

Impact of Youth Participation in Waste Management on Employment Generation in Kano State, Nigeria

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Abstract

Original Research Article

Youth unemployment remains a major socio-economic challenge in Nigeria despite the increasing participation of youths in waste-to-wealth and recycling activities. In Kano State, waste collection, recycling, and recovery activities provide informal income opportunities; however, weak institutional support and limited integration into the formal labour market have constrained their potential to generate sustainable employment. This study examined the effect of youth participation in waste management on employment generation in Kano State, Nigeria. A survey research design was adopted. The study population comprised 10,000 youths engaged in waste management activities across Kano Central, Kano North, and Kano South senatorial zones. Data were collected through a structured questionnaire administered to selected respondents, while descriptive and inferential statistics were employed for data analysis using the Statistical Package for the Social Sciences (SPSS) version 22. The findings revealed that waste-to-wealth activities have a positive and significant effect on self-employment opportunities among youths in Kano State, while recycling activities have a positive and significant effect on job creation, leading to the rejection of both null hypotheses. The study concludes that youth participation in waste management significantly enhances employment generation through improved self-employment opportunities and job creation. The study recommends that the Kano State Government and relevant stakeholders strengthen waste-to-wealth programmes through skills acquisition, entrepreneurship training, and financial support, while government and private sector organizations increase investment in recycling infrastructure and youth-led recycling enterprises to promote sustainable employment generation.

Keywords: Youth participation, waste management, recycling activities, job creation and youth empowerment.

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Introduction

Waste management is increasingly recognized as both an environmental necessity and an opportunity to create livelihoods through recycling and waste-to-wealth initiatives. It is a

growing environmental and socio-economic problem in developing countries like Nigeria, driven by rapid urbanization, population growth and inadequate waste management infrastructure. Besides, improper waste management in urban areas like Kano

contributes to environmental degradation but also creates informal employment opportunities for unemployed youths through waste collection and recycling activities (Musa, 2026; Saleh & Marzuki, 2024). Youth participation in waste management activities such as waste sorting, scavenging and recycling is increasingly seen as a practical way to address rising unemployment in Nigeria. In Kano State, recycling and waste recovery activities have encouraged the growth of small-scale eco-enterprises that provide productive opportunities for youths, helping to ease unemployment (Ibiwumi et al., 2024). However, their long-term contribution to sustainable employment remains underexplored.

Despite growing youth involvement in waste-to-wealth and recycling activities, unemployment remains high in Nigeria, indicating that participation in waste management has not consistently translated into formal employment (Omoju et al., 2023). Although circular economy initiatives and informal recycling are expanding in Kano State, their role in creating sustainable jobs and self-employment opportunities is still unclear. This study therefore investigates the influence of youth participation in waste management on employment generation in Kano State, with emphasis on job creation and self-employment.

Despite growing youth involvement in waste-to-wealth and recycling activities, youth unemployment in Nigeria remains persistently high, raising concerns about the ability of waste management to generate sustainable employment. In Kano State, recycling, scavenging, and waste recovery have created informal income opportunities and supported the emergence of small-scale eco-enterprises, but these activities remain largely unstructured and constrained by weak institutional support and limited integration into the formal labour market (Omoju et al., 2023; Musa, 2023; Umar & Nuhu Wali, 2025; Saleh & Marzuki, 2024). Although existing studies highlight the environmental and income-generation benefits of circular economy practices, there is limited empirical evidence on their contribution to self-employment sustainability and job creation (Ibiwumi et al., 2024). This study therefore investigates the effect of youth participation in waste management on employment generation in Kano

State, Nigeria.

The objective of this study is to examine the effect of youth participation in waste management on employment generation in Kano State, Nigeria. The specific objectives of the study are:

- i. To determine the effect of waste-to-wealth activities on self-employment opportunities among youths in Kano State.
- ii. To evaluate the effect of recycling activities on job creation in Kano State.

The following null hypotheses were developed and tested:

H₀₁: Waste-to-wealth activities have no significant effect on self-employment opportunities among youths in Kano State.

H₀₂: Recycling activities have no significant effect on job creation in Kano State.

The study is significant because it provides empirical evidence on how youth participation in waste management through waste-to-wealth and recycling activities contributes to self-employment opportunities and job creation in Kano State, Nigeria, thereby informing policymakers, environmental agencies, and youth development programmes on effective strategies for linking environmental management with employment generation.

Literature Review

Waste management has increasingly been recognized as both an environmental and economic activity capable of creating employment opportunities, particularly for young people. Edewor et al. (2023) argued that expanding labour-intensive sectors and improving skills development are critical to increasing youth employment in Nigeria, emphasizing that sector-specific investments can significantly improve employment outcomes among young people. Similarly, Edomah and Abiola (2025) observed that the waste management sector is constrained by substantial technical and entrepreneurial skills gaps, limiting its capacity to generate sustainable employment despite growing opportunities within recycling and the circular economy. Their

review further noted that strengthening vocational training, innovation and technical competence would enhance youth participation and productivity in waste management enterprises. Marafa et al. (2026) found that community participation through waste sorting and proper disposal improved waste management outcomes in Kano Metropolis but gave limited attention to youth participation and employment generation.

The framework was developed to illustrate the relationship between the independent variable,

youth participation in waste management, and the dependent variable, employment generation. Specifically, the framework demonstrates how waste-to-wealth activities and recycling activities undertaken by youths influence self-employment opportunities and job creation in Kano state. The conceptual framework provides the basis for examining the extent to which active youth involvement in waste management contributes to sustainable employment outcomes.

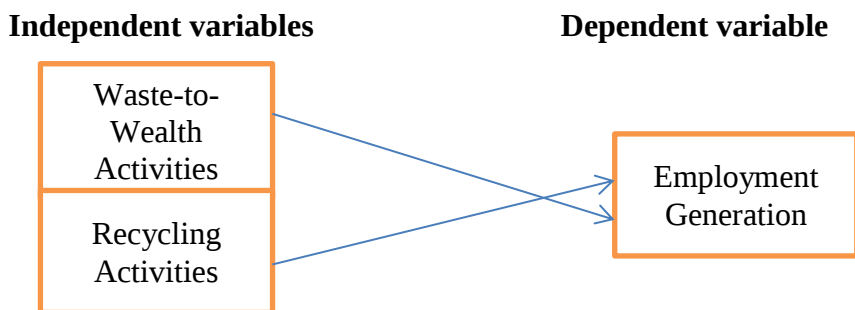


Figure 1: Conceptual framework

Waste-to-Wealth Activities: Waste-to-wealth activities involve the conversion of waste materials into economically valuable products through processes such as reuse, composting, up cycling, and resource recovery. These activities transform materials that would otherwise be discarded into products with commercial value, thereby creating income-generating opportunities and promoting environmental sustainability. Studies have shown that waste-to-wealth initiatives contribute to youth entrepreneurship, income generation, and self-employment, particularly in developing countries where the informal waste sector plays a significant role in local economies (United Nations Environment Programme, 2024; International Labour Organization, 2023).

Recycling Activities: Recycling activities refer to the collection, sorting, processing and conversion of recyclable waste materials such as plastics, paper, metals, and glass into new

products for further use. These activities reduce environmental pollution while creating employment opportunities across the waste value chain, including collection, transportation, processing, and marketing of recycled products. Evidence suggests that expanding recycling activities strengthens local economies by generating direct and indirect jobs, particularly for youths engaged in small-scale recycling enterprises (United Nations Industrial Development Organization, 2024; Nair & Datta, 2023).

Employment Generation: Employment generation refers to the creation of productive work opportunities that enable individuals to earn sustainable incomes through wage employment or self-employment. Within the context of waste management, employment generation includes jobs created through waste collection, recycling, waste-to-wealth enterprises, transportation, and other value-

added activities. Effective youth participation in these activities contributes to reducing unemployment, improving livelihoods, and stimulating local economic development (International Labour Organization, 2023; Nair & Datta, 2023).

From a theoretical standpoint, several relevant frameworks support the examination of how youth participation in waste management influences employment generation in Kano State, Nigeria, particularly through waste-to-wealth and recycling activities that contribute to self-employment opportunities and job creation.

Sustainable Livelihoods Theory, developed by the United Nations Development Programme (UNDP) in 1990 and later popularized by the Department for International Development (DFID, 1999), explains how individuals and communities utilize available assets such as human, social, financial, physical, and natural resources to achieve sustainable means of living while reducing vulnerability to economic shocks. The theory emphasizes that livelihood strategies are effective when they enhance income generation, reduce unemployment, and promote long-term sustainability through diversified economic activities. In relation to this study, the theory is relevant because youth participation in waste management in Kano State, particularly through waste-to-wealth and recycling activities, represents a livelihood strategy that transforms waste into economic assets, thereby contributing to self-employment opportunities and job creation in the informal and emerging circular economy sector.

The Waste-to-Wealth Theory is rooted in the principles of the circular economy and resource recovery, popularized by Peter Lacy and Jakob Rutqvist in 2015 through their work on transforming waste materials into valuable economic resources rather than treating them as useless by-products. The theory posits that waste can be converted into marketable products, energy, and income-generating opportunities through recycling, reuse, and innovation, thereby creating economic value while promoting environmental sustainability (Lacy & Rutqvist, 2015). This perspective emphasizes that effective waste management can serve as a catalyst for entrepreneurship, job creation, and

sustainable development by turning environmental challenges into economic opportunities. In relation to this study, the theory provides a suitable framework for explaining how youth participation in waste management activities in Kano State can generate employment and income through waste collection, recycling, processing, and other value-added ventures, thereby contributing to both environmental improvement and economic empowerment.

Human Capital Theory was developed by Theodore W. Schultz in 1961 and further expanded by Gary S. Becker in 1964, positing that investments in education, training, skills acquisition, and health enhance individuals' productivity and earning capacity (Schultz, 1961; Becker, 1964). The theory views human knowledge and competencies as forms of capital that contribute to economic growth and employment creation by improving workers' ability to perform tasks efficiently and adapt to changing labour market demands. In the context of this study, Human Capital Theory provides a useful framework for explaining how the acquisition of waste management knowledge, technical skills, and entrepreneurial capabilities by youths in Kano State can increase their employability, promote self-employment opportunities within the waste value chain, and ultimately enhance employment generation and sustainable livelihoods.

The Sustainable Livelihoods Theory is considered the most appropriate theoretical foundation for this study because it directly links livelihood opportunities, asset utilization, and employment outcomes. The theory explains how youth engagement in waste management activities can serve as a sustainable livelihood strategy that generates income, enhances skills acquisition, promotes entrepreneurship, and creates employment opportunities. Given that the study seeks to examine the impact of youth participation in waste management on employment generation in Kano State, Nigeria, the theory provides a suitable lens for understanding how waste management can contribute to economic empowerment, poverty reduction, and sustainable development among youths.

Empirical studies on youth participation in waste management and its influence on employment generation are increasingly emerging within the context of urban informal economies to enrich the existing literature; however, Marafa et al. (2026) conducted a study titled *community participation in urban waste management: An exploratory study in Kano metropolis* with the objective of examining the role of community participation and the factors influencing effective solid waste management in Kano metropolis. The study adopted a survey research design, using questionnaires administered to residents and analyzed the data through descriptive and inferential statistical techniques. The findings revealed that population growth and increasing economic activities significantly contributed to waste generation while active community participation, particularly waste sorting at source and proper disposal practices, enhanced effective waste management. However, the study focused mainly on community participation and environmental outcomes, paying limited attention to youth involvement and its contribution to employment generation. It also failed to examine employment indicators such as job creation, income generation, entrepreneurship and sustainable livelihoods. To address these gaps, the current study specifically investigates the impact of youth participation in waste management on employment generation in Kano state by focusing on youths engaged in waste collection, sorting, recycling, transportation and other related activities.

Unegbu et al. (2026) carried out a study titled *from landfills to livelihoods: Socioeconomic impacts of construction waste management in Nigeria*. The study examined the socioeconomic and environmental implications of construction waste management practices in Nigeria, with emphasis on how waste recovery, reuse and recycling activities contribute to livelihoods and employment opportunities. The study adopted a mixed-methods research design involving a survey of 300 respondents, semi-structured interviews, and field observations across selected Nigerian cities, including Lagos, Abuja and Kano. The findings revealed that informal waste management systems dominated construction waste handling, accounting for a

significant proportion of waste recovery activities, while recycling and reuse practices contributed positively to job creation and livelihood improvement. The study also identified inadequate infrastructure, limited institutional support and low adoption of advanced recycling practices as major barriers limiting the economic benefits of waste management activities. One major limitation of Unegbu et al. (2026) was that the study examined construction waste management generally and did not specifically isolate youth participation as a major factor influencing employment generation. The study also did not deeply measure youth-related employment indicators such as self-employment, income improvement and entrepreneurship among young waste workers.

A study by Musa (2026) titled *municipal solid waste quantification for biogas production in Kano metropolis* with the objective of estimating municipal solid waste generation for sustainable biogas production. The study employed field measurements and quantitative analysis of municipal solid waste generation across selected locations within Kano metropolis. The findings indicated that Kano generates substantial quantities of municipal solid waste capable of supporting renewable energy production. The study also suggested that improved waste recovery and recycling systems could create additional employment opportunities, particularly for waste collectors and recyclers operating within the informal sector. However, the study focused primarily on waste quantification and renewable energy potential without empirically examining youth participation as a determinant of employment generation. The present study therefore extends the literature by directly assessing the impact of youth participation in waste management on employment generation in Kano State.

Umar and Wali (2025) conducted a study titled *inclusive circularity: Empowering local communities through waste-based eco-enterprises in Kano* with the objective of examining how waste-based eco-enterprises contribute to environmental sustainability and socioeconomic development through circular economy practices. The study adopted a qualitative case-study approach and

documentary analysis of selected waste-based enterprises operating in Kano state. The findings revealed that waste-based enterprises create green jobs, generate income, promote entrepreneurship, enhance community empowerment and support environmental sustainability through waste recovery and recycling activities. The study further established that waste-to-wealth initiatives have the potential to expand employment opportunities for youths and other vulnerable groups within the state. A major critique of the study, as noted by the current review, is that it does not specifically measure the impact of youth participation on employment generation the study should employ survey research and regression analysis to quantify the direct relationship between youth involvement in waste management activities and employment outcomes in Kano state.

Muhammad et al. (2025) conducted a study titled analysis of solid waste management practices in Wudil town, Kano with the objective of examining existing solid waste management practices and their implications for sustainable waste management. The study employed a survey design, GIS spatial analysis and questionnaires administered to 396 respondents. The findings showed that waste management activities promoted youth employment in the informal sector through waste separation, scaling, collection and transportation of recyclable materials to Kano metropolis. A key limitation of the study, as identified by the current review, is that it did not sufficiently explore the extent to which youth participation in waste management influences job creation using a dedicated employment-generation framework which could provide the primary focus of the investigation.

Methodology

This study adopted a survey research method. The study population consists of 10,000 youths engaged in waste management activities across the three senatorial zones of Kano State, namely Kano Central, Kano North and Kano South. The population size was determined through preliminary field assessment and information obtained from relevant waste management

stakeholders within the study area. Kano state was selected as the study area because of its high population concentration, increasing waste generation and the growing involvement of youths in waste collection, recycling and recovery activities. The study used a structured questionnaire as the primary instrument for data collection which was administered to selected youth participants in waste management activities to obtain information on waste-to-wealth practices, recycling activities, self-employment opportunities and job creation. The data collected were analyzed using appropriate descriptive and inferential statistical techniques. The Statistical Package for the Social Sciences (SPSS) version 22 was used to perform the data analysis.

The study's sample size was determined using Cochran's formula, expressed as follows:

$$n = \frac{N \times Z^2 \times p \times (1 - p)}{e^2(N - 1) + Z^2 \times p \times (1 - p)}$$

Where:

n = required sample size

N = population size (10,000 youths)

Z = Z-score corresponding to the confidence level (1.96 for 95%)

p = estimated proportion of the population with the attribute of interest (assumed as 0.5 for maximum variability)

e = margin of error (0.05 for 5%)

Substituting the values:

$$\begin{aligned} n &= \frac{10,000 \times 1.96^2 \times 0.50 \times (1 - 0.50)}{0.05^2(10,000 - 1) + 1.96^2 \times 0.50 \times (1 - 0.50)} \\ n &= \frac{10,000 \times 3.8416 \times 0.50 \times 0.5}{0.0025(9,999) + 3.8416 \times 0.50 \times 0.5} \\ n &= \frac{10,000 \times 3.8416 \times 0.25}{24.9975 + 3.8416 \times 0.25} \\ n &= \frac{9,604}{24.9975 + 0.9604} \\ n &= \frac{9,604}{25.9579} \\ n &= 369.9837 \\ n &\approx 370 \text{ respondents} \end{aligned}$$

The regression model is:

$$EG = \beta_0 + \beta_1 WTW + \beta_2 RA + \mu_i \dots\dots\dots (i)$$

Whereas: EG = Employment generation, WTW = Waste-to-wealth activities, RA = Recycling activities, β_0 = Intercept or Constant, β_1 and β_2 = Regression coefficients of the independent variables, μ_i = Error term, and i denotes cross-sectional dimension.

The study population comprises 10,000 youths participating in waste management activities across Kano State, Nigeria. Using Cochran's formula, a sample size of 370 respondents was obtained at a 95% confidence level and a 5% margin of error. To account for possible non-response, incomplete questionnaires, or attrition, 20% of the calculated sample size was added. The attrition adjustment was calculated as 20% of 370, which equals 74 respondents; therefore, the adjusted sample size was $370 + 74 = 444$ respondents. Hence, 444 questionnaires were administered to ensure that the required sample size of 370 valid responses was achieved. The inclusion of youth participants in waste management activities was considered

appropriate because waste management activities provide opportunities for income generation and employment creation, particularly through collection, sorting, recycling, and related environmental services (Edomah & Abiola, 2025; Ali et al., 2025).

Results and Discussion

This section presents the analysis of data collected from the respondents and provides a discussion of the findings. The questionnaires administered were designed in line with the research questions, objectives, and hypotheses to examine the impact of youth participation in waste management on employment generation in Kano State, Nigeria. The data collected provides insights into how waste-to-wealth activities and recycling activities influence employment generation, particularly through self-employment opportunities and job creation among youths involved in waste management practices.

Table 1: Return Rate of Respondents

Senatorial Zones	Questionnaire Administered	Questionnaire Not Returned	Questionnaire Returned	Percentage of Total Questionnaire Returned
Kano Central	148	18	130	33.2
Kano North	148	17	131	33.4
Kano South	148	17	131	33.4
Total	444	52	392	100

Source: Field Survey, 2026

The return rate of respondents in Table 1 presents the distribution of questionnaires administered to youths participating in waste management activities across the three senatorial zones of Kano State. The table shows that 148 questionnaires were administered to respondents in each of Kano Central, Kano North, and Kano South senatorial zones. Out of the 444 questionnaires distributed, 392 were successfully

retrieved, while 52 questionnaires were not returned. The retrieved questionnaires represent an overall response rate of 88.3%, which is considered adequate for the continuation of data analysis.

The distribution of returned questionnaires indicates that respondents from Kano Central Senatorial Zone contributed 33.2% of the total returned questionnaires, while Kano North and

Kano South Senatorial Zones accounted for 33.4% each. The relatively balanced distribution across the three senatorial zones ensures adequate representation of youths involved in waste management activities within Kano State. The responses obtained provide relevant information on the contribution of waste-to-wealth activities and recycling practices to

employment generation, including the creation of self-employment opportunities and jobs among youths. The data obtained from the respondents provides the foundation for testing the study hypotheses and evaluating the relationship between youth participation in waste management and employment generation in Kano State.

Table 2: Demographic Characteristics of Respondents

Variables	Respondents' Category	Freq.	Percentages
Gender	Male	384	98.0
	Female	8	2.0
	Total	392	100
Age	Below 25 years	239	61.0
	25–34 years	93	23.7
	35–44 years	32	8.2
	45 yrs and above	28	7.1
	Total	392	100
Business Experience	0 – 3 years	216	55.1
	4 – 7 years	111	28.3
	Above 8 years	65	16.6
	Total	392	100
Marital Status	Single	368	93.9
	Divorced	14	3.5
	Total	392	100
	Total	392	100

Source: Field Survey, 2026

The demographic characteristics of the 392 respondents involved in waste management activities in Kano State are presented in Table 2. The gender distribution shows that 384 respondents, representing 98.0%, are male, while 8 respondents, representing 2.0%, are female. This indicates that males constitute the majority of youths engaged in waste management activities in the study area. The age distribution reveals that 239 respondents (61.0%) are below 25 years, 93 respondents (23.7%) are between 25 and 34 years, 32 respondents (8.2%) are between 35 and 44 years, while 28 respondents (7.1%) are 45 years and above. The predominance of respondents below the age of 25 demonstrates that waste management activities attract a large

proportion of young people, reflecting the sector's importance as a source of employment and livelihood for youths in Kano State.

The respondents' experience in waste management activities indicates that 216 respondents (55.1%) have participated for 0–3 years, 111 respondents (28.3%) have between 4 and 7 years of experience, while 65 respondents (16.6%) have more than 8 years of experience. This distribution suggests that many youths have recently entered the waste management sector, while a considerable number have acquired substantial experience in waste collection, recycling, and waste-to-wealth activities. The marital status of the respondents shows that 368

respondents (93.9%) are single, 10 respondents (2.6%) are married, and 14 respondents (3.5%) are divorced. The high proportion of single respondents indicates that the waste management sector is largely dominated by young people seeking income-generating opportunities. These

demographic characteristics provide a clear profile of the respondents and support the assessment of how youth participation in waste management contributes to employment generation through self-employment opportunities and job creation in Kano state.

Table 3: Model Summary

Indicator	Coefficient
R	0.974
R ²	0.949
Adjusted R ²	0.949
Std. Error of the Estimate	0.3114

Source: Field Survey, 2026

The model summary indicates a very strong relationship between youth participation in waste management activities and employment generation in Kano state, as reflected by a correlation coefficient (R) of 0.974. The coefficient of determination (R²) of 0.949 shows that 94.9% of the variation in employment generation is explained by the combined influence of waste-to-wealth activities and recycling activities, while the remaining 5.1% is attributed to other factors not included in the

model. The adjusted R² value of 0.949 confirms the stability and explanatory power of the model after accounting for the number of explanatory variables included in the analysis. Furthermore, the standard error of the estimate of 0.3114 indicates a relatively low level of prediction error, suggesting that the regression model provides a good fit for explaining the effect of youth participation in waste management on employment generation in Kano state.

Table 4: Analysis of Variance (ANOVA)

Indicator	Sum of Squares	Df	Mean Square	F	Sig.
Regression	702.555	2	351.277	3622.589	0.000
Residual	37.721	389	.097		
Total	740.276	391			

Source: Field Survey, 2026

The analysis of variance (ANOVA) indicates that the regression model is statistically significant in explaining the effect of youth

participation in waste management on employment generation in Kano state. The regression sum of squares of 702.555 is

substantially higher than the residual sum of squares of 37.721, showing that the model explains a large proportion of the variation in employment generation. The calculated F-statistic of 3622.589, together with a significance value of 0.000, demonstrates that the overall regression model provides a significantly better

fit than a model without the explanatory variables. This result indicates that waste-to-wealth activities and recycling activities jointly exert a significant influence on employment generation among youths in Kano state, confirming the suitability of the regression model for the study.

Table 5: Regression Coefficient Results

<i>Variable</i>	<i>Beta</i>	<i>Std. Error</i>	<i>T</i>	<i>Sig.</i>
Constant	0.250	0.035	7.081	0
WTW	0.498	0.021	24.152	0
RA	0.411	0.023	17.561	0

Source: *Field Survey, 2026*

The regression coefficient results indicate that waste-to-wealth activities and recycling activities have positive effects on employment generation among youths in Kano State. The constant value of 0.250 shows the baseline level of employment generation when the explanatory variables are held constant. Waste-to-wealth activities recorded a beta coefficient of 0.498 with a t-value of 24.152 and a significance level of 0.000, indicating a positive and statistically significant effect on employment generation. This implies that increased participation in waste-to-wealth activities is associated with higher levels of self-employment and income-generating opportunities among youths. Similarly, recycling activities produced a beta coefficient of 0.411 with a t-value of 17.561 and a significance value of 0.000, demonstrating a positive and statistically significant influence on employment generation. The findings indicate that both waste-to-wealth and recycling activities make significant contributions to employment generation in Kano State, with waste-to-wealth activities exhibiting the stronger effect based on the magnitude of the beta coefficient.

The first finding revealed that waste-to-wealth activities have a positive and significant effect on self-employment opportunities among youths in

Kano State, leading to the rejection of the null hypothesis. This finding aligns with the Human Capital Theory, which explains that the acquisition of practical skills and knowledge enhances individuals' capacity for self-employment, and it is consistent with the empirical findings of Edomah and Abiola (2025), who reported that waste-to-wealth initiatives promote youth entrepreneurship and income generation in the waste management sector.

The second finding showed that recycling activities have a positive and significant effect on job creation in Kano State, resulting in the rejection of the null hypothesis. This finding supports the Sustainable Livelihoods Theory, which emphasizes that productive livelihood activities enhance employment opportunities, and it agrees with the findings of Ali et al. (2025), who found that recycling activities contribute significantly to employment generation and economic development through sustainable waste management practices.

Conclusion and Recommendations

The study concludes that youth participation in waste management, particularly through waste-

to-wealth and recycling activities, significantly enhances self-employment opportunities and job creation, thereby contributing to employment generation in Kano state, Nigeria. In light of these, the study recommends that:

- i. The Kano state Government, environmental agencies, and relevant stakeholders should strengthen waste-to-wealth programmes through skills acquisition, entrepreneurship training, and access to financial support to expand self-employment opportunities for youths engaged in waste management activities.
- ii. Government and private sector organizations should promote and invest in recycling initiatives by establishing recycling centres, improving market access for recyclable materials, and supporting youth-led recycling enterprises to enhance job creation in Kano state.

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