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Green business model for local artisans in Jalingo, Taraba state: A panacea for sustainable entrepreneurship

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Abstract

This study examines the Green Business Model for local artisans in Jalingo, Taraba State, as a pathway to sustainable entrepreneurship. It specifically investigates how resource efficiency, waste management, energy efficiency, and eco-friendly materials influence economic, environmental, and social sustainability among artisans engaged in carpentry, tailoring, welding, masonry, leatherwork, and small-scale crafts. The study adopts a survey research design. The sample size was determined using Taro Yamane's formula, which yielded 400 respondents from a combined population of 518,000. The data were collected using a structured questionnaire designed on a 5-point Likert scale. Out of 400 questionnaires administered, 315 were properly completed and returned. The data were analysed using ordinal regression because the dependent variables were ordinal. The results show that green business practices have varying effects across sustainability dimensions. For economic sustainability, resource efficiency is highly significant, with an odds ratio of 2.489, indicating a 148.9 per cent increase in the likelihood of improved economic outcomes. At the same time, eco-friendly materials show an odds ratio of 2.140, indicating a 114 per cent increase. Waste management is also significant, with an odds ratio of 1.704, representing a 70.4 per cent increase, whereas energy efficiency is not significant. For environmental sustainability, waste management has the strongest odds ratio (2.472), followed by eco-friendly materials (2.275), resource efficiency (1.982), and energy efficiency (1.679), all statistically significant. For social sustainability, only waste management and experience are significant, with odds ratios of 1.554 and 1.592, respectively, while the other variables are not significant. Based on the results, the study recommends targeted artisan training, financial incentives for green adoption, establishment of community waste recycling centres, improved access to eco-friendly materials, and strengthened institutional support to enhance sustainable entrepreneurship among artisans in Jalingo.

Keywords: Green Business Model; Sustainable Entrepreneurship; Local Artisans; Resource Efficiency; Waste Management

1. Introduction

Entrepreneurship plays a key role in economic growth, especially in developing areas. It creates jobs and helps people earn a steady income. In many parts of Nigeria, local artisans depend on small businesses to survive. These artisans include carpenters, tailors, welders, and craft makers. They use their skills to produce goods and offer services within their communities. However, many of these businesses face serious challenges. They deal with low income, poor tools, and unstable demand. These problems limit growth and reduce long-term survival. So, there is a need for better ways to support their work and improve their performance.

In recent years, there has been more focus on sustainability in business. This idea means that businesses should not only make a profit but also protect the environment and support society (Busch et al., 2024). A green business model

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follows this approach. It focuses on reducing waste, using resources wisely, and minimising environmental harm (Bocken et al., 2014). It also supports long-term thinking in business decisions. For local artisans, this model can change how they produce goods and manage their inputs. For example, they can reuse materials, reduce energy use, and adopt cleaner production methods. These actions can lower costs and improve efficiency over time.

The need for this approach is clear in places like Jalingo, Taraba State. Many artisans in this area depend on natural resources for their work. Woodworkers rely on timber. Textile producers use water and dyes. Metal workers depend on fuel and raw materials, and when these resources are poorly managed, it leads to waste and environmental damage(Wilson, 2023). At the same time, many artisans lack access to modern tools and proper training (SMEDAN, 2022), which creates a gap between current practices and more sustainable options.

A green business model may help reduce this gap. It can help artisans run their businesses more efficiently and sustainably. For example, they can use recycled inputs, reduce waste during production, and implement simple energy-saving measures (Bocken et al., 2014). They can also design products that last longer or can be reused. These steps can reduce cost and improve product value.

Despite growing interest in green business, most studies focus on large firms and the formal sector. There is limited research on how these ideas apply to small-scale artisans in developing areas. This gap is evident in Nigeria, where informal businesses account for a large share of the economy, which raises an important question. Can a green business model improve the sustainability of local artisan businesses in this context? Therefore, this study focuses on local artisans in Jalingo, Taraba State. It examines how green business practices relate to business sustainability. The goal is to provide policymakers and support agencies with clear and useful insights. These insights can help design programs that meet the needs of local artisans.

2. Literature Review

2.1. Conceptual Review

The conceptual review outlines the key ideas underpinning this study. It focuses on green business models, sustainable entrepreneurship, and local artisans. A green business model is how a business creates and delivers value while reducing environmental harm. It focuses on using resources carefully and efficiently. According to Bocken et al. (2014), a green business model promotes waste reduction, energy efficiency, and sustainable production methods, thereby reducing pollution and using raw materials more efficiently. This study focuses on the components of a green business model. These include resource efficiency, waste management, energy efficiency, and the use of eco-friendly materials.

Sustainable entrepreneurship is another key concept in this study. It refers to business activities that aim to make a profit while also protecting the environment and supporting society. Elkington (1997) explains this idea through the triple bottom line, which focuses on profit, people, and the planet, which means a business should not only aim to make money but also consider its social and environmental impact. In the context of local artisans, sustainable entrepreneurship encourages responsible production and long-term planning. In this study, sustainable entrepreneurship is measured using three key outcomes. These are economic sustainability, environmental sustainability and social sustainability.

Local artisans form the third key concept in this study. These are skilled workers who produce goods or offer services using manual or technical skills. They include carpenters, tailors, welders, and craft makers.

2.2. Theoretical Review

The study focused on the Triple Bottom Line and the Resource-Based View Theories. The Triple Bottom Line theory was developed by Elkington (1997). It explains that a business should focus on three goals. These are profit, people, and the environment, which means a business should make money, support society, and protect natural resources. The theory argues that long-term success depends on balancing these three areas. For local artisans, this theory is very relevant. It shows that they should not focus solely on income. They also need to consider how their activities affect the environment and their community. For example, reducing waste or using safer materials can protect the environment while still allowing them to earn income.

The Resource-Based View explains that a business performs well when it uses its internal resources effectively. According to Barney (1991), resources such as skills, knowledge, and tools can give a business an advantage. These resources must be valuable, rare, and hard to copy. For local artisans, their skills and experience are key resources.

When these skills are improved and combined with better tools, productivity can increase. A green business model also becomes a valuable resource, helping reduce costs and improve efficiency. For example, using recycled materials or saving energy can lower production costs.

2.3. Theoretical Framework

For this study, the Triple Bottom Line theory serves as the theoretical framework. It fits your topic better than the others because your focus is on sustainability, green business practices, and entrepreneurship among local artisans. The Triple Bottom Line theory, developed by Elkington (1997), holds that a business should not aim solely for profit. It should also consider its impact on society and the natural environment. This idea aligns directly with the concept of a green business model. It also supports the goal of sustainable entrepreneurship, which is the core of your study. For artisans in Jalingo, this theory provides a clear guide for balancing profit-making with protecting resources and supporting their community. The Framework is presented in Figure 1.

It explains that businesses must balance profit, people, and the planet. These three areas support the green business model. The green business model then guides artisans to operate more sustainably, fostering sustainable entrepreneurship in which artisans focus on long-term survival rather than short-term profit.

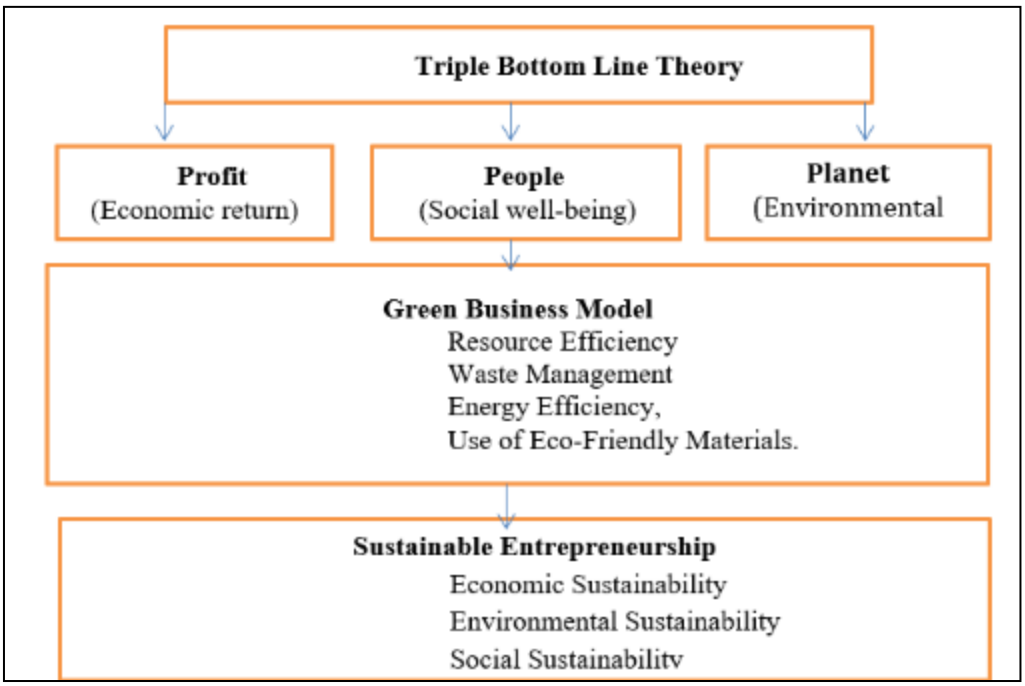

Figure 1 Theoretical Framework

2.4. Empirical Review

Al-Hattami, Mady, and Al-Bukhrani (2026) examined green digital accounting and its effect on sustainable entrepreneurship in emerging economies. The study focused on entrepreneurial ventures and used a quantitative survey design with Structural Equation Modelling (SEM). The results showed that green digital accounting improves financial sustainability and business performance. It also found that digital financial literacy strengthens this relationship. However, the study focused mainly on formal entrepreneurial firms. It did not consider informal, small-scale artisans, who constitute a large part of the workforce in developing economies, which creates a gap in understanding how digital green practices apply to artisan-based businesses.

Similarly, Mani and Manoharan (2026) studied green entrepreneurship and sustainable business growth using conceptual and comparative analysis. The study focused on Indian case studies and applied sustainability frameworks, such as the Triple Bottom Line and the circular economy. The findings showed that green entrepreneurship supports environmental protection and financial growth. It also highlighted barriers, including financial constraints and policy conflicts. However, the study remained largely theoretical and focused on broader business environments. It did not provide empirical evidence from informal artisan sectors, especially in African cities like Jalingo.

In the same direction, Maharjan (2025) explored green entrepreneurship in Nepal using a qualitative thematic approach. The study collected data from ten entrepreneurs in sectors such as agriculture, renewable energy, and ecotourism. The findings showed that environmental awareness and local knowledge drive green entrepreneurship. It also revealed challenges, such as limited financial resources and weak infrastructure. However, the study focused on formal green enterprises. It did not examine small-scale artisans who operate in informal urban markets, which limits its relevance to artisan-based economies in developing Nigerian cities.

Furthermore, Diepolder, Weitzel, and Huwer (2024) studied sustainable entrepreneurial education and opportunity recognition among students. The study used an experimental design with 136 participants and qualitative content analysis. The results showed that role models improve idea generation for sustainable development. It also found that exposure to sustainability increases awareness and creativity. However, the study focused on students and education settings. It did not examine real business operators such as artisans who apply these ideas in practice, which creates a gap between learning environments and real economic activities.

In addition, Tekala et al. (2024) examined green entrepreneurship and business sustainability among SMEs in Turkey. The study used a quantitative survey of 443 SME owners and applied structural equation modelling. The findings showed that green entrepreneurship enhances business sustainability by building green structural capital. It also found that environmental conditions influence outcomes. However, the study focused on formal SMEs in urban industrial settings. It did not consider informal artisan businesses in developing economies where resources and technology are limited.

Similarly, Almusaed et al. (2024) investigated the use of recycled materials and environmental sustainability in the construction sector. The study applied Life Cycle Assessment and Material Flow Analysis. The results showed that recycled materials reduce emissions and improve energy efficiency. It also emphasised the role of regulation and innovation. However, the study focused on large-scale construction systems. It did not explore small-scale artisans who often use similar materials but operate without formal environmental systems.

Baiocco and Paniccia (2023) studied business model innovation in sustainable entrepreneurship among small accommodation firms in Italy. The study used a longitudinal qualitative approach and co-evolutionary analysis. The findings showed that business model innovation supports circular economy practices and improves sustainability performance. It also showed that time and knowledge shape outcomes. However, the study focused on tourism-based SMEs in developed economies. It did not examine production-based artisan businesses in developing countries, where sustainability practices are still emerging.

Sun and Zhang (2022) analysed the impact of resource-saving and environmentally friendly policies on sustainability in China. The study used a quasi-experimental design with Propensity Score Matching and Difference-in-Differences analysis. The results showed that environmental policies improve green productivity and promote innovation. It also found differences across city types. However, the study focused on the effects of government policy at the urban level. It did not address individual artisan-level practices or how small businesses respond to green models.

Adekanmi et al. (2026) examined green entrepreneurship and competitive advantage among manufacturing firms in Nigeria. The study used a quantitative survey of 221 firms and applied regression analysis. The findings showed that waste management, eco innovation, and renewable energy improve competitive advantage. It also highlighted the role of supply chains. However, the study focused on formal manufacturing firms in Lagos and Ogun States. It did not include informal artisans who operate with lower technology and limited resources.

Udodiugwu et al. (2025) conducted a qualitative literature review on friendly products and environmental sustainability in Nigeria. The study found that eco-friendly products support environmental protection and sustainable development. It also noted weak adoption due to low awareness and readiness. However, the study was conceptual and lacked empirical testing. It also did not focus on specific artisan groups who are directly involved in production and material use.

Unegbu et al. (2024) conducted a systematic literature review of sustainable construction models in Nigeria. The study found increasing awareness of sustainability but low adoption in practice. It also highlighted challenges, including resource scarcity and weak policy support. However, the study focused mainly on the construction industry at a general level. It did not focus on individual artisans such as masons, welders, and block makers who are part of daily construction work.

Finally, Okechukwu et al. (2023) examined green business strategy and sustainable entrepreneurship in Enugu State. The study used a survey design with 181 respondents and employed chi-square analysis. The findings showed that environmental assessment and recycling improve innovation and opportunity identification. It also confirmed that green strategies support sustainable entrepreneurship. However, the study focused on general entrepreneurs rather than artisan groups. It also did not examine multiple sustainability outcomes, such as social, economic, and environmental dimensions, together.

2.5. Gaps in Literature

Across all the reviewed studies, a clear pattern emerges. Most studies confirm that green practices improve sustainability and business performance. However, many of them focus on formal firms, students, or large industries. Very few studies focus on informal artisans in developing cities. Moreover, even fewer examine multiple sustainability outcomes simultaneously, which creates a clear gap that this study addresses by focusing on local artisans in Jalingo and examining economic, environmental, and social sustainability together.

3. Methodology

The study is conducted in Jalingo, the capital city of Taraba State, Nigeria, with an estimated population of about 518,000 as of 2022. The focus is on local artisans engaged in carpentry, tailoring, welding and metal fabrication, masonry and block making, leatherwork, and small-scale crafts.

The sample size is determined using the Yamane (1967) formula:

$$n = \frac{N}{1 + N\,(e)2} \quad \text{...} 3.1$$

Where: n=sample size, N=Population, e^2= Degree of Error (0.05). $n = \frac{518{,}000}{1+518{,}000(0.05)^2}$

This gives an approximate sample size of 400 respondents, which is considered adequate for statistical analysis and representation across artisan groups.

Thereafter, a multi-stage sampling technique was employed. First, purposive sampling identifies key artisan clusters such as markets, workshops, and construction and welding hubs. Next, stratified sampling groups respondents into carpentry, tailoring, welding and metalwork, masonry and blockmaking, and leatherwork and crafts. Finally, simple random sampling is applied within each group to select respondents, ensuring equal representation and reducing bias.

Data is collected using a structured questionnaire. It measures green business practices and sustainability outcomes using a five-point Likert scale ranging from strongly disagree to agree strongly. The questionnaire covers resource efficiency, waste management, energy efficiency, eco-friendly materials, and sustainability outcomes. It is administered face-to-face to improve response rate and clarity among respondents with varying educational backgrounds.

Validity is ensured through expert review by specialists in entrepreneurship and environmental studies. A pilot test is conducted with similar artisans outside the main sample to refine the instrument. Reliability is tested using Cronbach's alpha, with a threshold of 0.70 considered acceptable for internal consistency. Finally, the data are analysed using ordinal regression, which is appropriate because sustainability outcomes are measured on a Likert scale.

3.1. Model Specification

The model for this study is developed based on the Triple Bottom Line theory, developed by Elkington (1997), which explains that a business should not aim for profit alone. However, it should also consider its impact on society and the natural environment, as this supports the goal of sustainable entrepreneurship, which is the core of this study. The model focuses on sustainability outcomes, measured by three key indicators. These are economic, environmental, and social sustainability. Each outcome is treated as a separate dependent variable, enabling the study to examine how green business practices affect distinct aspects of sustainability.

The independent variables are drawn from the components of a green business model. These include resource efficiency, waste management, energy efficiency, and the use of eco-friendly materials

The models are specified in econometric form as follows:

$$ECS_t = \theta_0 + \theta_1 RES_t + \theta_2 WST_t + \theta_3 ENG_t + \theta_4 ECO_t + \theta_5 EXP_t + \theta_6 EDU_t + \varepsilon_t \ldots\ldots\ldots\ldots 1$$

$$ENS_t = \beta_0 + \beta_1 RES_t + \beta_2 WST_t + \beta_3 ENG_t + \beta_4 ECO_t + \beta_5 EXP_t + \beta_6 EDU_t + \varepsilon_t \ldots\ldots\ldots\ldots 2$$

$$SOS_t = \Phi_0 + \Phi_1 RES_t + \Phi_2 WST_t + \Phi_3 ENG_t + \Phi_4 ECO_t + \Phi_5 EXP_t + \Phi_6 EDU_t + \varepsilon_t \ldots\ldots\ldots 3$$

Where: ECS=economic sustainability, ENS=environmental sustainability, SOS=social sustainability, RES =resource efficiency, WST=waste management, ENG = energy efficiency, ECO=the use of eco-friendly materials, EXP =years of experience, EDU=level of education, $\varepsilon_t = Error\ Term$, $\theta_0 - \theta_6$,$\beta_0 - \beta_{6,}$ $\Phi_0 - \Phi_6$=Parameters to be estimated

3.2. Description and Measurement of Variables in the Model

The Description and Measurement of Variables are presented in Table 1 as follows

Table 1 Description and Measurement of Variables in the Model

Variables	Measurement	Measurement Scale	Expected Sign
Dependent Variables			
Economic Sustainability (ECS)	This measures respondents' perceptions of income stability, cost reduction, and business growth among local artisans in Jalingo.	5 Likert Scale	Positive
Environmental Sustainability (ENS)	This measures respondents' perceptions of waste reduction, pollution control, and the efficient use of resources among artisans in Jalingo.	5 Likert Scale	Positive
Social Sustainability (SOS)	This measures respondents' perceptions of working conditions, customer satisfaction, and the community impact of artisan businesses in Jalingo.	5 Likert Scale	Positive
Independent Variables			
Resource Efficiency (RES)	This measures respondents' perceptions of how artisans reduce material use and reuse inputs during production in Jalingo.	5 Likert Scale	Positive
Waste Management (WST)	This measures respondents' perceptions of how artisans reduce, handle, and recycle waste in production processes in Jalingo.	5 Likert Scale	Positive
Energy Efficiency (ENG)	This measures respondents' perceptions of how artisans reduce energy use and apply efficient production methods in Jalingo.	5 Likert Scale	Positive
Eco-Friendly Materials (ECO)	This measures respondents' perceptions of artisans' use of safe, recyclable, and environmentally friendly materials in Jalingo.	5 Likert Scale	Positive
Control Variables			
Years of Experience (EXP)	This measures the number of years respondents have worked as artisans in Jalingo.	Continuous	Positive
Level of Education (EDU)	This measures the highest level of education attained by respondents in Jalingo.	Ordinal Scale	Positive

Source: Author's computation (2026)

4. Results

4.1. Respondents' Perspectives on Resource Efficiency (RES)

Table 2 presents the responses on resource efficiency among local artisans in Jalingo.

Table 2 Perceptions of Respondents on Resource Efficiency

S/N	Item	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean
1	I use raw materials in a way that reduces waste during production	102(32.4%)	125(39.7%)	40(12.7%)	28(8.9%)	20(6.3%)	3.83
2	I reuse materials to reduce production costs	118(37.5%)	110(34.9%)	36(11.4%)	31(9.8%)	20(6.3%)	3.87

Source: Author's Computation (2026)

For the statement "I use raw materials in a way that reduces waste during production," 102 respondents (32.4%) strongly agreed, and 125 respondents (39.7%) agreed, for a total of 227 respondents (72.1%) who acknowledged some level of resource-efficiency practice. However, 48 respondents (15.2%) either disagreed or strongly disagreed, indicating that not all artisans consistently apply waste-reducing techniques. The mean score of 3.83 suggests a generally positive but moderate level of resource efficiency.

For the second statement, "I reuse materials to reduce production cost," 118 respondents (37.5%) strongly agreed and 110 respondents (34.9%) agreed, for a total of 228 respondents (72.4%), reflecting slightly stronger engagement in cost-saving reuse practices. Nevertheless, the presence of neutral and negative responses shows that reuse is not fully institutionalised across all businesses. The mean score of 3.87 confirms moderate adoption. Artisans are applying these practices, though not consistently across all businesses.

4.2. Respondents' Perspectives on Waste Management (WST)

Table 3 presents responses on waste management practices.

Table 3 Perceptions of Respondents on Waste Management

S/N	Item	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean
1	I properly manage waste generated from my business activities	110(34.9%)	120(38.1%)	38(12.1%)	27(8.6%)	20(6.3%)	3.87
2	I recycle or reuse waste materials in my production process	95(30.2%)	118(37.5%)	45(14.3%)	37(11.7%)	20(6.3%)	3.74

Source: Author's Computation (2026)

For waste management practices, the first item shows that 230 respondents (73.0%) agreed that they properly manage waste generated from their businesses. However, about 47 respondents (14.9%) expressed disagreement, suggesting that waste handling is not uniform across all artisans. The mean score of 3.87 indicates moderate compliance with waste management practices, but not optimal. For recycling and reuse of waste materials, the agreement drops slightly to 213 respondents (67.7%). A relatively higher proportion of respondents remained neutral or disagreed, suggesting limited recycling capacity. The mean score of 3.74 further confirms that recycling practices are less developed compared to general waste handling.

4.3. Respondents' Perspectives on Energy Efficiency (ENG)

Table 4. presents responses on energy efficiency.

Table 4 Perceptions of Respondents on Energy Efficiency

S/N	Item	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean
1	I use energy-saving methods in my production process	90(28.6%)	122(38.7%)	48(15.2%)	35(11.1%)	20(6.3%)	3.72
2	I reduce unnecessary energy use in my business operations	105(33.3%)	120(38.1%)	42(13.3%)	28(8.9%)	20(6.3%)	3.83

Source: Author's Computation (2026)

Energy efficiency practices show a lower level of strong agreement than other green practices. For the first item, about 61.3% of respondents indicated some level of agreement, while nearly 17.4% disagreed, suggesting that while awareness exists, implementation remains limited. The mean score of 3.72 reflects moderate adoption. For the second item, responses are slightly stronger, with about 71.4% agreement. However, the presence of neutral responses indicates inconsistency in application. The mean score of 3.83 suggests that energy-saving practices are present but not deeply embedded in artisan operations.

4.4. Respondents' Perspectives on Eco-Friendly Materials (ECO)

Table 5. presents responses on eco-friendly materials.

Table 5 Perceptions of Respondents on Eco-Friendly Materials

S/N	Item	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean
1	I use environmentally friendly materials in my production	85(27.0%)	115(36.5%)	55(17.5%)	40(12.7%)	20(6.3%)	3.65
2	I avoid materials that can harm the environment	98(31.1%)	120(38.1%)	42(13.3%)	35(11.1%)	20(6.3%)	3.76

Source: Author's Computation (2026)

The use of eco-friendly materials shows comparatively weaker adoption. In the first item, 200 respondents (63.5%) agreed, while a notable 31.1% remained neutral or disagreed, indicating limited access or affordability issues. The mean score of 3.65 is the lowest among green practice variables, suggesting constrained adoption. For the second item, agreement increases slightly to 218 respondents (69.2%). However, the persistence of neutral responses indicates uncertainty about material sustainability. The mean score of 3.76 indicates moderate, but not strong, environmental material substitution.

4.5. Respondents' Perspectives on Sustainable Entrepreneurship

4.5.1. Economic Sustainability (ECS)

Table 6. presents responses on economic sustainability.

Table 6 Perceptions of Respondents on Economic Sustainability

S/N	Item	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean
1	My business income is stable over time	92(29.2%)	110(34.9%)	50(15.9%)	43(13.7%)	20(6.3%)	3.66
2	I have reduced production costs in my business	115(36.5%)	118(37.5%)	35(11.1%)	27(8.6%)	20(6.3%)	3.86

Source: Author's Computation (2026)

Economic sustainability shows mixed outcomes. While 68.4% of respondents reported some level of income stability, a relatively high proportion expressed uncertainty or disagreement about it, suggesting that earnings remain volatile in the artisan sector. The mean score of 3.66 confirms moderate economic sustainability. To reduce costs, responses are more positive, with 73.9% agreement, indicating that green practices such as reuse and efficiency are helping reduce operational costs. However, cost reduction does not necessarily translate into stable income, highlighting structural market challenges.

4.6. Environmental Sustainability (ENS)

Table 7. presents responses on environmental sustainability.

Table 7 Perceptions of Respondents on Environmental Sustainability

S/N	Item	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean
1	My business activities reduce environmental pollution	108(34.3%)	118(37.5%)	40(12.7%)	29(9.2%)	20(6.3%)	3.81
2	I use resources in a way that protects the environment	112(35.6%)	120(38.1%)	38(12.1%)	25(7.9%)	20(6.3%)	3.86

Source: Author's Computation (2026)

Environmental sustainability outcomes are relatively stronger than economic outcomes. About 71.8% of respondents agreed that their activities reduce pollution, suggesting awareness of environmental responsibility. However, full compliance is not universal. The mean score of 3.81 indicates moderate environmental performance. For resource protection, agreement rises slightly to 73.7%, indicating a positive but not absolute commitment to sustainable resource use. The presence of neutral responses suggests that environmental practices are still evolving among artisans.

4.7. Social Sustainability (SOS)

Table 8. presents responses on social sustainability.

Table 8 Perceptions of Respondents on Social Sustainability

S/N	Item	SA (5)	A (4)	U (3)	D (2)	SD (1)	Mean
1	My business improves my relationship with customers and the community	120(38.1%)	115(36.5%)	30(9.5%)	30(9.5%)	20(6.3%)	3.90
2	My working conditions are safe and socially acceptable	110(34.9%)	118(37.5%)	35(11.1%)	32(10.2%)	20(6.3%)	3.84

Source: Author's Computation (2026)

Social sustainability shows better performance than economic outcomes. About 74.6% of respondents reported improved community relations, suggesting that artisan businesses contribute positively to social cohesion. However, some dissatisfaction still exists, reflected in the neutral and disagreement responses. Regarding working conditions, 72.4% of respondents agreed, while a minority expressed concerns about safety and acceptability. The mean score of 3.84 confirms moderate but stable social sustainability outcomes.

4.8. Ordinal Regression Model Estimates

The study estimated three separate ordinal regression models to examine how green business practices affect each dimension of sustainability. The results are presented in the following tables:

For resource efficiency (RES) in Table 9, the effect is strong and highly significant ($p < 0.01$), with an odds ratio of 2.489, which means that a one-unit increase in resource efficiency increases the likelihood of achieving higher economic sustainability by about 148.9%, which shows that better use of materials directly improves income stability and cost reduction. Likewise, eco-friendly materials (ECO) show a strong and significant effect ($p < 0.01$), with an odds ratio of 2.140, which implies that a one-unit increase in the use of eco-friendly materials raises the chances of improved

economic sustainability by 114%, which suggests that better input choices can improve product value and reduce long-term costs.

Table 9 Estimated Ordinal Regression Model for Economic Sustainability (ECS)

Variables	Estimate	Std. Error	Wald	Sig.	Odds Ratio
RES	0.912	0.184	24.56	0.000*	2.489
WST	0.533	0.231	5.32	0.021**	1.704
ENG	0.287	0.196	2.14	0.142	1.332
ECO	0.761	0.221	11.85	0.001*	2.140
EXP	0.402	0.153	6.86	0.009**	1.495
EDU	0.315	0.154	4.18	0.041**	1.370

Source: Author's computation (2026)

For waste management (WST), the effect is moderate and significant ($p < 0.05$), with an odds ratio of 1.704, which indicates that a one-unit increase in waste management increases the likelihood of higher economic sustainability by 70.4%. However, energy efficiency (ENG) is not statistically significant ($p > 0.05$), despite an odds ratio of 1.332, suggesting that while energy-saving measures may have some positive effects, they do not strongly influence income outcomes in this context. Among the control variables, experience (EXP) is significant ($p < 0.05$) with an odds ratio of 1.495, meaning a one-unit increase in experience raises the likelihood of better economic sustainability by 49.5%. Likewise, education (EDU) is significant with an odds ratio of 1.370, indicating a 37% increase in the likelihood of improved economic outcomes.

Table 10 Estimated Ordinal Regression Model for Environmental Sustainability (ENS)

Variables	Estimate	Std. Error	Wald	Sig.	Odds Ratio
RES	0.684	0.218	9.84	0.002*	1.982
WST	0.905	0.205	19.46	0.000*	2.472
ENG	0.518	0.219	5.61	0.018**	1.679
ECO	0.822	0.210	15.32	0.000*	2.275
EXP	0.198	0.160	1.54	0.214	1.219
EDU	0.276	0.149	3.45	0.063	1.318

Source: Author's computation (2026)

For waste management (WST) in Table 10, the effect is strongest and highly significant ($p < 0.01$), with an odds ratio of 2.472, which means that a one-unit increase in waste management increases the likelihood of better environmental sustainability by 147.2%, which confirms that proper waste handling plays a key role in reducing environmental harm. Similarly, eco-friendly materials (ECO) show a strong and significant effect ($p < 0.01$), with an odds ratio of 2.275, which indicates that a one-unit increase in eco-friendly material use raises the likelihood of improved environmental sustainability by 127.5%.

For resource efficiency (RES), the effect is significant ($p < 0.01$), with an odds ratio of 1.982, which implies that a one-unit increase in resource efficiency increases the likelihood of better environmental outcomes by 98.2%. In addition, energy efficiency (ENG) is significant ($p < 0.05$), with an odds ratio of 1.679, indicating that a one-unit increase in energy efficiency increases the likelihood of improved environmental sustainability by 67.9%. However, neither experience (EXP) nor education (EDU) is statistically significant in this model, which suggests that environmental outcomes depend more on actual practices than on personal characteristics.

Table 11 Estimated Ordinal Regression Model for Social Sustainability (SOS)

Variables	Estimate	Std. Error	Wald	Sig.	Odds Ratio
RES	0.215	0.138	2.45	0.118	1.240
WST	0.441	0.213	4.27	0.039**	1.554
ENG	0.102	0.122	0.69	0.401	1.107
ECO	0.356	0.198	3.21	0.072	1.428
EXP	0.465	0.171	7.38	0.006**	1.592
EDU	0.188	0.137	1.88	0.172	1.207

Source: Author's computation (2026)

For waste management (WST) in Table 11, the effect is significant ($p < 0.05$), with an odds ratio of 1.554, which indicates that a one-unit increase in waste management increases the likelihood of better social sustainability by 55.4%, which suggests that proper waste handling improves community perception and working conditions. Also, experience (EXP) is significant ($p < 0.01$), with an odds ratio of 1.592, indicating that a one-unit increase in experience increases the likelihood of improved social sustainability by 59.2%, which shows that artisans adopt better social practices over time.

However, resource efficiency (RES) is not significant ($p > 0.05$), with an odds ratio of 1.240, which suggests that material efficiency does not strongly influence social outcomes. Similarly, energy efficiency (ENG) is not significant, with an odds ratio of 1.107, suggesting a weak, insignificant effect on social sustainability. For eco-friendly materials (ECO), the odds ratio is 1.428, suggesting a positive effect. However, it is not statistically significant at the 5% level, suggesting that eco-friendly materials have a limited effect on social outcomes. Finally, education (EDU) is not significant, which suggests that formal education does not strongly influence social sustainability in this context.

5. Discussion of Results

The findings from this study show that green business practices have varying effects on the three dimensions of sustainability among local artisans in Jalingo. Starting with economic sustainability, the results show that resource efficiency and the use of eco-friendly materials have strong, significant effects, indicating that artisans who manage materials well and use safer inputs are more likely to achieve stable income and reduce costs. This result aligns with the findings of Adekanmi et al. (2026), who reported that waste management and eco innovation improve competitive advantage among manufacturing firms in Nigeria. However, unlike their study, which focused on formal firms, this study shows that similar benefits also apply to informal artisans. In addition, the result supports Al Hattami et al. (2026), who found that green practices improve financial sustainability. While their study focused on digital accounting systems, this study shows that simple production practices can also drive financial outcomes for small artisans.

However, energy efficiency did not explain economic sustainability, which suggests that energy-saving practices may not immediately translate into higher income for artisans. This finding differs from Almusaed et al. (2024), who found that energy efficiency reduces costs in construction systems. The difference may be due to scale. Large firms benefit more from energy savings, while small artisans may not see immediate financial gains. Furthermore, the significance of experience and education supports the Resource-Based View (Barney, 1991), which explains that internal capabilities improve performance, and this aligns with Maharjan (2025), who found that knowledge and experience shape business outcomes, al. However, the study focused on formal green entrepreneurs.

Moving to environmental sustainability, the results show that all the core green business variables are significant. Waste management has the greatest effect, followed by eco-friendly materials and resource efficiency, confirming that direct environmental practices are key drivers of environmental outcomes. This finding is consistent with Tekala et al. (2024), who found that green entrepreneurship improves sustainability through structural practices. It also aligns with Sun and Zhang (2022), who showed that resource-saving strategies improve environmental performance. However, unlike their policy-level analysis, this study provides evidence at the individual artisan level. In addition, the findings support the findings of Udodiugwu et al. (2025), who argued that eco-friendly products are important for environmental sustainability. However, while their study was conceptual, this study provides empirical evidence.

On the other hand, experience and education were not significant in this model, suggesting that environmental sustainability depends more on actual practices than on personal characteristics, a finding that contrasts with Diepolder

et al. (2024), who found that knowledge and exposure improve sustainability awareness. The difference may be because awareness alone does not guarantee practice. Artisans may know about sustainability but still face barriers to applying it, which supports the argument by Mani and Manoharan (2026), who noted that financial and structural challenges limit green adoption.

For social sustainability, the results show a different pattern. Waste management and experience are the only significant variables, suggesting that proper waste handling improves community relations and working conditions. This finding agrees with Unegbu et al. (2024), who noted that sustainable practices improve social outcomes in the construction sector. It also supports Okechukwu et al. (2023), who found that recycling practices improve business innovation and stakeholder engagement. However, other variables, such as resource efficiency, energy efficiency, and eco-friendly materials, were not significant, which indicates that not all green practices directly influence social outcomes. Some may focus more on production than on social interaction.

Interestingly, experience plays a strong role in social sustainability, suggesting that artisans learn better ways to relate to customers and manage work conditions over time. This finding aligns with Baiocco and Paniccia (2023), who showed that knowledge and time improve sustainable business practices. However, education was not significant, suggesting that formal schooling may not directly shape social behaviour in informal settings, which reflects the practical nature of artisan work, where skills are often learned through experience rather than formal training.

6. Conclusion

This study examined how green business practices affect sustainable entrepreneurship among local artisans in Jalingo, Taraba State. It focused on three outcomes, namely economic, environmental, and social sustainability. The findings show that green practices do matter, but their effects differ across outcomes. Resource efficiency and the use of eco-friendly materials significantly improve economic sustainability, enabling artisans to earn a more stable income and reduce costs by managing inputs effectively. Waste management also supports economic outcomes, although to a lesser extent, while energy efficiency shows no strong effect in this area.

Furthermore, the results show that environmental sustainability depends mainly on direct green practices. Waste management, eco-friendly materials, resource efficiency, and energy efficiency all have significant effects, which suggests that artisans can reduce environmental harm by actively applying these practices in their daily work. However, personal factors such as education and experience do not play a strong role here. In contrast, social sustainability shows a different pattern. Only waste management and experience are significant, meaning that better waste handling improves community relations and working conditions, while years of practice help artisans build trust and enhance their social environment. Other green practices do not appear to have a strong influence in this area.

Recommendations

Based on the findings, the following policy recommendations are proposed:

- First, government agencies such as SMEDAN and state ministries should introduce targeted training programs for artisans. These programs should focus on practical skills such as waste management, material reuse, and eco-friendly production methods. Training should be simple, hands-on, and adapted to local trades such as carpentry, tailoring, and welding.
- Second, there is a need for financial support to encourage adoption. Government and development partners should provide small grants or low-interest loans to artisans who adopt green practices. For example, artisans who use recycled materials or reduce waste can receive financial incentives, thereby reducing the cost barrier that limits adoption.
- Third, local authorities should establish waste collection and recycling centres within artisan clusters. Many artisans lack proper systems for waste disposal. By providing shared facilities, policymakers can improve waste management practices and reduce environmental pollution.
- Fourth, awareness campaigns should be introduced to educate artisans on the benefits of green business practices. These campaigns can be carried out through trade associations, local markets, and community meetings.
- Fifth, policies should support access to affordable, eco-friendly materials. The government can partner with suppliers to make these materials available at a lower cost, which is important because the study shows that eco-friendly inputs improve both economic and environmental sustainability.

Finally, there is a need to strengthen institutional support at the local level, which includes improving access to tools, infrastructure, and extension services. Policymakers should also involve artisan groups in decision-making to ensure that policies reflect their real needs.

Compliance with ethical standards

Disclosure of conflict of interest

The author declares that there is no conflict of interest regarding the Publication of this paper.

Statement of ethical approval

The study involved human participants through the administration of questionnaires to local artisans in Jalingo, Taraba State. Ethical approval for the study was obtained from the appropriate research authority/Committee of Taraba State Polytechnic, Suntai. Participation was voluntary, and respondents were assured of confidentiality and anonymity.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

References

[1] Adekanmi, O. J., Oyedele, O. O., Umar, A., &Jenyo, B. O. (2026). Impact of green entrepreneurship on sustainable competitive advantage among manufacturing firms in Lagos and Ogun state, Nigeria. Gombe Journal Of Administration And Management (GJAM), 8(1), 1–12.

[2] Al-Hattami, H. M., Mady, K., & Al-Bukhrani, M. A. (2026). Green digital accounting and sustainable entrepreneurship in emerging economies: impacts on financial sustainability and performance. Cogent Business & Management, 13(1), 2601944.

[3] Almusaed, A., Yitmen, I., Myhren, J. A., &Almssad, A. (2024). Assessing the impact of recycled building materials on environmental sustainability and energy efficiency: a comprehensive framework for reducing greenhouse gas emissions. Buildings, 14(6), 1566.

[4] Baiocco, S., & Paniccia, P. M. (2023). Business model innovation in sustainable entrepreneurship: co-evolutionary evidence from small accommodation firms. Business Process Management Journal, 29(8), 260-292.

[5] Barney, J. B. (1991). Firm resources and sustained competitive advantage. Journal of Management, 17(1), 99–120

[6] Busch, T., Barnett, M. L., Burritt, R. L., Cashore, B. W., Freeman, R. E., Henriques, I., ... & York, J. (2024). Moving beyond "the" business case: How to make corporate sustainability work. Business Strategy and the Environment, 33(2), 776–787.

[7] Diepolder, C. S., Weitzel, H., & Huwer, J. (2024). Exploring the impact of sustainable entrepreneurial role models on students' opportunity recognition for sustainable development in sustainable entrepreneurship education. Sustainability, 16(4), 1484.

[8] Elkington, J. (1997). Cannibals with forks: The triple bottom line of 21st century business. Capstone Publishing.

[9] Maharjan, S. (2025). Sustainable Business through Green Entrepreneurship in Nepal.

[10] Mani, A., & Manoharan, G. (2026). Green entrepreneurship: a road to sustainable entrepreneurial growth. In Incentives and Benefits for Adopting Green Entrepreneurship Practices (pp. 169–190). IGI Global Scientific Publishing.

[11] Master's Degree Programme in International Business Management, Jyväskylä: JAMK University of Applied Sciences

[12] Okechukwu, E. U., Ugwu, F. I., & Oluka, U. K. (2023). Green Business Strategy and Sustainable Entrepreneurship Development in Enugu State. International Journal of Advanced Economics and Sustainable Development (IJAESD), 6(3).

[13] Sun, Z., & Zhang, J. (2022). Impact of resource-saving, environmentally friendly society construction on sustainability: sustainability, 14(18), 11139.

[14] Tekala, K., Baradarani, S., Alzubi, A., & Berberoğlu, A. (2024). Green entrepreneurship for business sustainability: do environmental dynamism and green structural capital matter?. Sustainability, 16(13), 5291.

[15] Udodiugwu, M. I., Obiakor, U. J., Eneremadu, K. E., Onwuegbuchulem, N. C., &Anyaegbunam, C. E. (2025). Promoting environmental sustainability through eco-friendly products: A critical review for sustainable development. Annals of Management and Organisation Research, 6(3), 247-252.

[16] Unegbu, H. C., Yawas, D. S., Dan-Asabe, B., & Alabi, A. A. (2024). Sustainable construction models in Nigeria: A systematic review. Journal of Mechanical, 109-127.

[17] Wilson, D. C. (2023). Learning from the past to plan for the future: An historical review of the evolution of waste and resource management 1970–2020 and reflections on priorities 2020–2030–The perspective of an involved witness. Waste Management & Research, 41(12), 1754-1813.