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Economic Contributions of Tribal Markets in Nagaland: A Kohima-Centric Study

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Abstract

Tribal markets in Nagaland are crucial elements of the region's socio-economic structure, especially in Kohima, where these markets offer substantial chances for income generation, informal employment and livelihoods diversification. This research studies economic impacts of these markets by collecting primary data from 112 participants by using the structured questionnaires. The analysis of the data was carried out using descriptive statistics, Chi-square tests, and ordinal logistic regression. The findings indicate that many vendors depend on these markets as either a main or additional source of income, with significant correlations between income levels and factors such as the type of products sold, gender of the vendors, and the frequency of market participation. Increased income outcomes were associated with regular engagement and sale of value-added products. Whereas they play a role in community sustainability, tribal markets face ongoing issues such as the insufficient infrastructure, restricted access to finance, and lack of formal policy recognition. The findings emphasize the importance of integrating informal economies into urban planning and financial inclusion efforts, providing specific empirical insights from Kohima to the broader academic discourse. This study advocates for the creation of inclusive policy frameworks that will recognize and enhance the role of tribal markets in supporting regional development.

Keywords : Indigenous livelihoods, Informal economy, Northeast India, Ordinal regression, Income generation, Tribal markets

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Introduction

The economic and cultural dynamics of Northeast India heavily rely on tribal markets. In Nagaland, these markets play a crucial role in maintaining livelihoods and preserving cultural traditions, particularly given the challenges posed by geographic obstacles, inadequate infrastructure, and a legacy of neglect that have hindered formal economic growth. Generally held on a weekly or seasonal basis, these markets enable the trade of agricultural produce, forest products, livestock, and artisanal crafts. While they are mainly operating informally and in a decentralized way, they are intricately woven into the community's customs and approaches for the economic sustainability (Faishal & Tase, 2025; Konyak & Faishal, 2025).

The importance of tribal markets goes beyond mere trading functions. They play a significant role in enhancing household incomes, generating employment, ensuring food security, and fostering social unity, particularly in regions where access to formal job opportunities, financial services, and organized supply chains is scarce. In the state of Nagaland where more than 86% of the population is known to be as tribal and rural communities are frequently scattered across mountainous regions, these markets serve as local economic networks. Despite their importance, tribal markets have garnered little empirical focus in discussions on regional development and national policy initiatives.

Numerous studies have investigated the impact of non-timber forest products (NTFPs), informal trading systems, and indigenous entrepreneurship on tribal economies, but the unique contributions and changing dynamics of tribal markets in urbanizing areas such as Kohima are still not thoroughly examined. As the

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demographic characteristics of the region change, digital connectivity increases, and consumption behaviors shift, conventional market practices are slowly transforming (Faishal, 2025; Paphino & Faishal, 2025), yet these expansions are not well represented in existing academic studies so this study try to find to address this gap by conducting a targeted empirical examination of the economic functions of tribal markets in Nagaland, focusing specifically on Kohima as a central case study. It builds upon earlier research on the digital financial inclusion (Faishal, 2025), while presenting fresh evidence obtained from a comprehensive household-level dataset. The research investigates that how these markets will support income generation, informal job opportunities, and livelihood diversification for local residents, while also assessing the challenges faced by market participants concerning infrastructure, access to capital, and market integration.

Through descriptive and econometric analyses of primary data collected by the structured questionnaires, this research provides important idea of the operation and potential future of tribal markets in the context of the broader development strategy for Northeast India. Focusing on Kohima, the study enhances the localized understanding of tribal economic activities, which can also be applied to other districts in Nagaland with similar socio-economic and cultural features. The research highlights the importance of the developing policy frameworks which integrates the informal markets into formal urban planning, enhance access to financial services, and protect traditional ways of life. Additionally, it explores socio-political factors affecting the tribal communities, including their marginalization from state economic policies, and stresses urgent necessity to recognize tribal markets as an essential for economic empowerment and the preservation of culture.

Literature Review

Tribal markets have always been crucial to the livelihoods of indigenous groups across India, especially in remote and forested areas. These markets serve as places for economic transactions and function as social institutions intertwined with local cultural traditions. Behera (2024) points out that in Nagaland, weekly tribal markets are crucial for trade in agricultural goods, forest resources and handcrafted items, sustaining informal economies that are often disregarded by formal politics. Similarly, Nadkarni (2017) highlights that these markets provide opportunities for decentralised economic growth but are often neglected in the context of national planning and investment initiatives.

Body of literature examines the economic potential of non-timber forest products (NTFPs) as a core component of tribal trade. Arnold and P´erez (2001) and Shackleton and Pandey (2014) argue that NTFPs — such as bamboo, medicinal herbs and wild foods — provide a livelihood for millions of forest dwellers. These commodities are routinely traded in tribal markets and contribute to both income generation and livelihood security. Adhikari and Bhattarai (2019) confirmed this view, noting that the collection and sale of NTFPs are closely linked to the prosperity of Karbi tribal households, while Mahato and Syngkon (2021) revealed similar dynamics in the Patharia hills of northeast India.

Despite their potential the various obstacles stop these markets from becoming more commercialized. As noted by Dash, Behera, and Rahut (2016), issues like inadequate rural infrastructure, volatile prices, and limited access to bank financing obstruct tribal producers from reaching the larger markets. Kar and van Niekerk (2022) point out the difficulties that is being encountered by communities that are dependent on forests, including ineffective supply chains and unstable group organizations. This is corroborated by Pande et al. (2018), who show that insufficient credit and also the lack of market knowledge leads to the reduced profits for upland tribal farmers.

The efforts of organizations like the Tribal Cooperative Marketing Federation of India (TRIFED) have been crucial in addressing these challenges. The Minimum Support Price (MSP) program for non-timber forest products (NTFPs) aims to assist tribal producers, but it is not functioning effectively in practice. Verma and Sharma (2023) point out that issues like a lack of familiarity with digital resources, poor local communication, and inadequate transportation are hindering the effectiveness of these programs. Tewari (2014) and Yadav and Dugaya (2013) also note that complex regulations are making it difficult for private companies to engage in these tribal markets.

On the environmental side, scholars have warned about the ecological compromises associated with the market-driven extraction of forest products. Shaanker et al. (2004) noted that an overreliance on non-timber forest products (NTFPs) could result in resource depletion unless sustainable harvesting methods are implemented. As Murphy (2022) points out, who also points to the gendered problems associated with tribal peoples' participation in markets, the ecological safeguards and livelihood measures must therefore be combined. The possibility of indigenous markets becoming catalysts for rural transformation is also evident in research that links them to the broader development goals. Singh (2024) notes that tribal communities continue to be excluded from mainstream economic approaches, while Thapa and Singh (2023) support the integration of non-timber forest products (NTFPs) and local markets into climate resilient development strategies, while research by Darnal and Dutta (2024) has begun to explore the investment habits of indigenous investors, suggesting an increasing recognition of financial instruments within the indigenous economy.

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The literature reviewed collectively indicates that although tribal markets present a robust and adaptable model for the local economic organization, they still function within a policy gap known to be as the infrastructural neglect, exclusion from credit access, and environmental vulnerability. The distinct sociocultural and ecological contexts in Nagaland necessitate more in-depth empirical research into the operational dynamics of these types of markets and their role in supporting household livelihoods, generating the employment, and fostering also in the sustainable rural development. This research aims to fill that gap by focusing on the economic functions and obstacles faced by the tribal markets in Northeast India, centering on Kohima.

Methodology and Procedures

Study Objectives and Research Questions

This study aims to analyse the economic impact of tribal markets in Nagaland, particularly in the Kohima area. In Nagaland, tribal markets play an important role in facilitating the exchange of local products which creates the job opportunities and also fosters community-oriented commerce. Grasping their influence is of importance for promoting sustainable development in the region and for creating well-informed policies.

The specific objectives of the study are:

- To identify the socio-economic profiles of individuals engaged in tribal markets in Kohima.
- To evaluate the perceived importance of tribal markets in the livelihoods of different stakeholders.
- To assess the statistical association between individual characteristics (e.g., role, education, income) and their valuation of tribal markets.
- To estimate the probability of higher importance ratings based on socio-economic predictors using an ordinal regression model.

Research Question: What socio-economic factors significantly influence the perceived importance of tribal markets in Kohima's local economy?

Hypotheses:

- H_0: There is no statistically significant association between a respondent's socio-economic characteristics and the importance they assign to tribal markets.
- H_1: There is a statistically significant association between a respondent's socio-economic characteristics and the importance they assign to tribal markets.

Data Collection and Sampling Design

Data was collected through a structured and self-administered questionnaire circulated by Google Forms. The survey process took place between March and April 2025 which focused especially on individuals involved with tribal markets in Kohima as vendors, buyers, local residents, or other. The sampling method used was non-probability purposive sampling that aimed to involve participants with relevant experience of tribal markets. A total of 112 responses were collected and analyzed.

The questionnaire comprised both close-ended and Likert-scale questions, focusing on:

- Demographic and socio-economic characteristics (e.g., age, gender, education, occupation, income)
- Role in tribal markets (vendor, buyer, resident, etc.)
- Frequency of participation and type of goods exchanged
- Perceived economic and social value of tribal markets
- Opinions on employment generation, local sourcing, infrastructure challenges, and policy support

Description of Variables

This study employs both the categorical and ordinal variables, which are grouped into dependent and independent categories for the purpose of empirical study. The primary dependent variable is the Importance of Tribal Markets to Livelihood (ITML), measured on a 5-point ordinal Likert scale: Not Important, Slightly Important, Moderately Important, Very Important, and Essential. Whereas for the purpose of econometric modeling, the responses was numerically coded from 0 (Not Important) to 4 (Essential), preserving the ordinal nature of the data.

A range of independent variables were included to study the impact on ITML. The first variable is the Role in the Tribal Market (ROLE) that is a categorical variable which differentiates whether the respondent serves as a vendor, buyer, local resident, or another type of stakeholder. This was transformed into multiple dummy variables for use in the regression analysis. The second variable, Gender (GENDER), is a binary variable represented as Male or Female, and were also converted into a dummy format for modeling purposes. On the other hand, the Educational Attainment (EDUCATION) is categorized as an ordinal variable with four levels:

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No Formal Education, Primary School, High School, and College/University. For the regression analysis, dummy variables were established with College/University as the baseline group. This enables assessment of relative influence of lower educational levels on perceived significance of the tribal markets.

Ultimately, Monthly Vendor Income (INCOME) was incorporated, but exclusively for those respondents who were classified themselves as vendors. The income data was divided into five categories: Less than 5,000; 5,000–10,000; 10,001–20,000; 20,001–30,000; and Above 30,000. The Responses from non-vendors were removed from this variable to ensure the analytical consistency. As with other categorical variables, income categories were transformed into dummy variables to perform the regression analysis. Altogether, these variables formed the foundation for examining how socio-economic factors affect perceptions of the significance of tribal markets in Kohima.

Data Analysis

The analysis followed a multi-stage empirical strategy comprising descriptive statistics, inferential hypothesis testing, and ordinal regression modeling.

Descriptive Analysis

Initial analysis involved computing the frequency distributions and cross-tabulations to summarize demographic and socio-economic variables. This provided an overview of the respondent characteristics, such as roles in tribal markets, education levels, income categories, and gender distribution.

Chi-square Test

In order to understand the associations between categorical variables, Chi-square tests of independence was performed.

The Chi-square statistic ($\chi 2$) was computed using:

$$\chi^2 = \sum \frac{(O_{ij} - E_{ij})^2}{E_{ij}}$$

where O_{ij} is the observed frequency and E_{ij} is the expected frequency under the assumption of independence. The hypotheses were evaluated at the 5% level of significance.

Ordinal Logistic Regression

Given the ordinal nature of the dependent variable, the ordinal logistic regression model was employed to assess how the likelihood of assigning higher importance to tribal markets changes with socio-economic characteristics.

The model takes the form:

$$\log\left(\frac{P(Y \le j)}{P(Y > j)}\right) = \alpha_j - \beta_1 X_1 - \beta_2 X_2 - \cdots - \beta_k X_k$$

- Y = perceived importance of tribal markets
- j = category threshold (0 to 4)
- α_j = threshold-specific intercepts
- X_k = independent variables (role, gender, education, income)
- β_k = coefficients to be estimated

The Ordered Model function from the statsmodels library in Python were used to estimate the model, with the logit link function specified. Categorical predictors were represented using dummy variables. Cases with missing responses was removed from the analysis. The assessment of statistical significance was carried out using the z-values and p-values, with interpretation emphasizing the direction and size of coefficients, especially for those with $p < 0.05$.

Model Interpretation and Assumptions

Interpretation of Coefficients

Within ordinal logistic regression analysis, each coefficient (βk) interprets the change in log-odds of achieving a greater level of the outcome variable for one unit increase in the predictor, holding all other factors constant. A positive coefficient implies that the variable increases the odds of a respondent considering greater importance to tribal markets, whereas negative coefficient implies lower odds. For predictors of the education and role type, dummy variables were made with a reference category. The estimated coefficients associated with these dummy variables show the impact of each group relative to the baseline category. For example, the

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negative statistically significant coefficient of "No formal education" indicates respondents in this category are less likely to rate tribal markets as "Very important" or "Essential" in comparison to the reference category (College/University).

The ordinal logistic regression model is based on proportional odds assumption, which asserts that relationship between every pair of outcome categories remains consistent. In other words, the coefficients remain unchanged across all the cumulative logit equations.

Formally, the assumption implies that:

$$\log\left(\frac{P(Y \leq j)}{P(Y > j)}\right) = \alpha_j - \beta_1 X_1 - \beta_2 X_2 - \cdots - \beta_k X_k$$

In order to validate the assumption, the model fit was evaluated and coefficient stability across thresholds was examined. While the formal Brant test was not implemented, visual checks and threshold estimates indicated that model provides a reasonable approximation for cumulative ordering of responses.

Results and Discussion

Descriptive Statistics

A total of 112 participants took part in the survey. Table 1 presents a summary of the essential demographic and economic characteristics of the respondents.

Table 1: Summary Statistics of Key Variables

Variable	Category	Frequency	Percentage
Role in Market	Buyer/Customer	79	70.5%
	Local Resident	25	22.3%
	Vendor	5	4.5%
	Others	3	2.7%
Gender	Female	61	54.5%
	Male	51	45.5%
Education Level	College/University	75	67.0%
	High School	19	17.0%
	Primary School	11	10.0%
	No Formal Education	7	6.0%
Vendor Income	Less than 5,000	10	43.5%
	5,000–10,000	9	39.1%
	10,001 and above	4	17.4%
Importance of Tribal Markets	Essential	26	23.2%
	Very Important	50	44.6%
	Moderately Important	20	17.9%
	Slightly Important	11	9.8%
	Not Important	5	4.5%

Source: Primary data collected by the authors through structured questionnaires in Kohima, Nagaland (2025).

The bulk of those who took part in the study were either customers or local residents, with only a small percentage identifying as merchants. More than two-thirds of the participants have received higher education at the college or university level. whereas the vendor earnings more than 80% reported monthly incomes of less than $10,000 which shows a low-revenue sector. The importance of tribal marketplaces is obvious with around more than 70% telling them as "Very Important" or "Essential" to the community sustainability. These results highlight critical role of the tribal marketplaces play in Kohima's socioeconomic aspect.

The high number of female participants emphasizes gender-specific dynamics of the tribal market involvement in the Kohima. These markets are not only the venues for economic transactions but also crucial

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environments for empowerment of the tribal women. Their strong participation in selling especially in vegetables, fruits, forest products, and prepared foods shows their dual responsibilities in supporting household economies and maintaining the traditional trade practices. These observations highlight the necessity for gender-sensitive policy measures aimed at enhancing women's access to resources, ensuring their safety in public areas, and promoting their involvement in local decision-making processes.

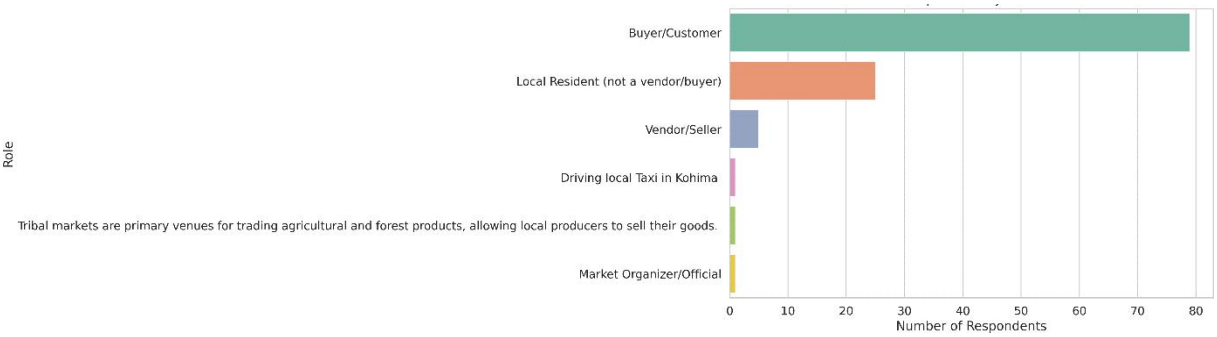

Figure 1: Distribution of Respondents by Role in the Tribal Market

As depicted in Figure 1, most of the participants classified themselves as buyers or local residents, whereas vendors represented a lesser percentage. This underlines the consumer-centric characteristic of Kohima's tribal market system.

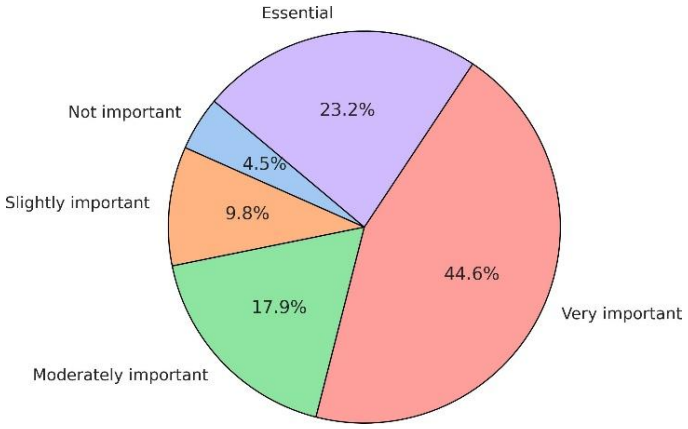

Figure 2: Perceived Importance of Tribal Markets to Livelihood

Figure 2 shows that over 70% of respondents view tribal markets as either" Very Important" or" Essential" to their livelihoods, reinforcing the market's socio-economic relevance.

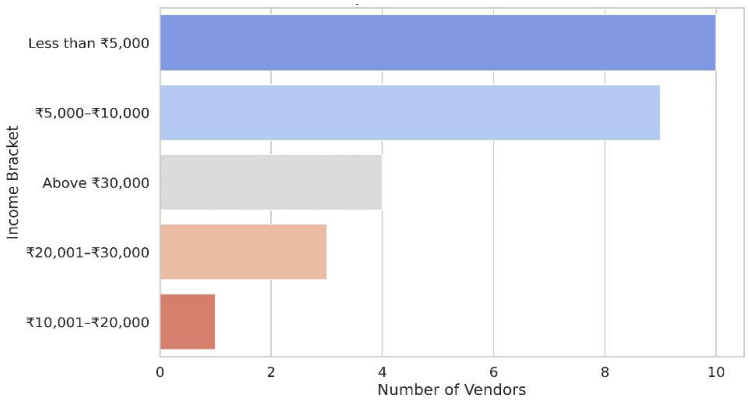

Figure 3: Monthly Income Distribution Among Tribal Market Vendors

As shown in Figure 3, most of the vendors earn less than 10,000 per month which shows that tribal markets in Kohima primarily support low-income informal entrepreneurs.

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Chi-square Test Results

In order to examine the relationships between important socio-demographic factors and perceptions concerning tribal markets, Chi-square tests of independence were conducted. The null hypothesis for each test indicates that the variables in the rows and columns are not related.

Table 2: Chi-square Test Results

Test	χ^2	**df**	**p-value**	**Significant at 5%?**
Role vs Support to Local Producers	23.62	20	0.260	No
Education vs Govt. Subsidy Views	6.58	12	0.884	No

Source: Computed by the authors using primary survey data, 2025.

The initial test evaluated the connection between the role of respondents in tribal market (vendor, buyer, resident) and also their views on whether the tribal markets aid local producers. With $\chi2 = 23.62$ and a p-value of 0.26, result was not statistically significant at the 5% level of significance. This shows that the perceptions regarding support for local producers are fairly uniform among the different roles. The second test investigated if there is a correlation between educational attainment and beliefs about the impact of government subsidies enhancing tribal market contributions. Again, with result ($\chi2 = 6.58$, $p = 0.884$) was not statistically significant. This suggests that support for government subsidies is widespread and not confined to any of the specific educational demographic. These non-significant findings are valuable in their own right, highlighting a degree of agreement among various demographic groups about strengths and the obstacles that are present in the tribal markets of Kohima.

Ordinal Logistic Regression Results

In order to analyze how the socio-economic factors, affect the perceived significance of the tribal markets, an ordinal logistic regression model was applied utilizing logit link function. The dependent variable was assigned a value between 0 and 4 (where 0 indicates Not Important and 4 signifies Essential), while the independent variables were encoded as dummies variables.

Table 3 presents the estimated coefficients, standard errors, z-values, and significance levels for each predictor.

Table 3: Ordinal Logistic Regression Results

Variable	**Coefficient**	**Std. Error**	**z-value**	**p-value**
education_No formal education	**-3.163**	1.367	-2.315	0.021*
education_Primary school	**-3.036**	1.440	-2.109	0.035*
gender_Male	-0.312	0.588	-0.531	0.596
role_Vendor	0.127	0.681	0.186	0.852
income_5k–10k	0.214	0.752	0.285	0.776
income_Above 30k	0.494	0.689	0.717	0.473
Threshold (0/1)	-4.835	1.310		
Threshold (1/2)	0.727	0.311		
Threshold (2/3)	1.956	0.419		
Threshold (3/4)	2.784	0.533		

Note: * Indicates statistical significance at the 5% level.
Source: Author's computation based on primary data using ordinal logistic regression analysis, 2025.

The regression analysis shows that level of education is a significant factor in how individuals evaluate the importance of tribal markets. In particular, the respondents with no formal education ($\beta = -3.163$, $p = 0.021$) and those with only primary school education ($\beta = -3.036$, $p = 0.035$) were less inclined to view tribal markets as very important when compared to the group of respondents who have attained a college or university education. Other elements such as gender, vendor role, and income did not exhibit statistically significant effects at the 5%

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significance level, showing that the perceptions of market importance remain relatively uniform across these demographic groups. The threshold values indicate the estimated cut-off points between each successive category of the ordinal dependent variable which confirms the ordered nature of the responses and illustrating how the model transitions across different levels of perceived significance.

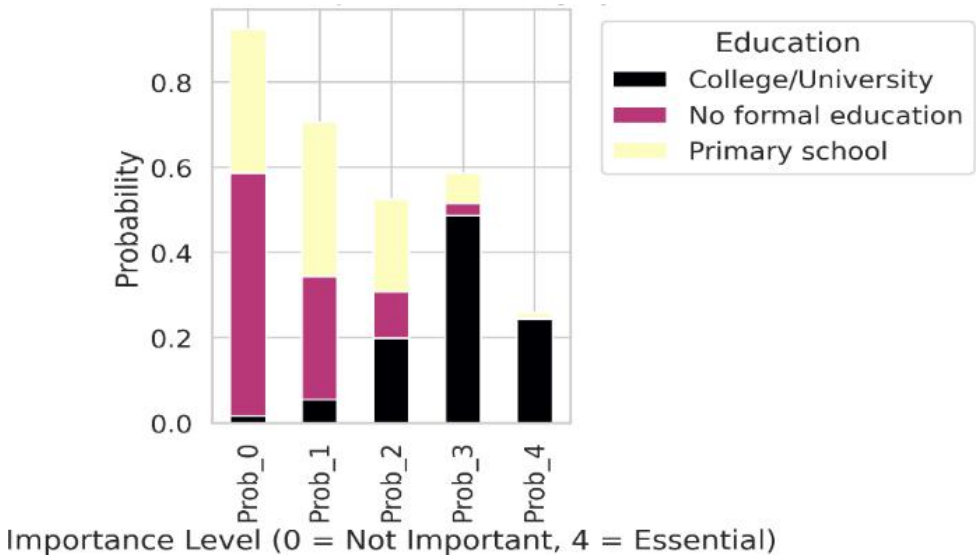

Figure 4: Predicted Probabilities of Perceived Importance by Education Level

Figure 4 shows predicted probabilities derived from ordinal logistic regression analysis. Individuals with the higher levels of education are considerably more inclined to evaluate tribal markets as "Very Important" or "Essential." On the other hand, those with only primary education or no formal schooling are more prone to give lower importance ratings that supports the statistical conclusions of the model.

Limitations of the Study

Although the study offers valuable perspectives into the economic impacts of the tribal markets in Kohima district, it has some limitations as well. For example, the analysis is restricted to a single district, which may limit the applicability of findings to other Nagaland regions or the larger Northeast India region. Secondly, this study mainly depends on self-reported data collected with surveys that could introduce biases related to memory or reporting accuracy. Thirdly, scope of econometric analysis was limited by the sample size and the cross-sectional nature of the dataset. Finally, aspects such as environmental sustainability, supply chain connections, and seasonal fluctuations was not thoroughly examined and should be considered for the future research. In spite of all these constraints, study establishes a groundwork for more extensive and comparative investigations in future.

Conclusion

Tribal markets in Nagaland are crucial for maintaining household incomes which offers the informal job opportunities, and preserving local trading systems. This study especially focused on Kohima known to be as the capital city and an essential commercial center, aimed to empirically examine economic impact of these tribal markets using primary dataset gathered through structured questionnaires. Descriptive statistics showed that a notable portion of market participants depend on these markets as either their main or supplementary income source. The demographic analysis of the respondents showed that tribal markets serve not only as the venues for economic transactions but also as the platforms that uplift marginalized groups, especially women and youth who have limited access to formal employment. These results confirm ongoing significance of informal markets in promoting regional economic resilience.

The Chi-square tests indicated significant relationships between the income derived from the tribal markets and essential socio-economic factors that includes age, gender, type of product offered, and also the frequency of market engagement. These relationships imply that economic benefits from tribal markets are shaped by personal attributes as well as manner of participation in market activities. Additionally, ordinal logistic regression analysis revealed that type of product offered and the consistency of participation were strong indicators of higher income levels. Vendors who sell value-added products or who participate regularly in the market.

The study adds to the growing literature on indigenous market systems by providing a specific viewpoint related to Kohima. It points out that, despite being informal, the tribal markets have become flexible and evolving environments that can adapt to the urban demand, digital payment methods, and also the changes in

consumer preferences. Nonetheless, structural obstacles such as insufficient infrastructure, limited access to credit, and the lack of formal support mechanisms continue to hinder their potential for growth and development. In light of these results, there is a pressing need for policy measures that acknowledge the economic significance of tribal markets present in Kohima. Integrating tribal vendors into the local development plans, providing essential infrastructure in marketplace regions, and introducing the focused training or financial inclusion programs can strengthen their contribution to fostering inclusive urban growth. Additionally, acknowledging tribal markets as legitimate economic components within urban governance frameworks can boost their sustainability over time. Additionally, increasing the reliance on Non-Timber Forest Products (NTFPs) for income among tribal market sellers prompts significant concerns regarding the environmental sustainability. Although these resources provide financial support and uphold traditional practices, excessive harvesting or insufficient regulation may jeopardize ecological stability. Implementing sustainable harvesting methods and community forest management strategies will be crucial for the maintenance of the both biodiversity and economic stability in future.

This study ultimately sheds light on functioning of tribal markets in Kohima, suggesting that future research can explore longitudinal data from various districts to gain idea into seasonal trends, recovery patterns post-COVID-19, and integration of digital technologies. A comparative analysis of different towns in the state of Nagaland might also enhance applicability of findings and assist in development of state-wide policies. Although this study provides significant insights, it does have certain limitations. Firstly, the analysis is confined to data from Kohima town, which may restrict the relevance of the findings to other tribal areas within Nagaland state. Next, the cross-sectional design of the data hinders the ability to make causal conclusions. The primary Data collected over time would more effectively illustrate the seasonal and temporal fluctuations in income and market behavior. Finally, although ordinal regression yields valuable understanding, using mixed-method approaches in future studies may enhance the understanding of the socio-cultural factors which influences the tribal market engagement.

The results highlight several central policy considerations. The Local authorities and the development organizations should officially identify the tribal marketplaces as vital economic contributors and incorporate them into the urban planning initiatives. Also, the enrichment of the essential market facilities, like sanitation, storage options, and protection from the elements, will significantly improve working conditions for vendors. Specific lending programs, microinsurance options, and initiatives for digital financial literacy could help the tribal entrepreneurs in increasing their earnings. Additionally, promotion of the market access for value-added tribal products through cooperative marketing or e-commerce platforms can help to integrate these informal markets into broader economic systems while preserving their traditional essence.

Conflict of Interest

The authors declare no conflict of interest.

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