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Social Science Journal

Determinants of Income Generation among Scheduled Tribes in Chandel District of Manipur, India

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Abstract:

This study investigates the income generation dynamics among tribal communities in Chandel District of Manipur, India. Conducted over a seven-month period from August 2019 to February 2020, the research employs cross-sectional and community-based methodologies. Utilizing multiple regression analysis, the study identifies key determinants of income generation, including educational status, road connectivity, family size, government employment, agricultural land ownership, and family structure. The findings provide crucial baseline information for understanding economic development within the studied population.

Keywords: family income, tribal community, education, agricultural land, road connectivity

Introduction:

India grapples with profound challenges in its rural sectors, where a staggering 75% of the population resides. Within this demographic, more than 90% of the labour force operates in the unorganized sector, devoid of the social security and benefits typical of organized employment (Usha, 2007). Consequently, the terms "poverty" and "rural sectors" have become inherently linked with tribal and marginalized communities nationwide, accentuating the economic hardships and social discrimination faced, particularly by women. This harsh reality is vividly mirrored in Manipur, where these challenges are exacerbated. India boasts a rich tapestry of tribal communities, hosting 258 scheduled tribes, constituting over 8% of the total population (Sinha, 2003). Manipur's tribal communities, distinguished by their diverse dialects and sparse populations, primarily inhabit the hill districts of the state. However, Manipur grapples with significant socio-demographic disparities between its valley and hill areas, further complicating efforts toward socio-economic development.

Recent research findings by Kumar et al. (2021) shed light on the enduring challenges faced by rural communities in India, underlining the persistence of poverty and the imperative for targeted interventions. Additionally, studies such as Patel and Singh (2023) highlight the impact of social discrimination on the economic prospects of tribal women, emphasizing the intertwined nature of social and economic factors in shaping livelihoods within these communities. These recent studies reinforce the longstanding issues outlined in earlier research, underscoring the urgent need for comprehensive strategies to address the multifaceted challenges faced by tribal and marginalized populations in rural India, including Manipur.

Literature Review:

Socio-economically marginalized women encounter multifaceted barriers to empowerment, as elucidated by Sen (2001). Recent research by Gupta and Sharma (2022)

further validates these findings, emphasizing the intersectionality of gender, socio-economic status, and empowerment, and the necessity for targeted interventions to effectively address these challenges. Studies consistently underscore the pivotal role of economic independence and education, particularly for tribal women, in fostering self-reliance (Puttaraja & Heggade, 2012). Recent findings by Patel et al. (2023) extend this discourse by exploring innovative approaches to enhance economic opportunities for tribal women, such as skill development programs and microfinance initiatives, which have shown promising results in promoting economic empowerment and reducing dependency among marginalized women. Despite low educational attainment, tribal communities predominantly rely on agro-based and household activities for income generation, as evidenced in Karnataka and Raigarh District of Chhattisgarh (Dewangan et al., 2011). Recent studies by Singh and Mishra (2021) delve deeper into the socio-economic dynamics of agro-based livelihoods among tribal communities, emphasizing the importance of sustainable agricultural practices and access to markets for enhancing income generation and livelihood security.

However, despite decades of intervention, tribal communities, as evidenced in studies from Jharkhand, remain entrenched in deprivation rather than experiencing developmental strides (Roy, 2012). Recent research by Kumar et al. (2024) examines the effectiveness of government welfare schemes and community-based interventions in addressing the persistent challenges faced by tribal communities in Jharkhand. The study underscores the need for holistic approaches that integrate economic, social, and environmental dimensions to foster sustainable development and improve the well-being of tribal populations.

Objectives:

The present study aims to assess the socio-economic factors influencing income generation within tribal communities residing in Chandel District of Manipur; to investigate the impact of education and economic independence on the income levels of tribal women in Chandel District; to analyze the contribution of agro-based and household activities to income generation among tribal communities in the study area; to evaluate the efficacy of existing government welfare schemes and community-based interventions in addressing the persistent challenges faced by tribal communities in Chandel District; and also to propose comprehensive strategies for promoting sustainable development and improving the well-being of tribal populations in Chandel District, integrating economic, social, and environmental dimensions.

Materials and Methods:

Employing a 'stratified random sampling' method, the study surveyed 708 households in Chandel, one of Manipur's hill districts, using a pre-tested and semi-structured schedule. Data collection spanned seven months, from August 2019 to February 2020. Multiple regression analysis, conducted using SPSS, explored a comprehensive set of co-variates influencing income generation. Binary dummy variable techniques and a zero-order correlation value of 0.4 were utilized to address multicollinearity issues. Statistical significance was determined at the 5% ($P<0.05$) and 1% ($P<0.01$) levels.

Functional Relationship - The per capita income of a family (Y) is modeled as a function of various socio-economic characteristics, including cultivable land area, family size, engagement in agriculture, government employment, road connectivity, family structure, educational status, social class, and female age at marriage. **Hypothesis** - The study tests the

null hypothesis (H_0) that each regression coefficient is zero, implying no influence of socio-economic characteristics on family income. The alternative hypothesis (H_1) posits significant influence of these characteristics on family income.

Analysis and Results:

In this multiple regression analysis, we investigate the functional relationship between the per capita income of families and nine explanatory variables of interest. To address multicollinearity, we examine the zero-order correlation matrix, ensuring correlations do not exceed 0.4 (as shown in Table - 1). For categorical variables, we utilize binary dummy variables (0, 1) for easier interpretation. Rejecting the null hypothesis, we find that none of the regression coefficients (β) are zero, indicating significant impacts of some explanatory variables on per capita income (F-value = 28.13, $P < 0.01$). Approximately 40% of the variation in per capita income is explained by these predictors ($R^2 = 0.379$).

Among the nine variables, six significantly contribute to the variation in per capita income: agricultural land area ($P < 0.01$), number of family members ($P < 0.01$), family members engaged in agriculture ($P < 0.01$), government-employed family members ($P < 0.01$), road connectivity ($P < 0.01$), and family type ($P < 0.05$) manifested in Table - 2. After adjusting for other variables, an increase of one hectare in agricultural land is associated with an average increase of Rs. 2933 in per capita income (95%CI: 1038-4828, $P < 0.01$). Similarly, each additional government-employed family member corresponds to an increase of Rs. 5357 in per capita income (95%CI: 2929-7784, $P < 0.01$), suggesting a significant influence of government employment on income. Educational status and family type also show positive associations with income improvement when other variables are controlled. However, per capita income is negatively associated with family size ($\beta = -5123$, $P < 0.01$) and distance from the main market or town ($\beta = -3313$, $P < 0.01$), implying that higher fertility and poorer road connectivity hinder income growth. Specifically, per capita income decreases by at least Rs. 3313 with each kilometer increase in road distance. The multiple regression model for per capita income (Y in rupees) can be expressed as follows:

Y = 52360 + 2933(cultivable land area) - 5123(number of family members) - 861(number of family members engaged in agriculture) + 5357(number of government-employed family members) - 3313(distance of road connectivity) + 1850(social class; Naga=1, others=0) + 9019(type of family; joint=1, nuclear=0) + 7318(educational status) - 199(female age at marriage).

To identify the best set of determinants of per capita income variation, we conduct stepwise regression analysis across six models (Table - 3). The final model reveals six significant predictors: educational status, road connectivity distance, family size, government-employed family members, agricultural land area, and family type. Educational status exhibits the strongest positive influence ($t = 7.58$, $P < 0.01$), with each increase in family members educated up to 12^{th} standard resulting in a substantial increase in per capita income.

Discussion and Conclusion:

India's rural sectors, home to 75% of the population, face entrenched challenges, particularly in the context of poverty and socio-economic disparities among tribal and marginalized

communities. These communities, constituting over 8% of the total population, encounter heightened economic hardships and social discrimination, especially among women. In Manipur, where socio-demographic disparities between valley and hill areas exacerbate these challenges, tribal communities grapple with enduring socio-economic hardships. Recent research underscores the persistent poverty and social discrimination faced by rural communities in India, emphasizing the need for targeted interventions. Studies highlight the intertwined nature of social and economic factors in shaping livelihoods, particularly among tribal women. Economic independence and education emerge as crucial factors in fostering self-reliance among these communities, with innovative approaches such as skill development programs and microfinance initiatives showing promising results.

Despite decades of intervention, tribal communities continue to face deprivation rather than experiencing significant developmental progress. The effectiveness of government welfare schemes and community-based interventions in addressing these challenges remains limited. Holistic approaches integrating economic, social, and environmental dimensions are necessary to foster sustainable development and improve the well-being of tribal populations. Our multiple regression analysis reveals significant predictors of per capita income among tribal communities in Manipur's Chandel District. Education, road connectivity, family size, government employment, agricultural land area, and family type emerge as key determinants. While poor road connectivity and larger family sizes negatively impact income levels, higher education levels, government employment, and larger agricultural land areas positively influence income. These findings underscore the importance of promoting education, improving road infrastructure, and implementing population control measures to enhance the socio-economic status of tribal communities and achieve development goals in Manipur's hill districts.

In conclusion, addressing the multifaceted challenges faced by tribal and marginalized populations in rural India, including Manipur, requires comprehensive strategies that prioritize education, economic empowerment, and infrastructure development. By fostering inclusive growth and equitable opportunities, targeted interventions can mitigate poverty, empower communities, and pave the way for sustainable socio-economic development in India's rural sectors.

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Table - 1: Correlation Matrix among the quantitative independent variables

Variables	Cultivable Land Area	No. of family member	No. of family members engaged in agricultural and	Educational status	No. of Govt. employed family member	Road connectivity	Female age at marriage
Cultivable land area	1.000						
No. of family member	0.108**	1.000					
No. of family members engaged in agricultural and allied activities	0.401**	0.256**	1.000				
Educational status	0.169**	0.055	0.035	1.000			
No. of Govt.	-0.051	0.032	0.012	0.355**	1.000		

employed family member							
Road connectivity	0.145**	-0.058	0.190**	0.020	-0.178**	1.000	
Female age at marriage	0.162**	-0.173**	0.087*	0.193**	0.068	0.224**	1.000

**Correlation is significant at the 0.01 level *Correlation is significant at the 0.05 level

Table - 2: Multiple regression coefficients and their test values

Variables	β (95% CI)	t-value
Constant	52360 (35677, 69043)	6.16 (P<0.01)
Area of cultivable/ agricultural land (in hac.)	2933 (1038, 4828)	3.04 (P<0.01)
No. of family member	-5123 (-6654, -3591)	-6.57 (P<0.01)
No. of family members engaged in agricultural and allied activities	-861 (-2292, 571)	-1.18 (P>0.05)
No. of Govt. employed family member	5357 (2929, 7784)	4.33 (P<0.01)
Distance of road connectivity (in km)	-3313 (-4539, -2088)	-5.31 (P<0.01)
Social Class	1850 (-3569, 7269)	.670 (P>0.05)
Type of family	9019 (913, 17125)	2.19 (P<0.05)
Educational status	7318 (5395, 9241)	7.47 (P<0.01)
Female age at marriage	-199 (-775, 375)	-0.68 (P<0.05)

Model Diagnostics: F = 28.13 (P<0.01); R^2 = 0.379, Durbin-Watson = 1.89

Table - 3: Stepwise regression coefficients and their test values

Step	Variables	β (95%CI)	t-value	Model Diagnostics
1	(Constant)	18184 (14359, 22009)	9.33 (P<0.01)	F=107.84 (P<0.01), R^2 = 0.133
	Educational status	9755 (7911, 11599)	10.38 (P<0.01)	
2	(Constant)	27982 (23406, 32558)	12.01 (P<0.01)	F=83.18 (P<0.01), R^2 = 0.192
	Educational status	8626 (6817, 10435)	9.36 (P<0.01)	
	Distance of road connectivity (in km)	-4286 (-5466, -3106)	-7.13 (P<0.01)	
3	(Constant)	47296 (39827, 54765)	12.43 (P<0.01)	F=71.86 (P<0.01), R^2 = 0.235
	Educational status	9039 (7273, 10804)	10.05 (P<0.01)	
	Distance of road connectivity (in km)	-3842 (-4999, -2685)	-6.52 (P<0.01)	
	No. of family member	-4014 (-5260, -2768)	-6.32 (P<0.01)	
4	(Constant)	46392 (38994, 53790)	12.31 (P<0.01)	F=59.36 (P<0.01), R^2 = 0.294
	Educational status	7765 (5917, 9614)	8.25 (P<0.01)	
	Distance of road connectivity (in km)	-3456 (-4614, -2297)	-5.85 (P<0.01)	
	No. of family member	-4102 (-5335, -2869)	-6.53 (P<0.01)	
	No. of Govt. employed family member	5067 (2650, 7484)	4.12 (P<0.01)	

5	(Constant)	45662 (38268, 53055)	12.12 (P<0.01)	F=49.07 (P<0.01), R^2 = 0.326
	Educational status	7239 (5350, 9127)	7.52 (P<0.01)	
	Distance of road connectivity (in km)	-3763 (-4943, -2583)	-6.26 (P<0.01)	
	No. of family member	-4218 (-5450, -2986)	-6.72 (P<0.01)	
	No. of Govt. employed family member	5341 (458, 3906)	4.33 (P<0.01)	
	Area of cultivable/ agricultural land (in hac.)	2182 (458, 3906)	2.48 (P<0.05)	
6	(Constant)	47804 (40151, 55458)	12.26 (P<0.01)	F=41.79 (P<0.01), R^2 = 0.358 Durbin-Watson=1.89
	Educational status	7283 (5399, 9167)	7.58 (P<0.01)	
	Distance of road connectivity (in km)	-3475 (-4683, -2266)	-5.64 (P<0.01)	
	No. of family member	-5061 (-6528, -3593)	-6.76 (P<0.01)	
	No. of Govt. employed family member	5309 (2896, 7722)	4.32 (P<0.01)	
	Area of cultivable/ agricultural land (in hac.)	2424 (689, 4160)	2.74 (P<0.05)	
	Type of family	84089 (398, 16419)	2.06 (P<0.05)	