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DETERMINANTS OF OCCUPATIONAL LIVELIHOOD STRATEGIES AMONG SELECTED TRIBAL FARMERS: AN EMPIRICAL MULTINOMIAL LOGIT ANALYSIS

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Abstract

This study analyses determinants influencing occupational livelihood diversification among 450 tribal farmers in India, employing a multinomial logit regression model. Recognizing that agriculture alone is often unsustainable, the study explores combined livelihood strategies such as agricultural labour, non-farm activities, collection of non-timber forest products (NTFP), and business engagements. Key factors impacting choices include age, literacy, dependency ratio, institutional contacts, income, and credit access, with notable variations across mandals. These findings offer actionable insights for policies promoting sustainable livelihoods and food security among tribal communities.

Introduction

Agriculture is the backbone of tribal livelihood in rural India, but its solitary income is often insufficient due to limited resources and environmental risks. Tribal households increasingly diversify into supplemental occupations to stabilize and improve income. Understanding the socio-

economic and institutional drivers behind these choices is essential to formulating effective rural development strategies. This research applies a multinomial logit framework to examine livelihood strategies and their determinants comprehensively among tribal farmers.

Literature Review

Livelihood diversification is widely recognized as a critical adaptive strategy for rural households facing agricultural uncertainties (Barrett et al., 2001). The multinomial logit model is appropriate for analysing discrete choices among multiple, unordered livelihood alternatives, capturing the complexity of household decision-making (Greene, 2003). Prior studies highlight several key determinants of diversification: demographic variables such as age and sex influence labour participation; education facilitates access to non-farm employment; family composition affects labour availability; and social capital, including institutional linkages, improves access to information and credit (Ellis, 2000; Berhanu, 2006). Economic factors like income and credit use further enable investment in diversified occupations. However, the interaction of these factors varies by region and cultural context, necessitating localized empirical analysis such as presented here.

Methodology

This research surveyed 450 tribal households across three mandals—Paderu, Chintapalli, and Munchingput—grouping them based on their occupational combinations. These range from relying solely on agriculture to combinations

involving agricultural labor, non-farm activities, NTFP collection, and business initiatives. The study focused on eight independent variables: age and sex of household head, literacy level, dependency ratio (proportion of dependents to working-age members), use of modern agricultural inputs, contacts with institutional agencies (extension or development organizations), annual income, and credit use.

The multinomial logit model was used to estimate the relative risks or odds ratios of households choosing one livelihood combination over the baseline category (agriculture alone). This model allows for analyzing the likelihood of multiple outcomes concurrently, adjusting for interdependencies among explanatory variables.

Results

Aggregate Level Determinants

Table 1: Agriculture + Agricultural Labour

Variable	Sig. Level	Odds Ratio	Interpretation
Age (X1)	1%	0.86	Older heads less likely to adopt this strategy
Dependency Ratio (X4)	10%	1.12	Higher dependency increases adoption likelihood
Modern Inputs (X5)	5%	1.01	Slight positive influence
Annual Income	10%	0.517	Higher income reduces

(X7)			adoption odds

Agriculture + Agricultural Labor:

Age negatively influenced diversification, suggesting younger households are more inclined to combine agricultural work with labour activities. A higher dependency ratio and use of modern inputs slightly increased diversification odds. Institutional factors showed mixed effects. Income had a significant impact, with higher income reducing the propensity to engage in supplemental labour.

Table 2: Agriculture + Non-Farm

Variable	Sig. Level	Odds Ratio	Interpretation
Literacy (X3)	10%	1.85	Literacy strongly promotes non-farm diversification
Institutional Contact (X6)	1%	3.76	Strong positive effect of institutional links
Annual Income (X7)	1%	1.0027	Positive but slight influence

Agriculture + Non-farm Activities:

Literacy and institutional contacts strongly increased odds, reflecting the role of education and extension services in facilitating entry into non-agricultural sectors. Income was positively correlated, indicating better-resourced households diversify more successfully.

Table 3: Agriculture + NTFP

Variable	Sig. Level	Odds Ratio	Interpretation
Age (X1)	10%	0.90	Older heads less likely to adopt NTFP strategy
Institutional Contact (X6)	1%	5.42	Very strong institutional effect

Agriculture + NTFP:

Institutional contacts significantly raised the likelihood of engaging with forest-based livelihoods, showcasing the importance of external linkages in accessing niche resources. Older heads of households were less likely to diversify into NTFP collection.

Table 4: Agriculture + Business

Variable	Sig. Level	Odds Ratio	Interpretation
Age (X1)	1%	0.90	Older household heads less likely
Dependency Ratio (X4)	10%	1.08	More dependents increase adoption likelihood
Institutional Contact (X6)	1%	4.27	Strong positive institutional influence

Agriculture + Business: Dependency ratio and institutional contacts positively influenced business

participation, while older household heads showed a reduced propensity to engage in entrepreneurial activities.

Mandal-Level Summary

Mandal	Key Determinants	Significant Livelihood Combinations
Paderu	Literacy, Modern Inputs, Institution Contact	Agriculture + Agricultural Labour, NTFP
Chintapalli	Institutional Contact, Credit, Literacy	Agriculture + Non-farm, Business
Munchingput	Age, Literacy, Dependency Ratio	Agriculture + Agricultural Labour, Non-farm, Business

Mandal-Level Variation

- Paderu showed stronger effects of literacy, modern input use, and institutional contacts on all diversification forms, suggesting better service penetration.
- Chintapalli's diversification was shaped predominantly by institutional contacts and credit access, emphasizing financial inclusion.
- Munchingput data indicated significant roles for demographic variables and literacy, highlighting heterogeneity in local socioeconomic structures.

Discussion

The data confirm that younger household heads are more prone to diversify livelihoods, while higher dependency ratios

stimulate diversification to meet family needs. Literacy and institutional contacts emerge as powerful enablers, facilitating access to information and opportunities beyond agriculture. Higher income paradoxically slightly lowers some diversification odds, suggesting wealthier households might specialize. Credit access at mandal level further supports livelihood investments.

These findings align with existing research advocating diversified livelihood portfolios as pathways to rural economic resilience and food security, especially for vulnerable tribal farmers. Regional variation underscores the need for decentralized policies targeting local socio-economic characteristics and strengthening institutional linkages.

Conclusion

Livelihood diversification among tribal farmers is significantly shaped by age, literacy, dependency ratio, institutional contacts, income, and credit availability. Policies aiming to enhance rural livelihoods must prioritize education, extension outreach, and credit access while considering local socio-economic contexts. Such interventions can improve the resilience and sustainability of tribal livelihoods, contributing to broader rural development goals.

Policy Recommendations

- Strengthen literacy programs targeting tribal households to improve livelihood options.
- Expand agricultural extension and institutional outreach to provide timely information and support.

- Enhance access to credit and financial services tailored for diversified rural enterprises.
- Develop locally adapted livelihood diversification strategies, accounting for demographic and economic heterogeneity across mandals.

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