WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Environmental Determinants of Livelihood Resilience within the Lotuko Community in Juba, South Sudan

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ABSTRACT :

The study aims to assess the impact of environmental factors on livelihood sustainability among the Lotuko community of Juba, South Sudan. The study was further anchored on the Sustainable Livelihoods Theory. This study employed a convergent parallel mixed-methods design. The population target was 12,654 Indigenous entrepreneurs engaged in practicing crafts, agro-processing, herbal medicine, and communal services, and older persons who hold cultural and historical knowledge. Cochran's formula was used to sample 182 participants, where 142 entrepreneurs were selected through stratified random sampling, and 40 elders were purposively sampled for focus group discussions (FGDs). Data collection instruments included structured questionnaires and FDG. Quantitative data were analyzed with SPSS Version 27 using descriptive methods as Pearson's correlations and linear regression model were employed in the statistical test. Qualitative data were transcribed, coded, and analyzed thematically in NVivo. It was found that environmental aspects are a key determinant in livelihood sustainability, with where the deep impacts caused by land loss, environmental degradation, and urban displacement. Findings also indicated that correlation between access to agricultural land, environmental status, and sustainable livelihoods, but stories obtained from participants revealed the decline of conventional farm operations, fishing operations, and foraging activity as a result of land grabbing, insecurity, and urbanization. The study recommended Training for Indigenous entrepreneurs of Otuho in Juba, South Sudan. This will help indigenous social entrepreneurs to strengthen resilience and scalability of indigenous enterprises by improving access to capital, gender-inclusive participation, and sustainable livelihoods amid environmental displacement.

Keywords: Environmental Determinants, Livelihood Sustainability, Indigenous Community, Forest Protection, Food Security and Cultural values.

INTRODUCTION:

Environmental conditions play an important role in deciding livelihood sustainability, particularly in post-conflict and fragile situations. Environmental factors refer to the ecological and natural conditions such as land, water, forests, climate, and biodiversity, that influence human survival and economic activity (UNDP, 2022). They define the capacity of communities to access basic needs and resist ecological shocks. Environmental determinants are access to land and security of tenure, fertility of soil, variability of rainfall, forest cover loss, and climate shocks such as floods and droughts Sustainable livelihood, on the other hand, is defined as the ability of individuals, households, and communities to gain their needs and improve well-being without undermining ecological and social systems that they are dependent on (FAO, 2023). For sustainability at the livelihood level, measures such as food security, stability of income, resilience to environmental stressors, and adaptive capacity to environmental change are often employed (Kusumastuti et al., 2022). Observing how these factors shape one another provides a key frame of reference for assessing community well-being and resilience in circumstances where natural resources are both integral and under threat.

Globally, approximately 70% of rural households in Sub-Saharan Africa are directly reliant on natural resources for their livelihood, but climate change and land degradation threaten the integrity of the systems (World Bank, 2023). In South Sudan, environmental shocks such as drought and floods cause frequent food insecurity affecting more than 9 million individuals annually (WFP, 2024). Against this broader national context, South Sudan's Lotuko community in Juba shows how indigenous societies navigate ecological constraints while seeking livelihood resilience. Land scarcity due to urban expansion, Nile flooding along riverine areas during seasonal periods, and deterioration of traditional resource-sharing frameworks have pushed the majority of Lotuko families into altering their survival strategies. Such environmental pressures underscore the need to examine the manner in which ecological drivers influence sustainable livelihoods in an effort to build resilience and inclusive development planning among the population.

Amaliah et al. (2025) conducted a scientometric analysis of rural sustainable livelihood research between 1988–2023. The study reflected an increase in publications that emphasized climate change adaptation, social capital, and resilience strategies. However, disjointed collaboration networks and non-researched topics such as gender, digital innovation, and localized ecological indicators were observed. Apart from global trends, empirical evidence from developed countries also indicates the importance of environment-livelihood interlinkages. For instance, Nelson et al. (2023) examined in Australia where severe episodes of drought in New South Wales affected farm households. The study identified that environmental shocks not just impacted agricultural output and income stability but also eroded mental health and social coherence, demonstrating that even in high-resource environments, environmental conditions may undercut rural livelihood sustainability.

In Ethiopia, Duku et al. (2025) modeled the application of climate and rangeland productivity models to assess the livestock carrying capacity in a future climate change scenario. The results indicated a possible decrease of up to 37% of the carrying capacity that would significantly reduce household income and food availability for pastoral and agro-pastoral households. This affirms the vulnerability of Ethiopian rural livelihoods to climate shocks and the need to apply adaptation strategies such as improved grazing management and diversification of feeds. Further in Kenya, Duku et al. (2025) also reported a future 24% reduction in livestock carrying capacity in certain mixed crop–livestock systems. The reduction will affect household food security, especially considering that livestock is a source of income and a rural community safety net. The study recommended adaptive interventions like investment in pasture development and early warning systems to enhance Kenyan smallholder farmers' livelihood resilience.

In South Sudan, the World Bank (2024) and FAO (2023) have documented how recurrent floods, land degradation, and tenure insecurity exacerbate food insecurity and displacement. Around 80% of the population depends on agriculture, livestock, and fisheries for livelihood, but environmental shocks between 2020 and 2023 resulted in extensive crop losses and mortality of livestock. These shocks have worsened domestic vulnerability as well as reliance on humanitarian assistance, to serve to highlight the vulnerable relationship between livelihood resilience and South Sudan natural resource systems.

At the local level, Muras (2025) examined women's entrepreneurial activities among the Lotuko people of Juba. Environmental factors, such as limited access to productive land, urban expansion, and seasonal flooding were found to significantly constrain livelihood choices. Although it is typical for women to rely on social networks and informal savings in the upkeep of micro-enterprises, such controls remain highly vulnerable to environmental interruption. The findings demonstrate the way environmental determinants directly affect household livelihoods viability at a local scale. Despite this, there is very little existing national scope or entrepreneurship-narrow research in South Sudan, forming the gap being addressed through studies that connect environmental pressures to household-level livelihood outcomes of sustainability.

REVIEW OF THE LITERATURE:

The Indigenous social entrepreneurship and the natural environment are closely interconnected, with environmental factors affecting livelihood strategies, business viability, and community welfare. Ecological elements such as climate change, natural disasters, soil fertility, and pollution directly affect entrepreneurship, particularly in vulnerable and post-conflict settings. For example, Akinbami et al. (2019) reported that climate change in Nigeria degraded entrepreneurship because it reduced soil fertility, prolonged dry seasons, and created unpredictable weather patterns that affected agricultural enterprises. Similarly, Skran (2020) pointed out that post-conflict environments ravage Indigenous entrepreneurship through the courtesy of bad infrastructure, social fragmentation, and chronic insecurity. These observations highlight that Indigenous people prefer to depend on ecological stability for supporting food and cultural values, along with resource-sharing mechanisms, all of which are entrenched in livelihood sustainability.

Globally, studies reveal how Indigenous entrepreneurship and natural resources relate to livelihood sustainability. In Bangladesh, Datta and Sahu (2020) were concerned with the role of forest projects in the livelihood of 300 Indigenous families. Their survey-based study revealed that access to alternative livelihood strategies influenced forest extraction, and economic autonomy significantly affected forest conservation. The study concluded that sustainable forest management improves both environmental outcomes and Indigenous living. In Turkey, Gurbuz and Ozkan (2020) investigated 88 Indigenous entrepreneurs and revealed that environmental pollution and climate change lowered revenues considerably, destroyed property, lowered water resources, and decreased livestock productivity. Respondents also projected that raw material scarcity and shifting consumer demand would constrain entrepreneurship in the future. These results illustrate how environmental degradation constrains entrepreneurial resilience among resource-dependent communities.

In West Africa, Akinbami (2021) examined how Indigenous entrepreneurs in Nigeria adapted to climate change. Based on exploratory interviews with 20 entrepreneurs, the study found that relying on natural resources subjected communities to food insecurity, health risks, and infrastructural loss. Inability to adequately adapt increased poverty and undermined entrepreneurial development. This indicates how climate-induced livelihood shocks undermine entrepreneurship in different ecological settings.

In East Africa, Vågsholm et al. (2020) assessed climate change impacts on smallholder Indigenous food producers using data collected from 400 entrepreneurs. The findings indicated that reliance on rain-fed agriculture exposed producers to cycles of poor production, poverty, and food insecurity, exacerbated by low adaptive capacity. This study demonstrated that rising temperatures and rainfall uncertainty have negative effects on community food security and business viability. Similarly, Quandt and Kimathi (2017) in Kenya employed mixed methods with 130 Indigenous farmers and established that floods and droughts significantly reduced agricultural and animal productivity, undermining the feasibility of Indigenous business. These findings underscore how climate shocks threaten livelihoods and require sustainable adaptation measures.

Ncube et al. (2021) surveyed 460 households, including 100 Indigenous forest-based entrepreneurs in South Sudan, to study forests' role in livelihood contribution. The study revealed that excessive use of forest products for income and energy has heightened deforestation, currently estimated at a rate of 2% per annum. Despite government interventions, such as the National Forest Policy and the National Adaptation Programmes of Action (NAPA), population pressure and unsustainable extraction persist. While this study prioritized household and forest level processes, it overlooked Indigenous entrepreneurial models, leaving gaps in knowledge regarding how specific Indigenous populations sustain livelihoods under ecological stress conditions. Environmental issues for the Lotuko people of Juba are not just economic but also cultural. Forest, grazing land, and ritual sites are imbued with symbolic and identity significance. Land commodification, Nile floods, and war-induced displacement have, however, disrupted these environmental connections. Unlike other studies, which largely focused on households or overall Indigenous populations, the present study aims at Indigenous entrepreneurship and the intersection of environmental concerns with livelihood sustainability. This fills an important research gap by situating the Lotuko people within the fragile ecological and socio-political environment of South Sudan.

SCOPE OF THE STUDY:

This study was designed to assess the Environmental determinants of community sustainable livelihood within the Otuho (Lotuko) ethnic group, with a specific focus on the community residing in the Gumbo residential area of Juba, South Sudan. Geographically, the scope was delimited to this single

urban-rural interface on the eastern side of the River Nile. While this area offers access to a significant Otuho population, its location presents logistical challenges, including transportation barriers. The researcher mitigated these through a contingency research budget, the strategic use of local research assistants, and collaboration with community leaders to ensure accessibility and trust-building during data collection. Demographically, the study targeted Otuho men and women engaged in indigenous social entrepreneurial activities, including elders whose cultural and experiential knowledge was crucial in understanding traditional livelihoods and evolving entrepreneurial practices.

STATEMENT OF THE PROBLEM:

South Sudan offers a highly urgent case in which the linkage between environmental conditions and livelihood sustainability has to be studied rigorously. The country is hit with persistent ecological shocks of floods, droughts, land erosion, and forest cover loss, topped by political instability and weak institutional capacity (World Bank, 2024). These forces have undermined farm productivity, reduced livestock viability, and increased dependency on humanitarian aid, with over nine million people experiencing food insecurity in recent years (WFP, 2024). Nearly 80% of South Sudanese households rely on natural resources for livelihood, environmental factors such as land scarcity, insecure tenure arrangements, and rainfall uncertainty have emerged as significant determinants of livelihood stability. Indigenous populations, whose lives and identities are bound up with environmental resources, are becoming more exposed as climate change and urbanization erode their historic resource bases and adaptation strategies. Traditionally, Lotuko community of Juba depended on open land, sharing a network of resources, and agro-pastoralism, but presently they have land shortages due to urbanization, seasonal Nile flooding, and decreasing forest cover (Muras, 2025). While families are managing through small-scale businesses and informal social safety nets, these mechanisms are precarious and poorly represented in research literature. There is also a lack of context-appreciation for how environmental stress directly affects their livelihood sustainability. This study seeks to fill this knowledge gap by examining the impact of environmental factors on livelihoods for Juba's Lotuko community, South Sudan.

OBJECTIVE OF THE STUDY:

To assess the impact of environmental factors on livelihood sustainability among the Lotuko community of Juba, South Sudan.

RESEARCH METHODOLOGY:

This study employed a convergent parallel mixed-methods design, collecting quantitative and qualitative data simultaneously to assess how the environmental factors impact livelihood sustainability of the Lotuko people of Gumbo, Rajaf Payam, Central Equatoria State, South Sudan. The population of interest were Indigenous entrepreneurs engaged in practicing crafts, agro-processing, herbal medicine, and communal services, and older persons who hold cultural and historical knowledge. Target population was 12,654 participants.

DATA COLLECTION:

The study used primary data, which refers to first hand data gathered from the participants. Data collection instruments included structured questionnaires rated on a 5-point Likert scale and focus group guides with open-ended questions on environmental issues in relation to sustainable livelihood.

SAMPLE TECHNIQUE:

Cochran's formula, stratified random sampling and purposive sampling technique were used to sample entrepreneurs and elders respectively.

SAMPLE SIZE:

A total sample of 182 participants was engaged in the study, (142 entrepreneurs and 40 elders.

TOOLS FOR ANALYSIS:

Quantitative data were analyzed with SPSS Version 27 using descriptive method. Simple percentages, mean and standard deviation were considered in data presentation whereas Pearson's correlations and linear regression model were employed in the statistical test, while qualitative FGD data were transcribed, coded, and analyzed thematically in NVivo; both streams' findings were then integrated to provide a synoptic comprehension of the interaction between environmental factors and livelihood sustainability.

ANALYSIS AND PRESENTATION:

NORMALITY TESTS

The descriptive statistics table 1 presents the normality indicators for the key variable of the study; Environmental Factors, and Community Sustainable Livelihood. The results include measures such as the mean, median, standard deviation, variance, skewness, and kurtosis. These indicators are essential in determining the symmetry and distribution of the data, which ultimately helps assess the appropriateness of parametric tests.

Table 1: Skewness and Kurtosis

Variables	Std. Deviation	Skewness	Kurtosis
Environmental Factors	.688	-8.12	.920
Community Sustainable Livelihood	.719	-4.12	.615

INTERPRETATION:

The Environmental Factors variable exhibits a mean of 3.32 and a median of 3.50, with a standard deviation of 0.688. The skewness is -0.812, which is within the commonly accepted range of ±1, indicating slight negative skewness. The kurtosis value is 0.920, close to 1, suggesting a distribution that is slightly more peaked than a normal curve but still within acceptable limits. Further, the Community Sustainable Livelihood (the dependent variable) shows a mean of 3.32 and a median of 3.33, again suggesting symmetry in the data. The skewness is -0.412 and the kurtosis is 0.615, which both confirm that the distribution does not deviate significantly from normality. The standard deviation is 0.719, which is also consistent with other variables in the study. Therefore, variables exhibit acceptable levels of skewness and kurtosis, supporting the assumption of normality. This justifies the use of parametric statistical techniques such as correlation, t-tests, and regression analyses in subsequent phases of analysis. The closeness of means and medians, along with symmetric distribution characteristics, reinforces the reliability of the composite variables used to measure environmental factors, and their impact on sustainable livelihood among the Lotuko community in Juba.

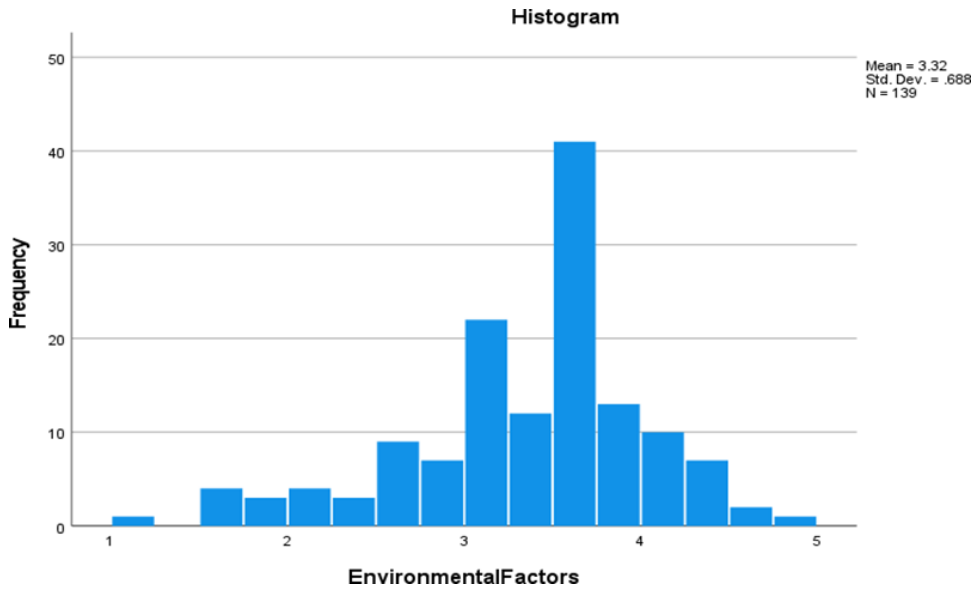
Table 2: Shapiro-Wilk and Kolmogorov-Smirnov Tests

Variables	Kolmogorov-Smirnov	Shapiro-Wilk
Environmental Factors	<.001	<.001
Community Sustainable Livelihood	<.001	.017

INTERPRETATION:

The table 2 presented the results of the Kolmogorov-Smirnov and Shapiro-Wilk normality tests for the variables in the study: Environmental Factors, and Community Sustainable Livelihood. The case is different for Environmental Factors, where the Shapiro-Wilk significance value is < .001, indicating a statistically significant deviation from normality. Therefore, the null hypothesis of normality is rejected for this variable. This result implies that the environmental factors data is not normally distributed. In addition, the Community Sustainable Livelihood variable, which is the dependent variable in this study, also shows a Shapiro-Wilk significance of 0.017, which is below the 0.05 threshold. This means that this variable is not normally distributed either, and the null hypothesis of normality is rejected.

Figure 1: Environmental Factors

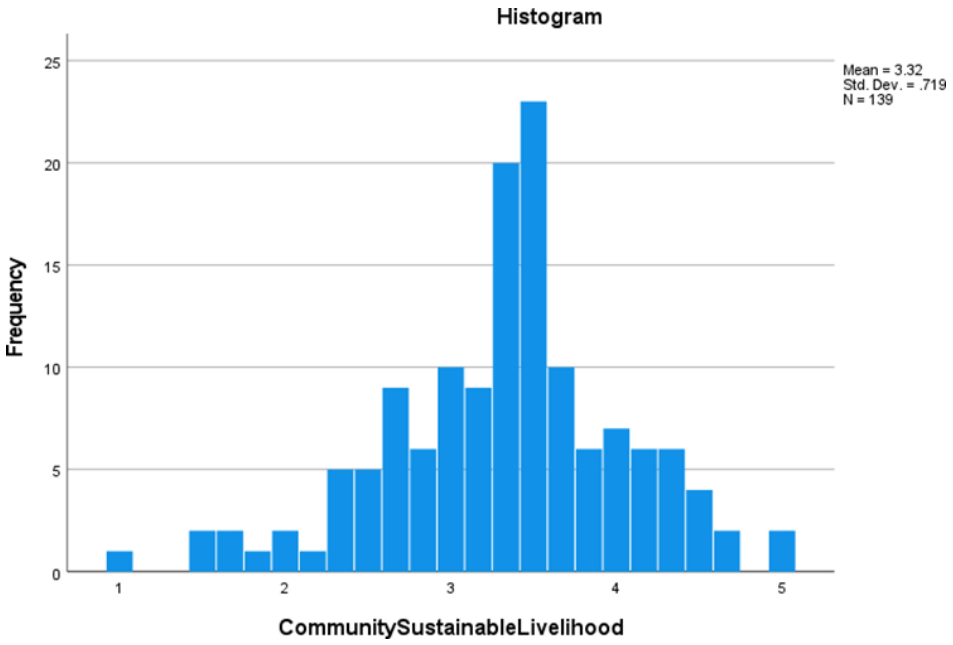


INTERPRETATION:

The histogram for the Environmental Factors variable illustrates a moderately symmetrical distribution centered around the mean value of 3.32, with a standard deviation of 0.688. This implies that respondents generally provided mid-to-high agreement responses regarding environmental influences on indigenous social entrepreneurship and livelihood sustainability in the Lotuko community of Juba.

Visually, the histogram forms a gentle bell-shaped curve, with the highest frequency of responses concentrated near the center of the scale, particularly between 3.0 and 4.0. This central clustering suggests that participants perceive environmental factors such as government support, resource availability, infrastructure, and local business initiatives as significantly influencing their entrepreneurial and livelihood activities. The diagram does not show extreme skewness or outliers. The spread of the bars is fairly even on either side of the peak, suggesting an approximate normal distribution, though the peak is slightly steeper than a perfect Gaussian curve. Such a structure supports the reliability of the composite score for environmental factors, validating the aggregation of multiple Likert items into a single variable. In finding, the histogram reflects a balanced distribution with mild normality characteristics. It affirms that respondents have moderately consistent perceptions about the role of environmental elements in shaping indigenous entrepreneurship, providing a stable basis for subsequent parametric analyses such as correlation or regression.

Figure 2: Community Sustainable Livelihood

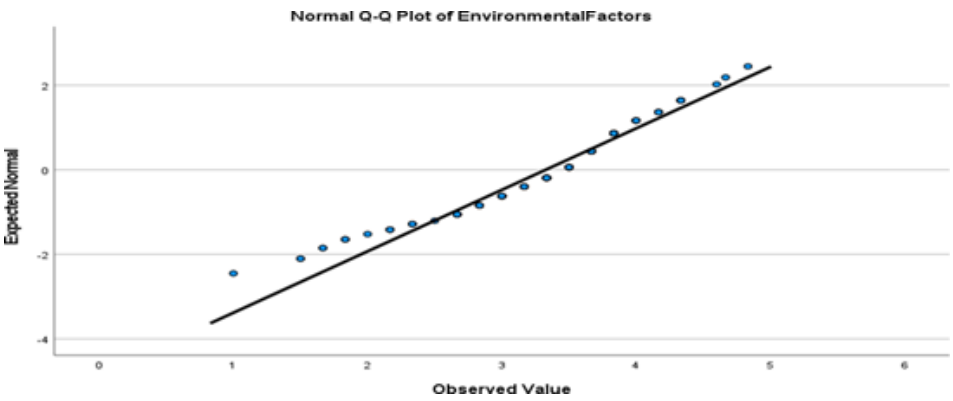


INTERRETATION:

The histogram of the Community Sustainable Livelihood variable presents a distribution that is approximately symmetrical, with most values clustering between the 3.0 and 4.0 scale points. This central tendency suggests that a majority of respondents rated their agreement around the middle to higher end of the Likert scale, indicating a generally positive perception of the impact of indigenous social entrepreneurship on sustainable livelihood within the Lotuko community in Juba.

The diagram shows a single central peak (unimodal), with frequencies tapering off gradually on both sides, which is desirable for interpreting perception-based Likert data. There is no severe skewness to the left or right, and the tails do not exhibit extreme outliers or flatness. The histogram is bell-shaped with a relatively balanced distribution, providing a good visual representation of normal-like behavior. This histogram suggests that most respondents agree or strongly agree that indigenous entrepreneurship contributes to livelihood sustainability, and the visual presentation supports the overall consistency of their responses. The bell-like curve in the diagram reinforces the suitability of data for central tendency and dispersion analysis.

Figure 3: Environmental Factors



INTERPRETATION:

The Q-Q plot for Environmental Factors illustrates a reasonably strong adherence to the expected normal distribution line, indicating that the data approximates normality. Most of the observed values fall closely along the diagonal reference line, suggesting that the responses are symmetrically distributed around the mean. The plot however shows slightly more deviation at the lower end of the distribution (left tail), where a few points fall below the line. This minor departure suggests the possibility of light negative skewness in the data, which is consistent with the skewness statistic previously observed. Nonetheless, the deviations are not substantial enough to indicate a serious violation of normality. This plot supports the interpretation that environmental conditions influencing indigenous social entrepreneurship are measured with sufficient variability and consistency, making the data reliable for further inferential analysis in examining their impact on sustainable community livelihood.

CORRELATION TEST:

Table 3: ***Correlation Analysis***

		Environmental Factors	Community Sustainable Livelihoods
Environmental Factors	**Pearson Correlation**	**1**	**.583****
	Sig (2-tailed)		**<.001**
	N	**139**	**139**
Community Sustainable Livelihoods	**Pearson Correlation**	**.583****	**1**
	Sig (2-tailed)	**<.001**	
	N	**139**	**139**

**** Correlation is significant at the 0.01 (2-tailed).**

INTERPRETATION:

The correlation analysis presented in Table above provides comprehensive insights into the relationships between the independent variables, Environmental Factors and Community Sustainable Livelihood, within the context of the Lotuko community in Juba, South Sudan. The Pearson correlation test was employed, which is appropriate for continuous variables that meet the assumptions of linearity and approximate normal distribution, as previously assessed through descriptive and graphical analyses. Environmental Factors were found to be positively and significantly associated with Community Sustainable Livelihood, showing a Pearson correlation of $r = .583$, with $p < .001$. Although the strength of this relationship is slightly lower than that of Economic and Socio-Cultural Factors, it remains within the moderate to strong range. Environmental factors include the physical infrastructure, institutional environment, market accessibility, government investment in rural entrepreneurship, and natural resource management, all of which are instrumental in supporting the operational capacity of indigenous businesses. The findings suggest that improvements in the environmental context contribute meaningfully to livelihood outcomes. For instance, access to clean infrastructure, modern farming or blacksmithing tools, and functional road networks are critical in facilitating the distribution, marketing, and scaling of indigenous products and services. Poor environmental conditions, on the other hand, can create structural obstacles that deter entrepreneurial success and hinder livelihood enhancement.

REGRESSION TEST:

Table 4: Regression Analysis

Model	R	RSquare	Adjusted RSquare	Std. Error of the Estimate	Durbin-Watson
1	.896[a]	.803	.799	.323	2.029

INTERPRETATION:

The Model Summary table above presents critical statistical information that helps assess the strength, predictive power, and suitability of the linear regression model used to examine the influence of environmental factors on the sustainability of livelihoods within the Lotuko community in Juba, South Sudan. The multiple correlation coefficient (R) is reported as 0.896, indicating a strong positive relationship between the predictor, Environmental Factors and the dependent variable, Community Sustainable Livelihood. This means that the variable has a high association with livelihood sustainability among the Lotuko community. The R Square value is 0.803, which implies that 80.3% of the variance in community sustainable livelihood can be explained by the independent variables. This is a substantial proportion, suggesting that the model has strong explanatory power. In practical terms, it means that improvements or changes in the environmental conditions of the Lotuko community are likely to significantly impact their livelihood sustainability. Furthermore, the Adjusted R Square value is 0.799, which adjusts for the predictor in the model and is a more accurate estimate of the population. Finally,

the Durbin-Watson statistic is 2.029, which falls within the acceptable range of 1.5 to 2.5, indicating that there is no significant autocorrelation in the residuals. This satisfies one of the key assumptions of linear regression, independence of errors, which means the residuals (prediction errors) are not correlated and the observation is independent.

Table 5: ANOVA

Model	Sum of Squares		Df	Mean Square	F	Sig.
1	Regression	57.246	3	19.082	183.356	<.001[b]
	Residual	14.050	135	.104		
	Total	71.296	138			

INTERPRETATION:

The ANOVA (Analysis of Variance) table 5, provides key insights into the significance of the regression model used to examine the influence of economic factors, socio- cultural factors, and environmental factors on community sustainable livelihood among the Lotuko community in Juba, South Sudan. The F-statistic, tests the null hypothesis that the model with no independent variables fits the data as well as the model with the included predictors. A very high F value of 183.356, coupled with a significance level (Sig.) less than .001, provides overwhelming evidence that the regression model is statistically significant. This means the model as a whole provides a good fit to the data and that the independent variable makes a meaningful contribution to predicting community livelihood sustainability.

Table 6: Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	Sig	95% Confidence Interval for B		Correlations		
	B	Std.Error			Lower Bound	Upper Bound	Zero-order	Partial	Part
Constant	0.44	.155	.286	.775	-2.61	.350			
Environmental Factors	.110	.052	.105	2.127	<0.001	.008 .212	.583	.180	.081

INTERPRETATION:

The regression coefficient table presents the detailed estimation and significance of the predictor variable, Environmental Factors on the dependent variable, Community Sustainable Livelihood. This analysis helps to understand not just whether these independent variables have an effect, but how strong that effect is, how precisely it is estimated, and how meaningful it is for interpretation in the context of the Lotuko community of Juba, South Sudan. The effect of Environmental Factors is lower in magnitude, with a coefficient of 0.110 and a standard error of 0.052, suggesting a more modest but still positive contribution to livelihood outcomes. The t-values and significance levels (p-values) further confirm the statistical relevance of each coefficient. The Environmental Factors have a lower t-value of 2.127 but remain statistically significant at the 0.05 level (p = 0.035). This pattern again reflects the dominant influence of socio-cultural variables, followed by economic and environmental factors, respectively.

QUALITATIVE RESULTS

Qualitative Analysis on the Market and Policy Environment; Taxation Frictions, Weak Competition, and Import Dependence revealed that Participants describe Juba ‘s economy as power-dominated (the strong take it all‖), not rules-based competitive markets. Municipal taxation without accompanying services pushes micro-traders indoors; meanwhile land grabbing, insecurity outside town, and rented farmland unaffordable to displaced Lotuko limit agricultural production. Result: import dependence for vegetables (Uganda, Kenya, Sudan) and elevated prices, squeezing petty traders ‘margins [FGD2; FGD4]. This macro environment erodes the traditional comparative advantage (free or communal access to land, bush products, and water bodies) that underpinned the village model.

FINDINGS:

The Lotuko‘s economic identity is rooted in environmental resources. Key livelihood activities include cattle rearing, cultivation of sorghum, groundnuts, millet, and maize, fishing, hunting, blacksmithing, honey harvesting, and bamboo/firewood sales. These activities are not only economic but also

embedded in ecological governance systems, where ritual leaders (Amonye Fau, Amonye Hari, Amonye Moor) regulate cultivation, fishing, and hunting seasons. For instance, fishing is prohibited during spawning periods to protect fish eggs. Such practices reflect a deep-seated commitment to sustainable use of nature ‘s resources.

However, migration to Juba has disrupted this environmental base. Land grabbing, rapid urbanization, and insecurity in peri-urban areas have deprived Lotuko entrepreneurs of access to cultivable land. This loss of access has forced communities into precarious urban hustles such as selling charcoal, sand digging, and water vending, which are less profitable and environmentally degrading. Further, the decline of indigenous agricultural production has created reliance on imports from Uganda, Kenya, and Sudan. Participants lamented the high cost of vegetables like tomatoes, onions, and cabbages, which are now controlled by other groups, including Burundian farmers renting land in Juba. This market displacement undermines the Lotuko‘s ability to compete and deepens their vulnerability in an already fragile livelihood system.

SUGGESTIONS

The study recommends specialized training for the Othuho Indigenous communities to increase the resilience and scalability of Othuho-aligned enterprises in the face of environmental displacement. The training, to be undertaken by specialists, will focus on developing indigenous social entrepreneurs through enhanced access to capital, inclusive gendered participation, and the promotion of sustainable livelihoods. Specifically, it will discuss financial literacy, business scaling up, and good entrepreneurship practices and analyze the types of businesses the Othuho community wishes to create. By integrating customary knowledge and modern business practice, the training hopes to prepare the Othuho in Juba to realize their potential, maintain cultural identity, and create enterprises that are not only economically sustainable but also environmentally sustainable

CONCLUSION

In conclusion, study demonstrate that environmental aspects are a key determinant in livelihood sustainability, with qualitative and quantitative results highlighting the deep impacts caused by land loss, environmental degradation, and urban displacement. Statistical analysis confirmed correlation between access to agricultural land, environmental status, and sustainable livelihoods, but stories obtained from participants revealed the decline of conventional farm operations, fishing operations, and foraging activity as a result of land grabbing, insecurity, and urbanization. Disintegration of ritual ecological governance systems not only undermined resource management but also facilitated the enhanced expansion of unsustainable practices such as charcoal selling and sand mining. Communities thus registered enhanced economic exposure, market displacement frustration, and enhanced reliance on the importation of external foodstuffs, showing an evident fundamental livelihood systems' shift in response to environmental and urban stress.

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