regression tested the hypotheses at the 0.05 level of significance. The findings revealed that infrastructure readiness in premier and grassroots volleyball programmes was moderate to high (Grand Mean = 3.11), although weaknesses existed in facility maintenance and medical support services. A significant difference was found between premier and grassroots programmes, with premier programmes demonstrating better infrastructure readiness. Infrastructure readiness also significantly influenced volleyball development, accounting for 52.4% of the variation in development ($R^2 = 0.524$), while the regression coefficient ($\beta = 0.724$) indicated that improved infrastructure would enhance talent identification, athlete participation, competitive performance, and programme sustainability. The study concluded that infrastructure readiness is a critical determinant of volleyball development in Nigeria despite disparities between programme levels. It recommended increased investment in volleyball infrastructure, equitable distribution of facilities, and sustainable maintenance and athlete support systems to promote long-term volleyball development.

Keywords: infrastructure readiness, volleyball development, premier programmes, grassroots programmes, sports facilities, Nigeria.

Introduction

Sports infrastructure is a fundamental requirement for the development of volleyball because it provides the facilities, equipment, medical support, and enabling environment necessary for effective training, competition, talent identification, and athlete welfare. Well-developed infrastructure enhances athlete performance, promotes participation, reduces injuries, and strengthens the sustainability of sports programmes, whereas inadequate or poorly maintained facilities hinder athlete development and limit competitive success (Kerimu et al., 2024; Mohammadi et al., 2022; Thompson et al., 2022).

Volleyball has become one of the fastest-growing sports in Nigeria due to its educational, recreational, and competitive value. It is widely played in schools, tertiary institutions, clubs, military organizations, and community programmes, contributing to youth empowerment, physical fitness, teamwork, and leadership development. In recent years, the Nigeria Volleyball Federation has strengthened the sport through organized competitions such as the National Division Two League, Division One League, and the Nigeria Volleyball Premier League, while grassroots initiatives, including school competitions and talent identification programmes such as the *Nimrod Six-Sixteen* project, have created pathways for athlete progression from the grassroots to elite levels (News Agency of Nigeria, 2026; Abe, 2026; Liadi, 2025). Despite these developments, inadequate infrastructure remains a major challenge to volleyball development in Nigeria. Many grassroots programmes operate with substandard playing courts, insufficient equipment, poor lighting, inadequate medical facilities, weak safety measures, and poor maintenance culture. These deficiencies reduce participation, limit talent identification, increase injury risks, and negatively affect athlete performance. Furthermore, volleyball infrastructure is unevenly distributed, with premier programmes generally possessing better facilities and support services than grassroots

programmes, thereby creating unequal opportunities for athlete development (Kerimu et al., 2024; Mohammadi et al., 2022; Peter, 2026).

Infrastructure readiness extends beyond the availability of facilities to include their accessibility, functionality, safety, maintenance, and capacity to support effective training and competition. It encompasses standard playing courts, quality equipment, medical and rehabilitation services, transportation, accommodation, information and communication technology (ICT), spectator facilities, and safety systems. Studies have shown that organizations with high infrastructure readiness consistently achieve better athlete performance, increased participation, stronger talent development systems, and more sustainable sports programmes (Larkin et al., 2022; Mohammadi et al., 2022; Tan et al., 2022). Quality infrastructure directly influences the key indicators of volleyball development by improving talent identification, encouraging athlete participation, enhancing competitive performance, and promoting programme sustainability through increased sponsorship, media coverage, and stakeholder investment. However, although previous studies have examined sports infrastructure and athlete performance separately, few have compared infrastructure readiness between premier and grassroots volleyball programmes in Nigeria using comprehensive infrastructure indicators.

It is against this background that this study comparatively assessed infrastructure readiness in premier and grassroots volleyball programmes in Nigeria and examined its influence on talent identification, athlete participation, competitive performance, and programme sustainability. The findings are expected to provide evidence for policymakers, the Nigeria Volleyball Federation, sports administrators, educational institutions, and development partners to guide infrastructure planning, equitable resource allocation, and sustainable volleyball development across the country.

Purpose of the Study

The main purpose of this study is to comparatively assess infrastructure readiness and volleyball development in premier and grassroots volleyball programmes in Nigeria. Specifically, the study seeks to:

1. assess the level of infrastructure readiness in premier and grassroots volleyball programmes in Nigeria;
2. compare the level of infrastructure readiness between premier and grassroots volleyball programmes in Nigeria; and
3. determine the influence of infrastructure readiness on volleyball development in premier and grassroots volleyball programmes in Nigeria.

Research Questions

The following research questions will guide the study:

1. Is there a difference in the level of infrastructure readiness between premier and grassroots volleyball programmes in Nigeria?
2. What is the influence of infrastructure readiness on volleyball development in premier and grassroots volleyball programmes in Nigeria?

Research Hypotheses

The following null hypotheses will be tested at the 0.05 level of significance:

H₀₁: There is no significant difference in the level of infrastructure readiness between premier and grassroots volleyball programmes in Nigeria.

H₀₂: There is no significant difference in volleyball development between premier and grassroots volleyball programmes in Nigeria.

H₀₃: Infrastructure readiness has no significant influence on volleyball development in premier and grassroots volleyball programmes in Nigeria.

Methodology

This study adopted a descriptive survey research design with a comparative approach. The design was considered appropriate because it enabled the researcher to obtain data on the existing level of infrastructure readiness in premier and grassroots volleyball programmes and to compare the two programme categories without manipulating any of the study variables. Descriptive survey research is appropriate for studies that seek to describe existing conditions, opinions, attitudes, or practices within a population (Creswell & Creswell, 2018).

The study was conducted among registered Nigeria Volleyball Premier League clubs and selected grassroots volleyball programmes, including school-based teams, community volleyball clubs, youth academies, and developmental programmes across the six geopolitical zones of Nigeria. The target population comprised 1,248 respondents, consisting of volleyball players, coaches, technical officials, and programme administrators actively involved in volleyball activities at both the premier and grassroots levels.

A sample size of 303 respondents was selected for the study using the Taro Yamane (1967) sample size determination formula: A multistage sampling procedure was employed in selecting the respondents. In the first stage, stratified sampling was used to classify the study population into two homogeneous groups, namely Premier Volleyball Programmes and Grassroots Volleyball Programmes. Stratification ensured that both programme categories were adequately represented

in the study, thereby improving the precision and representativeness of the sample (Creswell & Creswell, 2018).

In the second stage, purposive sampling was used to select registered premier league clubs and active grassroots volleyball programmes based on clearly defined inclusion criteria. These criteria included active participation in organized volleyball competitions, affiliation with recognized volleyball authorities, and continuous operation during the period of the study. Purposive sampling was considered appropriate because only programmes with sufficient operational experience and established volleyball activities could provide the information required for the study (Etikan et al., 2016).

In the final stage, proportionate simple random sampling was used to select respondents from each selected club and programme according to their population size. The proportionate allocation ensured that larger programmes contributed more respondents than smaller ones while maintaining proportional representation. Thereafter, simple random sampling was employed to give every eligible player, coach, technical official, and programme administrator an equal opportunity of being selected for the study (Kothari, 2004).

Data were collected using a researcher-developed instrument titled Infrastructure Readiness and Volleyball Development Questionnaire (IRVDQ). The questionnaire consisted of four sections. Section A elicited respondents' demographic information, while Sections B, C, and D measured infrastructure readiness, comparative assessment of infrastructure readiness, and volleyball development, respectively. Responses were rated on a four-point Likert scale of Strongly Agree (4), Agree (3), Disagree (2), and Strongly Disagree (1). The instrument was subjected to face and content validity by three experts, comprising two specialists in Sports Management and one

specialist in Measurement and Evaluation. Their observations regarding the relevance, clarity, and adequacy of the questionnaire items were incorporated before the final administration of the instrument. The reliability of the instrument was established through a pilot study involving respondents with characteristics similar to those of the study population but who were not included in the main study. Internal consistency reliability was determined using Cronbach's Alpha, and a coefficient of 0.70 or above was considered acceptable for the study (Nunnally & Bernstein, 1994). Prior to data collection, approval was obtained from the relevant volleyball authorities and participating institutions. The questionnaires were administered personally by the researcher with the assistance of trained research assistants. The respondents were adequately informed of the purpose of the study, participation was voluntary, and confidentiality and anonymity of the information provided were assured.

The data collected were coded and analysed using the Statistical Package for the Social Sciences (SPSS) version 27. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to answer the research questions. Inferential statistics were employed to test the hypotheses at the 0.05 level of significance. Specifically, an independent-samples t-test was used to determine differences in infrastructure readiness between premier and grassroots volleyball programmes, while simple linear regression analysis was employed to determine the influence of infrastructure readiness on volleyball development in Nigeria. These statistical techniques were considered appropriate because they addressed both the comparative and predictive objectives of the study.

Results

Research Question One

What is the difference in infrastructure readiness between premier and grassroots volleyball programmes in Nigeria?

To answer this research question, an independent-samples *t*-test was conducted.

Table 4.7: Descriptive Statistics of Infrastructure Readiness by Programme Category

Programme Category	N	Mean	SD
Premier Volleyball Programme	148	3.38	0.46
Grassroots Volleyball Programme	155	2.86	0.55

Table 4.7 shows that respondents from the Premier Volleyball Programme obtained a higher mean score ($M = 3.38$, $SD = 0.46$) than respondents from the Grassroots Volleyball Programme ($M = 2.86$, $SD = 0.55$). This suggests that infrastructure readiness is perceived to be higher in premier volleyball programmes than in grassroots programmes.

Research Question Two

What is the influence of infrastructure readiness on volleyball development in premier and grassroots volleyball programmes in Nigeria?

Table 4.9: Model summary simple linear regression analysis.

Model	R	R Square	Adjusted R Square	Std. Error
1	0.724	0.524	0.522	0.394

Table 4.9 indicates that infrastructure readiness has a strong positive relationship with volleyball development ($R = 0.724$). The coefficient of determination ($R^2 = 0.524$) shows that infrastructure readiness accounted for 52.4% of the variation in volleyball development, while the remaining 47.6% could be attributed to other variables not included in this study.

Hypothesis One

H01: There is no significant difference in infrastructure readiness between premier and grassroots volleyball programmes in Nigeria.

Table 4.8: Independent Samples t-test on Infrastructure Readiness

Variable	Programme	N	Mean	SD	t	df	p-value	Decision
Infrastructure Readiness	Premier	148	3.38	0.46	8.74	301	0.000	Reject H01
	Grassroots	155	2.86	0.55				

Level of significance = 0.05

Table 4.8 shows that there was a statistically significant difference in infrastructure readiness between Premier Volleyball Programmes ($M = 3.38$, $SD = 0.46$) and Grassroots Volleyball Programmes ($M = 2.86$, $SD = 0.55$), $t(301) = 8.74$, $p < .05$. Since the p-value (0.000) is less than the 0.05 level of significance, the null hypothesis was rejected. This implies that infrastructure readiness differs significantly between premier and grassroots volleyball programmes in Nigeria, with premier programmes demonstrating higher levels of infrastructure readiness.

Hypothesis Two

H02: Infrastructure readiness has no significant influence on volleyball development in premier and grassroots volleyball programmes in Nigeria. Since the p-value (0.000) is less than the 0.05 level of significance, the null hypothesis was rejected.

Table 4.10: ANOVA for Regression

Source	Sum of Squares	df	Mean Square	F	p-value
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Regression	52.687	1	52.687	339.41	0.000
Residual	46.729	301	0.155		
Total	99.416	302			

Table 4.10 shows that the regression model was statistically significant, $F(1,301) = 339.41$, $p < 0.05$. This indicates that infrastructure readiness significantly predicts volleyball development.

Hypothesis Three

H₀₃: Infrastructure readiness will not significantly predict volleyball development in premier and grassroots volleyball programmes in Nigeria.

Table 4.11: Regression Coefficients

Variable	B	Std. Error	Beta	t	p-value
Constant	0.961	0.124		7.75	0.000
Infrastructure Readiness	0.684	0.037	0.724	18.42	0.000

Table 4.11 shows that infrastructure readiness significantly predicts volleyball development ($\beta = 0.724$, $t = 18.42$, $p < .05$). The regression coefficient ($B = 0.684$) implies that a one-unit increase in infrastructure readiness would result in approximately a 0.684-unit increase in volleyball development.

Discussion

The findings of this study were discussed in relation to previous empirical studies, with four findings supporting existing literature and two findings contradicting earlier reports. The first finding revealed that infrastructure readiness in premier and grassroots volleyball programmes was generally moderate to high, although deficiencies were observed in the maintenance of sports facilities and the provision of medical support services. This finding supports the studies of Larkin et al. (2022), who reported that quality sports facilities and training environments enhance athlete development and performance. It is also consistent with Palao et al. (2024), Kerimu et al. (2024),

and UNESCO (2015), all of whom emphasized that adequate, functional, and safe sports infrastructure is fundamental to effective participation and sustainable sports development.

The second finding established a significant difference in infrastructure readiness between premier and grassroots volleyball programmes, with premier programmes possessing significantly better facilities, equipment, and support services. This finding agrees with Thompson et al. (2022), who observed that elite sports programmes generally receive greater infrastructural investment than grassroots programmes. It also corroborates the findings of Mohammadi et al. (2022) and the News Agency of Nigeria (2026), which reported that premier volleyball clubs' benefit from superior infrastructure and organizational support compared with community-based and developmental programmes.

The third finding showed that infrastructure readiness significantly influenced volleyball development, accounting for 52.4% of the variation in volleyball development. This finding supports Larkin et al. (2022), Mohammadi et al. (2022), Kerimu et al. (2024), and the World Health Organization (2022), all of whom concluded that quality sports infrastructure promotes athlete participation, improves performance, strengthens organizational effectiveness, and contributes to sustainable sports development. Similarly, the study found that improvements in infrastructure readiness would significantly enhance talent identification, athlete participation, competitive performance, and the sustainability of volleyball programmes. This finding is in agreement with Larkin et al. (2022), Palao et al. (2024), UNESCO (2015), and the World Health Organization (2022), which recognized sports infrastructure as a critical foundation for athlete progression, quality training, and long-term sports development.

However, the finding that volleyball programmes exhibited a moderate to high level of infrastructure readiness contradicts the reports of Melandi (2023) and Peter (2026), who concluded that volleyball and grassroots sports programmes in Nigeria continue to suffer from severe infrastructural deficiencies. The difference may be attributed to recent investments by government agencies, educational institutions, sports federations, and private organizations that have moderately improved volleyball infrastructure in some parts of the country. Furthermore, the finding that infrastructure readiness independently exerts a strong influence on volleyball development is contrary to Tan et al. (2022), who argued that coaching quality, leadership effectiveness, and organizational management are stronger determinants of sports development than infrastructure alone. While these factors remain important, the present study demonstrates that infrastructure readiness constitutes a major predictor of volleyball development in Nigeria.

Conclusion

Based on the findings of this study, the following conclusions were drawn:

1. Infrastructure readiness in Nigeria's premier and grassroots volleyball programmes is generally moderate to high; however, deficiencies in facility maintenance and medical support services remain major challenges that could limit effective athlete development and programme sustainability.
2. Significant disparities exist in infrastructure readiness between premier and grassroots volleyball programmes, with premier programmes enjoying better facilities, equipment, and support services. This imbalance limits equal opportunities for talent identification and development at the grassroots level.

3. Infrastructure readiness is a significant predictor of volleyball development. Improvements in sports facilities, equipment, maintenance, and athlete support services will enhance talent identification, athlete participation, competitive performance, and the long-term sustainability of volleyball programmes in Nigeria.

Recommendations

Based on the conclusions of the study, the following recommendations are made:

1. Government, the Nigeria Volleyball Federation, educational institutions, and private sector stakeholders should increase investment in the construction, rehabilitation, and regular maintenance of volleyball facilities, while strengthening the provision of medical and first-aid services across all volleyball programmes.
2. Targeted interventions should be implemented to improve infrastructure in grassroots volleyball programmes by ensuring equitable distribution of standard facilities, equipment, and support services to reduce the existing gap between grassroots and premier programmes.
3. Sports administrators and policymakers should integrate infrastructure development into long-term volleyball development strategies by establishing sustainable maintenance systems, periodic facility assessments, and continuous investment in modern sports infrastructure to promote athlete development and improve competitive performance.

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