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ANALYSIS OF HUMAN CAPITAL DEVELOPMENT AMONG NOMADS AND NON-NOMADS POPULATIONS IN ADAMAWA STATE, NIGERIA

ABSTRACT

This study examined the level of human capital development among nomadic and non-nomadic populations in Adamawa State, Nigeria. The study was undertaken to assess differences in access to education, healthcare, and skills acquisition between the two population groups. A quantitative cross-sectional survey design was adopted. The study covered nomadic and non-nomadic residents across 12 Local Government Areas of Adamawa State. Using Yamane's (1967) sample size determination formula, 800 respondents were selected, comprising 400 nomads and 400 non-nomads. A multistage sampling technique was employed, while data were collected through a structured questionnaire and analysed using descriptive statistics, including frequencies, percentages, means, and standard deviations. The findings revealed clear disparities in human capital development between the two groups. Non-nomadic respondents had higher levels of formal education. They consistently recorded higher mean scores in access to basic education (3.73), healthcare services (3.15), skills acquisition (3.33), employment opportunities through education and training (3.05), and the perceived contribution of human capital development to socio-economic progress (3.94). In contrast, nomadic respondents recorded lower mean scores across all indicators, reflecting limited access to essential human capital development opportunities. The study concludes that mobility, geographical isolation, and inadequate access to social services continue to constrain human capital development among nomadic populations. It recommends targeted interventions, including mobile education, improved healthcare delivery, and community-based vocational training, to reduce existing inequalities and promote inclusive and sustainable development in Adamawa State.

Keywords: Human capital development, nomadic population, non-nomadic population.

Introduction

Human capital development refers to improving people's knowledge, health and skills to enhance productivity, livelihoods and well-being. Human Capital Theory views education, health and training as investments that raise productive capacity and generate social and economic benefits (Becker, 1993; Schultz, 1961). Unequal access can create differences in productivity, employment, income and living standards. In Nigeria, access to education, healthcare and skills development remains uneven, especially among rural and disadvantaged populations.

The problem is more pronounced among nomads, whose livelihoods depend on mobility. Frequent movement can limit regular contact with schools, health facilities, and skills-acquisition centres, which are mainly established for settled communities. Recent empirical studies reflect the challenges created by mobility. Wulifan et al. (2022), in a review of nomadic pastoralists in low- and middle-income countries, found that distance, economic constraints, socio-cultural conditions, and weak health service delivery restrict access to reproductive and maternal healthcare. Nwokedi et al. (2023), studying 470 out-of-school nomadic children in Northern Nigeria, found that interactive radio and television instruction improved life-skills acquisition, with television producing stronger outcomes. These findings indicate that conventional services may not suit mobile populations and that alternatives can improve access. In Nigeria, inadequate resources, teacher shortages, insecurity, migration, and discontinuous educational services continue to limit nomadic education and skills accumulation.

The situation is particularly relevant in Adamawa State, where nomadic communities are geographically dispersed and coexist with settled populations. Recent evidence illustrates the difficulty of delivering essential services. A community-based tuberculosis intervention mapped 139 nomadic schools and 128 nomadic communities across 12 Local Government Areas, demonstrating their geographical spread and the need for adapted service-delivery approaches. More than 60% of respondents reported that no health facility was available in their communities, while community-based outreach improved access to health information and screening. The evidence indicates that geographical isolation and limited institutional reach remain barriers to human capital development. The problem is service continuity within mobile livelihoods.

The relationship between nomadism and human capital development follows a clear theoretical mechanism. Mobility and geographical dispersion can increase physical and institutional distance between nomadic households and fixed public services, reducing participation in education, healthcare utilisation and skills-acquisition programmes. Limited access can constrain knowledge, health and productive skills, affecting employment, productivity, income generation and socio-economic well-being. This mechanism aligns with Human Capital Theory, which links education, health, and training investment to productive capacity (Becker, 1993; Schultz, 1961), and with Sen's (1999) Capability Approach, which emphasises real opportunities to achieve valued outcomes. Thus, service availability alone does not guarantee effective access for nomadic populations, while arrangements favouring settled communities may sustain disparities.

Despite growing evidence of nomadic disadvantage, important gaps remain. Nigerian studies have mainly examined healthcare access, educational participation or specific skills-development interventions (Nwokedi et al., 2023; Wulifan et al., 2022), rather than treating education, healthcare and skills acquisition collectively as human capital dimensions. Many studies also examine nomads without directly comparing them with non-nomads in the same broader environment, making it difficult to separate nomadic circumstances from wider regional deprivation. Quantitative evidence from Adamawa State comparing both groups across multiple human capital dimensions remains limited. This study addresses the gap by comparing access to education, healthcare, skills, education-related employment opportunities, and the perceived socio-economic contribution of human capital, thereby supporting inclusive, context-specific policies.

Conceptual Literature

This section comprises conceptual reviews, theoretical review, and empirical literature reviews.

Concept of Human Capital Development

Human capital development refers to the accumulation of knowledge, education, health and skills that improve an individual's capacity to participate productively in economic and social activities. Human Capital Theory explains that education and training increase productive capabilities, while investment in health improves individuals' capacity to work, learn, and participate in economic activities (Becker, 1993; Schultz, 1961). However, the accumulation of human capital does not occur under identical conditions for all population groups. The opportunities available to acquire these capabilities depend partly on access to schools, health facilities, training institutions and other supporting infrastructure.

Components of Human Capital

Human capital comprises several closely linked components, primarily education, health, and skills. Education builds knowledge and cognitive ability, health supports physical strength and productivity, while skills determine how effectively individuals can participate in economic activities. These elements reinforce one another; poor health can limit school attendance and learning, while low education can restrict access to skilled employment and income opportunities. International development institutions such as the World Bank and the United Nations consistently emphasise the importance of investing in all three components in a balanced manner to achieve sustainable development outcomes (United Nations, 2015; World Bank, 2020).

Human Capital and Welfare Outcomes

The link between human capital and welfare is well established in the development literature. Higher levels of education and better health conditions tend to improve income levels, employment prospects, and household welfare. At the national level, countries with stronger human capital bases generally experience faster and more stable economic growth. At the household level, individuals with higher levels of education and better health are more likely to escape poverty and adapt to economic changes. However, access to these benefits is not evenly distributed, especially in rural and marginalised populations where infrastructure and services are limited (Todaro & Smith, 2020).

Nomadic and Non-Nomadic Populations

In many developing regions, including Adamawa State, human capital outcomes vary significantly between nomadic and non-nomadic populations. Nomadic groups, whose livelihoods depend on mobility and pastoral activities, often face difficulties accessing formal education and healthcare systems designed for settled communities. This results in lower literacy levels, reduced health coverage, and limited exposure to skills development opportunities. Non-nomadic populations, by contrast, benefit from more stable access to schools, hospitals, and government services. Studies have shown that these structural differences contribute to persistent inequalities in human development outcomes (Krätli & Dyer, 2009; Aderinoye et al., 2007).

Comparative Perspective and Policy Relevance

Understanding human capital development through a comparative lens enables a clearer assessment of inequality across population groups. By examining differences between nomadic and non-nomadic communities, researchers can identify the extent to which mobility, access to services, and socio-economic conditions shape development outcomes. This approach is particularly relevant in contexts such as Adamawa State, where both populations coexist under different living conditions. Such analysis provides an evidence base for designing more inclusive policies that address structural disparities and promote equitable human development across all groups.

Theoretical Literature

This aspect highlights theories of human capital development and their relevance to the study.

Human Capital Theory

Human Capital Theory provides the central theoretical foundation for this study. Developed by Gary Becker and Schultz, the theory explains that education, health, and training are investments that enhance an individual's productive capacity over time. In practical terms, people with better education and health outcomes tend to earn more and contribute more effectively to economic development. The theory is particularly useful for explaining disparities in development outcomes between population groups. In settings such as Adamawa State, where access to schooling and healthcare is uneven, differences in human capital accumulation help explain persistent inequality between nomadic and non-nomadic populations (Becker, 1993; Schultz, 1961).

Capability Approach

The Capability Approach, developed by Amartya Sen, shifts attention from resources alone to what individuals are actually able to achieve in life. It argues that development should be assessed in terms of real opportunities available to people, such as the ability to be educated, remain healthy, and participate in economic and social activities. This theory is relevant to the present study because it highlights how structural barriers, such as mobility constraints, geographic isolation, and limited institutional reach, can limit the capabilities of nomadic populations even when policies exist in principle. In this sense, inequality is not only about income or access but about restricted freedoms and opportunities (Sen, 1999; Nussbaum, 2011).

Structural Inequality Theory

Structural Inequality Theory explains how social systems and institutional arrangements create and sustain unequal outcomes among different groups. It emphasises that inequality is often built into the design and functioning of institutions rather than being purely the result of individual choices. In relation to this study, the theory helps explain why nomadic populations frequently have lower access to education, healthcare, and development services than sedentary populations. Development structures are often designed around settled communities, leaving mobile populations underserved. Evidence from development literature suggests that such institutional bias contributes significantly to persistent disparities in human capital outcomes (Krätli & Dyer, 2009; World Bank, 2020).

Empirical Literature

Wulifan et al. (2022), through a contextual scoping review, found that nomadic pastoralists face physical, political, economic and socio-cultural barriers to healthcare. The study demonstrates that geographical isolation and weak infrastructure are not isolated problems but interact with economic and institutional conditions to influence healthcare utilisation. In human-capital terms, this suggests that health disadvantages may arise from limited opportunity to access services rather than from individual unwillingness to use them.

Nwokedi et al. (2023) provide related evidence from Northern Nigeria. Their study compared interactive radio and television instruction for improving life skills among out-of-school nomadic children and found that interactive television produced significantly better outcomes than radio instruction. The significance of this finding extends beyond the effectiveness of the two instructional methods. It demonstrates that alternative educational arrangements can respond to the mobility constraints associated with conventional schooling. The finding therefore supports the Capability Approach by showing that the way a service is delivered can influence the actual opportunities nomadic children have to acquire skills.

Hussain et al. (2024) examined nomadic education in Nigeria and identified inadequate funding, insufficient instructional materials, teacher-related issues, curriculum deficiencies, insecurity, and policy constraints as ongoing challenges. Unlike studies that attribute educational disadvantage primarily to mobility, this evidence points to an interaction between mobility and institutional capacity. The implication is that improving human capital among nomads requires more than increasing school availability; it requires adequately financed, staffed, relevant, and capable education that can reach mobile households.

Braam et al. (2024) examined the relationship between pastoral mobility and health outcomes in Nigeria using a qualitative multi-site case study design. Data were collected through focus group discussions, participatory mapping, and key informant interviews with pastoral households. The findings showed that restricted mobility due to insecurity and land-use pressures has intensified health vulnerabilities among nomadic groups. Limited access to veterinary and human healthcare services further compounded livelihood insecurity and reduced productivity. The study recommended adopting an integrated One Health approach, improving grazing policies, and implementing institutional reforms to address the structural exclusion of mobile populations from essential services.

Nwokedi et al. (2022) investigated the effectiveness of alternative instructional methods in improving life skills among nomadic children in Northern Nigeria. The study adopted a quasi-experimental design, involving 470 participants who were exposed to interactive radio and television-based learning interventions. Statistical analysis showed that interactive television instruction produced significantly better outcomes in life skills acquisition compared to radio-based learning. The findings suggest that conventional classroom models are less effective for nomadic populations due to mobility constraints. The study recommended increased investment in distance learning technologies, particularly interactive digital and broadcast-based education systems, to improve educational inclusion for nomadic children.

Okwajie (2022) examined the impact of public expenditure on human capital development in Nigeria using an ex-post facto research design and secondary time-series data from 2008 to 2023. Regression analysis indicated that government spending on education and health has a positive and statistically significant effect on human capital development. However, implementation inefficiencies and weak institutional frameworks reduce the overall impact of such investments. The study recommended improved budget allocation to education and health sectors, alongside stronger monitoring and accountability mechanisms to ensure efficient utilisation of public resources.

Olowookere et al. (2022) analysed the relationship between human capital development and sustainable development in Nigeria using a quantitative econometric approach (Fully Modified Ordinary Least Squares – FMOLS). The study relied on secondary national data covering key human capital indicators. The findings revealed that investments in education and health significantly enhance human capital development, which, in turn, contributes to sustainable economic growth. The authors recommended sustained and balanced investment in education and health infrastructure, particularly in underserved and rural areas, to reduce regional disparities and strengthen long-term development outcomes.

Methodology

Research Design

This study adopted a quantitative cross-sectional survey design to examine human capital development among nomadic and non-nomadic populations in Adamawa State. A cross-sectional survey design is appropriate for studies that seek to collect data from respondents at a single point in time and compare characteristics across different population groups. The design enabled the researcher to obtain information on education, health, and skills development among the two populations and to assess the extent of variation in human capital outcomes between them. The quantitative approach was considered suitable because it facilitates the collection of measurable data that can be analysed using statistical techniques.

Population of the Study

The study population comprised nomadic and non-nomadic residents of Adamawa State, Nigeria. The nomadic population was estimated at approximately 450,000 people based on the 2022 population projection by the Nigerian National Population Commission. These populations are distributed across various communities in the state and differ in their socio-economic characteristics, livelihood systems, and access to human capital development opportunities. Including both population groups was necessary to provide a comprehensive assessment of disparities in education, health, and skills acquisition.

Sample Size Determination

The sample size was determined using Yamane's formula. The Yamane formula is widely used in social science research because it provides a simplified method for determining representative sample sizes from large populations (Yamane, 1967).

$$n = \frac{N}{1 + N(e^2)}$$

Where:

n = sample size

N = population size

e = margin of error (typically 5% or 0.05)

$$n = \frac{450000}{1+450000(0.05^2)} = \frac{450000}{1+450000(0.0025)} = \frac{450000}{1+1125} = \frac{450000}{1126} = 399.6$$

$$\approx = 400$$

Based on this formula, a sample of 400 respondents was selected from the nomadic population. To facilitate meaningful comparison between the two groups, a corresponding sample of 400 respondents was selected from the non-nomadic population. The 400 respondents selected from the non-nomadic population were not determined using the Yamane formula applied to the nomadic population. Instead, an equal sample size was adopted to provide a balanced basis for comparing the nomadic and non-nomadic groups. Having the same number of respondents in both groups makes it easier to assess differences in their human capital development outcomes. It reduces the possibility that differences in sample size could influence the comparative analysis. This approach is considered appropriate because the study focuses specifically on comparing the experiences and outcomes of nomadic and non-nomadic populations, rather than on estimating the proportions of each group.

Sampling Technique

The study employed a multistage sampling technique. In the first stage, twelve Local Government Areas were selected from Adamawa State based on the presence of substantial nomadic and non-nomadic populations. In the second stage, communities within the selected Local Government Areas were identified. In the third stage, respondents were selected from the identified communities using a simple random technique. The multistage approach was considered suitable because it enhanced representativeness while reducing the logistical difficulties associated with surveying a geographically dispersed population.

Sampled Local Government Areas

The study was conducted in 12 Local Government Areas of Adamawa State: Demsa, Fufore, Ganye, Girei, Guyuk, Hong, Lamurde, Mayo-Belwa, Shelleng, Song, Yola North, and Yola South. These Local Government Areas were selected because they contain significant concentrations of both nomadic and non-nomadic populations. Their inclusion ensured adequate representation of the diverse ecological, economic, and settlement patterns that characterise the state.

Instrument for Data Collection

Data for the study were collected using a structured questionnaire. The questionnaire was designed to capture information on key dimensions of human capital development, including education, health, and skills acquisition, as well as respondents' socio-economic characteristics. The instrument consisted mainly of closed-ended questions, enabling respondents to provide standardised responses and facilitating quantitative analysis. The questionnaire was administered directly to the selected respondents across the study area, either in their households or by their representatives.

Method of Data Analysis

The data collected through the questionnaire were coded and analysed using descriptive statistical techniques. Frequencies, percentages, means, and standard deviations were employed to summarise respondents' characteristics and assess the level of human capital development among nomadic and non-nomadic populations. These techniques provided a clear description of the distribution of responses and enabled comparisons between the two groups regarding their access to education, healthcare services, and skills development opportunities.

Results and Discussion

A total of 800 questionnaires were administered for the study, with 400 distributed to nomadic respondents and another 400 to non-nomadic respondents. Of the questionnaires administered to the nomadic population, 386 were completed and returned. Similarly, 388 questionnaires were retrieved from the non-nomadic respondents. The returned questionnaires formed the basis for the data analysis, yielding high response rates in both study groups.

Socio-Demographic Characteristics of Nomad Respondents

Table 1: Age Distribution of Respondents (Nomads)

Range	Responds	Percentage %
18-30	70	18.1
31-40	90	24.4
41-50	138	35.8
51-60	84	21.8
Total	386	100.0

Source: Author's Computation Using SPSS Version 25 (2026)

The age distribution shows that most respondents are within their active and productive years. Respondents aged 41–50 years constitute the largest group (35.8%), followed by those aged 31–40 years (24.4%). This suggests that the majority have considerable experience in pastoral livelihoods and household responsibilities, making their opinions valuable for understanding human capital development and sustainable livelihoods among nomadic communities.

Table 2: Gender of Respondents (Nomads)

Gender	Responds	Percentage %
Male	238	61.7
Female	148	38.3
Total	386	100.0

Source: Author's Computation Using SPSS Version 25 (2026)

The findings show that male respondents make up the majority of the sample (61.7%), while females account for 38.3%. This reflects the traditional structure of many nomadic communities, where men are often responsible for household and pastoral decisions. However, including a substantial number of female respondents ensures the study captures women's vital roles in household management, livelihoods, and community development.

Table 3 Marital Status of Respondents (Nomads)

Status	Responds	Percentage %
Single	55	14.2
Married	285	73.8
Divorced/Widowed	46	11.9
Total	386	100.0

Source: Author's Computation Using SPSS Version 25 (2026)

The results show that the majority of respondents are married (73.8%), while 14.2% are single and 11.9% are divorced or widowed. This reflects the family-centred nature of nomadic communities, where marriage is closely linked to household responsibilities and livelihood activities. As a result, most respondents are likely to have practical experience and responsibilities that influence their perspectives on education, healthcare, and sustainable development.

Table 4: Level of Education Respondents (Nomads)

Educational Attainment	Responds	Percentage %
No formal education	70	18.1
Primary	109	28.2
Secondary	69	17.9
Tertiary	31	8.0
Quranic/Islamic education	107	27.7
Total	386	100.0

Source: Author's Computation Using SPSS Version 25 (2026)

The results indicate that most respondents have either primary education (28.2%) or Qur'anic/Islamic education (27.7%), while 18.1% have no formal education. Only a small proportion (8.0%) have attained tertiary education. This suggests that educational opportunities remain limited beyond the basic level, hindering human capital development and reducing access to better economic and social opportunities among nomadic communities.

Socio-Demographic Characteristics of Non-Nomad Respondents

Table 5: Age Distribution of Respondents (Non-Nomads)

Range	Responds	Percentage %
18-30	69	17.8
31-40	56	14.4
41-50	178	45.9
51-60	23	5.9
61 and above	62	16.0
Total	388	100.0

Source: Author's Computation Using SPSS Version 25 (2026)

The results show that the majority of respondents are aged 41–50 years (45.9%), followed by those aged 18–30 years (17.8%) and 31–40 years (14.4%). Respondents aged 61 years and above account for 16.0%, while those aged 51–60 years represent 5.9%. This indicates that the study is largely based on the views of mature adults with substantial experience in household management, livelihoods, and community affairs.

Table 6: Gender of Respondents (Non-Nomads)

Gender	Responds	Percentage %
Male	249	64.2
Female	139	35.8
Total	388	100.0

Source: Author's Computation Using SPSS Version 25 (2026)

The results show that male respondents constitute the majority of the sample (64.2%), while females represent 35.8%. This reflects the social structure of many non-nomadic communities, in which men often serve as household heads and participate in community decision-making. At the same time, the inclusion of a considerable number of women provides a more balanced understanding of household livelihoods, economic activities, and community development.

Table 7: Marital Status of Respondents (Non-Nomads)

Status	Responds	Percentage %
Single	16	4.1
Married	233	60.1
Divorced/Widowed	139	35.8
Total	388	100.0

Source: Author's Computation Using SPSS Version 25 (2026)

The results indicate that the majority of respondents are married (60.1%), while 35.8% are divorced or widowed, and only 4.1% are single. This suggests that most respondents live within family settings and have household responsibilities. Such experiences are likely to shape their views on livelihoods, social welfare, and community development, thereby making their responses relevant to the study's objectives.

Table 8: Level of Education of Respondents (Non-Nomads)

Educational Attainment	Responds	Percentage %
No formal education	24	6.2
Primary	46	11.9
Secondary	155	39.9
Tertiary	132	34.0
Quranic/Islamic education	31	8.0
Total	388	100.0

Source: Author's Computation Using SPSS Version 25 (2026)

The results indicate that respondents from non-nomadic communities generally have higher levels of formal education. Most have completed secondary education (39.9%), while a substantial proportion have attained tertiary education (34.0%). Only 6.2% have no formal education. This suggests that better access to schools in settled communities has improved educational attainment, thereby enhanced human capital development and created greater opportunities for socio-economic development.

Table 9: Comparative Level of Perceived Human Capital Development among Nomads and Non-Nomads

Indicator	Non-Nomads Mean	Nomads Mean	Mean Difference	Cohen's <i>d</i>	Magnitude
Access to basic education	3.73	2.33	1.40	1.31	Large
Availability of health services	3.15	2.39	0.76	0.57	Moderate
Skills acquisition training	3.33	1.79	1.54	1.35	Large
Education/training provides jobs	3.05	2.84	0.21	0.15	Very small
Human capital contributes to progress	3.94	2.35	1.59	1.30	Large
Overall item-mean comparison	3.44	2.34	1.10	—	—

Source: Authors' Computation (2026).

Table 9 presents a comparison of perceived human capital development among nomadic and non-nomadic respondents, based on five indicators: access to basic education, availability of health services, skills-acquisition training, employment opportunities associated with education and training, and the perceived contribution of human capital development to social and economic progress. The results show a consistent difference between the two groups. Non-nomadic respondents recorded higher mean scores across all five indicators, though the magnitude of the difference varied.

The largest difference was observed in the perception that human capital development contributes to progress, with a mean of 3.94 among non-nomads compared with 2.35 among nomads. Similarly, the availability of skills acquisition training recorded means of 3.33 and 1.79 for non-nomads and nomads, respectively, representing a mean difference of 1.54 points. Access to basic education also showed a substantial difference, with non-nomads recording a mean of 3.73 compared with 2.33 among nomads. The difference in perceived availability of health services was smaller but still evident, with mean scores of 3.15 and 2.39, respectively. In contrast, the smallest difference occurred in the perception that education and training provide jobs, where the respective means were 3.05 and 2.84.

To assess the practical importance of these differences, Cohen's d was calculated for each indicator. The effect sizes were large for access to basic education ($d = 1.31$), the availability of skills-acquisition training ($d = 1.35$), and the contribution of human capital development to progress ($d = 1.30$). The difference in perceived availability of health services was moderate ($d = 0.57$), whereas the difference in perceived employment opportunities was very small ($d = 0.15$). These results suggest that the disparity between nomads and non-nomads is particularly pronounced in educational access and skills acquisition, rather than being uniform across all dimensions of human capital development.

For the five indicators considered jointly, the average item mean was 3.44 for non-nomads and 2.34 for nomads. This 1.10-point difference provides further evidence of a substantial disparity in perceived human capital development between the two groups. However, the results are interpreted as measures of respondents' perceptions of access to and outcomes of human capital development, rather than as direct measures of objective human capital stocks. Objective indicators such as years of schooling, educational attainment, enrolment, access to health facilities and participation in skills training would provide complementary evidence where such data are available.

Discussion of Findings

The findings reveal a clear difference in the level of human capital development between nomadic and non-nomadic populations. Non-nomadic respondents recorded higher mean scores across all five indicators, particularly in access to basic education, healthcare, and skills acquisition, whereas nomadic respondents consistently reported lower scores. These results suggest that nomadic communities continue to face significant barriers to accessing essential services, largely because of their mobility, geographical isolation, and inadequate policy support. This finding supports Human Capital Theory, which argues that investment in education, health, and skills improves individuals' productivity, earning capacity, and overall socio-economic well-being (Becker, 1993; Schultz, 1961).

The results are consistent with previous empirical studies, which report that pastoral and nomadic populations remain disadvantaged in accessing education and healthcare compared with settled populations (Krätli & Dyer, 2009; UNESCO, 2015). They also support Amartya Sen's (2000) argument that limited access to basic capabilities restricts individuals' opportunities to improve their livelihoods and participate fully in development. Similarly, the United Nations Development Programme (2021) observed that inequalities in education, health, and skills development contribute to persistent poverty and social exclusion. The present findings, therefore, emphasise the need for

targeted policies that expand access to quality education, healthcare, and vocational training for nomadic communities to promote inclusive and sustainable development.

Conclusion

The study examined the level of human capital development among nomadic and non-nomadic populations in Adamawa State, Nigeria. The findings revealed notable differences between the two groups. While both populations were predominantly composed of economically active, married adults, non-nomadic respondents reported higher levels of formal education. They consistently reported better access to basic education, healthcare services, and skills-acquisition programmes. In contrast, nomadic respondents had lower educational attainment, with most possessing only primary or Qur'anic/Islamic education and very few progressing to tertiary education. These differences were reflected in the descriptive statistics, where non-nomadic respondents obtained higher mean scores across all indicators of human capital development.

The study further established that limited access to education, healthcare, and vocational training continues to constrain human capital development among nomadic populations. These challenges appear to be associated with the migratory nature of pastoral livelihoods, geographical isolation, inadequate social infrastructure, and insufficient policy attention to the unique needs of nomadic communities. As a result, nomadic populations remain at a disadvantage in developing the knowledge, skills, and capabilities required for improved livelihoods and active participation in socio-economic development. The study, therefore, concludes that reducing these disparities through inclusive, context-specific human capital development policies is essential to promoting sustainable development and improving the welfare of nomadic communities in Adamawa State.

Recommendations

Based on the findings, the study recommends that the Federal Government, Adamawa State Government, and relevant stakeholders should develop and implement targeted human capital development programmes that address the specific needs of nomadic communities. Priority should be given to expanding mobile and community-based schools, strengthening mobile healthcare services, and providing flexible vocational and skills-acquisition programmes compatible with the nomadic way of life. The government should also increase investment in educational infrastructure, teacher recruitment and retention in underserved areas, adult literacy programmes, and scholarship schemes for nomadic children to improve access to formal education. Furthermore, stronger collaboration among government agencies, development partners, traditional institutions, and nomadic community leaders is necessary to ensure effective implementation of these interventions. Such measures will help reduce existing inequalities between nomadic and non-nomadic populations, strengthen human capital development, and promote inclusive and sustainable socio-economic development in Adamawa State.

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